What is the problem with food waste?
– The role of attitudes for food waste in school meals

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Abstract

Today one third of all food produced in the world is estimated to be wasted or lost. Agriculture and livestock production is part of a resource intensive industry with environmental consequences contributing to climate change and other pressing natural resource issues. Food waste occurs at several stages in the food chain, and middle- and high-income countries are estimated to be responsible for the main losses that occur at distribution and consumption level. This study focuses on food waste in a Swedish context with focus on public food services and especially school meals. With emphasis on attitudes and how they reflect dominating discourses about food production, attitudes about food waste in school meals have been scrutinised. Semi-structured interviews have been carried out at several levels of organisation working with school meals; national-, municipality-, and school kitchen level. The attitudes towards food waste appear to be complex and many times contradictory. The results indicate that it is seen as wrong to discard food and the negative environmental effects are also recognised, although the problem of food waste seems to be defined differently due to context. Interviews on several levels of organisation demonstrate that the problem of food waste is defined in economic terms, in attitudes and knowledge about food in general, in regulations and organisational structures or even denied to be a problem. The dominating attitudes have been linked to the theoretical concept of food regimes, which emphasise the influence of different food production systems on peoples' relation to food. The study implies the importance to recognise attitudes and the impacts of social and economic structure in order to understand causes for food waste and also possible measures to reduce it.

Table of contents

1 Introduction

To discard food seems like an unnecessary waste of resources, still FAO (2011) estimate that one third of all food produced in the world is wasted or lost every year. Food waste occurs at several stages in the food chain and middle- and high-income countries are estimated to be responsible for the main losses that occur at the distribution and consumption level (HLPE 2014, FAO 2011). The global food industry is projected to have a significant impact on climate change as agriculture and especially livestock production is estimated to account for about 22 percent of global greenhouse gas emissions (Lundqvist et al., 2008). Deforestation and water scarcity are other pressing environmental consequences that food industry is contributing to (FAO 2013, Lundqvist et al., 2008, Kummu et al., 2012). Considering this the issue of food waste becomes even more important to address, as the wasted food is a part of a resource demanding system that puts pressure on already constrained and limited resources.

In 2012 food waste in Sweden was estimated to be about 1.2 million tonnes, which is about 127 kilo food discarded per person (SEPA 2013). As mentioned above, food waste is a problem along the entire food chain. However, since more money and resources are added at every step in the food supply chain, the higher in the chain that the waste occurs, the bigger the loss in terms of value and resources (Eriksson 2015). The Public food service sector is estimated to discard about 58 000 tonnes of food per year, of which 52% is estimated to be food that could have been consumed (SEPA 2013). A study conducted on public food services in Sweden 2004 estimated that 1,5% of the arable land under cultivation for food production in Sweden may be used to produce food that is eventually lost within the public food service sector (Engström & Carlsson- Kanyama 2004). This

implies that the amount of resources to be saved within those institutions can be of great value, both economically as well as environmentally.

One of the public food service sectors is school meals, which in Sweden are served every day. As more people are served food in school canteens in comparison with other public food services, for example hospitals and nursing homes (Jensen et al. 2011 p.13), this study will focus on schools. Stare et al (2013) estimate that the school service sector generates about 30,000 tones of food waste every year. According to the Swedish Environmental Protection Agency (2009) schools could be able to lower their food waste by 50%. Reduced food waste in schools would not only save resources and money, but could also be used as a pedagogical tool as to form good habits and attitudes for reduced waste for future generations.

1.1   Problem formulation

In order to address the issue of food waste there is a need to understand why food is discarded in the first place. Initially, this study aimed at focusing on what policies might influence food waste. However, it subsequently appeared that attitudes were more influential when it came to what actions were taken to prevent food waste or not. As many studies and reports have a focus on what practical measures can be taken in each kitchen to reduce food waste and how to improve routines (Barr 2015, Haglund 2013, WRAP 2011, Söderlund 2012), this study will put emphasis on attitudes around the issue of food waste. Several studies examining households' attitudes towards food waste (such as Gulled & Västå 2013, Hedengren 2013, Evans 2012) indicate that consumers do think food waste is negative, thus not seeing themselves as contributing to the problem. However, households are estimated to discard the largest amount of food per year (SEPA 2013). This indicates that the role of attitudes might be central to how the problem of food waste is formulated and thereby also acted upon.

Attitudes can be understood as derived from dominating discourses, which can be defined as language, concepts and categories that are used to describe reality (Bacchi 1999). Discourses are not constant and can change and be different due to different contexts (Ibid.). By examining dominating

attitudes of people working with school meals, this can indicate in what ways food waste is seen and discussed, which consequently influence what are seen as causes and solutions to reduce waste.

The aim of this study is to understand possible underlying causes to food waste based on dominating attitudes in school meal management. The following sub-question has been used:

- What is perceived to be the problems with food waste?
- How can the perceived problems with food waste be understood in relation to the theoretical perspective of dominating food regimes?

1.2   Research context

In order to understand causes for food waste in school kitchens, there is a need to include several levels of organisation which all influence the management of school lunches. Every municipality has the responsibility to govern how and what food to serve according to guidelines on a national level. The management of school lunches thus differ between municipalities and can, for example, be governed through a centralised department within the municipality, with responsibility for all food served in public institutions such as schools and nursing homes. The schools then need to buy the service to prepare and serve food from that organisation. Some schools still have a system whereby the principle of the school has the main responsibility for the kitchen and school lunches.

Due to time constraints two municipalities, Uppsala and Sala, were selected to participate as a case study. Both municipalities have a centralised organisation for public meals that prepare and serve the food. Interviews have therefore been conducted with representatives on a national level, municipality level and school kitchen level. Both public high schools and elementary schools were included.

2 Thematic background

2.1 Food waste

There has been no common way to define food waste why the EU project FUSION has suggested a common definition in order to harmonise how food waste is defined (Östergren *et al.* 2014). Food waste is then described as

"...any food, and inedible parts of food, removed from the food supply chain to be recovered or disposed (including composted, crops ploughed in/not harvested, anaerobic digestion, bio-energy production, co-generation, incineration, disposal to sewer, landfill or discarded to sea)." (Östergren *et al.* 2014:6).

This implies that the term food waste include both prepared food that is wasted because of, for example, cooking too much food which is then discarded, as well as materials that are ready for harvest which are then not harvested (Ibid 2014). As the definition indicates, even though the food waste may be used for bio-energy production or other purposes, it is still food waste as it was initially intended for human consumption. This broad definition can thus be difficult to use when studying a very specific and defined part of the supply chain. As this study focus on food waste in school meals in Sweden, emphasis will be on waste occurring in the kitchens and school restaurants, not including possible waste arising at other stages of the supply chain. Some studies, such as WRAP (2011) and SEPA (2013), use subcategories to differentiate between avoidable food waste, that could have been eaten if it had been managed better, and unavoidable food waste, including for example vegetable peel, bones and teabags. This division can however be debated, as what can be included as unavoidable food waste can vary due to social norms and opinions on what, for exam-

ple, is seen as food. This is one of the reasons why it can be difficult to compare numbers from waste measurements, as different and vague definitions of food waste might have been used. The food waste measurements conducted in schools in Uppsala use a definition which do not include peels and bones, whereas measurements in Sala include what can be seen as unavoidable food waste (Informant 1, 2016, Informant 2, 2016). For this study a definition focusing on avoidable food waste has been used, although with consideration of possible differences in interpretations of the concept.

Food waste is not only an environmental concern, but can also be seen as an expression of the unequal resource use where many Western countries live in abundance and can afford to discard food, whereas other parts of the world are lacking resources and suffer from hunger (FAO 2011). This implies that the phenomena of food waste can also be seen as a manifestation of the global social inequalities that exists (Stuart 2009). The problem is complex as there can be various political, economic and social factors that together affect the access to food, such as poverty and conflicts (Lundqvist et al., 2008). Food waste is thus one factor that needs to be considered in order to achieve food security for everyone. Reducing food waste in Sweden does not explicitly lead to more food on someone else's plate in another part of the world, but contributes indirectly by saving already constrained and limited resources that are needed to produce food.

Food waste has been given a lot of attention recently, both in media (for example SVT 2015, The Guardian 2015) and from global institutions. When the United Nations General Assembly adopted the Sustainable Development Goals in September 2015, a target to halve the per capita global food waste by 2030 was included (UN 2016). International websites such as "Love food hate waste" (WRAP 2016) has been initiated to inform and raise awareness about food waste and similar projects has also been in introduced in Sweden, such as the website Mindrematsvinn.nu (Hushållningssällskapet 2016).

2.2   Food waste in schools

In Sweden a free school lunch is served to all pupils enrolled in the Swedish school five days a week. The Education Act states that all pupils in elementary school in Sweden should be served a

school lunch that is nutritious and free of charge (Swedish National Agency for Education, 2016). The amount of food wasted in schools in Sweden is estimated to be around 30 000 tonnes per year or 21 kg per pupil per year (Stare et al., 2013). At the same time, schools food services are estimated to have potential to reduce waste by 50% (SEPA 2009). The total amount of food waste in school meals might not seem to be a lot in comparison to food waste at the household level (which is estimated to 81 kg per person and year), but as schools only serve one meal per day and remaining meals are served in households, the figures has to be compared as per portion and not by absolute amounts. Based on 180 school days per year, the food waste generated in school meals would be about 100g per portion and pupil. The waste can be divided by waste generated in kitchens relating to the handling of the food, and waste from pupils' plates (SEPA 2009). Measures estimate that waste from pupils' plates amounts to about 30 gram per portion and day, although studies show that the plate waste can vary between 5 and 80 gram per portion and day (Ibid.). According to SEPA (2009) the amount of food discarded vary a lot depending on school and type of kitchen, as well as the age of the pupils.

In 2004 Engström and Carlsson- Kanyama conducted a study on food waste in four different public food services in Sweden. They estimate one-fifth of the food to be wasted and that the largest source of waste was estimated to be waste from peoples' plates (Engström & Carlsson- Kanyama 2004). The study concludes that a relatively small amount of food discarded is related to the handling of food (storage, preparations and serving) and that Swedish legislation for food quality and safety, as well as demand on freedom of choice, makes it hard to reduce that loss further. However, results from measuring food waste in school kitchens in Uppsala indicates that the waste from production of the food might sometimes be greater than the food discarded by pupils (Uppsala kommun 2015). One school in Uppsala is estimated to discard 131 kg food per week due to plate waste, in comparison to 243 kg per week from production waste generated in the kitchen (Ibid.) As mentioned before, numbers can vary significantly not only due to different schools, but also due to different ways of measuring food waste. Numbers on generated food waste should therefor be used with caution and with awareness of the different methods and definitions.

Similar studies undertaken in the UK estimate the total amount of food waste from schools are 80,382 tonnes per year, which result in 72 gram per pupil per day in primary school and 42 gram per pupil in secondary school (WRAP 2011). One study from the Waste and Resource Action Pro-

gramme (WRAP 2011) focused on the type of food discarded and at which point the waste arise, as well as causes for the waste. Three different categories of reasons for food waste could be identified: operational (relating to for example logistical issues and serving), situational (relating to canteen environment and the pupils eating situation) and behavioural (relating to pupils food preferences and behaviour) (WRAP 2011:6-7). Yet the UK has a different system for school lunches than Sweden, which is why causes for food waste might be slightly different.

2.3   Previous research

In order to come to terms with the problem of food waste it is important to not only seek to quantify and measure how much food is thrown away, but also to understand the causes for the waste. As this study draws on the qualitative aspect, previous research that includes discussions and perspectives on possible causes and attitudes will be discussed below.

Several studies have been made focusing on households and causes for consumer's behaviour for food waste (for example Stefan et al., 2012, Stancu et al., 2014). The role of planning and everyday life routines are emphasised as causes for food waste, as well as social norms and attitudes. An ethnographic study was conducted in the UK over 8 months including interviews and participatory methods to understand household food waste (Evans 2012). In concluding, Evans (2012) argues that the focus for food waste reducing actions should not be on individuals' attitudes, as the respondents did not appear to be careless or disregard the food wasted. Social contexts that influence food practices (such as time, conventions and domestic division of labour) together with material contexts (such as domestic technologies and infrastructures of provision) are instead emphasised. Yngfalk (2015) also discusses consumer behaviour, but links it to the influence of neo-liberal consumerism. By using Foucault's concepts of governmentality and bio-power, Yngfalk argues how behaviour is governed through, for example, the use of date labelling, and how that can influence people to not trust their own knowledge about food which can indirectly lead to food waste. Studies conducted in Sweden through the initiative of The National Food Agency, examine household attitudes towards food waste, which show that consumers are aware of the problem and that it has negative consequences, albeit not seeing themselves as contributing to the problem (Gulled, Västå 2013, Hedengren 2013).

A project carried out by the SP Technical Research Institute of Sweden (Barr 2015) aimed at reducing food waste in public food services, with focus on over-production in school kitchens. The project used a management philosophy called LEAN to reduce waste by developing and improving routines in the kitchens, as well as working with communication and engagement (Ibid). Interviews with students and kitchen personnel were conducted to understand causes for food waste behaviour, while still remaining focused on practical improvements such as routines and communication. WRAP (2011) also conducted studies on how to reduce food waste in school canteens in the UK. Behavioural causes were brought up as one aspect generating waste, although with a main focus on why pupils reject food (Ibid.). Several stakeholders involved in the process of serving school lunches participated in the study, which indicated different attitudes and concerns regarding food waste from different stakeholders depending on their own incentive and perceived possibility to influence food waste (Ibid). This implies the relevance of context and position of the different stakeholders in understanding influencing attitudes. However, this was not examined further in the study.

While several studies and projects have been implemented with an aim to reduce food waste, few have focused on the attitudes of people involved in school lunch management, and how that might affect perceived measures to lower food waste. There are some studies at the household level linking food waste behaviour to the broader societal discourse about food (see previous paragraph). There is however a lack these studies on public food services, and why focus on school meals can contribute to widen the understanding of causes for food waste in public institutions.

3   Conceptual framework

3.1   The role of attitudes and discourses

In order to analyse causes for food waste, there is a need to understand what influence peoples' actions and attitudes. According to Foucault, human behaviour is directed by discourses and organised practices (Foucault 2000). What we perceive as knowledge and objective truth is according to Foucault, something constructed and socially agreed upon (Barker 1998). Every society in history has its own "truths", which are made up of accepted discourses, which are changing with time (Ibid). What is seen as rational behaviour is then based on dominating discourses that influence ways in which people are governed and govern themselves (Foucault 2000) This implies that there are certain ways of thinking about food in our society that also influence how food waste is managed and acted upon. Food waste, for example, can be seen as both a waste of resources and money and it could consequently be considered common sense to not discard food. However, as dominating discourses or practices are claimed to change what people perceive as common sense, it thereby influence what is seen as reasonable do to. This implies an understanding of food waste as not only an action carried out by individuals, but deriving from attitudes and discourses influencing how to think and behave when it comes to food waste in school meals.

Questions about the source and origin of discourses can be debated, as well as who has the possibility to influence and shape discourses. Fairclough (2001) argues that discourses are shaped by societal structures, where one of the influential powers is the dominating ideology that use discourses as a tool to incorporate certain practices as universal and common sense. Practices/discourses and social structure are thus seen as dialectic, where social structures do not only determine discourses,

but are also a product of the same (Fairclough 2001). It thereby becomes interesting to understand how people perceive and frame the issue of food waste, as the dialectic relation opens up for possibilities to influence the social structure through changes in discourses.

3.2   Food regimes

Food regime is a concept that combines political ecology, political economy and historical analysis in trying to understand different modes of food production in relation to global capitalism (Holt Giménez & Shattuck 2011, McMichael 2009). McMichael (2009) use Friedsmann's definition of the term food regime as a 'rule-governed structure of production and consumption of food on a world scale' (Friedmann in McMichael 2009:142). The different regimes are postulated to be characterized by different producing patterns and the current regime, the corporate food regime, is argued to focus on the market and to a great extent reflect the hegemonic trend of neoliberalism (Holt Giménez & Shattuck 2011). Two of the characteristics described in the corporate food regime are disconnection from the food and the commodification of resources where food is mainly seen as a commodity for the market (Scrinis 2007, McMichael 2009). Holt Giménez & Shattuck (2011) describe that the dominating regime induced alternative agricultural movement trends and depict those trends as responses to the features of the corporate regime, although seen as functioning within the same dominating system. In this study the concept of corporate food regime will be used, referring to the trend of neoliberalism in food production.

As discussed in the previous paragraph, individual attitudes and behaviour can be understood as influenced by dominating discourses (Barker 1998). The corporate food regime can thereby be seen as reflecting the societal structure of neoliberalism as a dominating production pattern, as well as a dominating discourse which influences how people perceive and relate to food. By using the theoretical concept of food regimes, it can contribute to a deeper understanding of current attitudes toward food waste in school meals, as it relates to the broader social and economic context.

4 Method and material

4.1 Methods for data collection

This research is following the constructivist approach, seeing knowledge as socially constructed and that people develop a subjective understanding of the world (Cresswell 2014). With this approach, a qualitative method is preferable. It gives opportunities to discuss the topic more in depth and thereby examine underlying attitudes in a way that might be hard to achieve with quantitative methods (Creswell 2014). By conducting interviews, reasoning and arguments behind actions can be discussed and dominating discourses in food waste analysed. Semi-structured interviews were used to answer the research questions.

During the initial phase, different key actors were mapped out (for example the National Food Agency and kitchen managers for the public food service) to understand how decisions regarding food waste in food service sectors are taken. A short pre-interview was conducted with a person representing a food waste reduction initiative that gave some guidance in what issues and topics might be influencing food waste management. Four different schools participated in the study and they were selected in order to give examples from different types of schools. One school in Sala and one in Uppsala were chosen based on the number of enrolled students, with aim to include some of the largest schools and also with high numbers in measures of food waste. Another school was selected as it is an elementary school with younger pupils, and it also has relatively low numbers of food waste. The last school was chosen in order to see if any differences in attitudes could be identified due to its natural science profile. The last school was also the only school where the principal still have the responsibility for the school kitchen, and not the centralised organisation within the

municipality. Requests to schools to participate in the study were sent out and only those responding participated in the study.

In total nine interviews were conducted for the study. Almost all interviews were carried out through visits in school kitchens and respondents' offices. Two interviews were thus conducted by telephone due to practical circumstances, such as lack of proximity. Since the perspectives of those actors were seen as of importance to the study, telephone interviews were conducted instead. One of the interviews was also a group interview where three people from the personnel in the school kitchen took part. All interviews were recorded and all material transcribed. As the interviews were conducted in Swedish, why the author of this study has translated quotes presented in the empirical material.

In order to work with interviews in a more participatory way, the semi-structured interviews were based on an activity where the interviewee created a problem tree. The method of drawing a problem tree, where the starting point is the perceived problem from which the participants then explore and discuss possible causes, is a way of reflecting on underlying causes and how the causes might be interconnected (Eksvärd 2003). By using a method where an actual map of the structure of the problem is drawn, participants can be encouraged to reflect and discuss in a more open way than only answering interview questions. The method has been developed as a part of participatory research for agriculture, but can be used in many different settings (Ibid). According to Biggs (1989) participatory methods can include various levels of participation and be based on different relationships between the researcher and people who are part of the study. In this study of food waste the participatory element is used as a way to let the interviewed guide what they perceive as important causes to discuss in the interviews. Not all respondents were comfortable using the method of drawing the problem tree, why the method was only used in five of the nine interviews (of which two were telephone interviews and not relevant for using the method).

Through the choice of methods, the sampling of schools and use of theoretical framework, the study can be seen as exploratory. According to Yin (2014) there are several types of case studies and those with exploratory features are described to have a purpose to "identify the research questions

or procedures to be used in a subsequent research study" (p.238). This study thereby gives an example of how food waste can be studied in order to understand the phenomena of food waste.

4.2   Data analysis and validation

After conducted interviews the problem trees were analysed together with the transcribed interviews. In analysing the data, the "What's the problem?" approach was used as a tool. The approach has been developed by Bacchi (1999) as a way to primarily analyse policies, focusing on discourses and problem formulations. The approach emphasise interpretations of the perceived problem and what presumptions are taken for granted in the problem representation (Bacchi 1999). By using the 'What's the problem approach' discourses and underlying causes for food waste could be identified, as the approach question what concepts or categories are used to frame the issue. Some of the respondents were reluctant to use the method of drawing a problem tree, which is why the concept of 'what's the problem?' became useful for scrutinizing if food waste was perceived as a problem at all and /or defined by other problem formulations.

Based on the concept of "What's the problem?" approach, the main topics and themes were mapped out and divided into the two categories of attitudes and attitudes on practicalities. Previous research and reports on food waste in school kitchens have mainly focused on practical measures, and the empirical material of this study to a great extent confirmed those results. Subsequently, the emphasis of this study became attitudes towards food waste as those are also closely linked to how practical measures are perceived. The material guided which themes to use, which was then linked to theoretical concepts. The primary focus is on the respondents' attitudes, thus they also talked about attitudes of other actors (such as pupils and people in general). The discussion of attitudes is then made on several levels, as the analysis of the respondents' discussion develops into a meta-discussion.

4.3   Material

The interviews were conducted at three different organisational levels, dived into national-, municipality-, and kitchen level. The different participating actors are described below.

The Swedish National Food Agency is an authority working with communicating recommendations around dietary habits and safe food practices (The National Food Agency 2015b). They also develop recommendations and guidelines for how the school kitchens should work in order to follow their mission to serve healthy and nutritious food. The person interviewed for this study works specifically with public meals such as schools, hospitals and nursing homes at the National Food Agency. One representative from a research institute working with recommendations and information about reducing food waste was also included in the study, as well as one representative from one of the largest national projects working with reducing food waste in public food services. On the municipality level representatives from respective organisations responsible for public meals were interviewed. In Uppsala, this organisation is called "Måltidsservice" and in Sala, "Måltidsenheten". Four school kitchens participated in this study, all of which are public schools. Three out of four are a part of the centralised organisation in the respective municipality described above. The fourth school kitchen is still governed and managed by the administration of the school.

The respondents have been given code names based on their position, where A is equivalent to national level, B municipality level and C kitchen level.

Respondents	
Organisation and position	**Informant name**
National Level	
The National Food Agency, National Competence Centre for Public Food Services	A1
SP Technical Research Institute of Sweden	A2
National Project Mindrematsvinn.nu, project manager	A3
Municipality Level	
Uppsala Måltidsservice, Development manager	B1
Sala Måltidsenheten, Food manager	B2

School Kitchen Level	
Kungsängsskolan, kitchen chef and staff	C1, C2, C3
Bolandsgymnasiet, kitchen chef	C4
Valsätraskolan, kitchen chef	C5
Jällagymnasiet, kitchen chef	C6

5 Presentation of empirical material

In this chapter the empirical material from the interviews will be presented. As interviews have been conducted with individuals on different organisational levels, the data on attitudes towards food waste and its causes will be presented according to the different positions held, as well as categorised between attitudes and attitudes on practicalities.

5.1 National level

5.1.1 Attitudes

The respondents discussed the role of economy in relation to food waste, how the cost of discarding food is not shown and thereby the issue is not given attention. Respondents A2 and A3 talked about how systems where different actors in the supply chain pay a certain price for the production of meals independent of how much food is eaten or thrown away. A2 argued that the lack of visible economic profit or saving when reducing food waste might be a reason for not acting on the matter. In Uppsala municipality there is a political target to use 100% organic food by 2023 in all publicly funded meals (Uppsala kommun 2015b), a type of policy regulation that was argued to possibly "force" actors to save money by reducing food waste. In order to motivate people to work with reducing food waste, one respondent argued that there has to be some gain and positive feedback, such as for the staff in the kitchen. "If you reduce food waste and save a cost, who will gain from it? What are the incentives for reducing waste? Will it be better for us in general, or just better for me, or for us? Or will they just cancel a position? Can we buy more organic food? Or will we just have

a reduced budget? What is the outcome?" However, A1 desired that school lunches not only be seen as expenses and valued in economic terms, but how it contributes and be valued pedagogically.

General attitudes and norms about food were discussed as a cause for food waste, not only in schools, but also on the household level. A3 spoke about a disconnection to food, that the respect for the food is lost, and that we do not really understand the quantity of resources inputted into the production of it. The respondent argued that today a relatively small share of peoples' income is spent on food that contributes to the view that it is easy to discard. The food is cheap and thereby easy to throw away. A1 discussed our attitudes towards food in a similar way and talked about projects to re-connect to the food we consume. A school, which adopted a pig in order to teach the pupils about what food is and where it comes from, was raised as a good example of reconnecting and informing about food. "You become more careful with food, you understand. All of a sudden the food tastes better because it has an identity and… It is a great example of how you can use this for an educational purpose". Not only pupils' connection to the food was discussed, but also the attitude of the kitchen chefs. "If you as a chef work with good food, then you are more careful with it. If you buy quality food, for example expensive meat or if you got really nice broccoli from the neighbouring village, you have another respect for it". A1 then continued discussing how it is up to every municipality to decide what quality is for them. There are no national guidelines as to define that, but every municipality needs to decide what they want to focus on, for example the organic aspect, or locally produced or maybe the social perspective.

Attitudes towards school lunches in general were also brought up as an important feature. "It is about attitudes and values about school meals in general, that school meals are seen as some kind of second class meals. If you are to be a bit negative, the bad examples media brings up can be seen as complaining about school meals", A1 argued. The respondent reasoned that how both media, parents, politicians and society in general talk about school lunches affect how the meals are valued. As to illustrate the phenomena A1 took an example from a cooking show on TV where amateurs cook and professional chefs then judge their creations. One of the chefs had made a comment that it tasted like the school lunch, which was referring to bad taste. The informant expressed how angry she became when hearing that, arguing it adds to negative stereotypes about food served in schools.

All the respondents on a national level talked about food waste as a problem. A1 expressed that food waste is "food that has been produced in vain. When we know there are people starving, that there is not enough food. That is neither morally, ethically or environmentally okay, to throw away edible food. So of course it is a problem". In relation to the problem formulation of food waste the respondents emphasised that focus should not be to not throw away food, but how much food that has actually been eaten. "The main focus should be on how much food is eaten, not how much that is being thrown away. They (the school kitchen personnel) are there to make sure the pupils eat, that is their main responsibility", A1 stated.

5.1.2 Attitudes on practicalities

The respondents talked about the importance of staff knowledge and competence in order to adopt routines that can prevent and manage food waste. A1 discussed the role of knowledge in relation to food safety regulations. It is perceived as more likely to take decisions just to be on the safe side and consequently discard more food than necessary if the personnel do not have adequate knowledge about when the food might go bad and what the hygiene risks are. All of the respondents talked about routines in the kitchens that can all prevent or limit food waste, such as to just serve a little bit at a time, and not to use large canteens but smaller ones and to refill. To be able to freeze food that is redundant and that will not be eaten the same day, in order to serve it another day or use if for another dish, was also brought up as an important aspect. These routines were all mentioned as linked to the competence of the staff in the school kitchens and their willingness to work with these issues, "because if you do not have the knowledge, then you need safety margins all the time, 'since it says two hours in the National Food Agency guidelines and now it has been two hours and a couple of minutes, we better throw it away to be on the safe side'. If you have knowledge then you can manage that in another way. The personnel's' knowledge is probably the most important", A1 argued. She also emphasised the importance for the staff in every kitchen to think for them-selves and thereby develop routines that works for them, in order to adapt to different contexts. The informant argued that it would not turn out well if people are just reading guidelines and following them without thinking about how it will work in their context. Hence she claims that the personnel in school kitchens should be competent and be able to trust their own knowledge.

Planning is another practical issue that is mentioned as a key aspect in preventing food waste. To be able to plan how much food to order, as well as knowing how many pupils should be served every day. The practical and organisational circumstances around serving school lunches are brought up, as there is a relatively short time span during which the lunch should be served. The time schedule for when the pupils go and eat is an example the respondents bring up as of how organisational issues can influence the workload in the kitchen. If many students arrive to the canteen at the same time or if it is an even flow throughout the lunch hours affect the possibilities for managing routines for less food waste.

The respondents on the national level also discussed communication as a main key for reduced food waste. They argued that the kitchen's ability to plan for how much food to serve every day with organisational issues such as lunch schedules, are mainly due to communication between the kitchen and school management. A2 stated that the two most important causes for food waste in school kitchens are routines and communication. Limitations of technical equipment, such as lack of possibilities to refrigerate or lack of space in freezers, are also recognised as possible hindrances for managing food waste.

5.2   Municipality level

5.2.1   Attitudes

The respondents working with school lunches on municipality level both discussed the economic perspective in relation to food waste. "It is obvious, when you are working with limited economic resources the economic aspect is always there. It costs money to waste food. If we did not discard that much food, we could have spent that money on teaching material. It is a great expense for us, since we buy more than we need, and then also the cost for the kitchen staff that prepare more than we need. That part is very hard to report, to show what are the actual costs for our food waste", B2 argued. He continued that if the costs could be presented in a better way, the issue with food waste would probably get more attention and lead to that more extensive measures are taken. " I think that if we could show more clearly the actually costs we have for food waste in our organisation, then food waste would be taken more seriously on a higher level". The respondent further discussed the

difficulty in calculating the cost of food waste in school kitchens. The amount of waste can be measured and weighted and the costs for the ingredients can be estimated, but B2 argued it is hard to include the costs for the time someone from the personnel spent on cooking the food that is later discarded. The kitchen chef probably also spent time ordering food that is later discarded, which also adds up to a waste of resources. "The economic aspect is big and significant and something most people can see, it becomes concrete if you have a number to show. Everyone can relate to that. But that figure is also very hard to calculate".

Workload and time pressure were also aspects brought up by B2 as a possible reason for kitchen staff to not work with food waste or preventive procedures. If there is not enough people working in the kitchen it might be hard to follow those routines that might prevent waste, but requires a bit more work (as for example, to just serve a little bit at a time which requires you to refill more often and prepare food a little bit at a time). In order to be on the safe side and make sure there is time to serve all pupils that might show up at the same time, more food waste generating actions might be taken according to the respondent.

Like the respondents on the national level, the interviewees working on municipality level also discussed the role of attitudes towards food, and public meals in particular. B2 argued that in some ages it is seen as a taboo to like food served in schools, that it is an attitude that has been passed on from generation to generation, although the quality of the food has improved. Since the school lunch is free of charge for pupils in Sweden (funded through tax money), the respondent argued that it is not valued as food you pay for yourself directly. "It is somehow too cheap for people to think that there is any love behind it. But it is still food that costs money. It is not free, as it took a lot of resources and work to produce that meatloaf", B2 argued. B2 also linked pupils' attitudes about free food to the generation of food waste, "Yes, they actually think it is for free, that someone just conjures it up. Then they do not have to take responsibility for it, they take it for granted". Norms and attitudes about public meals in general were also argued to have an influence on possible food waste. If public meals would have a higher status in society, the food would be valued and respected in another way according to the informants. B1 saw access to unlimited amount of food as the main reason for food waste in general.

24

B1 emphasised the importance to work with pupils' attitudes and knowledge of food and food waste in education. She argued that food waste can be weighed, but not much more can be done to prevent it, if it is not included and discussed in schools. An example of how the organisation works together with pre-schools regarding information about different vegetables were brought up, "Some kids don't know how a carrot looks like, they think it is grated carrots. They actually do not know how the root vegetable carrot looks like. It is not as it used to be. You do not cook food at home in the same way as people did before. There are more pre-made meals. We have less time and more pre-made meals. You do not get the same connection to food as we had before". However, B1 questioned whether it is actually the responsibility of schools to inform and educate about those issues. The importance of pedagogical lunches, where a teacher sits and eats together with the pupils, was also raised. The teacher can thereby inform about food waste and encourage the pupils to refill their plates, instead of taking too much food that they do not finish, which is seen as the largest contributor to food waste generated in schools.

The relation between political targets to increase the amount of organic food and food waste were also discussed. B2 argued that people are conscious about organically grown and locally produced food, thus the status of the food can be increased by stating you only use organic ingredients. As organic food is still perceived to be more expansive than conventional food, a target to increase organic ingredients could therefore lead to an incentive to reduce food waste in order to afford to buy organic.

The respondents both talked about food waste as a problem primary of economic character. B1 explained, "it is terrible to throw away food, but it is foremost about money. They throw away money. If we can reduce food waste then we will have money for other things, like better quality of the food. We could have done so much more with the money that goes into the waste bin. That is how it is". B2 also recognised the environmental aspect and expressed that environmental issues are receiving more attention today and that it is important to work with. However, the respondents came back to how the issues needs to be given more attention in order for them to focus on reducing food waste, especially within the school. Poor financial management in the municipality was seen as one explanation as to why they were not prioritising and investing as many resources to manage food waste issues, compared to other pressing issues.

5.2.2 Attitudes on practicalities

Several practical issues were brought up as either contributing to food waste or practical activities that can be taken to reduce waste. What type of kitchen the school has was seen as one influential factor when it comes to managing leftover food. If the kitchen only receives prepared food from another kitchen, there is no technical equipment to heat up or freeze the food, explaining why it can be difficult to save and serve the food for another day. As a consequence, more food is perceived to be discarded in those kitchens. There is also no possibility to prepare more food if needed, which is why some extra is ordered just in case. B1 argued that the type of kitchen and technical equipment is due to the economic situation in the municipality, as it costs money to install or transform kitchens.

The food safety legislation was mentioned as one of the main regulations influencing how the routines are designed in the kitchen. B2 talked about how those routines are prioritised above everything else, especially as they serve food to small children and elderly people who might be ill. The informant emphasised the importance of those routines since those groups might be more vulnerable than people eating at the local lunch restaurant. "It would be easier for the kitchens to take care of more food if we did not have to conduct our own controls and follow the law on food safety. Then we could discard less, I think, definitely. But safe food will always be prioritised at the expense of food waste".

The environment in which the pupils eat their lunch was also emphasised as an important aspect of why pupils throw away food. How much time they have for their lunch, if it is a stress-free and pleasant atmosphere, it is perceived to give the pupils time to sit down and finish their lunch, and consequently not discard as much food. This is also linked to planning and logistical reasons, due to lunch schedules and the presence of teachers in the dining hall. B1 argued that those issues are up to the school to manage, as well as to include teachings on food and food waste to change pupils' attitudes and norms. As the school kitchens are a part of their own organisation, the informant emphasised the importance of cooperation. "We can not just barge in, but we need to collaborate with the school. We do have that in some places, but it depends if the principal is more or less interested and wants to work with it or not".

26

5.3 School kitchen level

5.3.1 Attitudes

The respondents from the school kitchens discussed how the value and resources put into the food that is produced and served every day is not tangible. People who are working in the kitchen and who are interested in food are implied to have that understanding, but not students or other people. This is argued to be one reason for why food is wasted, "I think it in particular depends on that you do not see the entire cost. And you do not see what you can gain by not discarding food, and then I do not just mean in money, but in general" C4 argued. She discussed the role of the consumers and their responsibility in relation to food waste, " You can look at any "smörgåsbord", if you watch how much food people still have on their plates when they go for another helping, it is like tonnes of food. Since they have already paid for eating as much as they like, they think they can throw away as much as they like, as it is free. It is that kind of feeling. I think the whole society needs to get a better understanding of commodities and how ingredients are managed in general". The importance of the school to realise the costs of food waste was also brought up. Since the kitchen is not a part of the school administration, it was argued that the school only cares about the costs, but not the food. "They do not tell us how many portions we are supposed to serve every day, they just pay for the food that has been eaten. So it is not really in their interest to tell us when a class is away, for example. Whatever. They do not see the money. But the money of the municipality is everyone's money, so it is not really our money either", C3 claimed.

Lack of time was brought up as a main cause for not adopting routines or activities to reduce food waste. C1, C2 and C3 argued that they face very stressful working conditions, and therefore do not have time to think of those factors in reducing waste or even have time for planning (what is seen as one key point in reducing waste). "The main thing in the kitchen is the stress. Not enough staff, too much stress, and no time to think or plan. Then you might prepare a bit extra because you are worried that it will not be enough, although you might know that 140 kg should be enough. But you do not have time. At least not the way it has been here". The same respondents also commented after the interview that it was nice to be able to have time to sit down and talk about food waste, as they usually just discuss the economic situation and what to cut down on. C4 and C5 argued that it does not take any extra time to work in a way that reduces waste, although it requires another way of

thinking. The attitude of the personnel was then seen as a main obstacle to introduce and implement new routines, " I think laziness is the big problem. You want it to be easy and you are used to do it in a certain way. It can be difficult to adapt to another way of doing things", C4 argued. C5 stated that claiming there is no time is not a valid excuse, as there is also a negative feeling in throwing away food. That feeling is worse than arguing there is no time, the informant argued. In contrast to this, some respondents argued that you also want the food and canteen to look appealing and make sure there is enough food for everyone, which might result in discarding more food than necessary.

The relation between organic food and food waste was also discussed in the kitchens considering the target of 100% organic food in all public food services in Uppsala. C4 argued that it might affect food waste since organic food is more expensive, "since the raw ingredients are more expensive we should discard less. It becomes easier to explain that something costs money. So if it (the target about 100% organic food) has any affects on food waste, I think it will rather be positive than negative". To buy organic products and at the same time discard food was also brought up as contradictory from an environmental perspective. Challenges were also expressed in relation to the 100% organic target, as organic food was perceived to be more expensive.

Different cultures and habits were discussed as possible influencing factors when it comes to pupils' attitudes towards food. In one school they had received many asylum seekers who the personnel perceived threw away less food, although they might not recognise the different dishes or know the flavours. "They are from countries such as Afghanistan and maybe they did not have that much food there/…/they are surely raised to not throw away food. That is not the case here, with the younger ones. Here you can just throw away", C1 claimed. Lack of knowledge about food together with changed eating habits was discussed as two reasons for this attitude. C6 argued that families where they do not sit and eat together but in front of the TV or computer, or eat at different times, can be contributing causes to bad eating habits. Best before dates were also brought up as one aspect to why household discard food, as lack of knowledge is perceived to make people follow best before dates instead of trusting their own knowledge.

Knowledge and information about food waste and food in general was discussed as one main problem and cause for food waste in all interviews. The effects of a better understanding about those

28

issues were thus questioned by some of the respondents. C1 gave an example of how pupils at her former work place, a school focusing on natural and agriculture science, discarded more food than the school with general programs, "In my foolishness I thought that the students working with animals and environment would be really aware of food waste. But you were actually better at discarding less food here than those high school students. They were very ignorant when it came to food waste, although they had the knowledge about environmental impacts and sustainable agriculture. That was quite interesting, since you think that education will influence you and have an affect on your actions while eating, but no… This school had better figures than the natural science and agricultural school". One of the schools participating in this study is a high school with focus on agricultural and natural science. As they have animals on site, they sometimes serve their own meat. C6 did not think that the students are more aware of how much food they discard just because the food is locally produced. "In one way there could be less food waste here since they are hungry and need more food, and consequently they discard less, but not because the food is from here. I do not think so. I do not think they respect the meat more just because they are students here. I do not know, but I do not think so".

One of the participating schools had the epithet environmental friendly school, which means they are supposed work with environmental issues through out the whole organisation. The informant from the school claimed that the students have a high awareness of environmental issues, as the school has a group to address and work with spreading information about environmental matters. This was brought up as a reason for perceived low food waste produced by pupils. C2 talked about focusing more on the environmental perspective when discussing food waste with students, as many still are perceived to be interested in those issues, "Yeah, the environment. It is modern".

Many of the respondents in the kitchens did not think they have a big problem with food waste. The food they have to discard is foremost food that has been served but not eaten which due to safety regulations is not seen as eatable. C5 argued that they take care of left overs and serve it the day after, and the only food waste they have is the food pupils discard. As investigations measuring all food waste has been conducted in almost all of the kitchens, which is usually made two times per year for those kitchens connected to the public food organisation in the municipality, there are approximate numbers of how much every kitchen discard. "I still do not think they throw away that

much here, that is what I have always been saying. Even though we have high numbers, it is still not much", C1 said. C5 said that another school should have participated in the study, since they do not have any problem with food waste, "I do not want to say that we are the best, there are schools that are even better in Uppsala. As we are sending in the result of our measures, we can see that and we are not the best. There are schools that are doing really well and almost have no waste at all. I was surprised as I thought we were doing good, but when you see those numbers you get jealous". C4 explained how the pupils do not care about food waste, as they do not realise it is a problem. The informant argued that it was the same with food waste in general a couple of years ago, it existed but no one cared, as it was not seen as a problem.

5.3.2 Attitudes on practicalities

Practicalities that were brought up by the kitchen personnel to be possible causes for food waste were to a large extent the same as those discussed on other levels of organisation. To be able to plan and know how many pupils are supposed to eat every day and to plan in detail for purchases were stated as possible situations where the amount of food waste could be influenced. C4 discussed how detailed recipes and recurring menus could be of help to plan correctly, although flexibility to be able to serve leftovers were emphasised by others. To decrease the number of dishes on the menu from four to three was discussed as an effective way to reduce waste, as fewer dishes were perceived to result in less overproduction in preparations for the different meals.

C5 argued that as along as you take notes on how much is served and cooked everyday, the quantity can be adjusted and more precise, and lead to less waste. Communication and cooperation between kitchen and school were also mentioned as key aspects and related to the ability to plan correctly and thereby reduce waste. Routines such as to only serve a little bit at a time and to refill was also mentioned by C3 as an effective way lessen food waste, although it was perceived as taking more time and be dependent on stress level in the kitchen.

6 Discussion

Based on the presentation of the empirical material four different themes have been identified and will be discussed further in this section. The themes are based on what the respondents saw as causes for food waste and consequently also how they perceived the problem of food waste. All respondents agreed on the negative effects of discarding food and that it is wrong to waste food, although the formulation of what is the actual problem with food waste seems to vary. The economic aspect of food waste, information and knowledge, the food safety legislation and organisational structures linking to practical issues were all discussed as influential in generating waste. There was also a denial of the problem with food waste, as some respondents did not perceive the waste as extensive in their kitchens. The different themes will be discussed in relation to the theoretical framework of food regimes, to understand how and why these attitudes might influence how food waste is managed in school meals.

6.1 The economic aspect

Several of the respondents discussed the economic aspect as the main problem with food waste. Almost all of them talked about waste in economic terms and argued that it is foremost money that is discarded. All respondents on municipality- and school kitchen level discussed the economic perspective as affecting what measures can be taken to reduce waste. This implies that not only stated policies on how to manage food influence food waste management, but also perceptions about economic aspects affect what measures are seen as possible to take. Uppsala's target of 100% organic food in all public meals was discussed as a possible influence on food waste, but foremost from a financial perspective. By some respondents organic food were seen as a quality measure and per-

ceived as better food, thus most of the informants argued that the consequences of its higher price would be the primary reason for not discarding it. If kitchens are forced to buy more organic and accordingly more expensive food, it was argued to compel them to reduce waste as to save money to afford to buy organic food. This implies that the economic aspect is the main priority, and for incentives to be effective it is of importance to relate to the economic aspect.

As the finances was perceived to be prioritised, the possibility to show the cost of wasted food were emphasised in order to be able to address the issue with food waste. To value food and its production in monetary terms were seen as of great importance, as mainly economic incentives were discussed as valid reasons to reduce waste. B2 argued that as long as the cost of the waste cannot be presented in numbers, nothing would be done from a political perspective, as the economy is what is prioritised. This indicates that for something to be valued and respected, it needs to have a price. According to the theory of food regimes, the capitalistic system and neoliberal ideology are dominating the current food regime (Holt Giménez & Shattuck 2011). As peoples' behaviour can be directed by dominating discourses and practices (Baker 1998) that implies the neoliberal paradigm can be perceived as a dominating discourse which influence how people and organisations value things or resources, such as food. Since the market and trade are main focus in capitalistic and neoliberal ideas (McMichael 2009), the economic value becomes essential as for how to value and perceive our realities. The lack of respect for and wasteful behaviour of food can then be argued to relate to the perceived low price or the perception that something needs a price in order to be economically valued.

Thus, to be able to show the actual price of food was not only discussed as of relevance in order to attend the issue of food waste, but also as an aspect to why pupils discard food. As the school lunch is funded by tax money, respondents argued the food was seen as free of charge and therefor not valued or respected. One informant, C4, argued that if students would pay for the school lunches directly with their own money, not as much food would be discarded. If following the argument discussed above, people who then buy their own food would discard less, as they have paid for it and there is a clear price. However, households are the ones who discard the largest amount of food and restaurants where people pay for the food themselves also have a higher rate of food waste than

public institutions (SEPA 2013, Engström & Carlsson- Kanyama 2004). This would suggest that even if people pay for the food themselves and they have a price to relate to, they still discard food.

A3 discussed the low price of food as a cause for food waste at all levels and institutions. Households in Sweden were argued to not spend as much money on food in relation to other costs in the household, explaining why food was argued to be relatively cheap today. Subsequently, this was seen as enabling people in several institutions to have a wasteful behaviour. The theory of food regimes argues that today food is to a large extent valued as commodities (McMichael 2009). McMichael (2009) points out that under capitalism "food is an exchange value, first, and use-value second" (p. 155). Human labour and natural resources that are used to produce food are not recognised, which can be seen as resulting in the market failing in pricing food its actual price (Ibid.). The omission to price food by at its actual cost can thereby be understood as causing an undervaluation of food. This indicates that in a system where price is essential for how food is valued, it becomes of great importance to show the actual cost of both the food itself and the cost of the food wasted.

All these examples implies the importance of considering attitudes and perceptions about economy which seems to influence what is perceived as possible to do or not when it comes to reducing food waste. Finances are seen as both an indirect cause for food waste (as it takes time and money to implement food waste reducing routines and also influence how pupils value the food) and limiting possible reduction actions (as costs of food waste are not clear). As food waste is primarily perceived as a waste of money, and not for example natural resources, it also indicates that attitudes are based on a discourse where finances are prioritised. This implies that for food waste to be prioritised and acted upon the economic cost of food waste must be shown and incentives relate to this economic nature.

6.2   Knowledge and information

On all different levels of the organisation the respondents talked about the role of pupils' attitudes towards the food served in schools as a cause for food waste. The concept of food paradigms describes one of the characteristics of the dominant corporate food regime to be a disconnection from

food (Scrinis 2007). The disconnection is argued to take form both as a physical disconnection as well as lack of knowledge about how, where and by whom the food is produced (Ibid.). The current food regime with focus on the market and trade consequently leads to longer supply chains where the origin of the food is hard to trace. The increased transport distances and out-of-season availability is claimed to lead to disconnection to local seasons and conditions, and thereby a loss of knowledge about food. A1, B1 and C4 discussed a perceived disconnection between the students and food. B1 spoke about how they on a municipality level are working with children in pre-school to teach them about how different vegetables look like. Furthermore, respondent A1 gave an example of how one class adopted a pig in order to learn about food and where it comes from. The respondents' examples of projects to "re-connect" the pupils with food and teach them about where it actually comes from can be seen as an illustration of possible consequences of the dominant food regime. More information and knowledge to students about food is seen as a possible solution to reduce food waste, as the disconnection from food is perceived to lead to wasteful behaviour.

A study conducted on pupils' knowledge about food waste in schools in Uppsala showed that students in general do not know how food waste might affect the environment, thus most of the students know it can lead to economic consequences (Casimir 2014). This implies that there is a need for increased knowledge about food waste in order for pupils to change behaviour. Although information and education about food and especially food waste were discussed among the respondents as important measures to take to reduce food waste in schools, two of the respondents discussed experiences that opposed these expectations. C1 recalled pupils at her previous working place, a school teaching natural- and agricultural science, discarding more food than students at her school teaching general subjects. The respondent thereby claimed that even though the students had information and knowledge about environmental consequences of food waste, they did not act according to it. C6 also disclaimed that students at her school would discard less food just because the meat originates from the school's cows, but argued that the outdoor work rather makes the students hungry and thereby discard less food. The assumption that information and knowledge would automatically lead to changed behaviour can then be questioned.

However, it is not only the attitudes of the students and their perceived dis-connection with food consumed that influence the management of food waste, but also the personnel's' relation to food.
34

The respondents on all level of organisation discussed students' lack of information and knowledge about food, but at the same time, saw themselves as knowledgeable, although not always acting on this knowledge. According to numbers from yearly measures of food waste in the school kitchens, a great share of food wasted also comes from the production in the kitchen, not only from what the students discard (Uppsala kommun 2015). That implies that not only pupils have information or knowledge about food waste that they are not acting on, but also personnel working with food issues. Respondent C4 had worked with food waste initiatives before and claimed that the personnel in her kitchen did not care enough or felt they had time to change or adapt to new working routines in order to reduce possible food waste. Several of the respondents in the kitchens told about stress and too much workload in order to manage, what was perceived as more time consuming routines. Consequently the actions to save possible food become a lower priority as other things are seen as more important. This behaviour can then relate to the students, who also prioritise other things (such as to have time to play with friends or not stand in a queue to refill (Engström & Carlsson-Kanyama 2004)) instead of making sure not to discard food.

This kind of behaviour can be related to other environmental issues, where people do have information and knowledge, thus the matter is not prioritised or managed. Norgaard (2006) conducted a study on peoples' lack of respond to climate change in a village in Norway. The study illustrates that even though people have a lot of information and knowledge about issues such as climate change they do not always act according to it. Norgaard (2006) argues that there is a need to pay attention not only to individual responses, but also to the social context that influence what people perceive as possible to do. Norway has for example built their economy on the use of oil, why there is an economic interest to keep status quo and not address the effects of oil use on climate change (Ibid.). This implies that political and economic structures need to be given more attention as to understand why there is a non-respond to environmental issues.

In the case of food waste in school meals, people do seem to have information and be aware of the negative effects of food waste, yet there is a denial of the problem and situations described as obstructing food waste reducing actions. As Norgaard's (2006) study implies the relevance of taking the social and economic context into consideration to understand the lack of respond to climate change, the concept of food regimes can be used to understand how the economic structure and

production system might influence attitudes towards food waste. Together with various levels of denial of the problem with food waste, the issue was defined mainly as a problem foremost of economic character, related to information and knowledge or linked to the legislation of food safety. This indicates that there might be a need for more than just information and knowledge in order for people to re-connect to food or change to less wasteful behaviour.

6.3 Legislation and organisational structure

Several respondents discussed the law on food safety as the main official law or policy that affect their work in the kitchens. Respondents on municipality level argued that without the food legislation, they would not have to discard as much food, as food safety will always be prioritised. Respondents on the kitchen level also confirmed the feeling of wanting to be on the safe side when it comes to hygiene and food safety, arguing that being an acceptable cause for discarding food. According to a report evaluating the work with an initiative from the Swedish government about reduced food waste, the food legislation was evaluated as to see if it contributes to unnecessary waste (The National Food Agency *et al.* 2015). The report concludes that the legislation does not directly lead to more food waste, although ways in which it is interpreted or applied might contribute to waste (Ibid.). A study conducted on the influence of laws and regulations on food waste in supermarkets concludes in a similar way, that the regulations themselves do not necessarily lead to more food waste, thus the way in which they are interpreted might lead to waste as a consequence (Martinsson 2014). This implies that the regulations do not need to lead to food waste although many of the respondents perceived the legislation to do that.

Yngfalk (2015) discuss how the neoliberal consumerism influence peoples' behaviour and use the example of date labelling of food. Yngfalk (2015) argues that the process of assessing the freshness of food is based on what is seen as rational choice and responsible conduct in relation to date labels, instead of embodied knowledge and skills. The neoliberal consumerism is thereby claimed to disembody food consumption and knowledge. The same pattern can be seen with kitchen personnel as some of them express insecurity and a view that you want to be on the safe side in relation to the legislation and guidelines. This can be related to the perceived disconnection of food, where the current food paradigm could be argued to lead to a distrust about peoples' own knowledge regard-

ing food, and the use of their own senses as a majority of people are not expected to manage food in the same way as before (Yngfalk 2015). The aim of the legislation on food security is to secure a good hygiene in organisations or businesses that works with food (The National Food Agency *et al.* 2015). Respondent A1 although emphasised the importance of this embodied knowledge by the personnel, in order for them to be flexible and adapt policies and regulations to the specific context of each kitchen. This implies that how the legislation is interpreted might lead to food waste due to disconnection and dis-embodied knowledge about food.

Several of the respondents brought up the importance of well-filled canteens and also mentioned how the multiple choices of dishes served every day can contribute to food waste. The idea of abundance and the importance of consumers' access to several options can be linked to the dominating neoliberal ideas (Yngfalk 2015). A study identifying motivations and barriers to reduced waste on household level brought up the aspect that providing an abundance of food was equated with being a 'good' provider (Graham-Rowe *et al.* 2013). Embarrassment was described as a potential consequence of not being able to provide enough food (Ibid.). In the case of school lunches similar views were expressed and as the task of the school kitchens is to provide food for the pupils, the feeling of being good and doing a good job might be palpable. This implies that cultural norms regarding access and abundance can be seen as barrier to reduced waste. One of the respondents further discussed unlimited access to food as a direct cause for food waste, as people were argued to not respect and value what we can easily access and replace. Informant C1 claimed that refugee youngsters, who are from countries where they might not have as much food, discard less even though they are probably not familiar with the different foods in Sweden. The unlimited access to food, together with a perceived disconnection and lack of knowledge, could then be seen as contributing to wasteful attitudes.

Several of the respondents also brought up communication and cooperation between the school kitchens and the schools as important features for reducing waste. As many of the school kitchens are part of a centralised organisation within the municipality, they do not belong to the same organisation as the schools anymore. Principals' attitudes arguing school lunches not being a financial cost that they have responsibility for were seen as a hinder to reduced food waste. Informants expressed a perceived lack of interest from schools to spend resources on something they consequent-

ly do not see as their problem. The organisational structure of the school meal management can thereby be linked to several of the practical issues that were brought up as causes for food waste. Besides views on financial responsibilities and interests, to not see food as an integrated part of the schools' educational activities were also expressed as affecting pupils' knowledge and attitudes about food. The organisational structure can together with dominating food paradigm consequently be argued to influence food waste.

6.4 Food waste, not a problem?

All respondents acknowledged that there is food waste and that it is something negative that should not exist. However, in several of the kitchens the personnel did not perceive that they generated that much waste so it becomes a problem. Several respondents expressed that even though measures indicate they discard a lot of food, it is not that much. Studies conducted on households' attitudes towards food waste show that people tend to see food waste as a problem, but not themselves contributing to it (Gulled, Västå 2013, Hedengren 2013, Graham-Rowe *et al.* 2013). The households do not perceive that they discard food, but rather restaurants, supermarkets and schools, which also are seen as having the main responsibility to act on the issue (Ibid.). Households are thus estimated to discard the greatest amount of food (SEPA 2013). This implies that there is a denial regarding peoples' own role in food waste issues at several levels in society.

Although several respondents discussed the negative effects of food waste and stated that they do not intend to waste food, there was still a denial of the problem and food was still discarded. One of the respondents on kitchen level explicitly expressed the negative feeling of throwing away food, and argued that that feeling is worse than feeling stressed and not being able to take action to prevent waste. Graham-Rowe *et al.* (2013) found that households experience negative emotions when discarding food and that a denial of the problem (illustrated by a lack of priority and exemption of responsibility) could be a way to manage uncomfortable feelings of guilt. This implies that conflicting emotional influences might lead to valuations of least negative emotions, which may result in contradictory behaviour. This indicates that the problem with food waste can vary depending on context and that the issue can be complex. In order to come to terms with food waste in school

meals it becomes highly relevant to try to understand what conflicting demands might influence priorities within the organisation.

Since the problem with food waste is framed and defined in numerous different ways, it might be challenging to address the issue in a way that food waste is prioritised and acted upon. Several of the respondents argued that there is a need to show the costs of food waste in monetary terms in order for the matter to get attention, which can be seen as a way to adapt to the contextual circumstances. It is thus of importance to consider the contribution of the theoretical framework on food regimes, which emphasis the implications of the current food production system. Attitudes and dominating discourses about food waste can be related to the neoliberal paradigm with its focus on economy and trade, which consequently also influence what is formulated to be a problem to prioritise. Problem formulations and perceived causes for food waste moreover affect what is considered to be solutions. Mourad (2016) discuss what types of solutions for food waste that have been most promoted in the United States and France, and also analyse the different solutions' potential to contribute to greater sustainability through "strong" or "weak" Sustainable Production and Consumption (SPC). Solutions that are based on "strong" prevention of food waste, focusing on structural changes linked to the production system of food, are least promoted although estimated to be the best opportunity from a long-term SPC perspective (Mourad 2016). This implies that there is a need to consider how long-term and sustainable suggested solutions to food waste are. In order to address the issue in a long-term perspective there might be a need to question and challenge the current dominating structures of how food is produced.

6.5   Discussion on methods and material

All the informants on the different levels tended to give similar answers and quite a common description of possible causes for food waste. Almost all of the aspects brought up, especially practical issues, seems to correspond very well with published reports on the topic (for example SEPA 2009). In one sense it can be seen as positive, as they are confirming each other's views, although it could also be representative of a situation where information and attitudes are reproduced and constructed to be true. It can thereby hinder people to think a step further and question the dominating way of thinking or acting regarding food waste in order to find new solutions.

The study focused on the vertical perspective of school lunch management, including different levels of organisation in the study. Since the informants have different positions in the organisation, they might also be acting in slightly different contexts. If the study would have focused more on the horizontal level, relevant attitudes and social structures could possibly been scrutinised more in depth. Due to time constraints, this study can rather be seen as an example of how causes for food waste can be researched and analysed.

During the fieldwork not all interviews came to be conducted in the same setting. In one case, a group of kitchen personnel were interviewed together in the dining hall of the school. In three other cases where kitchen staff was interviewed, it was only the responsible person for the kitchen who participated and the interview took place in an office. The different settings might have influenced what the respondents felt they could express and what topics they could bring up, as interviews are not only a one way communication but also influenced by interaction and context (Silverman 2013). A difference was seen during interviews with only responsible kitchen chefs, as the informants tended to talk more about how the other personnel work and their attitudes. The respondents also talked a lot about pupils and their attitudes and behaviour, a group that is a part of how food waste is managed in schools, but a group that was not included in this study. An interesting setting could be to bring all actors from the different levels together, which might be more of a practical challenge, thus give a stimulating setting for discussions about food waste in public food services.

During the interviews the informants responded differently in their willingness to use the method of drawing a problem tree. Some of them used it as a tool in guiding the conversation and as a mind map, thus others preferred to only speak and did not seem comfortable to use it. Bryman (2001) discusses the importance of being flexible during interviews in order to not miss out on important aspects, why the use of the problem tree was adjusted along the way. The use of the problem tree seemed to work better in groups, as fuelling the discussion. Methods used for this study would subsequently need to be evaluated and preferably tried out to a larger extent before entering the field as to modify to different contexts and settings.

6.6   Future research

The relevance of societal structures for food waste have been emphasised in this study, why it would be interesting to go further with linking different modes of food production to causes for food waste. The concept of disconnection from food in the framework of food regimes can be traced back to Marx's concept about the metabolic rift, which describes the separation of social production from its natural biological base (McMichael 2009). The concept is used to depict the separation between countryside and city as the agriculture industrialises. As the dominating corporate food regime can be linked to attitudes about food waste in school meals, it could be fruitful to see how different production patterns influence how people perceive food waste and their definition of the problem. The role of information and knowledge has been questioned and discussed, and in relation to theories about disconnection from food, alternative ways to reconnect to food and its relevance for food waste would be very interesting to examine further. Studies designed to compare, for example, food waste of where people or pupils have been participating growing the food or local produced ingredients to conventional "food from nowhere" could indicate the relevance of those concepts for food waste.

As mentioned in the discussion, the respondents frequently discussed pupils and their relation to and knowledge of food waste. Although some studies have been conducted on students' knowledge about food waste (such as Casimir 2014), it would be of interest to involve pupils as well, as to see how knowledge and producing pattern influence their attitudes and behaviour. Politicians were also mentioned as important in order to address the issue of food waste and referred to as those in power to implement changes. It could thereby be fruitful to include that group as well, as their attitudes towards food wasting matters influence the problem formulation and consequently what actions are taken to prevent food waste.

7   Conclusion

By studying attitudes on different levels of organisation of school meals management, what can be seen as underlying causes to food waste could be identified.

All of the respondents agreed on the negative effects of food waste and that it is wrong to discard food, thus the problem of food waste was defined in several different ways. Three themes were dominating in which food waste was viewed and how the problem of food waste was formulated. One theme was the economic aspect and how food waste was mainly described as a waste of money. The importance to be able to value food waste in monetary terms in order to be able to address the problem was emphasised, which implies the role of economic incitements to reduce waste. The second theme was pupils' perceived attitudes and consequently knowledge about food waste issues and food in general. The assumption that information and knowledge will automatically lead to changed behaviour was thus questioned, and why there might be reason to consider other ways of influencing wasteful behaviour. The third theme was legislation regarding food hygiene and organisational structures, which were described as influencing many practical issues linking to food waste reduction actions. Several of the respondents also denied food waste to be a problem, as they did not experience that they discard that great amount of food that measurements show. The study implies that even though people do not want to discard food, there seems to be a system in which food waste due to circumstances becomes the consequence.

In order to understand dominating attitudes and discourses about food waste in school meal management, the theory of dominating food regimes were used. Current food regime based on neoliber-

al ideas and producing patterns can be seen as the dominating discourse about food, which influence how people perceive and relate to food. In this case the attitudes gave an indication of dominating discourses in which organisations tend to prioritise economic perspectives and food safety. The current corporate food paradigm can be seen as reinforcing ideas about the importance of economy, as well as contributing to a perceived disconnection and disembodied knowledge about food through its focus on markets and trade. This can be used to understand why wasteful behaviour persists, even though people do have information and knowledge about food waste issues. The use of the theoretical concept of food regimes implies that dominating food production structures can be used to understand where dominating attitudes towards food waste might derive from, as well as how it might affect wasteful behaviour. This implies there is a need to not only focus on individual actions as causes for why food is discarded, thus economic and social structures manifested in attitudes and problem formulations can be underlying causes for food waste.

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