# THE LONG ROAD TO CONSCIOUS CONSUMPTION PRACTICES:

The origin of food as key to raise awareness for sustainable local food in the Danish canteen

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### Abstract

This thesis aims to understand the creation of conscious consumer practices in the Danish canteen context (under the framework of practice theory) and introduces a 'design thing' to facilitate a dialogue among consumers and indirectly with other stakeholders to realise steps towards more local food consumption as example issue for sustainably conscious consumption.

We studied the main issues around food consumption and gained an overview of its complexity from literature to approach the locality of products as our main point of interest. Numerous researchers agree that local food consumption would support the local economy and create a social reconnection between producer and consumer and for certain products reduces environmental impact. Institutions like the European Union and the United Nations also demand food organisations to be transparent with information about food for consumers to make more conscious choices, especially the EU with new regulation demanding to explicitly point out the origin of main ingredients of products.

Via interviews with relevant catering professionals, observations and questionnaires in three canteens, we created an overview of the practice of 'lunching at the canteen'. This gave us multiple viewpoints on obstacles to overcome and opportunities for change in a restricted context of a Danish canteen.

In the sequential design process, we worked with an iterative design object(design thing). This object used information on the origin of food as main subject for a dialogue on the concerns of locality between consumers and client in the context of one example canteen. Our final findings are from reflections on the construction of this object and documented consumers interactions. Here, we found successful qualities for further development in starting discussions between consumers on what they like to eat at the canteen and the related environmental concerns of their canteen food. We saw a holistic approach to work best, where the consumer could become conscious by mixing subjects of interest like the creation of a canteen recipe with environmental impact information in the form of comprehensible labels.

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# **The Interactive Thesis**

This master thesis is constructed in the format of an Interactive PDF, meaning on a digital medium you as reader can navigate quickly through the pages with the use of buttons in a navigation panel (See figure below). You can find this panel on the top right corner of each page. The button with the right arrow will guide you to the next chapter, the left arrow to the previous one. The button with **Ref.** will bring you to the reference list. Finally, **the centre button** with the coloured circles will bring you to the central navigation page.

On the next page you will find the central navigation map with all chapters you can click on to bring you to the designated chapter start. This navigational map will also give you the briefest overview of the content of this thesis.

Figure I: Navigation buttons



Food habits have changed over humankind's history. In the early days, human beings started as mere gatherers and hunting groups from local availability, with the function of necessary nutrition. Thanks to human historical transition these habits have shifted towards the availability of products from all over the world, due to globalisation and a large variety of food cultures (Fjellström and Southerton, 2011). Over the last decades, agri-food systems intensification has come with ambiguous results, massive over productive food systems and environmental pollution by the use of agrochemicals to maintain high yield rates and massive resource depletion (Fraňková and Haas, 2017).

Existing literature provides strong evidence to support that the current food system is unsustainable (Fraňková and Haas, 2017; Goggins, 2016; O'Kane, 2011). With (un)sustainability we relate to Kuhlman and Farrington's (2010) conservative meaning from the Brundtland report: *"where it is concerned with the well-being of future generations and in particular with irreplaceable natural resources."* (p. 3436). Hence, it is focused on socio-economic and environmental impacts of the food system or consumption. Global food production accounts for many environmental issues, such as deforestation, desertification, eutrophication and biodiversity loss. Likewise, food insecurity is growing worldwide due to the interconnectedness and complexity of long-chain systems (Goggins, 2016).

Resources and energy inputs are needed for the phases that support consumption like; production, distribution and retailing. This is the reason why consumption is considered the main driver towards climate change (Poças Ribeiro et al., 2019). The consumption of fossil fuels, water and topsoil at unsustainable rates for agricultural purposes, compromises ecosystems, soil depletion, harming biodiversity and influencing in weather patterns (Fraňková and Haas, 2017). In the following lines, we will describe briefly the food system in contemporary society. This will bring us to highlight the issues among food system.

### 1.1. Issues with current Food systems

Food development has brought us many advantages, such as providing cheap food to a large proportion of the world's population (O'Kane, 2011). It has become characteristic that the contemporary (Western) civilisation is dependent on mass food production and importation. This, in turn, started the term *"consumer as a demanding, active, and identity-seeking citizen"* (Fjellström and Southerton, 2011, p.3). Nevertheless, these same achievements have come at a high price, The development of agriculture, the globalization of diets and transport chains of food products have increased the energy consumption of agri-food systems. Current food systems consume 30% of the world's energy, where more than 70% is used beyond farm processes. Moreover, greenhouse gas emission accounts for 20% of world output, without including land use impact (Vourdoubas and Dubois, 2016).

Additionally, the agricultural scheme in recent decades has also enabled retailers and food manufacturers to determine what farmers grow, submitting specifications of their requirements in contractual arrangements, leaving farmers with low control over what they produce (O'kane,2011).

Today, food systems pose sustainable challenges at every stage of the chain, from production to consumption. In the urban areas of the twenty-first century, one could even speak of disconnection to food production.

First of all, food is taken for granted by urban citizens, especially in the Western world, where it is actually a technical and systematic accomplishment, especially for large metropolitan cities (Wiskerke and Viljoen, 2012). Rapid industrialisation has caused disconnection of food producers and (urban) consumers, because of increasingly longer production chains and geographic movement of products from different places. According to O'Kane (2011) the increasing efficiency in food production, since 1930, has led to problems like intensive agriculture using half of the world's arable land to keep food production growing where intensive practices are causing soil erosion, reducing the amount of arable land. The present connection between cities and food needs to be reconsidered; urban and regional areas capable of supporting new sustainable food systems must be designed and planned (Wiskerke and Viljoen, 2012).

Water resources are being depleted by crops irrigation and compromised by pesticides and fertilizers pollution, used within the current agricultural practices. Additionally, agricultural systems are accounting for about 10– 12% of human-generated greenhouse gas emissions globally, contributing to climate change and other environmental challenges (O'Kane, 2011). At the same time, a huge amount of food is being wasted along the food chain, about one-third of the food we produce is lost or wasted and a large share of crops is fed to livestock (Vourdoubas and Dubois, 2016). A Boston Consulting Group study (Hegnsholt et al., 2018), found out that if current trends on consumption continued, it will also give a rise of 2.1 billion tonnes of food waste annually. The United Nations has set the target of halving food loss and waste by 2030, but more efforts on food waste and responsible consumption need to be made.

In terms of health worldwide, food patterns have been moving towards unhealthy cycles for decades. Increase of meat consumption, lack of activity and nutritional deficiencies, has caused 0.4 million death in 2015 in middle-income countries (Fraňková and Haas, 2017). Likewise, developed countries diets are undergoing a transition towards higher fat and sugar foods enhancing obesity and chronic diseases (O'Kane. 2011). Furthermore, Willett et al. (2019) endorse that human health and environmental sustainability are linked through diets. For instance, *"world's population is inadequately nourished and many environmental systems and processes are pushed beyond safe boundaries by food production"* (Willett et al., 2019, p. 447). Therefore, global efforts are of utmost importance to change those diets and the food system (Willett et al., 2019).

Locally grown food promotion is mentioned by several academics as beneficial for changing food systems (Goggins, 2016; Kneafsey et al. 2013; O'Kane, 2011). Whereas the environmental sustainability can be in doubt since production methods might have higher impact than transportation (Cerutti et al, 2016; Goggins 2016; Macdiarmid, 2014), social and economic benefits for the local communities are a fact (Goggins, 2016). Furthermore, Barrett (2013) argues that local sustainable food done in responsible ways can reduce food miles, regenerate and restore ecosystem balance, promote healthy alternatives to processed food, and strengthen local communities (Barrett, 2013).

Among the diverse sustainable concerns detected in the food sector such as seasonality, food miles and meat consumption, we selected local food consumption as the central argument of our project to promote a more sustainable food system. Nevertheless, we acknowledge that mayor and difficult issues are in the sector which needs to be taken into consideration by consumers for a future change in the system.

#### 1.2. Problem formulation

Information on environmental impact and origin of food can be an important factor in bringing back the connection between food production and the consumer. Transparent communication on food processes from the suppliers and food producers towards the consumer is needed (Bureau Européen des Unions de Consommateurs, 2018; The European Parliament and the Council of the European Union, 2011). This information might lead to the creation of awareness on the environmental impact of consumption and therefore, encourage consumers to choose or evaluate food with a less environmental impact (Peattie, 2010).

To deal with the complexity that the food system entails, this research adopts a reductionist perspective, narrowing to studies of consumption, behaviour and food provisioning. As mentioned before, the consumption of local food would be our approach for promoting sustainable choices in consumers. Not only because of literature support, but also the United Nations suggest buying from sustainable and local resources to support as consumers responsible consumption. Furthermore, our own findings have shown that people might be interested in the environment when choosing food on canteens, but they do not relate it to locally sourced food. We wanted to show them this relation and get insights into how a new environmental subject can help to create awareness and conscious consumption in the system.

The location for our research is Denmark's capital Copenhagen and is a suitable context for local food as a subject. Copenhagen is one of the leading gastronomic destinations in the world, by means of using Nordic regional and seasonal traditional ingredients. It is also the breeding ground for the New Nordic Food movement (Saxe et al., 2013). Based on innovation, cost competitiveness and importance for the local economy, the Danish food cluster is one of the strongest one in Europe (Danish Agriculture and Food Council, 2019). Moreover, the Danish food industry wants to be climate-neutral in food production by 2050 and serve as an example to other countries (Danish Agriculture and Food Council, 2018). *"Good agricultural practices, innovative companies and efficient research have made Danish food production one of the most climate-friendly in the world today"* (Danish Agriculture and Food Council, 2018, p.5). Nevertheless, the Danish Agriculture and Food Council (2018) addresses that more initiatives should be taken to achieve this goal working together with universities, farmers, the state and companies. Hence, we see the Danish scenario as an opportunity for changing towards more sustainable practices in the consumers.

Within the Danish context, research has been done in changing consumption behaviour in the worksite canteens by Lassen and Mikkelsen among others (Lassen et al, 2003, 2011, 2018; Mikkelsen et al, 2006). Furthermore, the public catering sector has a big influence on the food system and canteens are seen as opportunities for affecting the choices of consumers (Goggins, 2016) and European consumers have been documented to eat outside of the house more often which includes lunchtime (Pfeiffer et al., 2017; Spurling et al, 2013). Hence, collecting all the information mentioned above, we formulate two research questions:

#### Research question 1: How can information on the origin of the food trigger a dialogue between consumers on local food consumption?

Research question 2: How can we create new opportunities towards more sustainably conscious practices in Danish canteens?

#### Research/ Interviews

#### Supply chain What is the impact of food production? What route does it take?

#### Catering organisation

How to facilitate change in consumption?

#### "There so much on going and people are busy ,and how can you tell about your sustainability activities in a *interesting way that reaches the consumers?*". (Interview Ninaa , Sustainable manager Fazer)

"We just put things on the internet which **nobody reads**". (Interview Kristofer, Marketing manager Compass Group)

"It becomes *pretty difficult when you try to change cultural behavior*, for instance Danish food habits entails to have "*meat every day*". "(Interview Adam, Commertial head Director Meyers)

**References:** United Nations Sustainable Development. (n.d.). Sustainable consumption and production. [online] Available at: https://www.un.org/sustainabledevelopment/sustainable-consumption-production/ [Accessed 30 Apr. 2019].

### EU Food information to Consumers 2020

### Main investigation through Co-design (

#### Origin

What is the origin of food? What is it's environmental impact

#### Research questions

Research question 1: Can information on the origin of the food trigger a dialogue between consumers on local food consumption? Research question 2: How can we create new opportunities towards more sustainably conscious

Canteens

**Kitchen staff** 

How can a local dish be

served?

What local food stuff is

available?

Practice

How can the lunching at

the canteen be change-

d/replaced towards

conscious lunching?

practices in Danish canteens?

Facilitate comunication
Create mutual awareness
agree on local recipe(s)

#### **Design Tools**

- Faciliated design game staff and consumers
- Local Recipe (book)
- Labeling system
- Comunication system

UN Sustainable development goal

"12.8 By 2030, ensure that **people everywhere** have the relevant information and **awareness for sustainable development and lifestyles** in harmony with nature" (UNSD,n.d.)

#### **Design Goals**

- Reduce **"Food miles"** BUT with reason, no unnecessary green houses or over consumption.

- Food education by local connection and support.



#### Consumers

How is the food experienced? Can information-based food be valued?

### 1.3 Research strategy and Report structure

This thesis is built upon a time frame of 4 months, thus, the following chapters are entitled to explain the state of the art around food system, our research methods, material gathering on the field and the building of our analysis. In further chapters we dive into a more active role, identifying actionable interventions and design approaches towards the system. Figure 1 on the previous page shows an overview of the project, the main findings and concerns in the system, and the design approaches we took;

As follows, we present a brief summary of each chapter of the report to give the reader an overview:

**INTRODUCTION:** We present the food system, the issues and the importance of the topic we are unravelling. This introduction leads to the research questions with the aim of showing the origin of food to reconnect people within a local sustainable approach.

**state of the art:** The literature presented in this section will offer a framework for our research on the food system, as well as a deeper knowledge of the different concerns that entails. Literature research includes topics such as food waste, meat consumption, local food, seasonality, food policies, consumers behaviours, green consumption and food labels.

**THEORY:** Firstly, by using Practice Theory framework to know what influences people's choices in canteens and knowing the context where we could act. Secondly, the Actor-Network theory was used for mapping the interconnections of the diverse actors in the system, which will

facilitate the negotiations among them. Finally, the design thing concept is presented as a means of sharing knowledge in the network.

**METHODOLOGY:** Different techniques on data gathering were used in order to explore the behaviour and natural environment that surrounds consumers and the act of making food choices in canteens. Firstly, methods for primary ethnographic or field research are presented; such as semi-structured interviews, direct observations, participant observations, and questionnaires in order to get qualitative data. Secondly, research was made in archival data; reading policies, going through databases and corporate reports.

**EMPIRICAL MATERIAL:** The material obtained from interviews, observations, questionnaires, and databases is presented for a better understanding of the food system and how it works. Not only from a systemic perspective, but also by understanding and analysing the consumer's behaviours and practices. Some of the information obtained in the questionnaires to consumers is that taste and appearance are the most important, followed by health and environmental concerns. Form observations we could see that very little information is given in consumer's practice, they have an "automatic choice" in the canteen, not too much thought, not too many actions they can take. Finally, from the empirical research in the canteen system, we could see that the major effort is put in reducing food waste and that locality and seasonality it's already considered in the procurement team, but it will depend on the contract with the client.

**ANALYSIS:** By using the frame of Practice Theory to analyse the practices and behaviours of consumers in the canteen, the ANT to analyze the system interconnections, and the empirical material, obtained thanks to the methods. The design thing and what it should entail is presented as a driver solution to the research questions.

**DESIGN PHASE:** In this chapter, we explain how the gathered knowledge can be converted into a concrete design thing. For that, strategies from literature are collected and design criteria established. The design thing aims to have a local sustainable approach, be integrated into the practice and connect the canteen and consumers. Experimentation with our design thing is made with consumers.

**CONCLUSION:** In this section, a final overview of the project is presented with future opportunities and iterations on the design thing. Our contribution as Sustainable Design Engineers to the world it's also explained. There is not radical change possible but small changes that can be done, not just addressing locality but also other issues in the food system.

Summing up, this thesis builds upon a discussion of the sustainability of consumed food in canteens under an environmental and social perspective. We shift the attention from practices in very localised households or very technical oriented supply chain systems to an effective and less explored field, which is public food consumption (Goggins, 2016). Consumers and their behaviours in an everyday lunch situation are the central points of analysis, in an environment where food options (in sustainability) are limited to the offers and actions of the canteen. We, therefore, leaving more technical/ systemic issues such as influencing the production or supply chain stages blackboxed.

From the introduction, we continue to explain in more details, the present literature or State of the Art around the field of food consumption and various aspects involved in our research. We will start to elaborate on consumption in general and its relevance in the world and our project. We will then expose various contemporary sustainable concerns connected to food consumption of which the last one involves locality. Further explanation will be done on various part of the context of the project, like the role of organisations, the geographic area and influential regulations. The data and literature presented in this section will offer a frame for our research on the food system as well as knowledge of the different concerns that this system entails. Figure 2 on the next page is a mindmap of how we investigated the extensive literature body concerning (local) food consumption,



### 2.1. Consumption and its relevance

Consumption is, in fact, one of the critical problems that affect human civilization, as pointed out in a conference about Consulting in Sustainability at CBS (Hvidsteen, 2019). To handle problems like this, the consumption of goods and services are often of high relevance in academic literature. While innovation in food systems often seeks to reduce production environmental stress, consumption is identified as a key driver to counter climate change and environmental degradation (Poças Ribeiro et al., 2019).

Peattie (2010) mentions that consumerist lifestyles in industrialized areas are difficult to get over since the economic growth is needed. Therefore, a focus on offering the same products but with smaller energy consumption and material intensity is made. This consumerist lifestyle raises the dilemma on what we truly need and what we want; *"Broad needs are translated into more specific wants, reflecting the nature of the individual, the person's lifestyle, and the society within which they live."* (Peattie, 2010, p.200). Development of technical innovation like energy efficiency improvements, saving materials and recycling waste as well as the introduction of labels and advertisements to trigger reactions in consumers, have been subject of research and policy implementation.

In the consumerist world, attention is paid poorly to meet the basic needs of those who cannot afford them. In this sense, Lebel and Lorek (2008) argue that by giving opportunities to the poor to invest in long term products, sustainable consumption would *"increasing wisely"*. Also by supporting initiatives where a purchase is not needed; such recycle or reuse materials. Furthermore, individuals expect legislation from authorities that will convince society to boost sustainable consumption (Peattie, 2010). For instance, *"Policymakers have a responsibility to take into account the sensitive relationship between socio-economic priorities, food production, human and environmental health (McMichael 2005)"*. (Sonnino, R., 2019, p.15)

Peattie (2010) pointed out that behaviour towards sustainable consumption is the key point to make production systems and consumption environmentally sustainable. There is a need to change food habits (Hvidsteen, 2019). Dietary behaviour change towards sustainable choices could possibly happen in the future. To do so, lifestyle, social expectations and cultural element and food environment that affect choices (Macdiarmid, 2014) need to be taken into account.

In 2015 the United Nations launched *"The 2030 Agenda for Sustainable Development Goals"* (SDG's), which incorporates 17 goals for humanity's development. Among these goals, number 12th addresses consumption and production patterns in order to ensure more sustainable ones. This goal aims to achieve sustainable management and efficient use of natural resources while implementing sustainable consumption frameworks, carrying out more circular production patterns (United Nations, 2015). As well the United Nations also states that it is necessary to provide consumers with information that allows them to live in harmony with the environment. Thus, creation of awareness is one of the targets that will ensure the development of this goal and supports our choice to focus on the consumption stage(CHAPTER 7).

In this regards, a change of behaviours towards sustainable choices needs to link environmental information to aspects of consumer lives (Peattie, 2010). Not just by having a direct impact through information but also generating an indirect impact by increasing dialogue and education in the consumers (Spaargaren et al., 2013) is how we believe a long-lasting

change in their behaviours can be made. In line with these arguments, our research also seeks to investigate how to influence consumer practices at canteens so more sustainable choices are achieved. This will be approached by promoting locally grown products and its demand can enforce more local production systems. Locality and other sustainable concerns emerged regarding sustainable consumption in the food supply system are going to be exposed in the following subsections.

On this matter, food consumption was a significant environmental factor that contributed to 18% of EU household emissions in 2018 (European Commission, 2018b). More sustainable consumption can be achieved by committing and acting across the whole food system involving consumers, retailers, producers and governments, that are not taking a holistic perspective on the system and neglect the hidden costs (Peattie, 2010).

### 2.2. Sustainable concerns among Food consumption

By exposing the main unsustainable concerns in food consumption, we align to promote a more transparent channel regarding the origin of food and encourage people's behaviour towards more sustainable/local consumption.

#### 2.2.1. Food Waste

Of all globally produced food that can be consumed, one third is thrown away. Food waste is not only an environmental issue but also financial and social problem, hence special attention has been paid to prevent it in diverse areas such as households, retailers and industries (Laakso, 2017). Nevertheless, not everyone can access or afford food and that issue has remained in society for decades (Leal Filho and Kovaleva, 2015). For instance, "malnutrition is a huge problem globally, and many people even in developed countries are unable to provide for their basic needs." (Laakso, 2017, p. 631).

As mentioned, some initiatives have been undertaken in order to reduce food waste. In the final stage of the food supply chain there have been developments in changing consumer behaviours (i.e. while cooking, consuming or waste managing). Also earlier in the chain retailers and suppliers have increased the shelf life of products and improved packaging, etc. Despite what people might think, is not just the end consumer who has the responsibility of reducing the generation of food waste. Adequate canteen operators and catering staff training could result in a decrease of the waste produced on the storage and preparation. By creating awareness on how to prepare and preserve food, up to 10% of food waste could be reduced (Lagorio et al. 2018, p. 78). Additionally, in a case study by Martins et al. (2014) revealed that in the school canteen context a standardization of the lunch portions can to be made as well as a control to the presentation and appearance in order to reduce food waste.

Lately, more and more researchers agree that the mayor way to improve sustainability in the food system and efficiency in the use of resources is by reducing food waste (Boschini, 2018), but it won't be an easy path. A study by the Boston Consulting Group revealed that if current trends on consumption continued, it will rise to 2.1 billion tonnes of food waste annually. Even though the United Nations has set the target of halving food loss and waste by 2030 (Bacchi, 2017), more efforts on food waste and responsible consumption need to be made.

#### 2.2.2. Meat consumption and production

Regarding the consumption of food, Röcklinsberg et al. (2013) reveal that consumers and citizens need to be better informed on the impact of the production and the consequences that our food choices have on the planet. In the case of meat consumption, increasing scientific evidence associates it with a negative impact on the environment and public health. For instance, *"Meat consumption is a major contributor to greenhouse gas (GHG) emissions and thus to climate change"* (Weibel et al. 2019, p.1).

Dietary guidelines suggest, environmentally talking, to eat 500g of red meat per week, whereas regarding health the right amount would be 300g (Raphaely et al., 2016). Slaughtering moves more than 70 billion animals per year worldwide, and that is related to a huge amount of resources used for the production, and also other health problems such as resistance to antibiotics (Raphaely et al., 2016). This number tends to be increased a 70% by 2050, not just because of the population density, but also because of economic growth (Weibel et al., 2019).

"Since meat consumption is a voluntary form of behaviour, and since only 1.4 percent of the Swiss population are strict vegetarians, there is considerable potential for behavioural change." (Weibel et al., 2019, p.1). But changing this behaviour will be challenging, especially in Western countries where meat is still the traditional centrepiece of a meal (Röcklinsberg et al. 2013). It has been seen as a status symbol, nutritional need and cultural inviable (Raphaely et al., 2016). For instance, according to Raphaely et al. (2016), developing countries are adapting meat-rich western diets increasing consumption and leaving worrying future projections. Other barriers appear such as preconceptions to vegetarian diets (thought to have lower sensory quality), plant-based products simulating meat (clearly less appreciated), prices and habits (Röcklinsberg et al. 2013).

In conclusion, meat production and consumption is one of the greatest threats regarding long and short term sustainability of the humankind and the planet. Therefore, reducing it's consumption its a reasonable and appropriate action that we should take, *"both through policy directions and individual choices and actions."* (Raphaely et al., 2016, p. XXIII)

#### 2.2.3. Seasonality

Seasonality has been a subject for debate around sustainable consumption and the environmental impact of our diets. Global food production has lead us to a huge opportunity for food variety, which is increasingly demanded by society, yet it has come with a high environmental cost in energy and land usage, a loss of crop diversity due to monoculture production among other events (Macdiarmid, 2014). An LCA study conducted by Foster et al. (2014), shows that in the case study of raspberries, the focus on seasonality doesn't leave significative environmental benefits. They state that in order to have a more accurate idea on whether to turn to seasonal food consumption for a lower sustainable impact, a life-cycle assessment would require a multi-product approach (Foster et al., 2014).

To understand the holistic impact of eating seasonal the whole food system needs to be in consideration. Tradeoffs for full seasonal consumption should be considered, for it comes with dietary restrictions and would have large consequences for international trade. A balance needs to be found between dietary quality and environmental costs. Whether eating seasonal has a positive sustainable impact or not is in doubt, but some think it plays an important role in the reconnection with the origins of food and also provides information on what we eat (Macdiarmid, 2014).

Other difficulties have been noticed regarding what seasonality entails. That is why two main definitions have been given by the British department

for environment, food and rural affairs; global seasonality and local seasonality (DEFRA, 2012, p.3). The production place is the main concern in global seasonality for the consumption can be all around the globe, whereas in the local seasonality the interest relies on the consumption place as well as the production site, which should be the same (DEFRA, 2012). Both definitions share the peculiarity that they should be grown naturally with no external use of energy (no greenhouse or gas emissions). Whereas global seasonality provides a more varied supply all year around, it increases the demand in the country of production resulting in a high environmental cost as mentioned before. This fact doesn't mean that the gas emissions will be higher than if they were locally produced since the transportation is usually less harmful than the production system used (Macdiarmid, 2014), which will be further explained in the Food miles section.

Regardless, when talking about social and economic sustainability, seasonal food production could enrich the local economy by allowing the local producers to sell to food organisations all year around as well as educating people on eating with the seasons, local traditional food, techniques and culture (Goggins, 2016). Seasonality will also reduce the problem of shelf life of food and storage, decreasing the chemical treatments and energy used (Goggins, 2016). This can thus be a solution to the problem mentioned above on food waste. Additionally, seasonal food is also cheaper price-wise, because of temporal high supply in season. (as is later corroborated by one of the canteen staff).

Nevertheless, it has to be acknowledged that the sustainable benefits of seasonal food consumption are just a small aspect of what sustainable diets should have and it *"should not overshadow some of the potentially more difficult dietary behaviours to change that are likely to have greater benefits (e.g. overeating or meat consumption)."* (Macdiarmid, 2014, p. 368)

#### 2.2.4. Food Miles

The distance between the place of provenance of food products and place of consumption is a concern often referred by academics as food miles (Edwards-Jones et al., 2008; Barrett, 2013). This term has received a lot of public and scientific attention in the past for having social and environmental benefits (Edwards-Jones et al, 2008). Local food is presented as a solution to counter the problem of food miles and defined as either being produced in a 30 Miles radius from the consumer or more commonly accepted nationally produced (Edwards-Jones et al., 2008).

Later studies focusing on environmental indicators like CO2 emission have shifted arguments for local production to a more contextual position (Coley et al., 2009). Edwards-Jones et al. (2008) concluded that food miles are a poor indicator of the environmental and ethical impacts of food production. As a result, most literature agrees that food miles or transportation is no longer considered to have the biggest environmental impact of the food system. Methods of production and the type of food consumed, for example, are deemed bigger influential factors (Goggins 2016; Macdiarmid, 2014; Cerutti et al, 2016). Recent data agree that both in the case of fruit and vegetables the production phase had the 60-70% of the Carbon Footprint whereas the urban distribution phase 24-28% (Cerutti et al, 2016). Studies also pointed out that from those food miles in the UK, more than half of the represented consumers drive to food shops. An exception is made when it comes to air freight transportation (Macdiarmid, 2014).

Even though food miles has been inappropriately used as an indicator of sustainability, Cerutti et al. (2016) on their study found out an overall saving of 33% of the GHG emission thanks to provisioning regionally policy. An opportunity to improve the urban distributions, such as optimal routes or food hubs, is also contemplated as further development for reducing the

environmental impact (Cerutti et al, 2016). Additionally, food-miles has also been used as a successful marketing tool and labelling to push local and seasonal food consumption (Macdiarmid, 2014). In this sense, there is a claim that sustains that local sustainable food (explained in the next section) can reduce food miles, and if done in responsible ways it can regenerate and restore ecosystem balance, promote healthy alternatives to processed food, and strengthen local communities (Barrett, 2013). This claim is more related to the term food miles conceived by Tim Lang in the early 1990s which focused on reconnecting people to the origin of food, under a social and cultural dimension.

#### 2.2.5. Local sourcing

A local food system is defined as one in *"which foods are produced, processed and retailed within a defined geographical area."* (Kneafsey et al, 2013, p. 23). Locally produced food is thought to be more sustainable than the mainstream system. For instance, the local food system is usually a counter-initiative to the current global food system, which has to a certain extent a negative impact on environment, politics, economics and public health (O'Kane, 2011). Thus, other factors that can be taken into account while consigning *"locality"* are the freshness of, the scope of economic impact and social implication.

Furthermore, Goggins (2016) on his study method Foodscale values the highest locality of products (up to three points if its local, two if it's national, one if it is from EU) (Appendix 1). By consuming locally produced food, the transportation distance is reduced between consumption and production, as well as supporting local economic growth and the creation of jobs (Goggins, 2016). If this production is made under fair work conditions and reasonable prices, it can bring revenues to these communities (Hinrichs, 2003). Under the social values supported by local consumption, is also the quality of the products, such as freshness and direct contact with the producer which creates trust in the consumer (Kneafsey et al, 2013). Hence, the benefits of local food can be better assessed by the combination of spatially life cycle assessment with social impact analysis where most of the literature is lacking.

Connecting consumers to producers can be done in multiple ways like *"short supply chains, alternative food networks, local farming systems and direct sales"* (Kneafsey et al, 2013, p.13), which are supported by the EU or various European countries for quite some time. Short food supply chain (SFSC) allow for food to be easily traceable for farmers and the number of intermediaries before the consumer is minimal (Kneafsey et al, 2013). Hence, they can cultivate trust and social capital and can create a sense of community, all of which might result in changes in the behaviour of the consumer. Some SFSC's have been set up where a local farmer provides his/her produce to public institutions such as schools or hospitals. However, the main interest for SFSC's was found in high-income audiences who want quality next to caring for sustainable elements (Kneafsey et al, 2013).

However, also the positive sustainable impacts of consuming locally produced food are debated. Hospido et al (2012) raised the concern that some people didn't like the visual impact that this could have on the landscape or the impact of sourcing new labourers could have socially on the community. Similarly, food produced locally uses a large amount of water and energy that could be environmentally less sustainable than food imported from outside (Goggins, 2016). As mentioned in the previous sections of seasonality and food miles, transport of the food has a small environmental impact compared to the production one, therefore bringing food from outside where the production is less energy and resource consuming, could be more environmentally friendly. Not just environmentally but also the food produced in developing countries can

contribute to their economic growth, changing our diets to completely local one may have fatal consequences to the producers of those countries (Foresight, 2011).

Additionally, the crescent and more frequent changes in the weather due to global warming will create difficulties for the dependence on just locally or single regional produced food. The consequences have already been seen with temperature fluctuations, floodings and other phenomena that destroy crops (sometimes changing nutritional value) and limits the availability of food (Macdiarmid, 2014).

Moreover, Barling et al. (2016) agree that the environment and health are closely related (see Figure 3); by building explicit the connection between a healthy environment and a healthy food through sourcing activities sustainable diets can be understood, thus companies can stimulate consumer's demand (Barling et al. 2016; Sonnino, 2019). In the same way, we envision by making explicit links between local food with a more sustainable environment/community.

In conclusion, it seems that the right and most sustainable choice is to have a mix between *"local seasonal food and 'global fairly-traded' food"* (Goggins, 2016). Furthermore, data reveals that compared to the Danish typical diet, adapting locally produced food to our diets will cause a reduction of 5% of Greenhouse gas emissions, which is the focus of a new Nordic diet (Saxe et al., 2013). This data together with the positive impact in local communities, supporting not just environmental but social and economic sustainability, will be the main reasons to push for locality.



**Figure 3** Double pyramid of healthy food and environmental sustainability., Source: BCFN foundation, 2015)

# 2.3. The role of organisations in food consumption

A starting point for changing behaviours on the food system could be public food consumption. Especially in wealthy countries, it is recognised that this area is important for triggering sustainable food consumption, due to its impact on triple bottom line sustainability and influence on the larger system (Goggins, 2016). Furthermore, it's a fact that people choose to eat outside home more regularly than before and it would keep growing since the population and demand for food will increase. For instance, *"The world will need 70 per cent more food, as measured by calories, to feed a global population of 9.6 billion in 2050"* (Fleischmann, 2013). Yet, this practice could also be risky since studies demonstrate that eating outside is generating a negative health impact in society. However, a distinction between institutional consumers and individual consumers position is made when talking about opportunities for changing behaviours (Goggins and Rau, 2016).

Goggins (2016) state that organisations are a crucial influence when eating outside homes. In fact, *"Within the food services sector, catering professionals, food procurement officials and chefs are in positions of responsibility and influence, they continually make decisions that help to shape, guide and control the food system"* (Goggins and Rau, 2016, p. 258). In other words, they can give shape to production, distribution and processes of food as well as practices. In addition, improving the consumption and production of food is the suggestion of the United Nations (Fleischmann, 2013) for dealing with the increasing food demand and future perspectives. Going back to the opportunities for changing behaviours in organisations, it should be acknowledged that catering operations are ruled by legislation at all levels. Activities must be carried under safety, hygiene and health regulations, among others. Moreover, the staff usually work for larger institutional organizations that have their own rules and requirements so they must work within those restrictions and boundaries (Goggins, 2016).

In conclusion, there is a need for supporting sustainable food practices, as well as health, food origin and social impact, that can be helped by organisations. Some actions can be taken inside them to support this change towards sustainable food consumption, such as providing seasonal menus or educating consumers and staff about it by providing information. Nevertheless, a more holistic perspective of the system needs to be taken for a change in society. For that to happen, an engagement of the diverse actors in the food system through the whole supply chain should be created (Goggins, 2016).

# 2.4. Strategies of canteens and food systems

Social and technical innovation is increasingly included among new strategies tackling sustainable matters among the catering sector. For instance, education about food in school are examples of such social innovation approaches. These approaches are as diverse as organisations. Hence throughout this project, we have identified and grouped/classified the strategies (Appendix 2) under themes depending on the relation they entail:

**Labelling:** this theme groups the different labels and certifications schemes applied to products like CO2 labelling, organic, nutrition or fat content labels, etc. Likewise, *"labels aim to inform consumers about the environmental impact of industrialised, global systems of food production and consumption."* (Spaargaren et al., 2013, p.433). Labels are an instrument for environmental and nutritional governance (Lassen et al., 2004, 2018; Spaargaren et al., 2013) serving for food companies to communicate with consumers (Bureau Européen des Unions de Consommateurs, 2018).

**Information management:** Under this category are the strategies that managed relevant information to influence consumer behaviour. Organisations can provide information that persuades consumers for better sustainable choices. Nevertheless, in contrast with labelling schemes, these elements do not possess a systemic nor institutionalise channel of diffusion. (e.g screen displays, flyers, Information displayed in menus, etc) but has the same goal as labels of giving consumers the possibility to make choices based on better information (Goggins, 2016; Mikkelsen et al., 2006).

**Campaigns:** Refers to organisational events over a period of time to promote some sort of awareness events or initiatives, often tailored for employees or consumers of a particular company or organisation, like improving fruit and vegetable consumption campaigns (Lassen et al, 2018).

**Canteen Staff/ Catering organisation:** These strategies are tailored towards the catering organisations and staff members, through the development of operational policies, or training programs in food handling. As well as facilitate the organisational process to deal with local suppliers, breaching large scale procurements. Hence, empowerment of staff and proactively involvement of all the members can define intervention goals in the processes (Goggins, 2016; Goggins and Rau, 2016; Lassen et al., 2004).

**Nudging:** Organisations can alter their food environment to lead consumers towards more sustainable options. By making choices such as meat-free dishes, salads and fruits easier and quick access, consumers are taking unconscious decision pushed by catering organisations (Lassen et al., 2004).

**Supply Change engagement:** In this category, the approaches are to form collaboration and engage actors along the food chain, It represents the involvement of key players along with the system involving local producers, government, caterers, public/private organisations, and distributors in providing a sustainable food supply for organisational meals. Some initiatives even include social- economic benefits for the local community. These partnerships are established in order to grow local and regional food culture building relationships and support local business development (Goggins, 2016; Lassen et al., 2018; Ruge and Mikkelsen, 2013)

**Prices and incentives;** These approaches have an economic aim to stimulate the use of certain products such as organic or even local products. It also incorporates governmental policies perspective, relating subsidies or promotion of certain conditions. As well, support of small business to favour local and organic procurement in large organisations (Mikkelsen et al., 2006).

**School and teaching:** Under this category, we have grouped strategies performed in school, For example, local food sourcing and learning experiences at production sites (Goggins, 2016; Ruge and Mikkelsen, 2013).

This review of operational strategies among canteens and food catering will be used in a later process during the design phase as ways of envisioning new methods of implementing concepts to the current practice of lunching at the canteen. Though Goggins (2016) recognizes that these approaches are more effectively shifting practices consumption when combined rather than working by isolated interventions or competing between each other.

## 2.5. The context in Northern Europe and Denmark

Jørgensen, et al. (2010) in their research on Danish canteens, they point out that the way work is organized seem to affect the organization of eating. For instance, the type of work and the way of working may be connected to the health and diets of the employees. There is a crescent demand for a buffet on these canteens, which has been associated with healthier options (more vegetables and fruit and less energy density) (Jørgensen et al., 2010).

In the past 20 years, there have been developments in changing consumption behaviour of employees at Danish worksites through policies, campaigns (like the Keyhole label and 6-a-day campaign) and strategies in a food serving in Canteens. Nevertheless, experience in other areas reveals that "a policy in itself may not change the practice of an organization" (Jørgensen et al., 2010, p. 200). A recent study showed results of these developments in a comparison study of 15 worksites over a 10 year period and showed an increase of vegetable and fruit consumption as well as a reduction in the energy density of the food among other aspects (Lassen et al., 2018). Earlier research to these food strategies were proven to be a success in increasing fruit and vegetable consumption (Lassen et al., 2004) and were able to change the behaviour of the average consumer and not just the already health conscious ones, but aligned the less-caring male consumer with female part (Lassen et al. 2018). Comparison research also showed that Danish Organic caterers also were the ones who served healthier diets to their customers. compared to the non-organic caterers (Mikkelsen et al., 2006).

Another study carried out by Diaz Fernandez et al. (2018) in Denmark about

how lunch influence on integration policies within working sites. In fact, it showed that there are some unspoken rules in the lunch table culture which are difficult to adapt by internationals so they can be integrated. Accordingly, they mention that lunch "becomes a non-negotiable part of integration. For the locals sitting at the table, lunch has the same social commitments, and skipping it jeopardizes only their job, not their residency" (Diaz Fernandez et al. 2018, p.27). Regarding sustainability, a research made in five Danish worksites who served per day from 50 to 500 meals. The study aimed to raise the number of vegetables and fruit eaten in those canteens. As result, it indicates it was possible in the worksites that applied "participatory and empowering approach, self-monitoring, environmental change, dialogue with suppliers and networking among worksite" (Thorsen et al. 2010, p. 1647).

Next to Denmark, Finnish policies on institutional kitchens are also focusing on promoting the consumption of more organic and local production mainly for environmental arguments, One of the major barriers was price considerations by the consumer (Risku-Norja and Muukka, 2013). An article on the leftover lunch service carried by Laakso (2017), aimed to create a new sustainable practice on a Finnish case. The study aimed to use the leftovers from a school to create a social event while reducing food waste. In fact, this initiative had a future potential in taking care of the food waste issue as long as there is edible food waste and people "suffering from food insecurity", "while making use of the existing facilities in bringing people together for a lunchtime meal." (Laakso, 2017, pp. 645-646). Besides, regarding sustainable transitions Kuokkanen et al (2018) agree that they "require innovations that disrupt both production and consumption practices." (Kuokkanen et al., 2018, p.16). They found four types of disruptive sustainable innovation; "(1) alternative protein-source products, (2) alternative distribution chains. (3) sustainable production and (4) community-oriented food."

They should be quantitatively assessed in the future, for *"broaden analytic and prescriptive tools for sustainability transition research and policy."* (Kuokkanen et al., 2018, p.16)

This section presented a background on the diverse strategies taken in the context of the Danish canteen sector, as well as background knowledge. It shows there is an academic interest in this area and success has been booked in the subject of healthy food consumption, but not so much on environmental concerns or local food consumption.

#### 2.6. Regulations and institutions

### 2.6.1. Fic's (European legislation, current and upcoming in food system)

The current Regulation No 1169/2011 (European Commission, 2011) on the provision of food information to consumers (FIC) "shall apply to food business operators at all stages of the food chain" including organisms 'mass caterer' "such as restaurants, canteens, schools, hospitals and catering enterprises in which, in the course of a business, food is prepared to be ready for consumption by the final consumer,". The scope of mentioned regulation is assuring "a high level of consumer protection in relation to food information, taking into account the differences in the perception of consumers and their information needs whilst ensuring the smooth functioning of the internal market." (European Commission, 2011, p. L304/24)

This regulation contains diverse articles addressing information regarding food safety, name of food, language, ingredients, labelling of certain substances or products causing allergies or intolerances, etc. The article 26 alludes that it shall be mandatory to provide *"the indication of the country of origin or of the place of provenance of a food (...) whenever its absence is likely to mislead consumers as to the true country of origin or place of provenance of that product."* (European Commission, 2011, p. L304/33)

Concerning this article, the EU will release in April 2020 a modification to ensure "that the information on the origin of a food is given in a manner which does not deceive the consumer and on the basis of clear criteria that ensure a level playing field for industry and improve consumers' understanding of the information related to the origin of foods." (European Union, 2018, p.1). It aims to reflect on the best solution to solve the contradictory views conveyed by consumers and food business operators. For accomplishing that, rules guaranteeing that such information is sufficiently precise and significant has been concluded to be important (European Union, 2018).

In this regards, this modification doesn't lay down any new obligations since the requirements were already indicated in the Article 26 of the FIC Regulation explained before, but it commits modalities on how labels provide the information about the primary ingredient. For instance, it will provide a *"list of geographical levels to which the origin indication of the primary ingredient may refer"* and *"harmonises the presentation of such information in order to ensure that it is easily visible and clearly legible."* (European Union, 2018, p.1). This information, in more details, could be found in the European Commission document Implementing regulation (2018), laying down rules for the application of Article 26 of Regulation (EU) No 1169/2011 (European Commission, 2018) as regards the rules for indicating the country of origin or place of provenance of the primary ingredient of a food.

Summing up, with this modification of the regulation, the European Commission will compromise better transparency in the system and a better approach than the current regulation, to improve consumers information.

### 2.6.2. Transparency (in origin and how it affects consumers behaviour)

Feedback obtained from the draft of the new modification on the regulation (EC) No 1924/2006, had a positive welcome in the case of Danske Slagterier, where they *"support overall the draft proposal and recognize that a harmonized approach is needed to make a step forward towards the implementation of the origin labelling requirements".* On the other hand, The Danish Consumer Council argues that *"the draft does not meet the EU consumers' expectations for food origin information, and if implemented, it may even end up being very confusing for the consumers (...) It should be stated which country the main ingredient is from and not be up to the manufacturer to decide on the geographical level of precision."* (Appendix 3)

Building upon consumers expectations about food information, several studies have shown that information in the origin of food is a matter of interest for European consumers (Baltussen et al., 2013). For instance, a study by The European Consumer Organisation (BEUC) carried out in Austria, France, Poland and Sweden, found that 70% of European consumers want to know the origin of where their food comes from (Bureau Européen des Unions de Consommateurs, 2013).

"Consumers find origin important, but only after other wants and needs like food safety, good taste and affordable price are fulfilled first."(...)" The country of origin is nice to know rather than a need to know factor (Van Haaster-de Winter and Ruissen, 2012)." (Baltussen et al., 2013, p.62-63)

According to BEUC's study, the reason why it is important to know the origin of food varies from country to country. For consumers in France and Poland, safety and quality (52% -61%) are important reasons. Austrians on

the other hand, reasons are not only on the quality of food (56%) but also its environmental impact (50%), whereas in France, Sweden and Poland, tend less to relate with this last reason (17%-38%). Ethical concerns are also an important reason (40%-50%) in all countries of the study. When coming to establish the level of definition for origin information, a majority of consumers want to know the specific country where their food comes from (Bureau Européen des Unions de Consommateurs, 2013).

On the other hand, labelling on the origin of the food can also evoke some associations that are not indicated on it, but rely on consumers minds as for example, nationalism. For instance, there are studies, such as the one made by SANCO, that back up this argument by revealing that consumers prefer national or local meat (Baltussen et al., 2013).

Nevertheless, labels are not always as clear as we think, and confusions may appear in consumers when they don't get what they expect about the origin of food. Even though citizens might have an interest on the country of origin, understanding what it means and what are they referring to on the label is not clear, and the perception about the food origin of the product varies from country to country (Bureau Européen des Unions de Consommateurs, 2013). As stated in the study made by BEUC, there is *"a gap between what they would like to find on the label and their actual understanding of current food labels."* (Bureau Européen des Unions de Consommateurs, 2013, p.10).

Further information about labelling and how this affects consumers behaviours will be explained in the next section.

### 2.6.3. Labelling and BEUC concerns about its veracity

Over the last years, an extended variety of labels has been introduced to consumers in the food system. Among the most relevant ones, we can find safety and health but also the environmental aspect is considered an extensive subject (Spaargaren et al. , 2013).

Studies demonstrate that "communicating eco-footprint to consumers could encourage them to try to reduce it." (Peattie, 2010, p.203) Following these lines on the impact of environmental labelling, we find that climate labels in the upstream sections can push a competition between businesses among "primary producers, processing industries, retail and catering companies." (Spaargaren et al., 2013, p.22). On the other hand, in the consumption phase (downstream section), this labels on carbon footprint will hopefully shift consumption behaviours, in environmentally informed and aware groups of consumers (Spaargaren et al., 2013).

Despite the good buying practices and information that labelling can introduce in the society, it is important to understand that since labels often influence consumers perceptions, companies *"ultimately the purchases of their products with deceptive labels"* (Bureau Européen des Unions de Consommateurs, 2018, p.5). Therefore, transparency and trust are often lost and complaints from consumers that think the packaging is misleading in the products they purchase, have been received by the European Consumer Organization (Bureau Européen des Unions de Consommateurs, 2018).

It is a core principle of the European food law that consumers deserve accurate information about the acquired food. The European Consumer Organization claim in their study about Food Labels, that the authenticity and honesty of labels would grant better and more informed choices to the consumers. Furthermore, a glance to the label should give the consumer a precise impression, rather than searching for hidden percentages in the pack (Bureau Européen des Unions de Consommateurs, 2018).

Quality, fruits and whole grain are identified as main types of misleading labelling around Europe by BEUC. Attractive descriptions and images that have little relation to the production process ('traditional', 'artisanal', etc), pictures of fruit on the front of products with less than 0.1% of content on it and products with no actual whole grain composition are some examples of it (Bureau Européen des Unions de Consommateurs, 2018).

"Without specific rules for marketing terms such as 'artisanal' or 'farmhouse' for example, some food producers are exploiting this legal grey area and the trust of their consumers." (Bureau Européen des Unions de Consommateurs, 2018, p. 9).

Accordingly, to the quote, marketing terms are damaging the trust of consumers. It is the responsibility of consumers organisations all over Europe to analyse products and make sure that what labels say is voracious. However, it is not an easy task since they don't have resources to analyse every product on the market. Therefore, it is of utmost importance for the institutions of the European Union, to improve labelling rules (Bureau Européen des Unions de Consommateurs, 2018).

#### 2.7. Conclusion

As can be concluded from this state of the art, the food consumption area is large complex and sustainably impactful. We have tried to cover multiple facets of it to create a relevant overview, which will also be used as a foundation for arguments in our further design research. As explained, various academics and institutions find consumers and food consumption to be a key factor for a sustainable change in the food sector. There are multiple ways, this can be improved and we choose Local sourcing as our main argument for this and explained some contextual elements that have or could have an influence towards responsible local food consumption in the Danish canteen sector. With a satisfactory amount of knowledge of the context of the project, we will continue with exploration inside the context with a set of theories and methods.

This theory section will explain the first part of our research work where we will explain and reason for relevant frameworks in two branches of theories, Practice theory and Science and Technology studies. Practice theory we will be our main framework, with which we will explain how we can envision a change in the practice of lunching at the canteen. With simple vocabulary and a practiceoriented viewpoint, we will be able to describe the context of the researched canteen context with the collected data. Additionally, Science and Technology studies will give extra frameworks to map out relationships between stakeholders (or so called actors) with the use of Actor Network Theory (ANT). Finally, we will describe qualities for an object of knowledge transfer, we call a design thing. This design thing is adopted from Storni (2012, 2015) who describes its use in collecting different concerns that actors might have around our subject of local food consumption.

#### 3.1. Practice theory

The scientific discipline of practice theory or social theories of practice sees society or a collection of individuals within a network of interconnected practices that are the structure for everyday life. These practices consist of a complex and intercausal system of *"minds, bodies, objects, discourses, knowledge, structures/processes, and agency"* (Kimbell, 2012, p.132). Implicitly, practice theory also focuses on how to transform a current practice or set of practices towards a more desired and sustainable practice via policy making (Spurling et al., 2013; Jallinoja et al., 2016). Hence, policies can be seen as important for a turn towards sustainable consumption (Goggins, 2016). Although our project doesn't involve policy making, we do desire to make some future oriented guidelines on food consumption, Our goal is to change the network around lunching consumers at the canteen towards a more desirable practice in which consumers are aware of the origin of food and act towards sustainable change via the activities surrounding their lunch.

In the setting of canteens, the before-quoted characteristics of this system are clearly distinguishable, for getting and eating food at a canteen always involves interaction with other consumers, plates, cutlery, the food itself. Food has always been an everyday necessity and it is embedded in both individuals and culture in general. The current food consumption system is also complex and current activities have a negative environmental impact (as explained in the introduction and state of the art) and can be seen as a practice that should be changed (Goggins, 2016). For next to framing the food system as a network of practices, researchers have also used practice theory as a source for envisioning or implementing the change of undesired practices for new desired practices (Spurling et al., 2013).

#### 3.1.1. Practice theory in the food sector

Practice theory has already been used various times in the food sector in relation to eating, food waste, experiments on change in consumption among other subjects (Laakso, 2017). Next to that, it is also used in the disciplines of design like technology, product design, organisations, service innovation, etc. (Kimbell, 2012). As an example, Kuijer and De Jong (2011) also used data framed by practice theory as a basis for Humancentred design prototypes for more sustainable processes around bathing. All these areas have an overlap with our angle of designing a tool to support conscious consumption with the origin of food. Food as the materials that can be produced and consumed locally, design and innovation as material support of the change, and human centred design as the style of participatory engagement with various stakeholders in the system.

Specifically for the food, we should also take into account that the practice of *"Eating is simultaneously personal and collective"* (Laakso, 2017, p.634) meaning everyone has a different taste and even at different times of the day and at different places. Yet, collectively there are a lot of cultural and social aspects to eating and food through the whole supply chain (farm to fork and thereafter) involves an enormous amount of technicalities and regulations.

We would like to narrow down the holistic practice of 'Eating' and define a more specific and relevant practice as: **'Lunching at the canteen'**.

Where Lunching expresses more than just the intake of food and accepts the obtaining of the food and social activities of eating together. With 'At the canteen', we express the importance of the context of the consumption.

#### 3.1.2. A non-individual turn

Additionally, practice theory turns away from a sole individual-oriented approach adopted by other theories such as rational choice theory and social psychology. These focus on individual choice making by rational decisions based on price and sole information or irrational decisions on socially stimulated impulses or routinized habits (Goggins, 2016). The communication of information alone might not be enough (Spaargaren et al, 2013). Widely researched nudging strategies or choice architecture (Kraak et al., 2017) also fall under this individual oriented approach and although proven successful in changes towards healthier diets (Lassen et al, 2018, Winkler et al, 2016), they have some restrictions. Nudged consumers are not aware of themselves as being affected by the strategy (Winkler et al, 2016), nudging 'educates' consumers on taste (for healthy food), but not their beliefs and attitudes (Wahlen et al., 2012) and has been shown a chance to spark unhealthy rebound consumption behaviour (Sim and Cheon, 2019). Furthermore nudging Danish post-adolescent consumers is argued not as effective (Dos Santos et al., 2018). We also align ourselves with the latter arguments and especially want to try to find new ways to create/envision a conscious practice that can have long term effects for a sustainable impact. By researching conscious consumption we also move away from a saturated field of practical shortterm fixes for consumption behaviour.

#### 3.1.3. The functionality of practice theory

In previous research, it has been shown that practice theory can be used to explain how and why consumers turn to (un)sustainable consumption practices (Perera et al., 2018). It is thus a framework for laying out what practice(s) are present and how and why consumers perform in this way and also how it comes together with the material world as well as macro influences like culture and infrastructures. Additionally, it can also be seen as a tool. One of the challenges in the area of practices and sustainable consumption has been expressed to be *"making changes toward more environmentally conscious consumption patterns and offer practice theory as a potential approach to meeting this challenge"* (Perera et al., 2018, p. 846). We see the opportunity of drawing inspiration from the mapped out practice in the explained framework below and then experiment with changes towards conscious consumption. Similarly, Jallinoja et al. (2016) mapped out the practice around meat consumption in Finland and envisioned a change for routinized bean-eating practices.

#### 3.1.4. Core elements of Practice theory

In order to describe practices in context, Kuijer and De Jong (2011) explain three core/basic elements *"images, skills and stuff"* which are *"...socially shared* [and] *they are formed as loose cultural and structural patterns that shape our lives in the way we live it"*(p.2). They are a simple and practical vocabulary for grouping in order to shape/express a practice which is especially suitable for designers. The core elements are formulated as:

"*Images* are elements that give meaning to the practice, reasons for doing, including ideas of what is normal (and what is not). They are socially shared within a cultural group and often implicit.

*Skills* are learned bodily and mental routines, know- how, levels of competence, ways of knowing and desiring. They are socially shared through imitation, media, education, informal social interaction and so on.

*Stuff* groups material elements, including human bodies and humanobject hybrids. They are socially shared through (mass) products." (p. 2)

#### Basic Elements of Practice Theory



#### *Figure 4* Basic elements of practice theory inspired by (Kuijer and de Jong, 2011).

As can be seen in Figure 4, A couple of elements from each category can form a practice. However the example is simplified for communicative purposes and in reality, there are a multitude of images, skills and stuff for every practice, which can be listed in order to get a realistic overview (Kuijer and De Jong, 2011). These core elements are the structure for investigating and analysing the complexity of practices, which are often interconnected and involve other elements (Laakso, 2017). In the analysis we will also visualise and explain our practice of Lunching at the canteen. Here we will also connect elements as well as 'sub-practices' which we deem clusters of elements that can be clearly characterized and help to keep an overview while showing complexity.

### 3.1.5. Recrafting, substituting and interlocking practices

In order to analyse and explain how practices can change Spurling et al. (2013) presents three practice oriented frames called, *"Recrafting practices, Substituting practices and Changing how practices interlock"* (p.5).

**Recrafting practices** is oriented towards changing the basic elements in practices (Images, Skills and Stuff) and seeing their specific impact on connected elements (see Figure 5). Reframing is mostly about finding changes within the elements of images/ideas. Turning existing mindsets towards desired ones like: *"You don't need to eat meat every day"* instead of *"Meat is a necessary part of a proper Danish meal"* or add *"local food is better for the environment and social issues"*. New identities for groups (instead of individuals) could also be created or adopted. One of such identities is already created successfully in Denmark and is called the 'New Nordic diet' created by Danish gastronomers and more influencing actors (Saxe et al., 2013; Spurling et al., 2013).

### Recrafting the Practice



Figure 5 Recrafting practices inspired by Spurling et al. (2013)

**Substituting practices** is the idea of replacing the practice as a whole by promoting new (sustainable) practices and discouraging the current (undesired) practices (see Figure 6). Practices are constantly changing and involve trends. These trends should be searched for and should then be seen as a movement to support and envision sustainable change.

Spurling et al. (2013) explained this with the development of people in the UK eating out of the house more often than before. They then explained that this practice could be supported to turn away from the more domestic energy consuming cooking practice, making a sustainable impact if done on a large scale. Therefore the analysis in substituting should be on trends and new growing practices that can still be embraced and afterwards these can become material to be turned to have a positive sustainable impact and relevant for this project's context of consumer and catering organisation.

#### Substituting Practices **Present practices** Stuff Other Stu **Domestic Import-**Local cante ed consumption Skills **Other Stuff** Local canteen Promotion of the consumption Other new practice Skills

*Figure 6* Substituting practice inspired by Spurling et al. (2013)

Finally, **Changing how practices interlock**, looks at how practices themselves are linked together and ask how changes in complex inter-practice interactions between practices can have an effect on one another (see Figure 7). Eating (lunching at the canteen) is connected to other practices, such as socialising, working, relaxing, etc. Looking at these connections could provide a more holistic and effective insight on how to change a practice. Spurling et al. (2013) elaborate on this by seeing the growing practice of snacking during work, which could then be turned towards the promotion of creating sustainable snacks for this time. Another example could be the promotion of a practice that adapts snacking but with sustainable food products and consumption ideas.

This style of analysis is more abstract and least practical but most realistic and both the private and public sector have general interlocked practises that can be adopted for sustainable development. Key is then to also look outside of the investigated practice of lunching and see how it is currently connected and how new connections are developing around it. This last approach is considered the most effective one in creating a change of practices (Spurling et al, 2013). Having an understanding of connected practices can then also lead to insights in effective intervention points and external practices and other factors have a major impact on one specific practice (Pfeiffer et al., 2017). However, experimenting and designing for abstract results is also most difficult, hence results will mostly be used for future oriented insights.



Figure 7 Changing interlocked practices inspired by Spurling et al. (2013)
#### 3.1.6 Practice-Oriented Design approach

Innovation cannot be achieved solely by the novelty of design processes as recognized by Pettersen (2015). It is also dependent on the integration, change and reproduction of new elements through the practice. Thus, the role of design needs to be collectively carried out by designers and stakeholders. While practice theory provides an understanding of consumption dynamics, it does not supply researchers/designers with methods to foster change in new ways (Pettersen, 2015; Kuijer et al., 2013), Therefore a less developed area within practice theory is tailored towards design methods under the name of Practice-oriented design (POD).

Practice-oriented design as a young field seems promising in framing a holistic approach to complex, systemic issues (Barnes Hofmeister and Stibe, 2017). Scott et al. (2012) synthesized six staged used under the approach of practice-oriented design (see also Figure 8):

**Deconstruct:** The first step is to analyse of practice at hand. The parts of the practice that seem simple can be an inspiration for change. For example, we can look at, social norms, common behaviours, personal values, etc as factors of the practice. Additionally, the goal is to explore the boundaries of the given practice by becoming aware of strong and weak core elements that shape the practice and envision change.

**Deviate:** This step is about experimenting by deliberately deviating from the current practice with a set/single goals towards more sustainable practice. In doing so new knowledge and insights are created for the design of a new practice.

**Design:** The gained insights are merged into new objects, that could be prototypes or new practices itself. Conceptual supports are devised into prototypes to make possible implementation considering the implications

of all three elements of a practice and to keep the flexibility that allows further adjustment. Moreover, in a design phase, Kuijer (2013) draws from Scott et al. (2009) on two approaches in which practice-oriented design is used as a generative design phase called 'experimentation in practice' and 'trigger-products'. Experimentation in practice is conceived as the process in which participants are challenged to conceive and perform pragmatic tests in the context of the practice. Then, trigger products are new elements that can form leverage points to stimulate radical reconfigurations of a practice.

**Integrate:** Through attempting to assimilate the new practice or prototype into everyday routines practitioners will gain further insight on how the practice evolves itself and how to couple with normality.

**Deliberate:** This is the evaluation of the practice prototype with respects to its effectiveness. Depending on its success the new practice can either be circulated or needs further iteration through deconstruction or re-design.

**Circulate:** At this stage, a new practice is disseminated outside of experimentation environment for broader opportunities. At this point, new individuals will enable the practice to evolve by providing diverse performance through integration, change and reproduction of the new practice.



*Figure 8* Practice-Oriented Design approach. Source: (Scott et al., 2012, p. 286).

We acknowledge that practice-oriented design offers a helpful framework for early design stages and we will utilise the stages in our own design phase as a structure for our design process. However, as long term evolution approach it lacks deeper understanding for the development and reproduction of novel practices (Scott et al., 2012). This study is also performed with limited resources of time, where we cannot develop past the stage of integration as it is envisioned for the long term transition, we follow until the design stage. For the rest of the stages, we can conclude after designing on the matter of how the novel practice of the canteen can be re-crafted.

#### 3.1.7. Final notes

We would like to conclude with some final remarks on Practice theory which also has its drawbacks. As explained before, Practice theory as a framework describes a current practice and from it, new practices can be envisioned. This is however done with a policymaker mindset and so the way from present to future is descriptive and imposing by rules and guidelines. An incorporation of the stakeholders involved is neglected, However, Practice theory *"is in principle focused on what is and was, but when incorporated in a design approach future orientations on practices emerge"* (Kuijer and De Jong, 2011, p.6), meaning that it might refrain from deeper insights in consumer/participant motivations and preferences.

Additionally, practice theory is focused on changes in the long term. With examples in changing a food culture from meat- to a 'bean-eating' one in Finland (Jallinoja et al., 2016), searching for potential intervention points on creating sustainable eating-out habits (Pfeiffer et al., 2017) or changing sustainability policies in general (Spurling, et al., 2013)

Shove and Pantzar (2005) also describe practice theory as a tool to analyse the sequential implementation of practices. What is locally a successful new practice has to be adapted to other sites in different cultures and places, where images especially play a large role. As an example, the concept of Nordic walking was popular in Germany, Japan and the US, but with very different motivations and views. Local food consumption, in extent, might remain a concept to involve around local produce but might have different images and other core elements at different canteens.

With these three drawbacks, we see the need for a complementary theoretical framework, which helps us looking at a way to explore from A to B and vocabulary to explain ways to persuade stakeholders along the way.

# 3.2. Science and technology studies

With practice theory as the main framework focused on the cultural envisioning and synchronicity of practices, we do miss tools or vocabulary to explain how to negotiate change and see the social construction of how entities affect each other in the current situations on a closer individual level. Practice theory in the past has been adopted and expanded upon by multiple social theories and vice versa including the branch of Science and Technology. This branch, in particular, has helped the progress of practice theory with one part being the introduction of objects or, frequently termed, non-human actors having influence or agency on other (human) actors too (Huizing and Cavanagh, 2011). Science and technology literature fundamentally adopts the notion that science and technology (innovation and material introduction) cannot be disconnected from society or other everyday activities. Additionally, no hierarchical distinction should be made between human and non-human actors (Callon, 1986.b). With these fundamentals, part of the literature then builds on a framework to map out a group of actors, their identity, interconnected relation to each other and role to play towards a common goal which is called Actor-Network theory (ANT) (Callon, 1986.a,b).

ANT is focused on micro-social interactions between the individual entities (Huizing and Cavanagh, 2011). It provides steps for persuasion of actors (Callon, 1986.a,b) and has the qualities to be adopted in the design process (Storni, 2012, 2015). It is therefore suitable to our project in giving the extra vocabulary to test changes in a local situation of one canteen with its human and non-human actors in a design process.

#### 3.2.1. Actor-Network theory

Actor-Network theory is, in general, a suitable framework for mapping out the interconnectedness of human and non-human actors/forces in a system (Callon, 1986.b; Storni, 2015) like the food supply system in a canteen. The food system especially has many connections/relationships between single non-human actors like food, cutlery, food culture etc. and human actors like consumers, suppliers, cooks etc. An apple, for example, has multiple kinds of relationship with a consumer. Next to nutrition, the apple gives the consumer enjoyment, refreshment and energy, and in return, the consumer gives the apple a value in everyday consumption. It can be given an extra purpose in a recipe or if he/she takes care of its disposal after consumption.

Using Actor-Network theory in this scenario means that the researcher's point of view should be framed by refraining from preemptive judgement on (Callon, 1986.a):

- The identity of all actors (which can change over time).
- Blackboxing conflicting viewpoints between actors (for we will try to bend/negotiate them later).
- Prioritizing one actor over the other (all human and non-human actors are equal).

With these three restrictions, we have the ability to literally draw maps of relevant actors we come across during our project. Initially, this will help us to create an overview of the relationships between actors and see what standpoints or technicalities (in case of non-human actors) could be negotiated to turn commonly towards conscious food consumption or implementation of information on the origin of food.

Then, traditionally researchers or central actors could create/draw an 'actor-world' to prepare a persuasion strategy for all actors deemed important for the success of the desired goal. This strategy is called the translation process and keeps the actors in line with that desired goal (Callon, 1986.b; Jørgensen and Sørensen, 1999). However, especially this translation process has been criticized for being imposed by the central actors upon all others and becoming sole definers of the goal's success (Star and Griesemer, 1989) or being managerially oriented (Storni, 2015). We deem ourselves no experts in the large and complex catering industry and would like to co-create a meaningful way to create conscious consumption through information on the origin of food. We, therefore, adopt the more modern adaptation of mapping ANT for collaborative and participatory design by Cristiano Storni (2015).

In this adaptation, maps should support the participation of actors and create 'spaces for co-habitation', which is the term for an abstract area where actors and their contradicting views can co-exist without making (large) sacrifices to their interests, statements and ambitions. The design process for mapping an actor-world should have the following characteristics:

"(i) inform the early stages of a [Participatory design] process by helping to identify its main H and NH participants and their initial positions, (ii) outline the networking nature of a potential design scenario or prototype, thereby enabling critique (Ward and Wilkie 2008) and projecting (DiSalvo 2009)...

(iii) iteratively make the public the evolution of a design thing (the gatherings of H and NH actors and the issues that draw them together)."(Storni, 2015, p.171)

Here a 'design thing' is defined as the material manifestation of a certain question for the public(or the network) which needs to be kept open for

discussion and where every actor can point out their concerns on the question and so continuously develop the object (Storni, 2012, 2015).

#### 3.2.2. Object of knowledge transfer

In line with the decentralized character of a design object Star and Griesemer (1989) introduced the concept of a boundary object which has the qualities to share knowledge (Qualities of a vegetable, environmental footprints, etc.) between different knowledge boundaries of distinct groups like consumers and cooks. These groups see subjects of knowledge in different ways, but boundary objects with the right characteristics can transfer knowledge in an understandable way. Carlile (2002) added the qualities of a good boundary objects as needing to have a mutually understandable language, a quality that provides the ability to for both parties to specify and learn from each other's differences and dependencies and finally groups should be able to mutually transform the existing knowledge to a new level.

To these qualities, we would also like to add a final one derived the concept of an intermediary object by Vinck (Vinck et al., 1996; Vinck, 2012) which explains that an object with inscribed knowledge can also travel over time and space to actors for them to transform knowledge in their own time. Which is convenient in the situation where it is hard to get different actors together all at once.

These material qualities will be important in the analysis. There we will try to create a holistic fundament of ideas to materialise concerns and controversies that involve the encouragement of local food consumption based on the analysed data.

We will, therefore, outline the analysed data as a/the design thing and put it to the test for different actors in our drawn actor-network. As will be described in the analysis and adopted in the design phase a solution for our research questions will be kept open for concerns until the end to create a relevant concept in a restricted and complex network. Additionally, we deem it also important to create a bottom-up approach where actors like the consumer and canteen staff, which are deemed key actors that can push the market or make the practical changes, but not always given enough opportunities to act. In Figure 9 we illustrated, how we envisioned the design thing with its reasoned qualities will operate.

# 3.3. Conclusion

With all the presented frameworks in Practice Theory and Science and Technology Studies, we are able to analyse data from the empirical material and write a sound analysis of this data. As we explained before, we are now able to frame and describe the practice of lunching at the canteen with three core elements and three ways to envision practice change. With the Practice-oriented design approach, we also have an iterative structure for our design phase. Additionally, with ANT, we can map out the influential relationship between actors and are able to create a design thing that collects all concerns of key actors to iterate and progress useful solutions for change.



In order to gather data and explore the behaviour and natural environment that surrounds consumers and the act of consuming in canteens, we intend to uncover the social aspects and practices at conscious as well as unconscious levels of eating (Guest et al., 2013). Our data gathering has been collected through different techniques used by primary ethnographic or field research; such as Semi-structured interviews, direct observations, participant observations, and questionnaires in order to get qualitative data. Secondly, research was made in archival data; reading policies, going through databases and corporate reports.

# 4.1. Field research

#### 4.1.1. Interviews

"Interviews in ethnographic research range from spontaneous, informal conversations in the course of other activities to formally arranged meetings in bounded settings out of earshot of other people. In the case of the former, the dividing line between participant observation and interviewing is hard to discern. In the case of formal interviews, it is more obvious." (Atkinson and Hammersley, 2007, p.108)

For this research semi-structured interviews are chosen to engage actors inside the supply chain of canteen food. Semi-structured interviews are defined as "an interaction between an interviewer and a respondent in which the interviewer has a general plan of inquiry including a set of topics to be discussed in depth... through a careful questioning and listening approach." (Oplatka, 2018, p.1350). This requires thorough preparation and research on the subject and a sharing of information can be created on "Rationales, explanations, and justifications for their actions, feelings, and attitudes" (Oplatka, 2018, p. 1350). Additionally, semi-structured interviews give room for new relevant subjects if necessary, which is especially relevant for a project with a vast and complex system behind it, where the interviewees (experts in the supply chain) can point out important topics for them and their company. An informative preparation is also necessary and valuable to get in depth information from interviewees and hence the archival research also provided a secondary purpose as support for the interviews.

These interviews were conducted through the first research phase to three main companies in the Danish catering sector; Meyers, Compass Group and Fazer. Other interviews, to the canteen and university staff from AAU, were necessary in order to know better the network and system behind our actionable point (AAU-CPH), and future possibilities for making a change.

#### 4.1.2. Observations

#### **Direct Observations**

According to Guest et al. (2013), direct observation is a method to map the social composition in a particular scene, where the researcher uses the frequency or repetition of particular behaviours in order to construct a model of the subject of research. In our research, direct observations have allowed us to build a preliminary analysis where we shape a preliminary description of the practice of lunching at the canteen.

These observations are then recorded as text description where the researcher details as much as possible depending on her/his capacity of recording and taking notes, Though, we acknowledge that research description can filter the recorded information depending on her/his analysis, or not be so accurate. In that sense, we have tried to gather as many descriptions as possible in order to form a complete frame of the practice in concern. Photo/video documentation was possible for the big majority of the observations since we had to respect the consumers privacy, yet Figure 10 shows a small common event at the canteen for understanding of the environment.



Figure 10 Common scenery at the canteen

#### **Participant Observation**

Participant observation is a qualitative variant of observation, in which the goal is to get a deeper socio-cultural understanding on *"why questions, causal explanations, uncovering the cognitive elements, rules, and norms that underlie the observable behaviours".* (Guest et al., 2013, p.79).

Participant observation is used in the contemporary world in an intimate context, where the environment, people and objects have a complex coherency (Guest et al., 2013), like the Danish working site or university life. In our strategy, it still entails being an active player in part of the participant's life during lunch time. This method is also a good follow up on the Direct observation method, in digging deeper into a person's thoughts, opinions and images of the lunch by reasoning for actions during lunch and the situation before and after. In this sense, participant observations were done by consciously participating in the practice and absorbing as much additional information as possible next to the direct observations.

Out of five reasons on why participant observations should be used, given by Guest et al. (2013), two are most relevant to our case. First of all, it can give us insights in relevant/coherent questions to ask in further interviews or questionnaires. The second reason is that gained experiences cannot be granted by many other ethnographic methods and they have to be thought by doing and being present in the activity of lunching.

Three important elements are suggested for doing participant observations; being on the site of action (being in the canteens), creating the trust of the participants and spending sufficient amount of time in the context for proper data (Guest et al., 2013). In our case, these observations took place both in the private sector at the canteen in Mikado House and Lyngbyvej and in the public sector the canteen at Aalborg university department Copenhagen(See Figure 12).

Once the observation takes place and the notes are written down, the researcher digitalizes the information into daily records. This material obtained will be framed under the practice theory structure; skills, images and stuff, as can be seen in Appendix 4. In this regards, we found out that obtaining images from simple observation with no contact with the consumer was arduous. In fact, the support of a questionnaire (see Figure 11) played an important role while completing these images.

#### 4.1.3. Qualitative content analysis

Extracting the information from the observations in a way in which we entail "all the material without quantifying findings too early and by honoring important singular instances and small contexts" was crucial. In this way, we didn't make first assumptions or conclusions on what was needed for the analysis but left "quantity as measure for significance of information" (Pfeiffer et al., 2017, p.5).

To do so, every small detail obtained from the observations was translated into the excel shown in Appendix 4., even though it was a small action not repeated or common within the practices. Hence, all the material was classified with the same relevance, also in order to see opportunities in the practice for recrafting, substituting or changing interlocked practices. This methodology of analysis was also applied later on, in the classification of images obtained from the questionnaire.

#### 4.1.4. Questionnaire

The images addressed in the practice theory section, imply an important understanding of what the consumer has in mind while carrying the practice of selecting food in the canteen and can be key to envision a change in the practice. In this regards, participant observations from the outside were not enough to draw those pictures.

"A survey question is a measurement tool, a way for researchers to discover a respondent's opinion, knowledge and behaviour" (Sue et al., 2012, p. 51)

Therefore, in order to gather information about the images on consumer preferences, an 'online' questionnaire was created. With the support of the platform Google Forms, several questions were formulated to the consumers once they had eaten, to gather their thoughts and opinions on the practice.

The online approach was chosen since "using the Internet for survey purposes among young people may lead to higher response rates as compared to paper-and-pencil surveys." (Van Selm et. al, 2006, p. 437), in this sense, approaching the students in the public sector would be easier. When it comes to the private sector in companies, a decision to stay in this canal was taken, since its more flexible in timing, also gives more privacy and was recommended by the involved strategic development director of the related canteens. This will let them be more honest and avoid social desirability and political correctness in sustainability and their food choices. For reducing this social desirability phenomenon, a reminder at the beginning of the questionnaire about confidentiality and anonymity is given (Sue et al., 2012).

Regarding the design of the questionnaire, time restriction is a prior fact to take into account since *"the longer the questionnaire, the less likely people will respond."* (Van Selm et. al, 2006, p. 441). Besides, attending to access problems, motivation and cognition of the respondents while designing the questionnaire increases participants accuracy and response rate (Van Selm et. al, 2006). On the other hand, the questions in the survey should be framed to get the objectives of the survey, revisited and deleted when the question doesn't lead to the research objectives (Sue et al., 2012).

Guidelines for asking surveys were taken into consideration such; short and simple questions are written, since the *"respondent is more likely to skip a question than to read it more than once for clarification"* (Fielding et al., 2008, p. 87), instructions were provided on how to answer questions so the respondent knows what to do; everyday language was used with consistent wording and complete sentences were written asking one question at time. The response options should be meaningful to the

respondents so the topics are relevant for them. Special care for leading questions was also not to influence the respondent in their answers (Fielding et al., 2008).

In order to access the online questionnaire, we designed a flyer (Figure 11) containing a QR code, which by scanning it with a smartphone, will give the user access to a link for filling it out. This flyer was handed to the consumers in the different canteens we had access (See Figure 12) while lunch practice.

The total amount of 33 answers were collected in the public sector (AAU-CPH canteen) whereas 36 were gathered in the private one (Mikado House and Lyngbyvej). Diverse target groups were covered; from students to researchers and business people working at the site. This gave us insights and personal perspective about what was crossing consumers minds while choosing food and their concerns while eating, and from there, create the images that were used in the practice oriented analysis.

# 4.2. Archival review

#### 4.2.1. Policies

Deep research on the diverse articles and regulations made by the European Commission regarding the food topic, specifically, on the provision of food information to consumers was made. This information supported the interest in the research about the origin of food and how the European Union is working in being more transparent with the consumer to not deceive them. For instance, as mentioned previously in the report, a modification on the legislation EU No 1169/2011 will be released in April 2020 so it will push the agenda towards informing correctly the consumer



Figure 11 Distributed flyer for questionnaire.



#### **AAU Canteen Mikado House** Lyngbyvej canteen -Public sector. -Privat sector. -Privat sector. -Pay for their own meal; scale -Pay for their own meal, fixed -Free buffet. paying system. -Over 600 consumers per day. prices. -More than 1000 consumers -Around 300 consumers per day. -Target group: Employees per day. -Target group: Employees working at Mikado house. -Target group: Students, working at the site. researchers and staff at the university.

Figure 12 Canteens of inquiry under Compass Group

and being transparent. This provided a supporting argument for making changes in the system towards showing the origin of food, where our project was directed. It also gave insights in how transportation of this information was done and for what categories of food.

#### 4.2.2. Databases

In order to provide consumers with knowledge to make a change in their lunching practices, we assume that empowering them with information on sustainable impact of production and origin can be a key factor. This information needs to captivate the most appealing and engaging aspects of sustainability (eg. resources for future generations, preservations of biodiversity, health, empathy to social problems, environmental responsibility, etc). In this regards, we deemed that the most recognizable data to offer consumers to be environmental oriented information. The Life Cycle Assessment (LCA) methodology provides us with reliable data on potential environmental impacts for the products, systems and services. The direct application of LCA's can be many such as *"Strategic planning, public policy making, marketing"* (Hauschild, 2017, p.61) and can be expressed for Eco labeling and carbon footprints. In our project, this kind of data was used in the design phase of the project.

LCA methodology works under the European Union's standardized ISO framework (Hauschild, 2017) which we deem a trusted source of information for environmental impacts under academic standards. In other words, LCA can quantify the environmental performance through the life cycle of a product, from the very beginning of the production of its raw materials, till the end stage where it is disposed or recycled (Goedkoop, M. et al. 2016). We deem the carbon footprint to be a qualified and generally well-known indicator for climate change and *"it offers the opportunity of having a simplified and practical indicator to be used* 

especially when a large number of items must be assessed in a short time frame" (Cerutti et al., 2018, p.98). Nevertheless, we acknowledge that by choosing another indicator such as ecological or water footprint we might have carried different results (Cerutti et al., 2016).

#### LCA data from literature database

An excel-model (Appendix 6) about climate impact obtained from two different Swedish articles (Carlsson-kanyama, 1998; Carlsson-kanyama et al., 2003), was used for making the first iteration for showing climate change of ingredients. This excel-model builds upon a previous study made in 2003 where LCA data was collected for diverse Swedish market products with national as well as imported produce. However it's diversity was not enough for the ingredient variety of the different vegetables and other produce that was provided by the collaborating canteen. Furthermore we wanted more updated data and centred in the production stage. In order to get it, we decided to work with SimaPro program explained in the following section.

#### SimaPro

We choose to work with Simapro (Goedkoop, 2019), a professional tool which collects, analyses and monitors the sustainability performance data and helps to apply effectively the LCA (SimaPro, 2019). This program entails a complex of databases and runs the calculations to obtain results and as the outcome will give an calculated indication such as the chosen carbon footprint; kgCO2-eq/kg. This indicator measures the amount (in kilograms) of CO2 equivalent referred to one kilogram of the product. The indicator would be more or less accurate, depending on the stage of life cycle or how many stages and how precise the coverage of the research for the assessed data is. In our case, this indicator of carbon footprint will cover the production stage of the diverse ingredients given by the

canteen of the AAU-CPH campus.

To accurately cover all ingredients, three main libraries were selected since one was not possible to cover all the ingredients/products on the list. The innitial definitions were obtained from the SimaPro (Goedkoop, 2019) library in the ratio's that can be seen in Figure 13:

**Agri footprint- mass allocation;** Agri-footprint includes linked unit process inventories of crop cultivation, crop processing, animal production systems and processing of animal products for multi-impact life cycle assessments. Agri-footprint also contains inventory data on transport, fertilizers production and auxiliary materials.

Ecoinvent 3- allocation at point of substitution-unit: The

ecoinvent v3 database contains LCI data from various sectors such as energy production, transport, building materials, production of chemicals, metal production and fruit and vegetables. The entire database consists of over 10,000 interlinked datasets, each of which describes a life cycle inventory on a process level.

**EU & DK Input & Output Database**: The DK table is linked to the EU27 for imported products to Denmark. The EU27 model is a closed economy model considering imported products being produced in the EU27.

We acknowledge that since different databases/libraries are used a small difference on the result might appear, and the comparison between the different products carbon footprint might be unequal. That's why after considering the results, and even though the "EU & DK Input & Output Database" would have more accurate data in the Danish meat products, this database measures an input/output approach instead of a process approach which was not the same as the other two databases. The meat



Figure 14 Chart of the database used on the second iteration.

product values were therefore obtained from the Agri-footprint database too. Giving the final ratios as in Figure 14.

The point of analysis in the data obtained from Ecoinvent 3 was in mostly referred to Swiss processes concerning the production stage of the ingredients/products. Having the same reference place for production gave us a better comparison of the different products since they were raised in the same conditions. Nevertheless, other countries such the Netherlands and France, are also taken into consideration when Swiss production was not available. All the data collected from the program has been stored in an excel spreadsheet that can be found in Appendix 5., where information on the library used, the place of analysis, as well as other observations is presented.

To sum up, the Simapro program was used to run calculations of the production stage of the different ingredients used in the Aalborg University canteen, with the latest updates on the LCA data and more accurate in ingredients than the Swedish database obtained from the literature. The indicator obtained, kgCO2-eq/kg, gave us a comparison unit for the design game that would be developed further on in this report.

#### Other data

92% of the data required for completing the list given by the canteen was successfully obtained from SimaPro databases. Nevertheless, approximately 8% of the ingredients were not available in the program (Appendix 5.). That's why some assumptions and research on literature was made in order to cover them as precisely as possible.

#### 4.2.3. Corporate (social) responsibility reports

As mentioned before, investigation was done before interviews with the main catering organisations to see how they were impacting society. Available Corporate (social) responsibility (CSR) reports of the two multinational organisation gave us an insight into their interests and committed responsibilities towards the community and sustainable matters such as the social and ecological. Since, one ought to be created annually, we tried to search for the latest version, for Fazer this was 2017 found online and for Compass group this was the report of 2018 provided by the strategic development director. Later visuals of the companies regarding their concerns was created thanks to these documents and as evidence to align with the catering organisations on their given goals.

## 4.3 Conclusion

The methods explained above gave us structured tools on how to approach the system and how to analyse it. An overview of the system became clear with it and was documented and visualised due to these methods (as can be read in the analysis). It would have a big influence in the following stages of our project. Data obtained out from these methods will be explained in the following section, as well as the quality of it.

In this chapter, we will introduce our gathered data from the field and archival research. The data has been obtained through the methods described in the PREVIOUS SECTION. The timeline in Figure 15 shows the various kinds of interactions in the explored field of the research. As you can see, the data was obtained in sequential steps and archival research was used to prepare for upcoming interviews and the questionnaires followed from the observations. This chapter will summarize/describe the obtained data and evaluate its quality. After the obtaining questionnaire at the Mikado House Canteen, the process of the design phase started, where data was still obtained but in an iterative and more flexible fashion.



# 5.1. CSR and information from catering organisations

The available documentation and CSR reports of the researched companies gave us access to information for illustrating the market size of the organisations as well as their sustainable dedication and values (see Figure 16). In the following paragraphs, we elaborate on each of the companies, their goals, and approaches. This is the case of three large food providers, two of the multinational companies with a high presence in the Danish catering market and a Danish company with a more exclusive target group. In this second stage of collecting data we focused on the catering organizations in Denmark, in order to get an overview of the organisational world behind the canteen system, we approached relevant catering organisations in the Danish sector such; Fazer, Compass group and Meyers.

#### 5.1.1. Fazer

Fazer group works with the food services in different business areas, the largest sector of the company is food services which include restaurants, canteens, small cafes, and bakeries. It is one of the largest food providers in the Nordic countries serving around 500,000 meals per day with headquarters located in Finland, and owning several canteens in Denmark (Fazer Food Services a. , n.d.).

When analysing the Corporate review of the company (Fazer food services, 2017), it is divided under the terms of: *"People matter"*, *"Running business"*, *"For health and well being"*, *"Fair value chain"* and *"Part of the environment"*. The first two make references to the companies commitment to their stakeholders, customer, and employees. The three remaining strategies

are responses of consumer demands for more sustainable options (Fazer food services, 2017) where they focus on offering healthier food products, promote plant-based meals and non-dairy consumption and secondary also sustainable sourcing of specific produce. Compared to the others, Fazer's commitment is quite holistic.

#### 5.1.2.Compass Group

Compass Group is a large corporate group that provides food and cleaning services, with more than 50,000 client locations over 50 countries around the globe (Compass group dk, n.d.). The company claims to be one of the lowest cost and most efficient food providers thanks to their economy of scale. Their large volumes of food management allow the company to perform better in terms of procurement, leadership labour and back-office work (At a Glance. n.d.).

The company serves 5.5 billion meals per year. According to their corporate review (Compass-group.com, 2018), their current focus lies within three strategies: performance, people and purpose, the first two strategies are oriented towards managing the expectations and interest of their stakeholders, clients and employees. As our sustainable scope incurs among the environmental impact for the origin of food, our interest is on the environmental aspects of the corporate review. Therefore, the relevant elements for this paper are: Food waste, Single used plastic and Plant forward meals these approaches aim to impact more of social and environmental concerns.







#### Dedicated sus. goals

- More plant based meals
- Food waste reduction 50%
- Reduction of emissions 50%
- Sustainable sourced products 100%

#### Sustainable values

- 1. Food waste and overconsumption
- 2. Support start of supply chain
- 3, Seasonality
- 4. Fish and meat reduction

#### Market

40 countries Net sales of 1.6 billion euros 15,000 employees

#### Dedicated sus. goals

- Reduce water and energy use
- Reduce carbon emissions
- Seasonal sourcing
- Food waste management
- Other waste management
- Use of organic produce

#### Sustainable values

Health and Wellbeing
Environmental:
Food waste, Single use plastic, Plant forward meals
Beter world; Sourcing responsibly, local comunitities

#### Market

50 countries Net sales of 27 billion euros 600.000 employees

#### Dedicated sus. goals

- None

- Goals are integral part of their gastronomic business

#### Sustainable values

- 1. Focus on meat reduction
- 2. High organic food produce
- 3. Ethical food production
- 4. Local food sourcing
- 5. Food waste

#### Market

In Denmark Net sales of 0.2 billion euros 80 Clients

#### 5.1.3. Meyers

Meyers is the third reviewed company. It serves more than 70 canteens in Denmark's best workplaces, receiving around 20,000 guests per day (Meyers Frokostløsninger, n.d.). The firm alleges to be ruled on a philosophical way of cooking rooted in health and well-being, never missing the aspects of taste, joy, quality and ecology. In this regard, the company commits to using as much raw material from close sources as Danish or Nordic production, especially on meat (Meyers Kantiner, n.d.).

The company claims that sustainability and environmental considerations are not concepts but drivers and fundamental principles on their business operations. One concrete example they give is being the oldest experienced canteen dealing with organic products. They work constantly to minimize their carbon footprint so in that sense the choice to work with local raw materials because of the short transportation distances, using saving cooking methods, and ambitious food waste reduction targets. (Social responsibility statement, n.d.).

The company has recently been working on its goal of reducing the amount of meat consumption while keeping satisfaction intact, through the development of menus and different ways of keeping the consumer demands satisfied. Culture is a key factor as we were told by the Commercial Head Adam Usman because it becomes pretty difficult when you try to change cultural behaviour. For instance, Danish food habits entail having *"meat every day"* and that is hard to change. Even so, the company efforts on pushing sustainable values into their staff and embrace any kind of approaches developed by them such as reducing meat consumption without compromising consumers satisfaction (Social responsibility statement, n.d.).

#### 5.1.4. Summary

The information researched through the Corporate Social Reports and websites gave us helpful insights into the priorities the organisations have, their strategies and commitments with society. Special attention is put, in the three cases, to sustainability in different forms such as food waste and plant forward meals. Besides, locality and seasonality are claimed to be an important part of the food procurement, especially in the case of Meyers. Nevertheless, a closer perspective from someone inside, on how the catering organisations work with such concerns was needed. Further information will be presented through the interviews held in the next section.

# 5.2. Interviews

#### 5.2.1. AAU-CPH canteen staff

A first approach of talking to the catering staff from Compass group at Aalborg University in Copenhagen (AAU-CPH) was made to gather first impressions about the different concerns and processes held at a canteen (see Figure 17).

#### Eleni Arvaniti

A first interview was conducted to Eleni Arvaniti, a student on the AAU-CPH (Appendix 7), who is working part-time for the campus canteen, employed by Compass Group. In this interview, she gave us her perspective on how the organisation of the canteen was. She gave us insights; about food waste, which was not a big problem in the canteen; how they optimized the spare food, so it could be reused in the following days; how the menus were conceived and by who, etc. Biggest economical income are the conferences

Measuring food quantities carefully not to **overproduce**; economically and resource wise sustainable

Interest on making more vegan and vegetarian food due to the resent demand.

Recycling is a hard task while cooking, just big packaging parts.

Initiatives for the **food** waste are not that easy. There is not that much food waste on this canteen.

# **ELENI ARVANITI**

# MORTEN PEDERSEN

Regarding of the **contract** between AAU and Compass group a economic profit needs to be made.

Feedback from the consumers was obtained through a Facebook group, which he stated was not visited or engage by consumers

Regarding **food waste** initiatives such 2 good 2 go for the canteen; *"It is not a small company, you cannot do whatever you want"* 

There is an attempt to use **seasonal** products, **"when** *its season the prices are lower".* 

"Sometimes it is difficult to get some inspiration and we also have foreign students that have food from their own country that they can share..."

As seen in Figure 17. Overview of AAU-CPH canteen staff main points of this interview are summarized. Eleni mentioned that for the canteen the biggest economical income was the one obtained from the conferences held in the university. Not that much food waste is produced (although assumed by us) since they try to be economically sustainable; the more waste they have, the more money they lose. They know more or less the days in which the demand will be bigger, so they adopt the production. Therefore, initiatives regarding food waste wouldn't make much sense in this canteen. Eleni also referred to recycling, which is not easy while preparing meals because everything is mixed. They just recycle the larger cardboard or big objects and also milk packages, plastic wraps/ wrappings... Finally, vegetarian and vegan food was another interesting topic that was brought to the conversation, where she mentioned that there was an interest in making more vegan and vegetarian food due to the demand.

#### Morten Pedersen

The second interviewee was Morten Pedersen(Appendix 8), the site manager of the canteen (at that time). He exposed us to more in-depth information on how the canteen runs, the procurement system, suppliers and more specific data about food, as well as diverse concerns around this theme.

When talking about the contract, he explained the canteen was required to have either meat or fish dish every day; [there is] "one hot dish that has meat and one day with fish, and then there should be some kind of smaller dish. Not a side dish but we have done it sort of vegetarian dish." (Appendix 8, p.1). In this regards, it was also mentioned that in order to decide the products they buy there is some economy on it that needs to be considered.

As it can be seen on Figure 17 Overview of AAU-CPH canteen staff,

seasonality is a thing they consider. In Morten's words "Of course there is an attempt to try to use more fruit in the summertime (...) you try to find the products that are in season, with fish as well, and it is also reflected when we buy stuff when its season the prices are lower of course." (Appendix 8, p.4). When we brought up the locality topic he said that an attempt on using local products could be made on a much smaller scale, but it should make sense economically speaking.

Feedback from the consumers was expected to be obtained through a Facebook page, which was not active. Additionally, the site manager explained another unknown channel: "*It was a long time ago, ..., at some point there would be a group, the people responsible for the contract would like to have students to talk about what they think or if it should be any changes.*" (Appendix 8, p. 6)

Regarding food waste, Morten was closely related to what Eleni told us about it. They try to use as much leftover food as possible for the dishes of the next day and also sell it at cheaper prices. Not all of the food is reused since hygiene regulations need to be taken into consideration. Initiatives like 'Too good to go' in the canteen would be difficult to implement regarding the regulation and the contract with Aalborg: *"it is not a small company/business you cannot do whatever you can"* (Appendix 8, p. 7)

Finally, we mentioned the regulation on food origin and how it would affect the canteen system. Morten mentioned that putting the origin of the meat, for example, wouldn't take that much work; *"You can ask about anything, we don't type everything down, it's very big work to do to write everything down"*. If in this way we can influence the consumers he reflects it would be great *"Because sometimes it is difficult to get some inspiration and we also have foreign students that have food from their own country that they can share..."* (Appendix 8, p. 9).

#### 5.2.2. Catering organizations

# Interview with the sustainability director at Fazer-Nina Elomaa

In an interview with Nina Elomaa, Sustainability Director at Fazer (Appendix 9), we were provided with information on how the company is working with diverse sustainable aspects. Based on the company experience dealing with sustainable strategies, they consider that a sustainable approach needs to be included through the normal operations of the business. It has become part of the regular processes and functions in everyday business decisions for example via guidelines.

As shown in Figure 18 below, inspired by the UN Sustainable Development Goals, the company has launched ambitious objectives for 2030. They acknowledge their responsibility for the impact of their operations. As a concrete example of the integrated sustainability on a daily basis, Nina mentioned how product development practices are now rooted to push more plant-based diets as aiming for ingredients with a smaller footprint. In addition, customers and clients also push sustainable requests to the company, turning their approaches into business requirements.

Having as a reference the FOODSCALE assessment tool presented by Goggins (Goggins, 2016) in order to measure sustainability in canteens, we asked Ninaa to value, within Fazer's perspective, which elements she considered the most important. Reducing the food waste seemed to be the priority, which she related to the overconsumption problem we have in the society; *"I think this is a very delicate issue to discuss and that is, that food is too cheap, so we can afford to over consume or waste it"* (Appendix 9, p.7). Embracing local communities is another point where she puts interest in, as well as eating seasonal not to waste resources in the production of these products. Finally, she mentions meat and fish reduction toward more plant-based dishes.

When talking about the consumers, according to Nina it is about capturing their time and their attention where the real challenge presents for the caterer's ambitions. *"There so much ongoing and people are busy and how can you tell about your sustainability activities in an interesting way that reaches the consumers"* (Appendix 9, p.4). She also expressed *"the tonality"* of the story shared is very important, reaching consumers in a positive way where they do not feel pushed by someone's agenda. Another mentioned initiative is nudging, for pushing people in a friendly way or the campaigns for promoting it through facebook or the website.

Fazer acknowledges that they cannot overwhelm the consumers with information, as expressed when talking about informing on the food origin; is something hard to achieve when the company manages more than 10,000 different lines of ingredients, through complex supply chains, generating a huge amount of information to process. Regardless, being more transparent on the origin of food is a dialogue Fazer would be willing to take with their clients as if they were required. Social media is a well-established channel, where consumers, cooks, and staff interact and share different experiences. *"We are using all possible channels that we can"* (Appendix 9, p.5).

Another example in Fazer Finland, the company works with 90% local meat and 100% local grains and eggs. The company has worked on these facts and they acknowledge that consumer demands for locality, *"It has a big meaning that in Finland for example, they want Finnish origin in Denmark they want Danish origin"* (Appendix 9, p.9).

*Figure 18 Summary of the data obtained from Fazer Interview.* 

#### FOODSCALE RANKING:

 FOOD WASTE: overconsumption and price relation is a delicate issue. "We throw it away because we can afford."
LOCAL COMMUNITIES: making impact in the beginning of food supply chain.
SEASONALITY: eat seasonally will avoid waste of resources in seasonal product cultivation.

4-FISH AND MEAT REDUCTION: more plant based dishes.

Regarding organic food and other labels; there is already development in this area so no that much importance.

#### **NEW PRODUCTS:**

Introduce sustainability by pushing plant based dishes, searching for the footprint of raw materials

#### LOCAL FOOD:



"It is a good thing to support local."



#### INTEGRATED SUSTAINABILITY

Small sustainable team because they try to integrate sustainable practices in the daily activities. Raising sustainability level by 2030:

- -More plant based meals.
- -50% reduction of Food Waste .
- -50% reduction in emissions.
- -100% sustainable sourced products.

Retailers push their own sustainable requirements. Where Fazer has an impact and can make a difference, they act. I.e.: Cocoa farmers conditions and grain production in Nordics.

#### CONSUMERS:

**DIFICULTIES** reaching the consumer; they dont have time, so much ongoing, they are busy...

#### HOW TO TURN THEIR CHOICES INTO MORE SUSTAINABLE ONES?

TARGET MAINSTREAM AUDIENCE into sustainable food consumption.

HOW?

-NUDGING; push people behaviour in a friendly way to make sustainable choices.

-STORY TELLING & TONALITY; no negativity regarding climate change, you can do something about it.

-CAMPAIGNS; Facebook, videos.

Feedback from consumers through Facebook, Website...

#### FOOD ORIGIN:

Fazer has menues where the origin of food is written; main ingredients. Raw ingredients might be easy but not spices or sauces. Try not to make the information given to the consumers overwhelming.

#### Interview with the strategic development at Compass Group - Kristofer Kjellman

An interview with Kristofer Kjellman, head of strategic development at Compass group (Appendix 10), broadened our perspective of the food system by explaining how such a big catering company works and exploring, more in depth, their sustainable approaches, as well as more personal insights on the food consumption.

As shown in Figure 19 below, their vision focuses on creating the best workplaces with the help of the client since their primary priority is 'people', so they aim to create diverse and inclusive environments. Other priorities are also mentioned such business performance and safety; the company focuses on safety and simplification of their operations. Their current performance system is based on measuring those elements. though, achieving 0 accidents is near impossible according to Kristofer (Appendix 10). The second focus of the company is upon health, wellbeing and better nutrition choices as they try to stimulate healthier lifestyles. Foremost, the next social responsibilities of the company are "purposes, better for the world", "sourcing responsibility", and "enriching local communities".

Regarding a sustainable perspective, Kristofer mentioned the organisation is collaborating for a big change regarding food waste together with Selina Juul, an influential and familiar expert in that field. Actions such as reducing the amount of single-use plastic and removing unnecessary plastic products are taken into account by launching re-design programs of plastic packaging. Likewise, through internal contests and ideation spaces, the company encourages its cooks to develop more plant-based menus that help to reduce the amount of meat consumed by consumers. Additionally, the company tries to maintain responsible sourcing in their supply chain, through increased purchases of trusted fishery networks and eco-labelled raw ingredients such as organic, since guests expect that. Nevertheless, they leave that decision to the client; *"We respect*  where there is a need or demand for organic purchasing" (Appendix 10, p.3).

One of the biggest impacts at canteens pointed by Kristofer involves the sourcing of the ingredients. The Compass Group procurement department is organized in a different way from the rest, as they are the only independent department which reports to the European level of the organisation that enables them to make bulk purchases. The staff can influence the sources of ingredients as long as they are under the assortment of Europe-wide procurement regulation. The company policy does, however, allow making only small deals with independent suppliers, but it is not done on a large scale. This procurement department is also in charge of sourcing seasonal products and independent from the client or consumer demands for year round fruit and the department will block out of season produce.

A gap of information is detected in several areas between consumers and the company. What they do is not properly transmitted to the consumers, also regarding the initiatives about food waste that some canteens had and the company is not aware of. The channel might be another problem since *"We just put things on the internet which nobody reads"* (Appendix 10, p.5). A solution that they have therefore launched recently is an *"Associate app"* to make it easier for canteen staff to share ideas (from consumers and clients) independently from the managerial part of the organisation.

Some ideas about consumers and behaviours were shared by Kristofer. For instance, he pointed out that consumers move the demand, and in this way is how the catering business is also moved. On the other hand, catering companies can also have an impact on the people, 60.000 in Denmark in the case of Compass group. The best way to do so is by educating their audience, as pointed by Kristofer, which is differently approached for clients and consumers. He acknowledges that changing consumers behaviours is a hard step and that it will take a lot from society;

"We can make a change or have an impact is through our sourcing, in the **PROCUREMENT DEPARTMENT** (...) they have a product list and when we move out of seasonality their just block it (...) that make the clients and consumers dissapointed but they have to trust that we are making the right decision"

-It is easy to comply with european food regulations.

-Guests expect certain standards and expectations in food, and the same in sustainable sourcing. *"We respect where there is a need or demand for organic purchasing, governed by the client "* 

#### **VISION AND PRIORITIES**

TGETHER WITH THE CLIENT CREATE THE BEST WORKPLACES. -PEOPLE, BUSINESS PERFORMANCE, HEALTH AND WELL BEING, SAFETY OF THE WORKERS, SOURCING RESPONSIBILITY, ENRICHING LOCAL COMMUNITIES AND STOP FOOD WASTE.

"CREDIBILITY DOESN'T COME FROM A CSR REPORT, IT COMES FROM WHAT YOU DO, MAKE IT NOTICEABLE FOR YOUR CONSUMERS SO THEY TELL THEIR CLIENTS THIS IS A CREDIBLE DELIVERY."

#### SUSTAINABILITY ON THE BUSINESS

The focus on Compass group regarding environmental game changers:

- -Local food waste.
- -Single plastic reduction
- -Plant forward meals. (Trying to get more proteins from other sources than meat.)

"I would say this is very sustainable framework, I'm really proud of working with this framework, because I actually believe we can do some change."



#### **CONSUMERS**:

"As consumer we also MOVE THE DEMAND and that demand also moves into the CATERING BUSINESS." "We could impact on the 60.000 people potentially, in Compass group Denmark every day" "What we think is best is to EDUCATE OUR AUDIENCE". Clients and consumers are approached in a different way. CHANGING BEHAVIOURS: "The big impact would be in the long term, that is their daily purchases" (...) "that change takes a lot from the society." "At the end of the day that is indirect payment but with a direct payment what most of them do in the supermarket"

#### SHARING INFORMATION

"Things can be done much easier when it comes from the consumer demand, to the client to us.(...)We try to make it easier for them to share ideas." So they launched an Associates application.

#### GAP OF INFORMATION:

SEASONALITY: "We have a big gap between what we actually do and what the consumers know we are actually doing because we are really aware of seasonality for example, and sometimes we have the issue telling our clients"

FOOD WASTE: "They do a lot in our canteens that we didn't know about." CHANNEL: "We just put things on the internet which nobody reads"

"we probably can change a lot but the big impact would be in the long term" (Appendix 10, p.8) and the final result will be seen in consumers choices at the supermarket, in their daily purchases.

Ultimately, as pointed out by Kristofer in order to create a proper brand around sustainability or purpose, you need credibility and it *"doesn't come from a CR report it comes from what you do, make it noticeable for your consumers so they tell their clients this is a credible delivery"* (Appendix 10, pp. 7-8)

# 5.2.3. Client (AAU's student environment council)

Simon Holmen Reventlow (Appendix 11), coordinator of student environment council said food, in general, is also a topic discussed at the meetings throughout the year, especially when they have input that comes from the students, but there is a limit on what they can do because of the contract between compass group and Aalborg University.

He mentioned that when students have an inquiry about the canteen, they approach Thomas (student and part of shared services), Martin (head of shared services), the staff at the information desk or himself. Input from various sides is discussed in the study lining group and also in the weekly coordinated meetings, among other things.

Simon explained that they cannot change the contract between Aalborg University and the canteen. There is a covered budget for the university on environment related matter and the council wants to make sure the money they get is spent as beneficial as possible, so it is a matter of prioritisation. Nevertheless, they could come with input and suggestions and it will be possible to push the limits of the contract to change and challenge the assumptions behind if there is a case or a solid reason for it. The importance is given to keep the prices (assessed once a year) as low as possible. Not only for a student's budget but because there is no more subsidy for it either. Simon also acknowledges that the company behind the canteen needs to make a profit and AAU-CPH canteen has already low prices compared to others in the sector.

When asked about implementing more communication channels for covering the information gap between students and the canteen, he replied that it can be a very big challenge to set up a new platform. Students think they have too many platforms and systems to use. He also found it really difficult to get information across studies.

Lastly, he conveyed that if we have a proposal to make a change in the system, he will bring it inside the administration as fast as possible to make it possible.

#### 5.2.4 Summary of the interviews

Data obtained in this interview section gave us relevant insights on where we would have opportunities to influence/change the system. The data was sufficiently diverse, covering managerial as well as operational stakeholders and ranged from technical/institutional issues to global concerns on sustainability.

We found out there are that a lot of initiatives regarding sustainability were already concerns in the system and subjects in the catering organisations were broadly aware of. At this point in time, the priorities for action were food waste reduction (also as economical necessity in AAU-CPH canteens) and concerns on promoting organic or plant-based meals were in the system already. Much more was thought of than we anticipated



and challenges of the organisation were on conveying information to consumers and clients or receiving interest to get more support to tackle the sustainable issues among which sustainable/seasonal sourcing and locality was one (Figure 20). Stakeholders in the system shown above draw out the main stakeholders in the system and how the relations are established mainly from the point of view of Catering organisations.

# 5.3. Observations

The raw data of the observations consists of short notes of a tracked consumer in his/her course to get food from the canteen. Therefore, part of the real interactions was lost because of the time needed to write down the previously observed or being able to remember or observe every detailed action. With numbers, however (26 at the public canteen and 35 at the private) a general and numerical part of the whole practice could be documented. Having both data on a public and a private canteen was also valuable to see distinctions between the practices in different settings with different lunch cultures and therefore more easily define them by their differences. The data was not only divided into elements but also into sub-practices in order to find diversity and relations between elements.

This way, we could also make distinctions between the practices in different settings with different cultures and therefore more easily define them by their differences. The main practice of lunching in the canteen was also divided into sub-practices to categorise and show connected elements as will be elaborated in the analysis. The practices and subpractices can be seen in further detail in Appendix 4, where they are organised following the practice theory's core elements.

#### 5.3.1. Aalborg University Copenhagen

Observations were first done in the university canteen as practice and were initially not as detailed yet still focused on objects, activities and sporadic emotions and interactions. The observations were done in two lunches. In general, this canteen had a payment system, where the buffet part was charged by weight and extra food like soup, smoothies, and sandwiches was to be paid separately. The setup of the canteen observed is presented in the following Figure 21



Figure 21 Set up of the AAU-CPH canteen.

During the observations, we noticed Chartwells' (daughter organisation of Compass Group for universities) attempts to communicate environmental campaigns. In the form of a flyer, the company encourages about food waste and stopping it, our observation spotted how this piece of information lies inert among other advertisements in a non-central position and no one observed paid attention to the pamphlet. People just walked by and never stop to pick it up nor noticing it.

#### 5.3.2. Mikado House

The later observations in the working site canteen were done in one lunch break and focused on the same aspects as the public sector. The system at this canteen had no payment and all members of the companies in the building could freely get food. Additionally, bowls with portions of food were presented at the start of the canteen. The setup of the canteen observed is presented in the following Figure 22:



#### Figure 22 Set up of Mikado House canteen.

As explained before in the report, creating images under the practice theory framework was complex so we needed to help our research by an online questionnaire to the consumers.

# 5.4. Questionnaire

The data obtained from the questionnaires (Appendix 12 and Appendix 13), was quite framed in some of the questions because of their closed structure. Other results might have been derived if, for example, in the question of "priorities while selecting food" wouldn't have had leading answers. Yet, this decision had two sides since we wanted to help the user by making accessible and stimulating the answering process in order to still get a general understanding of their ideas on the canteens. So, we found out respondents were willing to spend time answering and even giving additional criteria or insights. We did also add some open ended questions in order to get the unframed opinions of consumers on their food, general decisions and the canteen, which was the main goal of the questionnaire in order to explain more images of the practice.

For further information all the images are collected and classified in the following excel sheet; Appendix. Levels were of Consciousness in images. Below we present the results from the three canteens where the questionnaire was handed to the consumers.

#### 5.4.1. Aalborg University Copenhagen

The raw data obtained was from 33 responses at AAU-CPH canteen lunchtime to the questionnaire and is presented in Figure 23. The target group was students, researchers, and staff of the university.

As shown, most of the times, people are able to find the right food to their preferences, whereas one-fourth of the answers obtained indicates that just sometimes they got the right information about food. 15% of the participants think that they never get the right information.

Taste is the priority when it comes to selecting food, followed by appearance and health. Environmental concerns appear to be important or slightly important. The majority of respondents related the least to locally grown food. Other concerns such as varied food, vegetarian, freshness of products and nutritional value were raised by the participants of the questionnaire.

Furthermore, we noticed that even though the most eaten dish of that day (according to our questionnaire) was salad and 60.6% consumed a meat dish, the respondents explained 88% of the participants eat meat in their general diets.

#### 5.4.2. Mikado House

Following the same structure as with AAU-CPH canteen, answers obtained from 20 employees at Mikado House are presented in Figure 24.

In among the participants of this canteen, there is a small percentage of people (5%) think they can never find the right food to their preferences, unlike 30% of the participants think that they are always able to find it. In contrast to the previous canteen analyzed, the information displayed on this one seems to satisfy always or most of the times the participants of the questionnaire.

Taste and appearance are highly relevant to the selection of food. Environmental concerns and health appear to be also important for the participants on this canteen. Once again, locally grown food is slightly or not an important priority. Vegetarian, vegan, organic are other priorities that participants consider, as well as being well cooked, inspirational and fun. 30% of the participants do not eat meat in their general diets while 100% eats plant-based food. Therefore not surprisingly, the most chosen dish of that day was salad eaten by the 85% of the participants, against the 50% that ate meat.

#### 5.4.3. Lyngbyvej

Finally, the data obtained from the questionnaire to 16 employees at Lyngbyvej canteen is presented in Figure 25.

The most positive answers of people being able to find the right food to their preferences and the right information about food, are the ones gathered at this canteen. More than 60% of the participants think they always got the right information about food and nearly 40% think they are always able to find the right food to their preferences.

The results of priorities while selecting food are similar to the ones obtained at AAU-CPH where taste is the most important priority, followed by appearance and health, environmental concerns and finally, locally grown food, which is the least important priority on average. New concerns not mentioned before arose such; allergies, price, quality, and packaging. The vegetarian concern is presented again.

The most eaten dish of that day was pasta bolognese, while the 31% that ate salad. The highest percentage of people that ate fish as a general diet was found in this canteen, with the 93,7% of the participants, curiously higher than meat which obtained the 87,3%.

#### AAU canteen questionnaire data (33 sample)



#### Priorities while selecting food

1°Taste is the most important priority, most people think is highly important.

2°Appearance and Health are the second priorities while selecting.

3°Enviromental concerns most people think is important or slightly important.

4°Locally grown is the least important, most people think is not important or slightly important.

Others: Variety, Vegetarian, Freshness, Nutritional value.





#### Mikado House canteen questionnaire data (20 sample)





#### Priorities while selecting food

1°Taste and appearance are the most important priorities, most people think are highly important. 2°Enviroment and Health are the second priorities

while selecting, they consider important.

3°Locally grown is the least important, most people think is not important or slightly important. Others: Vegetarian, vegan, organic, well cooked, Inspirational and fun



### Lyngbyvej canteen questionnaire data (16 sample)





Priorities while selecting food

1°Taste is the most important priority, most people think it's highly important.

2°Appearance and Health are the second priorities while selecting.

3°Enviromental concerns most people think are important or slightly important.

4<sup>o</sup>Locally grown is the least important, most people think is not important or slightly important.

Others: Vegetarian, price, quality, allergies, packaging



#### 5.4.4. Open answers from all responses

Next to the closed options, we also requested and received open answers in the questionnaire. One of the main questions we wanted an answer to was: 'what are the reasons you choose to ate this food today?', which resembles very closely of a practice theory's images on the practice of Lunching at the canteen. A summary of the most repeated images participants had in mind around the canteen and food are presented in Figure 26:

AAU-CPH canteen results showed that nutrition, health, and variety are important when asking about general diets, but when referring to the choice of that day, the reasons were simple such: *"I am hungry"*, or based on feelings such: *"I like it"* or *"It looked good..."* (Appendix 13). At Mikado House, participants had in general deeper thoughts while choosing the food that day (health, diet, vegetarian...) than in other canteens. (Appendix 12). Similarly to AAU-CPH participants, choices of the day at Lyngbyvej canteen were based on feelings (taste, how it looks...) whereas, when asking about general diets, they had deeper reasons such health, variety... (Appendix 12)

We would like to conclude this section by acknowledging that although not intended, we might have gotten a select audience for the data. For while handing out flyers, only the ones interested would take them, meaning we might have some respondents that were positively/negatively concerned about the canteen. Therefor, this questionnaire might not give a full representation of the average consumer at the canteen.

We further acknowledge that studying behaviours and the reasoning process behind participants mind involve deeper psychological knowledge, to deeply understand, analyze and classify them. Despite this, initial results confirm that not very deep reasoning happens when it comes to choosing food at the canteen. These decisions are mainly guided by appearance and taste. Even so, when talking about ordinary dietary choices, people care about healthy diets; nutritious, varied and balanced. Another remarkable data is that more than 10% of the participants of the questionnaire don't eat meat on a general diet, and concern about environmentally friendly choices arises in priorities, even though participants do not relate it to the locality of products.

#### Mikado House

People make choices taking in consideration their diet. (vegetarian (4), vegan, health...) (8/20) People care about balanced/nutritious/ healthy diets (7/20) People select food based on how it looks (5/20) People want vegetarian/vegan food (5/20) People choose food they usually eat/like (4/20) People like varied diets (4/20) People think the food in the canteen is bland, no flavour and disappointing (3/20) People is concern about environment (2/20)

#### AAU-CPH Canteen

People care about balanced/nutritious/healthy diets (16/33) People eat what they like (14/33) People select food based on how it looks (9/33) People like variety on their diets (4/33) People choose food they usually eat (4/33,) People care about varied food (3/33) People select food that is faster to get (they don't like waiting lines) (3/33) People want clear and understandable information about food and choices (3/33)

#### Lyngbyvej canteen

People like variety on their diets (8/16) People eat what they like (6/16) People care about balanced/nutritious/healthy diets (3/16) People choose what is easy and fast (2/16,) People care about food price (2/16) People select food that is faster to get (2/16) People want quality food (2/16) People choose what they usually eat (2/16)

# 5.5. Databases

As presented in the methodology section, we collected data from different sources in order to build our own database that provides a base for comparing an impact on climate change for different produce served at the AAU-CPH canteen. The application of it will be further explained in the design phase of the report. The final table where the ingredients obtained from the canteen (Appendix 14) are presented in the left side, and the carbon footprint of the production phase on the right side from the lowest to the highest value is given below;

As shown in Table 1, meat products are the ones with the highest value and the root vegetables the lowest, where legumes and grain are in general, placed in the middle of the table. These values as mentioned in the methodology, depending on the database source, the place of production and other facts, that are presented in the following table 2 (more info available at Appendix 5) :

From the information in Table 2, we can see that the sources of the data and the countries where the production phase is taken for running the calculations are varied. Nevertheless, attempts were made to match the found country of origin provided by the canteen(which can be found in Appendix 14, with a country from available LC data in similar conditions or vicinity.

In this regards, not only this factor but also others can affect the results of the carbon footprint data obtained:

The use of two different libraries in SimaPro: Even though we reduced the number of libraries to two, it would have been a more accurate comparison if all the products/ingredients were available in just one, in

Ingredients	Kg CO2-eq /Kg of product
Beetroot	0,04
Carrots	0,09
White carrots	0,09
Tomato (Paste can)	0,12
Fish	0,14
Iceberg lettuce	0,15
Lollo rosa	0,15
Potato	0,18
Onion (red)	0,19
Courgette/Squash	0,25
Spinach	0,27
White cabbage	0,27
Red cabbage	0,28
Cauliflower	0,34
Fennel	0,37
Broccoli	0,40
Celery	0,40
Peas	0,62
White asparagus	0,74
Rice (Risotto)	0,81
Bread	0,83
Cherry tomato	1,01
Radish	1,04
Red beans	1,29
Lentils (Black)	1,51
Rice (Long-Grain)	1,82
Pasta	1,93
Rice (Short-Grain)	2,04
Bell pepper (red)	2,24
Mushrooms	2,50

Ingredients	Kg CO2-eq /Kg of product
Cucumber	2,79
Chickpeas	3,73
Eggplants	3,98
Pork	4,68
Salami	4,69
Serrano Ham	4,69
Chicken	6,47
Beef	17,30

# Table 1The carbon footprintof the production phase ofingredients
# Empirical Material

Table 2 Information about the data obtained., source:(Adewale, C. et al. 2016), \*\*(Werner et al., 2014), (Robinson, B. et al., 2019)

\*

Ingredients	Specific dataset used	Observations about data	Ingredients	Specific dataset used	Observations about data
Beetroot	Ecoinvent 3 (point of substitution, Unit)	Swiss production of sugar beet, field.	Bread	Ecoinvent 3 (point of substitution, Unit)	Wheat grain, modelled for Global.
Carrots	Ecoinvent 3 (point of substitution, Unit)	Netherlands production.	Cherry tomato	Ecoinvent 3 (point of substitution, Unit)	Netherlands regular tomato production, Greenhouse.
White carrots	Ecoinvent 3 (point of substitution, Unit)	Netherlands production.	Radish	Ecoinvent 3 (point of substitution, Unit)	Swiss field production.
Tomato (Pasta can)	Ecoinvent 3 (point of substitution, Unit)	Italian production of 1 kg of processing grade tomato.	Red beans	Agri-footprint- mass allocation	Netherlands, beans canned
Fish	Agri-footprint- mass allocation	Landed fish from the fishery, DK.	Lentils (Black)	Agri-footprint- mass allocation	Canadian production,
Iceberg lettuce	Ecoinvent 3 (point of substitution, Unit)	Swiss production, Greenhouse.	Rice (Long- Grain)	Ecoinvent 3 (point of substitution, Unit)	Indian production.
Lollo rosa	Ecoinvent 3 (point of	Swiss production, Greenhouse.	Pasta	Other, literature	Danish market info.**
Potato	Ecoinvent 3 (point of	Rest of the world database.	Rice (Short- Grain)	Ecoinvent 3 (point of substitution, Unit)	Rest of the world database.
Onion (red)	Ecoinvent 3 (point of	Netherlands production.	Bell pepper (red)	Ecoinvent 3 (point of substitution, Unit)	Swiss production, Greenhouse.
Courrentte (Courseh	Substitution, Unit)	Approxivative from literature *	Mushrooms	Other, literature	USA article.***
Courgetter Squash	Agri-footprint-mass	Approx. value from inerature.	Cucumber	Ecoinvent 3 (point of	Swiss production, Greenhouse.
Spinach	allocation	Netherlands production.		Agri-footprint- mass	
White cabbage	Ecoinvent 3 (point of	Swiss production, Greenhouse.	Chickpeas	allocation	Australian production.
Red cabbage	Ecoinvent 3 (point of substitution, Unit)	Swiss production, Greenhouse.	Eggplants	Ecoinvent 3 (point of substitution, Unit)	Swiss production, Greenhouse.
Cauliflower	Ecoinvent 3 (point of	Swiss production, Greenhouse.	Pork	Agri-footprint- mass allocation	Pig meat and co-products in the slaughterhouse, in the Netherlands.
Fennel	Ecoinvent 3 (point of	Swiss production, Greenhouse.	Salami	Agri-footprint- mass allocation	Pig meat and co-products in the slaughterhouse, in The Netherlands.
Broccoli	Ecoinvent 3 (point of	Swiss production, Greenhouse.	Serrano Ham	Agri-footprint- mass allocation	Pig meat and co-products in the slaughterhouse, in The Netherlands.
Celery	Ecoinvent 3 (point of	Swiss production, Greenhouse.	Chicken	Agri-footprint- mass allocation	Chicken meat and co-products in the slaughterhouse, in The Netherlands
Peas	Agri-footprint-mass allocation	German production.	Beef	Agri-footprint- mass allocation	Irish beef and co-products in the slaughterhouse, in Ireland.
White asparagus	Ecoinvent 3 (point of substitution, Unit)	French production.	_		
White asparagus	Ecoinvent 3 (point of substitution, Unit)	French production.			
Rice (Risotto)	Ecoinvent 3 (point of substitution, Unit)	Chinese production.			

# **Empirical Material**

order to have the same structure for calculations behind all the results. The use within the database of different places of production: The Ecoinvent 3 library, which was used as a source in the 65% of cases in our list, has most of the data based in Swiss production (methods, energy, land...). By having the same place as an analysis point in all the products, a better comparison of production processes within the different ingredients could have been performed. However, as explained before, our attempt while selecting the data to work with was to choose the closest country to the one in the product list.

**Human error:** When it comes to picking the closest or best data to perform the model, from SimaPro, literature or other libraries. There is a vast amount of possibilities and choices, that could have been more accurate for the purpose of the project if we have had a superior knowledge behind the program or the LCA performance.

**Data not found:** Despite the available amount of data mentioned, there is still a lot to research and to update on the libraries. The missing products we couldn't find at SimaPro were obtained from literature and in some cases, an approximation was made so it would fit the data that we had. Therefore, an error is made since the source, the processes and inputs in which the calculations are based are not the same.

As a conclusion in this section, different choices on the libraries and data sources would have led us to a different picture of the values on the table created. Nevertheless, in a general perspective on how we used this data (more info on the design phase), the deviation wouldn't affect the final outcome of the report. In fact, the data was used to inform and create awareness in a more visual way (colour scale), not as detailed which would have taken much more time and resources from the project.

# 5.6. Conclusion

The data presented and evaluated in this section will be analysed in the next chapter of the thesis. Interviews, observations, questionnaires, and databases have given us a better understanding of the canteen service context. We have a general understanding of its internal mechanisms or actions taken and opinions on the canteen and food served from various kinds of stakeholders and their different perspectives. This knowledge was necessary in order to develop and progress the direction of the project in a step by step fashion.

In the analysis, we will make sense of the data described in the PREVIOUS CHAPTER gathered with the used METHODS. The frameworks from the theory chapter will here be used to create a structure and explain the deeper mechanisms and opinions within the practice and interconnected actor network. We will first explain obstacles in connections of the actor network which should be resolved. Then we will present and explain the interconnected practice of lunching at the canteen from the combined observations and envision the three different styles for changing practices. We will then draw opportunities out of the images collected from the questionnaires and frame it into different levels of conscious consumptions. Finally, we create a foundation for a design thing that is relevant in the context of the canteen and can absorb various concerns of the identified key-actors.

# 6.1. The catering organisation, the client and the consumer

On a systemic level, creating awareness for local food consumption has stagnant features. Especially, the important actors found do not act in a quick pace towards sustainable issues, let alone local food consumption. The food system in the catering area is large and moves slow. This is both affected by socio-cultural drivers as well as technical ones. In order to clarify some of the obstacles, we present the investigated food system as an actor network that gives room for both technical and social influences on heterogeneous terms. An actor network of the system is represented in Figure 27 on the next page and further explained in the next subsections.

## 6.1.1. Technical obstacles

We found two technical objects in the network that slow down progress towards local food consumption. A contract is signed and agreed on by both the catering organisation and the client for a period between 3 and 5 years. In interviews on sustainable change, both parties (Aalborg University and Compass group) state this contract makes change not possible. On an example for replacing meat, the head chef said [having meat every day]*"is in the contract. Here in Aalborg University in Copenhagen we have the same contract as where the big university in Aalborg and also is in Esbjerg."* (Morten Pedersen, Appendix 8). The study environment responsible of AAU also discussed that students come with suggested changes but implementations are limited by the contract and concerns are brought on the table during the next redesign of this contract. Additionally, the contract is created for all the locations of the university with different interest groups. The catering organisation also states that clients, like the university, are final decision makers on this; [Amounts of organic produce] *"is governed by the client basically, but in many universities, we have at least a bronze certification."* (Kristofer Kjellman, Appendix 10).

Altogether, this contract has the agency to restrict possibilities of more radical consumer demands or restructuring the food provision towards local food consumption. However, the canteen staff has flexibility within the boundaries of the contract. In the past, the vegetarian dish was successfully introduced as 'extra dish' to serve consumer requests.

Another technical obstacle, more specifically for local food consumption, is the information on the origin, which we observed to travel on the packaging. It, therefore, travels a long distance as intended by the European Union to inform the consumer. However, at the canteen communicating this information of the origin of food becomes a lot of work in reading packages and writing down their origin. Additionally, catering organisations deal with many suppliers, who might have different styles of communicating information. Furthermore, there are even more ingredients, which are mixed to create a tasteful dish. In this sense, the amount of actors of one kind has a big agency in the communication of origin.

"... the meat maybe [and] the vegetable that is the easy part. but if it contains a lot of spices and other kinds of processed ingredients [tracking the origin of food is hard" (Nina Elomaa, Appendix 9)



## 6.1.2. Socio-cultural obstacles

On Socio-cultural aspects, there are also some obstacles that hinder a quick transition towards more sustainable or local food consumption. The absorption of information by consumers is one of them:

"There are a lot of things that people are not interested about. we try not to drown them in information" (Appendix 9). In line to this for the group that does give an interest: [The issue] "is the time and the attention that you can get. There so much ongoing and people are busy and how can you tell about your sustainability activities in an interesting way that reaches the consumers?" (Nina Elomaa, Appendix 9). Consumer themselves are quickly saturated and food or lunching is only a part of their everyday life in which sustainable issues play a role. Negative agency towards local food consumption could be allocated towards culture or contemporary society in general, filled with competing information.

In this extent, information can create a certain level of awareness, but a limited amount of information was communicated in the everyday setting. In the observed Compass group canteens, a general description of the dish with main ingredients was given and allergies were numbered and/or had to be inquired by the canteen staff. The website of the Compass group contains weekly information on the shifting main and accompanying side dish. The other used channel is Facebook where few posts were sent by the canteen (Facebook.com, 2019). On the other hand, nothing was sent by consumers on this channel either, as expressed by the head chef (Morten Pedersen, Appendix 8).

Thirdly, we found consumer preferences have priority over environmental issues and locality of products. This was found in our questionnaires, where both the majority of consumers at the university canteen and the two worksite canteens, gave taste and appearance the highest importance over health followed by environmental concerns and locally grown produce. This confirmed the challenge given by the strategic development director of Compass group on the appearance of food:

"[Compared to appealing waxed Argentinian apple] *There are Scandinavian* apples, they are smaller, they don't look that tasty, I know they are not sweet. I will go for that apple anyway and when we do that as a consumer we also move the demand and that demand also moves into the catering business, So we would stand with the same demand." (Kristofer Kjellman, Appendix 10).

This again shows the agency current priorities have but can be overcome by the agency of consumers that consciously demand local produce. Kristofer further elaborated that information is again key to understanding change in priorities and indirectly create awareness. *"We get a lot of comments on that*[selling Scandinavian apples], *then we also see why we have a big gap between what we actually do and what the consumers know we are actually doing because we are really aware of seasonality."* (Kristofer Kjellman, Appendix 10). This quote also shows the gap in communication from catering organisation to consumers and we additionally observed the only information shared at the Aalborg University canteen came from flyers on sustainable issues (food waste and food sourcing). Later we found out these flyers dated from 2015 confirming this gap.

Finally, the fact that a contract state that there has to be meat (or fish) on the menu every day at the Aalborg university canteen is a causality of the Danish culture where meat is seen as a standard part of a warm dish at lunch or dinner. However, consumption of excessive meat is also one of the most environmentally impactful parts in general food consumption (Willett et al., 2019). This issue was also raised by commercial director of the Danish catering organisation Meyers Adam Usman, who also confirmed meat is an inseparable part of the Danish food culture and has to be tackled. He added culture could not easily be changed and instead, Meyers focused on gastronomically dosing meat as toppings of a dish instead of the main ingredient.

Analysis



# 6.1.3. The importance of creating conscious consumption

Changing food culture and consumption behaviour is however ideally the solution to tackling the socio-cultural obstacles mentioned before and was confirmed by both Compass group as well as Fazer.

"...if you think that consumers and people need to consciously do the decision, the change is happening and people are more concerned and they are changing their behaviour, but on the other hand, I think sometimes it takes such a long time to truly change their behaviour so that it becomes the new habit and get rid of the old one." (Nina Elomaa Appendix 9)

"We probably can change a lot but the big impact would be in the long term, that is their daily purchases. That is how the consumers are empowered, this is restricted empowerment but when their go down to the local supermarket and what they buy from there. That is consumer power that is how change is done and that takes a lot from the society" (Kristofer Kjellman, Appendix 10).

Conscious consumption behaviour can lead to a triple bottom line sustainability impact as described before and consumers have power or agency to increase the process on sustainable development. The main problem is time to educate or let people adapt to new behaviour or habits and the catering organisations see this happening over a long term process. We, however, are of the opinion that this process of becoming a conscious consumer can be accelerated by intervening or changing in consumers daily habits or practices, by testing tools to create conscious awareness on the origin of food in Danish canteens. Every cultural change has to start with a first step.

# 6.2. Overview of the practice: Lunching at the canteen

In order to change current practices towards more sustainable ones, we mapped out the practice of lunching at the canteen (see Figure 28) according to practice theory's basic elements of skills, stuff and images as explained in the theory chapter. The map below shows the interconnected practice as derived from the observations (Appendix 4) from both the university and worksite canteens. The whole practice is divided into overlapping sub-practices for a better overview and to show the general consecutive steps an average consumer walks through. Additionally, within practices clusters of elements are linked and connected to other clusters, giving it visualizing the characteristics of complexity and interconnectivity. Elements are also given a distinct colour to get them apart and show that practice should have all three elements. The final goal of the map is to pinpoint to the opportunities or sub-practices to change the practice as a whole.

First, however, we will briefly describe the parts of the map for clarity. Starting with the general steps of the practice and ending with giving some estimations for the interlocked practices based on observations.

## 6.2.1. Recrafting Lunching at the canteen

One way to change practice is to see where different elements could be changed, which on their turn affect others because of their interconnective character. When recrafting the current practice of lunching at the canteen, you can search for different elements that are either widely spread through the practice or are functional to change.

Utensil and the skill of carrying utensil around is an example of elements that cover almost the whole practice and changing or adapting it could, therefore, have an effective impact more conscious consumption. In the length of this, Food itself also covers multiple sub-practices also being observed, tasted, judged etc. These elements seem obvious and simple, but practice theory is about exposing these "mundane" routines and envisioning new scenarios or designs to create a more desirable practice (Kimbell, 2012; Kuijer and De Jong, 2011; Pfeiffer et al., 2017). One can imagine changing the utensils for new stuff has a big impact on the whole practice and the same can be said for the skills that change in carrying the utensils as well as new images connecting to this. More concretely embedding information on a specific piece of utensil like an awareness creating text on the plate can create awareness by the user looking at it. During the navigating through the canteen, the consumer can be reminded of his sustainable impact during consumption. The same style can be applied to different food sections where information on the origin of food could be provided on the side of the serving bowls. In this way, repetition of information or other awareness sparking elements can change the practice towards more conscious consumption.

Another way to recraft practices is by looking at elements that are functional to add new elements on to or change internally. The skill of 'standing in the waiting line' is such an element where the consumer has space for extra awareness generating skills or the creation of new images. One example could be a strategically placed infographic to read while still performing the skill. This might even replace the currently observed image of 'standing in the waiting line is tiresome'. Similarly, the whole sub-practice of 'eating and drinking' is relatively long compared to the others and consumers are stationary and part of them have spare time. Introducing strategic communication methods/elements that are suited to the context of the sub-practice could be an efficient way to recraft a local conscious practice.

## 6.2.2. Substituting Lunching at the canteen

In theory, we could also substitute the whole current practice altogether with more local oriented practice of lunching. Although the data gained from observations is limited for envisioning it, we could look at other trends happening at the consumer level. Especially at Aalborg University we know and observed a significant amount of consumers not consuming (daily) food from the canteen, but bring their own. We could therefore also focus our attention on designing or encouraging a system for local food consumption that includes consumers getting local food from other sources like a local bakery or greengrocer or snack bar. In the past, we have also noticed food trucks coming at the campus site on special occasions. Focusing on this target group could also lead to opportunities in increasing conscious consumption. This, however, doesn't hold for the arranged buffet at the worksite of Mikado house where food is already paid for by the employer/client and changing provider makes no sense financially. No further data could provide us any direct clues on how to substitute the practice at this worksite.

# 6.2.3. Interlocked practices to Lunching at the canteen

Some data was observed on interlocked practices as illustrated in Figure 28. There are however differences in these other practices between the university and worksite. At university, studying is connected to lunching as well as the connection to eating/preparing food at home. at the worksite, working was the mainly observed enveloping the lunch practice.

At the university, we could continue on the event of bringing one's own lunch and it is common that these eat together with canteen consumers. Both probably might (subconsciously) influence each other in appealing

towards canteen food or homemade food. The option of bringing one's own food from home influences the practice of lunching at the canteen, perhaps one sign of this, is the majority of the consumers taking their time to select a qualitative meal.

Another event taking place is the relation to work or study. One example from the observations was a woman guiding clearly foreign visitors (Including a woman with children) through the canteen, making it her work connected to the canteen and the lunching practice. Personally, we observed frequent conferences and events happening during lunch where food is hosted by the canteen and organised by AAU staff as part of their job. Additionally, students were also observed to work while eating. Some were eating in front of the laptop and/or discussing study matters or projects.

At the worksite, we observed a division between groups of calm colleagues and busy individuals showing opportunities for different approaches. Groups with more time might come to disconnect from work and relax with 'good food'. Additionally, the observations revealed that inside an initial group, members tend to copy choices of areas visited, food served or hands cleaned. Therefore there is a mix of enjoyment/comfort and a group feeling. An implicit image could be that lunching should be fun and social and therefore new practices or practice interventions should incorporate this. Communicating information thus might have an element of being interesting, not stressful and share with others (colleagues). This also overlaps with University consumers getting quality canteen food and wanting to enjoy it.

For busy individuals, working is still a practice done besides lunching and might still have priority. Therefor lunching might have a different image like 'lunching should be practical and is a necessary activity done to prevent future hunger feelings'. Changing the practice should, therefore, take into account different aspects such as practicality and efficiency. For even though canonically lunching should disconnect one from work for more energy later on, non-canonical they are still focused on work because of influences from the worksite.

# 6.3. Opportunities for change of practice

Via the questionnaires, in three canteens we gained more insights in the images surrounding the practice. Especially, the notes where participants could write freely about their preferences and ideas on food and the canteen were interesting as insights for the current situation of the lunching at the canteen. Related to conscious consumption we grouped these notes of images into different categories of consciousness.

The categories of consciousness we derived from both a book chapter on cognitive science on consciousness (Dehaene, 2008) as well as an article on sustainable consumption behaviour (Sharma and Jha, 2017).

For cognitive conscious three stages are explained Subliminal processing which is a state of mind "*...within multiple sensory, semantic, executive, and motor networks*" but without reaching the full weighted decision. (Dehaene, 2008, p.44). So it is unconscious decision making driven from senses and automated action.

Nonconscious processing comes down to a state of preconsciousness or conscious focus being (partially) blocked by other processes in the brain. Conscious access is a dynamic state of the mind *"The sensory representation of the stimulus can thus be maintained online and be used for higher-level"* 

executive processes, such as reasoning and decision making." (Dehaene, 2008, p.45).

Because the second stage is a temporary or transitory one, it is not valid in a longer-term process like the lunching practice. The other two, however, represent consciousness as a state-controlled either by sensory impulses or by cognitive thinking. We will use the simplified terms of 'unconscious decisions' and 'conscious consumption'. The difference can be made clear by two quotes from the QUESTIONNAIRE AT AAU CPH CANTEEN (Appendix 13);

*"I was hungry"* (Appendix 13) the choice for getting food is sensory driven, A feeling of hunger. So, it falls under unconscious decisions.

*"I want to eat more vegetables"* (Appendix 13) this choice, however, is more focused on a planned diet to consume more vegetables, assumably for health or environmental benefits. This under the category conscious consumption.

There were, however, statements that were not based on sensory impulses nor fully intentional thoughts. One example is *"I always choose a sandwich"* (Appendix 13) Here, the participant once planned to choose sandwiches during his/her practice, however now there is the possibility of not always being fully aware of the choices for a sandwich compared to other dishes available. Instead, it has become a habit or standard

#### behaviour.

In order to get a clearer distinction between sensory, cognitive and routines we introduce another 'criterium' for dividing images for conscious consumption, which is (personal/cultural) values. Sharma and Jha (2017) explain sustainable consumption behaviour (SCB) is guided by values and after their survey on this matter in India, they divided SCB into three levels. The first level contained sustainable behaviour the majority did, but people did not attach values to them. The third level however with significant activities, a majority was practising also raised multiple values to it. Sharma and Jha (2017) use Schwartz widely adopted definition of values as *"the concepts or beliefs about desirable end states or behaviour and events and are ordered by relative importance"* (p.78)

"Personal values were measured using the 21-item version of the Portrait Values Scale by Schwartz, 1994, Schwartz, 2003. The scale measures ten basic human values: power, achievement, benevolence, conformity, hedonism, self-direction, security, universalism, stimulation and tradition." (Verbeke et al., 2011, p. 620)

Here we assume that created routinised consumption behaviour is based on personal/cultural value(s), which is not necessarily consciously thought of in every lunching process. This creates a third middle category Subconscious values. Additionally, we acknowledge that all fully conscious decisions have values behind them.

In LEVELS OF CONSCIOUSNESS IN IMAGES, we created an overview of all the written opinions or images participants gave via the online questionnaire. In the next sub-chapter, we will compare different canteens

and levels of consciousness.

# 6.3.1. Insights in Comparison of the images in different canteens

First of all, there are some similarities and clear discourse in the decision making at all three canteens and some are also supported by the fixed answers of the questionnaires. Below we will sum these up and end with a conclusion on the state of the images around lunching at the canteen.

#### Unconscious decisions

Unconscious decisions in all canteens involved choices on personal taste. People choose because they like the food that is presented and all canteens have a variety of options. Additionally, in the canteens where consumers had to pay, choices were made and ideas were raised for efficient and practical consumption. Participants choose quick food options and raised issues around price. On the contrary, in the company-paid buffet at Mikado house, multiple participants raised issues on the quality of food or desires for more food options. This also reflects in the numbers on expressed satisfaction on consumers' food preferences where Mikado House expressed the lowest average satisfaction levels. We can, therefore, argue that the prepaid buffet also made consumers most food critical.

#### Subconscious values

For subconscious values, the structured habit was a general theme in all canteens. Additionally, University and Mikado house consumers expressed their desire for more creative or new dishes. At Lyngbyvej, none of the 16 participants raised this question and one raised an opposite idea for the canteen *"A fixed small menu with a small salad, a little dish and a piece of bread"* (Questionnaire Private sector, Appendix 12,).

The reason for this might be the offers being sufficiently diverse already having two daily changing dishes(one vegetarian, one meat dish) or it could be about it's fixed price per dish paying system. Lyngby consumers expressed the highest satisfaction on having their food preferences fulfilled.

### **Conscious consumption**

For conscious consumption, participants at all three canteens raised subjects around a balanced and healthy diet with a relatively high amount of participants claiming it to be an important reason for choosing their general diet. In the fixed answers this came always after taste and/or equal to appearance. This also is a slight reconfirmation of the success of past Danish activities on promotion of eating healthy with more vegetables and fruit. Variety of food consumed was also a related subject expressed in all three canteens.

Additionally, in all canteens, there were one or two participants raising the subject of environmental concerns in food consumption although all were expressed on the question of their general diet and none when asked the first question on considerations of the current food on their plate. Vegetarian and vegan subjects were also discussed in all three canteens, by a few people. From the fixed answers we could further conclude that 12% of AAU CPH consumers was vegetarian, 12.5% of the Lyngby consumers was and 30% of the Mikado House consumers was. However, 60%/50%/50% of all consumers respectively choose a lunch dish with meat in it.

Curiously, lack of information on the food was an issue raised only in the university canteen by three participants. It was also reconfirmed by the fixed question, on satisfaction on information received, where AAU CPH consumer expressed to gain the least amount of information they

need. In other canteens, participants expressed high numbers on always (62,%/55%) or most of the time (25%/40%). At Mikado house, one person even expressed to appreciate that information on food could be obtained from the staff. At this site, the staff was also observed to be out of the kitchen and serve consumers food directly and open for interaction. Finally, from fixed questions alone we could conclude that priorities on locally grown food were low or non-existent. At the university, more than half of the participants expressed slight importance and another 11 out of 33 expressed it to be not important. Similar priorities were given at the working site canteens the only difference being one Lyngby participant expressing locally grown to be highly important and two at Mikado House. With this we can see that locally grown is not a mainstream subject and at the canteen, it is even non-existent and not part of the practice or consideration of it.

Concluding, the main themes of conscious or value driven motivations raised are Health, variation and creativity and environmental concern. However, in the majority of the situations and especially on choosing on a daily basis environmental concerns let alone locality are not considered. Instead, locality needs to compete or align with healthiness and primary unconscious decisions like taste and appearance and demand for variety and creativity or diversity in food.

## 6.3.2. Archival insights

Although from the consumer side there is no direct support for locality or expressed need for transparency, we did find some insights from archival data from the catering industry and sometimes supported/confirmed in carried out interviews.

The bigger catering organisations of Fazer and Compass group dedicated

themselves to a connected issue they call "sustainable sourcing" or "Seasonal sourcing" respectively (Fazer Group, n.d.; Compass Group. n.d.). In an interview with the Sustainability director of Fazer, she claimed the organisation just dedicated itself to 100% sustainable sourced products by 2030. Nina Elomaa 2019 (Appendix 9) Which their website explained to be focused on working with sustainable production internationally "100 % sustainable palm oil, cocoa and soy" production, but also locally "only use sustainable cage-free eggs" and "Commitment to the Baltic Sea Action Group concerning circular economy, sustainable grain farming, water stewardship plan and offering development". Additionally, they show devotion to seasonality "Taking sustainability into consideration when planning our menus, for example by working with seasonal ingredients" (Fazer Food Services b., n.d.). Additionally, Fazer's Corporate responsibility review 2017 states multiple subjects that align with our subject on origin of food, like Transparency, Origin, Traceability, Sustainable farming and Awareness. (Fazer food services, 2017)

Fazer further elaborates on the transparency as well with current focus and goals like: *"Transparently communicating with stakeholders about topics related to health and well-being"* And inside their value chain: *"Constantly improving the level of responsibility and strengthening cooperation in the value chain", "Improving traceability in the value chain and securing food quality and safety"* and from 2018 on *"Continuing the use of seasonal and second grade fruit and vegetables in our restaurants..."* On the environmental issue, they finally also state: *"Supporting sustainable farming and preventing loss of biodiversity"* and also *"Raising environmental awareness"*.

Hence Fazer does provide indirect arguments for creating transparency on the origin of food and involves both their supply chain as well as the consumers in this matter. Seasonality is also connected to this cause, by managing locally grown produce in an efficient way.

The Compass group also dedicates itself to "Sourcing fresh seasonal produce" and "Reducing food transportation by using local, seasonal produce" next to multiple other goals on their website (Compass Group, n.d.). Further, they elaborate in their Global 'Corporate responsibility report 2018' the following: "It is our goal to serve our consumers the best quality food from known sources and to make procurement choices that protect the environment and respect human rights." (Compass-group.com, 2018). Hence Compass group also states to focus on social aspects surrounding the origins of food production.

Additionally, we have been introduced by the strategic development director and the related director of operations to a new food movement raised by Chartwells (daughter company of Compass group) called Urban nomad food movement, which involves around a food stand at university canteens. Here excited and knowledgeable chefs cook a dish on demand for customers and engage with them and even create the movement with the customers. This movement also explicitly stated chefs have knowledge on the origin of food.

Finally, Meyers stated not to have a Corporate responsibility report for holistic sustainable aspect surrounding the food industry were interconnected with their style of serving food. They do however also state on their website that at the catering branch:

"We prioritise products from Denmark or the Nordic region and we primarily use Danish meat with a high focus on animal welfare. All of our vegetables are fresh and are chosen with a high focus on ecology and flour, grains and cereals are always organic." (Meyers mad a., n.d.)

Finally, Claus Meyers was also one of the initiators of the New Nordic cuisine (or food) movement, which has a great focus on (Nordic) regional

food, seasonality and promotion of Nordic food (Meyers mad b., n.d.). The offspring result of a new Nordic diet is also focused on local produce and which on adaptation would cause a 5% reduction in Greenhouse gas emissions compared to the average Danish diet (Saxe et al., 2013).

## 6.3.3. Current strategies of the industry

As explained in the theory, a lot of development has been done in the catering industry in regards to nudging methods. These methods have shown positive results in changing the public's consumption behaviour towards healthier diets and also other subjects. The interview catering organisations also express the value of these methods.

[one of Fazer's methods] *"in the canteens is the nudging method .... we have tried and tested in certain canteens how can we make people eat more plant based and there have been positive results"* (Nina Elomaa, Appendix 9)

"...instead of just having buffets, we do something we called small wonders. we have different ways of cooking in small portions so if you take a bowl on your plate it actually feels a little and then maybe you take 2 of them which almost fill your plate but actually with very little food and is a very tasty cook and everything is in place" (Kristoffer Kjellman, Appendix 10)

The Sustainability director also explained nudging methods to be superior to the current awareness creating activities: *"Nudging is a method we have been applying so it stands beyond conscious behaviour, that you can change and is very interesting see that it works".* (Nina Elomaa, Appendix 9). Here we, however, differ from the catering organisations opinions. Although we do acknowledge the positive results nudging has on sustainable/healthier consumption, we see it as a practical approach with no long term impact. Hence these methods are not creating a

# The design thing: Create a Recipe



deeper understanding at a consumer level and thus also not creating acceptance for larger changes in served food or raise in fair prices. The should therefore not be seen as the most effective or prioritized method to go with.

Fortunately, catering organisations also do focus on awareness creation. Fazer does this in a style where the consumer is fed little pieces of information on a continuous note and with a positive tonality: *"I think it is more how to reach the consumer in a positive way where people don't get the feeling that somebody is now pushing but is more focused on 'this is a good thing' and 'we can do it',"* (Nina Elomaa, Appendix 9). Compass group, on the other hand, has a style that is based around periodic awareness campaigns: *"We try to do 4 campaign every year, now this year we'll do 3 plus 'stop food waste day' where we are also trying to educate our audience."* (Kristoffer Kjellman, Appendix 10)

# 6.4. A design thing to encourage of local food consumption

To conclude the analysis, we present requirements for a design thing that will be able to let actors speak about their concerns towards more local food consumption. We here summarize the key aspects discussed in this chapter and prepare a comprehensible fundament for the iterative design phase in the next chapter. We also created a visual summary of the design thing (see Figure 29).

Here the context of the actor network is mostly based on the information from the Aalborg University canteen. We gained most of the information from this canteen, we have most insights in how to draw resources from this context (How/when to get consumers to speak, how/when to approach canteen staff? etc.) and with the context close by we could iterate faster than in other canteens. We do however acknowledge that this context nor any other single canteen can represent fully the consumer in general in the canteen.

## 6.4.1. The identities of key actors

In the 'preliminary' research we came across five actors we deem relevant to design with in order to create insights on how information on the origin of food can create sustainable consumption behaviour. These actors are; the catering organisation (Compass group), the Client (Aalborg University), Consumers (Customers at the AAU Canteen), Canteen staff (at the Aalborg university canteen) and Local food consumption (as desired practice represented by us as researchers).

### The catering organisation

The catering organisation has ambitions and goals towards local food consumption, be it indirect via connected locality seasonality and sustainable sourcing. It also wants to empower consumers and make them more aware, currently via four temporary campaigns per year. These campaigns can be oriented to local food consumption and this actor has an influence on how the information on the origin of food is moved through the supply chain and we assume the catering organisation can direct information towards the consumer if resources are put in. We also assume this actor has most of the control over changing the practice as it is, changing elements like utensils or introduce/remove elements/ sub-practices. It is also the only actor that has a direct relationship to all other actors and we see it as the managerial/course setting part of the organisation compared to canteen staff which is deemed the practical

oriented part.

### The client

The client is mainly related to the contract and translating the consumers' (staff and students) wishes into it for a long period of time, additionally, the actor also demands costs and in the current situation costs for food don't have a high priority. Furthermore, the local part in Copenhagen (with a minority of members) has to negotiate internally with the whole, where interests are different and less environmentally oriented. The local part is, however, open to feedback from staff and students and will bring it to the table in the discussion of the new contract.

### The consumers

The consumers have express little interest in local food consumption in the current situation. They have other priorities and value their present food culture, however, in the character of openness, it is important to keep in mind that there is diversity. There is a niche of consumers that does give significant importance to environmental issues and importance to locality. Additionally, we observed consumers who want to relax and have quality food with spare time and those who want a quick practical meal and continue work. We also inquired 12% being vegetarians and 40% of consumers eating no meat. The consumers at Aalborg University also raised the issue of not getting the information about their food the most and desired more creativity and diverse food, which we deem valuable insights for a design process towards conscious local food consumption.

### The canteen staff

This actor is the least discussed in the analysis but is, however, an important actor for creating changes towards local food consumption for they are the ones creating the local produce into an appealing, tasty and healthy dish and order the product. Practically, they are also the ones closed to sense the economic impact of changes towards local food consumption and are tasked by the catering organisation to keep making a profit. We know they are open for receiving inspiration for dishes to make and thus open for consumer inputs. The consumers also talk to the staff sporadically and have the right to ask for allergies and content of the food. The head chef and later staff did explain that they have limited resources to spend on non cooking activities, like long interactions with consumers/researchers or documenting origins of produce.

### The local food consumption

The local food consumption is the only non-human actor in our list and is indirectly supported by the European Union by demanding information on the country of origin of ingredients and encouraging local food systems, It is also presented as a goal by multiple catering organisations and with sustainable benefits as explained in the state of the art. We, therefore, feel like interest at the consumer level needs to be raised to start a network wide change. For it to manifest, the interest of the consumer needs to be raised and information on origin needs to travel to the consumer to at least be aware of the distances food travels. We will let data gathered be the representation of this non-human actor derived archival and scientific research, environmental databases as well as information on products gained from AAU CPH canteen staff. We do acknowledge, we as researchers process this data towards other actors and can't avoid distortion in communication.

# 6.4.2. Outline the networking nature of the design thing

Across the actors, the ability should be given to express concerns and ideas on our findings and assumptions that are summarised just above. In the DESIGN SOLUTION chapter, the process towards one concrete design thing will be explained, here we already give an outline of what it fundamentally should have to develop and navigate in the network. In Figure 29., you can see the design thing as 'the creation of recipe' as envisioned in the network.

We deem the networking nature of the design thing to depend on the qualities of an object for knowledge sharing like the boundary object. This requires the design thing to have a shared understandable language. All actors should be able to talk about it with vocabulary or symbolism that they understand and can express. In our case, we found the elements for creating a recipe are a suitable vocabulary, for they are comprehensible terms for all people. Food professionals can give technical details like contract restrictions and costs and consumers and clients can talk about terms they like, such as preferences and images. For each part of the recipe then technical or subjective information can be inscribed and transferred to other actors to make them understand actor-specific restrictions and viewpoints. Additionally, all different actors should be able to shape and add parts of the recipe, be it ingredients, cooking methods, environmental information, price. etc.

## 6.4.3. How can the design thing be iterative?

The design thing should evolve over time and requires all actors to

add their concerns to it. We decided to do this in a sequential fashion for quick iteration in an area where actors are busy (as expressed by the canteen staff and part of the consumers). This does, however, mean we need to keep an open attitude and refrain from prioritizing one actor over the other and even though there will be contradictions in the concerns we document them regardless as much as possible (Like the modern Actor network mapping explains) to create most updated insights at the end of the process. Additionally, the process should also still involve the practice oriented change and a goal of envisioning this change suitable to the observed practice. We keep in mind that the design thing is one out of many solutions to change the practice.

# 6.5. Conclusion

With all insights from the analysis, we had the preparations to engage into a Design phase. We were able to do so, due to the visual overview of both connections in the causal actor network as well as the sequential practice of lunching at the canteen. The various concerns, goals and opinions of catering organisations, canteen staff and consumers provided us with enough information to initiate a strategy to persuade the whole network towards more conscious local food consumption. The foundation for the design thing also helps to give context relevant requirements/restrictions to design with the network and gain more insights.

From analysing the systemic properties, the involved actors and the core elements of Lunching at the canteen practice, we now transition into a design phase. Here the gathered knowledge can be converted into a concrete design thing as described in the analysis. To repeat, 'the design thing is defined as the material manifestation of a certain question for the public(or the network) which needs to be kept open for discussion and where every actor can point out their concerns on the question and so continuously develop the object'. In this design phase, we experiment with our design thing in the network of the catering organisation, the client, the canteen staff, the consumers and local food consumption. We proceed in an open and sequential iterative fashion as prescribe by Storni (2015). Yet, in order to incorporate the practice theory beyond visualising "what is and was" (Kuijer and De Jong, 2011, p.6), we want to emphasise on intervening in the normality of a practice in the design context (Kuijer,2013; Pettersen 2015). The Practice-oriented design (POD) approach will give us the structure to do so as explained in the theory.

This chapter describes our journey through experimentation and design stages at the AAU-CPH canteen context(See also Figure 30). We will explain the stages that the design project has gone through for designing an intervention and reflect upon our approach to persuade the network towards a more sustainable practice with the use of the origin of food.



# 7.1. Deconstructing: Boundaries and opportunities

We observed technical and socio-cultural obstacles in our analysis, that initially shaped the context of our design thing. The conditions of a binding contract, already limited some possibilities to radically change the practice or the food served or the price specifically. Therefore we need to design within the parameters of the current context. Similarly, we need to capture the origin of food before it is disposed at the canteen site. We also found a gap in communication between the catering organisation and the consumers, which needs to be bridged and personal and cultural acceptance for local food which needs to be generated or encourages.

On the other hand, opportunities are found. The whole sub-practice of 'eating and drinking' is relatively long in time compared to the others and so consumers might be more receptive to information. Even though they have expressed little interested in local food matters, the consumers have other priorities and values related to their present food culture, such as desiring inspiring food and some express to have environmental concerns. This presents an opportunity for consumers to be introduced to new elements that are suited for the context of the sub-practice and re-shape their images effectively. The consumers at Aalborg University's canteen raised the issue of not getting the information about their food the most and desired more creativity and diverse food, which we deem valuable insights for a design process towards conscious local food consumption.

The canteen staff is a powerful actor for creating changes in local food consumption. In previous occasions, matters like the lack of a vegetarian dish had been brought to the canteen and within boundaries of policies and the contract they successfully implemented the vegetarian dish (with a reduction in meat dishes served, derived from our questionnaire). They were willing to collaborate by exchanging information in our attempt to enrol them in our design process. However, participation was not possible as the canteen had limited resources for non-operational or cooking activities. They did tell us to be open for receiving inspiration for dishes to make and thus open for consumer inputs.

# 7.2. Deviating: Envisioning strategies to change the practice at the AAU-CPH canteen

Departing from the boundaries and opportunities of the previous stage, we tried to see what strategies can be used to deviate from the current practice and go towards one which can incorporate local food consumption. Besides the foundation of the design thing from our analysis, we drew inspiration from the different strategies identified in the state of the art of this research to envision change (See state of the art strategies; also Appendix 2). These referenced strategies were enlisted in preparation for mapping in an affinity diagram style (Holtzblatt and Beyer, 1997). The goal of this technique is to find higher relationships from grouping similar strategies we came across earlier in the research process that could influence consumers images around local food consumption and fit into the design process. The identified relations were categorized under themes that allowed a systemic perspective for managing operational illustrated in Figure 31 below.

Additionally, we deemed more strategies to be possible and desired for

# *Figure 31* Deviating strategies for local food consumption from literature



diversity and security of choosing the one most suitable to our goal and context. The strategies found in the literature strategies gave us new insights for ways to change the lunching at the canteen practice. Still, we decided to add our own ideas that have been sparked throughout the research as well as the ones conceived in a small brainstorm session after the initial affinity diagram. The outcome of the deviation stage was a list with 30 possible ideas to build upon for changing the present lunching at the canteen (Appendix 15).

# 7.3. Design: Conceptualization and Synthesis

We continued to frame and focus our design thing, once insights from the deconstruction and deviating stages were generated. An initial step was the creation of a set of design criteria for a suitable design thing. This set of criteria was a mix of the team's ambitions with the necessities gathered from the field and literature research:

- The design thing needs to be participatory, the idea should not be fixed by the designer alone. It should have the ability to evolve through iterations in the process.

- The design thing should enable people to change the object to their needs.

- The design thing must deliver information for consumers, intended for environmental impact on locality and origin of food.

- The design thing needs to be designed in order to be integrated into the practice, the interaction between the consumer and the concept needs to happen naturally.

- The design thing must be engaging and appealing for participants to perform or interact with it.

This set of criteria also allowed us to assess where each of the 30 ideas was rated by assigning 1 point according to each fulfilled criteria. Only the ideas with a score of 4 or 5 out of 5 moved to the next stage. This voting reduced the list to a total of 7 ideas that were conceptualized. Each of these concepts was written down in detail by means of the previous criteria. A final decision for the best suiting design thing was made based on personal intuition and feasibility of the concepts.



The decision fell on the boundary cooking challenge (see Figure 32 and Table 3). This concept had the quality that involved around the creation of a recipe. We found a number of consumers talking about the desire to change or get inspiring dishes at the canteen. At the same time, the canteen staff stated to be welcoming inspirational recipes from consumers and the food sections and the food itself also played a big role in the observed practice. Intuitively, we deemed food to be an engaging topic. Our intuition was confirmed by the strategic development direct of Compass group: *"If you don't have anything else to talk about you can always talk about the food in the canteen, that's a good collection point."* (Kristofer Kjellman 2019, Appendix 10). A 'challenge' element was added to create a playful and casual attitude around the design.

Criteria	Description		
Participatory	This concept engages people in their everyday lunch practice and should give them a voice by enabling them to give their dietary preferences and being able to steer the project.		
Enable people to change	By starting a discussion and making people create their preferred recipes in a place where they commonly talk as well, they might change/exchange of ideas and become more aware of the origin of a specific ingredient.		
Deliver information	Information is delivered in steps, first in small amounts to get consumers interested and more info is available if they actively search for it on the back of the circle.		
Integrated into the practice	The concepts are present in the eating and drinking part of the practice and the desired effect is also present in selecting and obtaining food once there is a dish dedicated to the recipe created by one of the consumers.		
Engage people	There are different levels of engagement for people. Just checking out the object, already has a small impact of creating awareness. Professional/appealing aesthetics are thus important. Then people can create a recipe and read and discuss ingredients in detail.		

Table 3 Boundary cooking challenge criteria

The first intention for our design thing was to support an independent debate around what different actors want and can/should locally get. After that, ingredients will be shared with the canteen staff to make a recipe. In order to achieve these features a design prototype must include:

- A variety of ingredients available in the canteen.

- A challenge of creating a recipe that can easily be shared with the kitchen staff.

- Engaging elements that catch participants attention.

- Inform and encourage participants since they don't necessarily pose the required knowledge or intrinsic motivation to start a discussion of their own about food and sustainability or locality.

- A comprehensible unit to express and discuss the environmental impact.

- Needs to make consumers aware of what they are eating.

- It should include the possibility of enact one local dish in the canteen.

# 7.4. Design: Prototyping

In order to experiment with different actors and mainly the consumers a prototype was made representing the design thing around 'creating a recipe for the canteen'. Techniques such as sketching and creating simple models helped us to materialise the concept into a physical object (see Figure 33). This encouraged to feedback and explain the relevance of our design thing for the canteen staff and a participatory design expert.

We consulted the design expert outside of the network, to create a more democratic prototype that actors would engage on. Her first recommendation was to switch from a design thing for intuitive

independent engagement by participants into facilitating the process of our intervention. Being in the middle of the interactions, we could get more and better qualitative data. Participants would also be more engaged by guiding them through the interaction with the thing. We could catalyse a discussion by facilitating different steps of explaining the design thing. This would be impossible or hard to do with consumers that were found not interested in locality or environment concerns. Additionally, she recommended creating a 'recipe book' collected from all the practitioners and give it to the canteen staff as plural inspiration. Then with the help of the canteen staff, one recipe could be created and noted by the participants. (See Appendix 16)



Figure 33 open and innitial sketches

## 7.4.1 The proto design thing

We were able to create a physical and sensemaking prototype with the initial knowledge gathered from multiple sources. Next to feedback from the participatory design expert and a canteen staff member, we also gathered information on the ingredients made available by the staff and environmental impact data from the Database SimaPro (See empirical material). All this knowledge built a foundation for a design thing that was embedded into the real-life context of the practice and that would make sense to consumers.

The design thing's main function is to subtly create consciousness about the origin of foods consumed during lunch, by letting consumers talk about recipes they'd like to eat. In order to manifest recipes, we drew inspiration from "exploratory design games" which give both the consumer and designer chance to raise issues on the design or in our case creation of a recipe. As games imply, it is a playful environment where participants can get in and out of the ordinary creative setting and are empowered to explore different ideas. Among other things, they should feel empowered to add and change outcomes (Brandt et al., 2008). Hence, this characteristic is a powerful quality in our design thing that let the participant casually contribute on equal terms as the designer or other actors before him/her like the canteen staff.

In order to do so, we created a couple of game elements that help with the creation of a recipe. The game elements are; a board on which the recipe can manifest, circled disks with raw ingredients that make up the recipe, triangled pieces for condiments to give the recipe extra taste, and rectangular pieces for cooking methods to explain how to prepare the recipe (See also Figure 34 and Figure 35). During the design game, we asked the participants in multiple steps to put, at least, one of each game elements to create a full recipe that they would like to send to



*Figure 34 Game elements* 



*Figure 35 Design game: Create your own recipe* 

the canteen. The canteen staff explained to create recipes out of their heads, so these four elements should be enough as inspiration for the creation of a dish out of the submitted recipe. These elements should also be recognisable for consumers, as we assume the large majority of them has some know-how on cooking and preference for ingredients and condiments.

The focus in the design game is on the circles with the ingredients, which should be the main subject of discussion. We considered the ingredients as the part in the game that indicates the environmental impact of the recipe. We created 40 circles (tokens) with a specific ingredient each, which was noted to be present at the canteen. Each circle has a top side with a picture and the name of the ingredient. On the bottom side of the piece, information is presented to educate consumers about the actual origin of the ingredient, a derived carbon footprint indicator of production, a derived kilometres of transport and local seasonality on their impact. This information we see as the initiator of creating awareness, via a quick and simple scale for transport and production indicators and symbols for seasonality as well as the name of the country of origin (See Figure 36). With multiple ingredients and their information, participants can compare them to one another and make decisions based on both personal taste and environmental impact.

The two scales for production and transportation have been researched and compressed in two simple graphics. The first scale represents the production impact on climate change measured by means of carbon footprint. As explained in the empirical material, data on a CO2 equivalent per kg was obtained from the database Simapro for multiple ingredients found to be used in the AAU-CPH canteen (Appendix 5). The second scale represents the distance ingredients have travelled from their current place of origin. This distance is categorised in four areas each with a further distance from a Nordic city as derived from Carlssonkanyama, Ekstro and Shanahan (2003). Data in both scales ranged and segmented by colours. In the red spectrum of the scale we can classify the most harmful aspects of ingredients and in dark green the least harmful aspects and thus recommended. The data was used to inform and create quick awareness in a more visual way (colour scale).

The other elements are were added in order to create a realistic recipe and add taste and style to it. The six cooking methods, as explained by the canteen staff, are the ones they have access to. The condiments are also derived from the list of foodstuff provided by the canteen staff and are a used part of the recipe to create extra taste. Although some environmental data was found on these condiments, they were left out to keep the focus on the main environmental impact of the ingredients. The board had guiding circles, triangles and rectangles to guide the participant to add on of each element on the board and mainly restrict the number of ingredients used to six. We would also always have blank game elements for ingredients and condiment for participants not to limit their creativity. In this way, we expect to expand the value and interest of the design thing to the consumers. *Figure 36 Production environmental impact, traveled distance scales and seasonal information.* 

## **Production footprint**



## **Transportation Distance**



# 7.5. Design: Experimentation and Reflection

After the setup of the design game, we started an iterative process to test it with consumers. Interactions for testing its qualities were made in a guided discussion as well as creating awareness for local concerns (see Figure 37). Our first aim was to conduct a design game with multiple actors at once such as canteen staff, consumers and university representatives. However, as explained before, canteen staff had limited resources and could not participate. In order to respond to the design's main objectives, we adopted the intermediary object characteristic. The practical restrictions from the canteen were already obtained at that point of time and embedded into the design game. In the next sequence, we could fully devote our approach to consumers and use the same design game to engage the client. In this way, actors in different knowledge boundaries will be still able to embed their concerns into the design thing.

In Figure 38 the process of the design game workshop is explained. In total, we conducted 11 sessions, where we invited individuals or groups of 2 or 3 participants per session and facilitated the design game for them. During lunchtime, consumers were directly asked to participate in the canteen area or an appointment was created upfront. By conducting the workshop during the lunchtime we allowed consumers to have a scenario where they could reflect on the impact of experience while performing the regular practice, lunching (Scott et al., 2012). Spaargaren et al. (2013) also found this aspect to be important in their practice-changing experiment in the lunching context with the following positive received feedback: "That kind of information came at the right moment ... at the point that you are actually busy consuming your lunch and then you are open to information that directly relates to the food you are eating." (p.448)

The design game had multiple phases in order to provide information over time and create a step-by-step discussion. Information was first presented on the mechanism of the game, where rules and restrictions needed to be clear in order to create a meaningful new recipe. Once the participants were familiar with the design game and how to create a recipe, a natural introduction of the local environmental aspects could begin. Eventually, the compromises and balances of the information were reflected upon and written in a template to the canteen staff and via pictures of the final recipe. An envisioned example can found in Figure 39 and Figure 40. Participants could write down their (group) name, the name of the recipe and the qualities of the recipe in whatever way the deemed fit on the recipe template. In the same way, discussions around personal preferences, concerns and values were encouraged and concluded during the same phases and manner.



# Design game workshop

Participants: group of 2 or 3 related consumers OR 1 interested individual
Time frame: During lunch break, for 10 to 15 minutes
Location: AAU-CPH open canteen areas.
Context: In a casual setting preferably while the participants are consuming their lunch. Innitially video recordings were done with a mobile phone. Later

Audio recordings were done and pictures were taken of the recipes. 2 or 3 researchers were present, one facilitating the game and discussion others documenting in non-obstructive fashion.

### 1: Introduction

**Aim:** Introduce the idea of the group being able to share a recipe to their liking to the canteen. Explain the board and other game elements and the goal of sending a recipe to the canteen.

#### **Optional supportive questions:**

"Will you be able to create a recipe together?" "What do you usually like about lunch meals?" "How do you think the canteen staff creates recipes?" "Did you ever wonder how the canteen staff makes recipes?"

## 3: Expose Origin of food

**Aim:** Let participants reveal the various environmental impacts of the ingredients. Introduce clearly the scale and the real-life impact the ingredients have. Show all the other options of the ingredients and start a discussion between participants on whether they want to change their recipe or not.

#### **Optional supportive questions:**

"What other available ingredients do you like/are still suitable?" "Would you change any of the ingredients for others available?" "Which types of food would/wouldn't you change?"

### 2: Create a recipe for the canteen

**Aim:** The participants will as independent as possible create a recipe, with at least one of each game element. No more than 6 ingredients and more ingredients or condiments can be requested.

#### **Optional supportive questions:**

"What kind of ingredients do you like? "What is your favourite food?" What food do you like in the canteen?"

## 4: Reflect and convince the canteen

**Aim:** Let participant reflect on their final recipe. They should pitch it to the canteen staff on a paper and discribe the good qualities of the dish, sustainable or otherwise.

#### Optional supportive questions:

"Would you still enjoy the dish from the recipe you created?" "What other/environmental qualities does this recipe have?" "Are you satisfied with the recipe you created?"



Figure 39 Example Recipe first round



Figure 40 Example Recipe second round after awareness creation

### Reflections

The eleven interactions with consumer groups and individuals helped to get qualitative data for further improvement. Insights in the mechanics of the design thing to change lunching at the canteen were also obtained. The fixed data was written down in a pitch on paper and captured in pictures of final recipes before and after exposure to environmental scales. Additionally, video/audio recordings of the interactions helped to track down important statements and reasoning on various aspects of our design thing. Those aspects should encourage local consumption by creating recipes to the canteen (In Table 4 can be found the documented data and further explanation and reflection on the dynamics of the design game workshops.

Session no.	Dish name	Recipe#1	Changed Recipe	Pitch
1	Wok	<ul> <li>Boil: Peas, carrots and cauliflower.</li> <li>Fry: Chicken, Red onion &amp; cauliflower, Peas, Carrot, egg.</li> <li>Condiments: Chili, curry, coconut milk, sweet chilli sauce.</li> </ul>	<ul> <li>Boil: whole grain rice</li> <li>Fry: carrots, cauliflower, red onions, peas</li> </ul>	"It is high in nutrients(Proteins and good fat). It is low price dish. all ingredients are locally sourced and based on seasonal"
2	Cucumba	<ul> <li>Bread</li> <li>Fry: pepper tomatoes, chicken, mushrooms, potatoes, red onions, eggplant, zucchini</li> <li>Condiments: Pepper, salt, basil, garlic, chilli, parsley,</li> </ul>	<ul> <li>Steam: Short grain rice.</li> <li>Fry: Spinach, Carrot, Cauliflower, Red onion,</li> </ul>	"Because is made with local ingredients, high intense flavour, fast and easy and has a low food production footprint."
3	Chicken + Veggie wok	<ul> <li>Boil: Long grain rice</li> <li>Steam:</li> <li>Fry: Long grain rice, Spinach, Broccoli, Zucchini, Red Cabbage, Chicken, Mushroom.</li> <li>Condiments: Spices: Ginger, Gartic, Parsley.</li> </ul>	<ul> <li>Boil: Short grain rice</li> <li>Steam</li> <li>Fry: Short grain rice, Spinach, Carrot, Zucchini, Red Onion, Chicken, Mushroom.</li> <li>Condiments: Spices: Ginger, Garlic, Parsley.</li> </ul>	"It is quite sustainable, I combined taste which creates a rich taste to it. There could be a veggie version removing the chicken. It's quite healthy too.
4	Chicken Delight	<ul> <li>Fry: Red Onion, Spinach, Broccoli, Serrano ham, Chicken, Mushroom.</li> <li>Condiments: Salt, Garlic, Basil.</li> </ul>	<ul> <li>Fry: Red Onion, Spinach, Cauliflower, Chicken, Mushroom.</li> <li>Condiments: Salt, Gartic, Basil.</li> </ul>	"It is eco-friendly and nice <3"

Session no.	Dish name	Recipe#1	Changed Recipe	Pitch
5	Beef and asparagus	High heat oven: Beef, Potato, Peas, Cherry tomato, Carrot and Red beans.	<ul> <li>Boil: carrots</li> <li>High oven: Beef, asparagus, carrots</li> </ul>	"It is simple, full of protein and not allergies risk for anyone."
6	The green hell	<ul> <li>Oven high heat: Fish and potato.</li> <li>Condiments: Salt, Basil, Pepper.</li> </ul>	<ul> <li>Red onions, peas, spinach, beetroot, cauliflower, carrots</li> </ul>	"This was just an attempt to make the most environmental dish on the test"
7	Taiwanese mixed veggies with chickens	Deep fry: Chicken     Steam: short grain rice     Fry: Asparagus, red     onions, bell pepper, and     short grain rice     Condiments: salt, garlic     pepper	no change	"It's healthy delicious and good for the environment"
8	Red without Chilli	<ul> <li>Steam: Long grain rice</li> <li>Fry: Red beans, eggplant, long grain rice, Beef, onion, beetroot</li> <li>Deep fry:</li> <li>Condiments: Coriander, salt, ginger:</li> </ul>	<ul> <li>Steam: Short grain rice</li> <li>Fry: Red beans, eggplant short grain rice, Beef, onion, beetroot</li> <li>deep fry:</li> <li>Condiments: Coriander, salt, ginger.:</li> </ul>	"It has a nice texture and high intense taste"
9	Carbonara with Danish made ingredients	<ul> <li>Boil: pasta</li> <li>Fry: pasta, egg, serrano ham, chepese, bread</li> <li>Condiments: Olive oil, gartic, rosemary, pepper, salt, thyme, Basil</li> </ul>	<ul> <li>Boil: pasta</li> <li>Fry: pasta, egg, pork, cheese, bread</li> <li>Condiments: Olive oil, garlic, rosemary, pepper, salt, thyme, Basil</li> </ul>	"Because is fucking delicious and use Danish made products instead of Italian, etc"
10	Spinach and fish	<ul> <li>Boil: Short grain rice,</li> <li>Fry: Pork, Tomato, red onion, avocado</li> <li>Condiments: Garlic, olive oil, salt, coriander, bay leaves, Achiote</li> </ul>	<ul> <li>Boil: short grain rice</li> <li>Fry: Fish, red onion, spinach, tomato</li> <li>Condiments: Olive oil, Garlic, salt, Coriander, Bay leaves</li> </ul>	"Spinach is good for your health and very tasty; it goes well as a side for fish"
11	Simple and light Lunch	<ul> <li>Boil: rice</li> <li>Fry: chicken</li> <li>Salad: Spinach cucumber, cherry tomatoes</li> <li>Condiments: Garlic, Olive oil, pepper, salt, paprika</li> </ul>	<ul> <li>Boil: short grain rice</li> <li>Fry: chicken</li> <li>Salad: Spinach cucumber, cherry tomatoes</li> <li>Condiments: Garlic, Olive oil, pepper, salt, paprika</li> </ul>	Simple and dish for a working professional. Cheap to get at the canteen.

 Table 4 Documented results of the design game

Out eleven interactions, eight (sets of) participants were willing to exchange ingredients from their original recipe for less environmentally harmful ones, after confronted with the impact of production and transportation. Additionally, three participants (two in a group) were initially reluctant to change their recipe but changed or helped to change the recipe anyway. However, the majority of the participants were able to transform their initial knowledge about a 'good' recipe. In general, the three parts of information of ingredients were absorbed easily and participants were able to discuss between themselves and us the impact of changing ingredients in the recipe and their view on the matters. In doing so, we deem we were able to raise direct awareness at the consumer level because we exposed an issue that came not to their mind on food at their canteen. Hence, images of the lunch practice were discussed and in the majority of the times changed (temporary) towards a new practice for local/environmental food consumption at the canteen.

Yet, images on the envisioned practice came in a positive and negative attitude. Five groups of participants pitched their recipe as local or sustainable and on several occasions, narratives were made on how food/ recipes can become more sustainable. However, some other participants expressed negative emotions in the design game. Participant (guilty): *"is it bad? Very bad?"* Facilitator: *"Maybe vegetarian then?"* Participant: *"Never!"* (Session no. 4, time:8.04, see Video 1) or *"Now you make me seem like the bad guy!"* (Session no.9, time 9.50). Additionally, seasonality was a factor that was quickly recognised as one being too fixed to take into account next to other priorities. Another concern on the design thing was expressed incompetency to create a recipe (for other people): *"I'm the worst person to do this Icreate a recipe!"* (Session no.6) or *"I'm not a motivated cook"* (Session no.10). Finally, two participants in different interactions expressed not being able to distinguish different qualities of rice spices, making the choice for the nearest the way to go.



In some interactions, culture played an expressed role in the creation of a recipe: "We have different tastes. It's not possible to create a recipe together.", "[it's] too difficult, because she is from Denmark and I am from Colombia, and we like deep fry things" (Session no.5). Additionally, most Danish participants picked meat and in some cases more than one kind per recipe. Especially, around meat in general, participants expressed conservative opinions, like it being necessary or integer part of the recipe. Traditional recipes were a 'treasure'.

In line with tradition, we found multiple ways in which participants would construct a recipe. The first one is creating a recipe from an existing or well-known recipe like, Pasta Carbonara, Ratatouille or a favourite recipe of a participant. Related to this was a recipe based on national style like Taiwanese or Italian cuisine. Next to that, there was a style where participants would pick their favourite ingredients and condiments and create a recipe on the spot. Similarly, after exposure to environmental elements, consumers would reduce or replace ingredients to make a more environmental friendly recipe or create a different recipe entirely. A final suggestion by one participant was to get more structure in the game by letting future participants build recipes around one main ingredient. In this sense, we believe there might be more ways to create a recipe and it is valuable to take the creation style into account in the next design.

More recommendations or aspects were given through the interactions on the creation of a recipe that had to be taken into account. While creating their recipe participants raised the importance of nutrition, health, texture, taste and budget. Multiple participants also had favourite ingredients which they were reluctant to give up in a dish, regardless of environmental impact. *"I really like mushrooms, so they stay"* (Session no.3, see Video 2). Furthermore, new condiments and ingredients were requested like courgette(zucchini) and bread, which were added as disks in later design games. Sauces or ingredients to make recipes juicy or liquid were also a requested aspect that was not yet integrated into the design thing. Last recommendation for the game, that was mentioned several times, was removing the restriction on changing the country of origin. Participants envisioned this to create an environmental change and saw the possibilities. *"We cannot choose that the broccoli should come from Denmark instead of Spain?"*(Session no.1, see Video 3)

Finally, structure wise, there were some mechanisms in the game that could use improvement. First of all, fixing the number of ingredients was framing the participants to either always aim to use 6 ingredients or feel restricted to use more. An example: "We need one more ingredient" (Session no.7). While we thought it would provide structure and simplicity, from various interactions we deem freedom of choice more important in hindsight. Similarly, condiments should not have been framed to three. Secondly, the visualisation of the scales and explanation should get more guidelines. Using the colour scheme ranged from, "let's try to make it as green as possible." (Session no.6) to "I don't have so many red so I am ok" (Session no.4). Yet, we realized, we didn't provide a point of reference towards what a 'good' environmental friendly dish would be. While the present design game was about letting participants find/dictate the balance, future developments should also give objective environmental impact information to define and pull consumers towards the desired local food consumption.

# 7.6. Conclusion

As the true open quality of a design thing, all the previously mentioned concerns should get attention in the next iteration. We do see difficulties with incorporating them all in the updated design thing but, we can and should make holistic improvements. Especially, the request to change the origin of food was part of our final aim and could benefit our envisioned local food consumption practice too.

First of all, the intention of our design game was to create a discussion on what people want and should locally get. We succeed to create this discussion even with individuals and a diverse set of narratives and standpoints were expressed by the participants. Empowering people to talk about environmental concerns and the issues around locality was also achieved and in this sense, we deem to have created a direct awareness of local food consumption at the participants. This is an argument for the success of the design game as we were able to improve consumers' awareness of the links between food and place of origin in order to empower participants to be more environmentally friendly (Lea, 2005).

However, participants also raised plenty of concerns and we observed multiple mechanisms in the design game that show opportunities for improvement. Technically, we could add more ingredients and create more visual and accurate cues to show our aim towards more local food consumption, by adding reference points and explaining the colour scheme clearly. Additionally, we should respect other priorities arisen by consumers such as nutrition, taste, price, ingredient preferences etc. and try to incorporate them to provide an opportunity to create for a more realistic scenario. We should also take into account how participants create a recipe and support this by providing inspiration by showing different cuisines or recipes.

Yet, in regards to this, culture and tradition were also barriers to change. Some of the participants showed a big resistance to change in meat ingredients. Although our initial aim was on local consumption and not plant-forward consumption, it became an important subject of debate in the holistic environmental scenario we put up. Also, other cultural aspects were hard for participants to change. A traditional recipe like Ratatouille could/should not be changed, and had specific ingredients. Furthermore, Dutch people can't get rid of cheese consumption. We conclude that these are aspects that cannot be changed in a single interaction or direct awareness creation and can only be solved with a long term (policymaking) approach as explained by the traditional practice theory.

Next to the creation of awareness, we did however also show opportunities to close the gap between the consumer and the catering organisation. The big majority, nine out of eleven participants groups, expressed sincere interest in creating a recipe for the canteen. Regardless of the outcome of the ingredients being local or all environmentally less harmful, we were able to let participants communicate recipes to the canteen staff. In this sense, we found a way to bridge the gap in communication between Catering organisation(as a whole) and consumer that was presented in the analysis.

Further reflections on the design thing and its perspectivation, will be presented in the next chapter, as well as a discussion on the issues presented through the report.
# 8. Conclusion & Discussion

# 8.1 Conclusion

In this conclusion we will give answers to the two research questions presented in the introduction:

# Research question 1: Can information on the origin of the food trigger a dialogue between consumers on local food consumption?

# Research question 2: How can we create new opportunities towards more sustainably conscious practices in Danish canteens?

The answer to the first research question draws upon the main outcomes of the facilitation of the 'design thing'. In the second phase of the game, the participants were exposed to the country of origin of the ingredients in their recipe. The dialogue created between the consumers, after the information was given, raised a concern on whether their initial choice was still adequate or not. In the majority of the cases, attempts to change to more local ingredients were made. Also, reflections and questions arose on why some of the ingredients, such as potatoes, weren't from Denmark. In this regards we can conclude that direct interest was mainly generated on the participants and that dialogue triggered by the origin was created. However, we acknowledge future developments on the 'design thing' concept need to be done for being able to reach a larger number of consumers in the system. Furthermore, the lunch practice studied in the Danish canteens should be further investigated, aiming to reach the consumer and transmit information in the most optimal way.

Drawing upon the first question, the answer to the second research question leads a path to further development. The 'design thing' was

used as a tool of informing and triggering a dialogue and gave us some interesting ideas on future opportunities in the canteens. Surprisingly, some of the participants were the ones coming up with insights on how to share this information on origin to influence their practices towards more sustainable and conscious ones. Furthermore, by studying the practices and sub-practices in the canteens, we were able to see other actionable points and opportunities to change them, which will be elaborated in the discussion below.

In a nutshell, we therefore conclude that information on the origin of food, displayed in the right moment, place, and in a format which can be easily absorbed by the consumers, would trigger a dialogue towards local consumption. Furthermore, in giving information and facilitating a dialogue, is how we created an environment where opportunities towards more sustainable conscious practices were shared by consumers. This interest generated through the facilitation of the 'design thing', is what we called direct impact on the consumers. Nevertheless, we acknowledge that a consecution of a long term impact which would maintain the opportunities for better practices is complex. How to measure the scope of this impact is another field that needs to be further explored.

In the upcoming sections more in detail information could be found on the process we followed for giving an answer to the research questions presented.

#### Information and the origin of food

From our questionnaires, we found that the information on the origin of food and appreciation of local food was considered of the lowest importance compared to other aspects like taste, appearance and healthiness. Literature also confirmed that European consumers found the information "nice to know" and also gave priority to other food qualities, but still, 70% of European consumers want to know the origin of where

their food (Baltussen et al., 2013, p.63; BEUC, 2013). Along with the value of protecting European consumers from misinformation, the European Commission found it important to develop a mandatory label to provide transparency of the country of origin or place of provenance (European Commission, 2011). This regulation also counts for catering organisations and restaurants and hence we found this information available to be utilised for the benefit to create awareness for local food consumption in this context.

The design game/thing also shows opportunities to bridge the gap between the consumer and the catering organisation, where catering organisations can add more of their CSR aims into it (like locality). On the other hand, consumers were now given a voice to tell the canteen what they like and value in a dish, not necessarily in extreme sustainable qualities(like 100% locally grown food), but with ingredients realistically weighted also to their personal taste, diet, etc.

In order to increase relevance for the origin of food, the design thing helped us to understand the willingness of consumers to change. The reflections of the thing were also fruitful discussions around the distance that specific ingredients have to travel compared to personal taste and finding a balance between the two. Locality did not always gain the upper hand, but was always discussed and absorbed. With this absorption of information, we also found consumers to be aware of the issues that local food consumption could tackle, which is a valuable finding for future iterations.

#### Awareness and Consciousness

Although, discussions in the design game with consumers still evolved around unconscious matters such as tastes, they were now consciously being weighted against environmental issues related to the origin of food. As mentioned before, with comprehensible and simple information in the form of environmental labels, participants in the game were empowered. They did not just receive direct information, but could indirectly discuss and so process information with other participants or the facilitator (Spaargaren et al, 2013). Creativity and variety in food which were important conscious matters from the questionnaire were also incorporated and might also have contributed in fruitful discussions for part of the participants.

Still, in the long term, the present consumption practice has to go through a transformation to get an overall conscious consumption practice (for local food). Although the design game as tool was successfully tested on creating awareness for locality via information and dialog, the envisioned conscious consumption practice is on a long road and more iterations in the network need to be done.

Luckily, some important actors, like the catering organisations also want to empower consumers and make them more aware, which is currently done for example via info campaigns. Multinational institutes like the European Union and the United Nations also stated awareness on food consumption to be an important driver for a sustainable food system. Furthermore, the Danish government encourages the creation of alternatives towards a zero emission in the food sector by 2050, for which our design thing can be seen as one.

#### Lunching at the canteen as a practice

In this sense, we find the design thing as an opportunity and first test, to change the current food consumption practice in the canteen. It was embedded in the practice, while most participants were willing and able to participate and discuss while consuming lunch or during lunch time and the result of the game might have a later impact on the food served in the practice. In the same lines, another important quality of the design thing is that it will give consumers the opportunity to make a later change.

This is opposed to the conventional 'display of demand by choice' which has its limitations in the canteen. Still we do see the design thing as a game changer, but as first test, for which many more are needed to slowly recraft the current practice, by replacing more core elements in relevant and effective places. For this we analysed multiple opportunities such as utilising the niche movement for environmental concerns or align with the importance of increasing demand for vegetarian diets. Finally, the observed practice also showed options for change, by utilising much covered stuff like Utensils or skills like navigating through the canteen. Thus, there are still many opportunities and chances to change the current practice towards one with a much needed sustainable impact.

#### The sustainable impact of the design thing

The sustainable impact of changing the current practice towards one with conscious local food consumption is, holistically speaking, limited and not the sole answer to the issue. Environmentally, it is related to the geographic conditions and production methods used and/or suitable in these conditions. Socially, local food consumption is about food education and reconnecting consumers to how food is produced and valuing what is already grown local as well as creating local jobs. Still, Socio-economic wise, global trade should be considered too and the fact that developing countries rely on exporting food products developed countries like Denmark. Hence, promoting local food consumption at large denies income that developing countries rely on(Goggins, 2016).

Yet on the more practical side, we found that change (especially the cultural one) is slow and there is time to adapt. Additionally, the impact towards conscious local food consumption is met and competing with various other environmental and social concerns that the catering industry is working with. In this sense catering business operations and their sustainable policies often are a response to consumers appeal and clients requirements, According to the strategic development director

at Compass Group (Appendix 10): consumers dictate the demand and catering organisations adapt their processes to fulfil it. Additionally, catering organisations can have an impact on consumers by educating them, where he too acknowledges that changing consumers behaviours is a hard step that will take time to see results.

# 8.2 Discussion

According to Goggins (2016) among others, local food consumption might have a bigger impact on social and economic sustainability matters. Hence, other matters such as reconnection to food production, local economic growth and increased local labour market are research path that supports local consumption. Among the sustainable concerns that catering organisations try to tackle such as food waste, meat consumption, healthy diets, literature offers meaningful approaches that have been implemented and offer meaningful insights for our approach.

Different labels and certifications schemes have been implemented in catering organisations such as CO2 labelling, organic, nutrition or fat content labels, etc. Labels are in place to inform consumers about specific matters such as environmental impact, and production practices. Though, just offering labels without a normative reference nor integration within the practice would reduce the opportunities for meaningful change of consumers practices (Spaargaren et al, 2013). Consumers have growing concerns around sustainability and ethical food production, thus companies must avoid offer information that misleads consumers or solely pursue marketing goals (BEUC, 2013). In our case we could not find specific display of a particular label at the canteen intervened with our design tool, Though from the compass interview (Appendix 10) canteens pursue organic certifications, to be more "sustainable", if the clients are willing to cover the expenses of such certifications or labels.

Furthermore, canteens dedicates resources to improve the development of operational policies and training programs, tailored towards the catering organisations and staff members. Catering organisation implements this approaches seeking to improve food handling, reducing waste and pursue economic advantages for their business(Lassen et al., 2004). Though we recognize it exist a certain degree of empowerment for staff to choose the most suitable decisions in some occasion, for example at compass group some canteens were able to source local products in small amount. If such policies and programs are developed under sustainability perspective, staff can also become channels for disseminating information among the food chain(Goggins, 2016).

We acknowledge that these approaches are more effectively shifting practices consumption when combined rather than working by isolated interventions. Conscious consumption behaviour can lead to triple bottom line sustainability where consumers have an agency to increase the process of sustainable development. The main problem is time to educate or let people adapt to new behaviour or habits and the catering organisations see this happening over a long term process.

Acknowledging that our 'design thing' is just a tool for grasping the direct impact that information such origin of food could make in the consumers, more research is needed to fully understand its implications. Other ways and ideas on doing so would be presented in the perspectivation chapter. In this paper, we scratch the surface of key point towards sustainable food systems (Goggins, 2016) and will be extensively developed to ensure conscious consumption and production patterns in the next 10 years under the sustainable development goals (United Nations, 2015). Further steps might need to be taken, especially concerning the impact that the information is generating in the practices of the consumers. A bigger sample of target groups, including other Danish canteens and other actors(farmers, suppliers, intermediaries) could contribute to a more general perspective that we pursued to cover with our initial research question.

# 8.2.1. Value of the project within the setting of the canteen

We found that within the setting of the Danish canteen, consumers did not have a powerful voice/ability to demand change towards sustainable food. The options are limited by what the canteen has to offer that day and is chosen by the canteen staff which in their turn have limited supply options. Limitations are from contracts with both the client (on maximum costs of food) and with suppliers (on what is available in bulk purchase). So, change needs to come in another way than for example display of demand in the supermarket, where there might be two options for the same meal (for example organic or conventional).

Literature states catering professionals and chefs are in a position to continuously influence the decision that shapes and controls food systems by means of their sourcing (Goggins, 2016). However, we found the canteen staff at Aalborg university was also restricted by a small budget, yet willing to receive inspiration from consumers they serve and able to make dishes with the supply options they have. Sending inspiration in the form of recipes that have environmentally considered qualities would then be a way to reach the influential chefs and let consumers express indirect demand. We reasoned that when consumers options for creating a recipe have the same supply limit, they could think along with the chefs to 'co-create' more sustainable dishes.

Other literature states that organisational events over prolonged periods of time seek to promote some sort of awareness events or initiatives, which often lead to consumers of the particular organisation to better consumer

practices (Derqui et al., 2018). For example, political programmes and companies initiative in recent years in Denmark, have been dealing, with health campaigns, stimulating healthy food consumption in order to improve everyday nutritional environment by the provision of affordable healthy food options(Lassen et al, 2018). This method often creates the sense of out of regular practice or "special occasion" in consumers and do not impact consumers on a daily basis, though in the long term results can have significant impact, as pointed by Lassen et al (2018) as consumers increased their vegetable consumption over 10 years of organisational campaigns and policies towards healthier food consumption. For our missing long term perspective, these campaigns on health promotion might thus give us more inspiration and might be fruitful to investigate further, especially on how awareness was created. The only difference between health and locality, is that healthy food gives direct personal benefits (longer life span, being more fit), while local food as quality itself is altruistically based and does not give these personal benefits, but only harder to grasp social benefits.

# 8.2.2. Value of the project for Catering organisations

In the process of this project, we found catering organisations as key actors in the network with the power to change consumption behaviour, The organisation as a whole is both knowledgeable on and in discussion with the supply chain as well as consumers and clients. From the interviews we found they have a lot of visions on how the food supply chain can change towards a more sustainable system and also have a general understanding of the consumer's actions and opinions on sustainability. We assume therefore, they would have the experience to deal with implementation of our future design thing and see the values of the outcomes of our project. With the outcomes of the mapped out practice and inquired images, the catering organisation can get to an even better understanding of what is in the consumer's mind. What are their preferences and where should the food/sustainable impact change in the practice (during eating, on the plate or at the different food sections)?

The qualities of the design game can give consumers a voice and engaging information, which is an important combination. In providing this service, the catering organisation can also be pioneers in managing demand. They can pull the demand for the causes in their corporate responsibility reports and gain more support to accomplish them. Additionally, they can more easily adapt to the preferences and values that consumers have on the diverse matters of food. CSR reports and sustainable activities should become not just mandatory reports from society in general, but also translated into tools like our design game that can persuade the consumer and client,

With more development on the reflections of the design game, catering organisations could have a tool next to their current popular choice for influencing behaviour. We found that catering organisations interviewed, alter their food environment to lead or nudge consumers towards more sustainable options. Nudging or choice architecture was also found popular in literature(Kraak et al., 2017) and although effective on the short term, we envision future iterations on the design game to be a suitable addition to create actual awareness among consumers.

There are opportunities for being transparent as a catering organisation. The European Union's 'Food Information for Consumers' regulation already requires labels to communicate the country of origin or place of provenance for a big majority of foodstuff. We saw that participants of our game, by themselves questioned why certain products were not from Denmark. By anticipating this question and communicating

further information on what this supply change entails acceptance could be created for more local food consumption. Research confirms that offering labels without a reference point or integration within the practice would reduce the opportunities for meaningful change of consumers perceptions (Spaargaren et al, 2013). Finally, consumers have growing concerns around sustainability and ethical food production, thus companies must avoid offer information that misleads consumers or solely pursue marketing goals (BEUC, 2013).

We also found that our current design game touched upon other matters in the food consumption area that catering organisations work towards such as plant forward meals and seasonal products. If the valuable qualities of the design game that supported discussion on these subjects would be transferred to a new/updated design thing, it could be a multipurpose or all round tool to encourage consumers. Plant forward and seasonal products could also save money, because meat is in general expensive and seasonal (local) vegetables cheap.

Changing the lunching practice also has it's limitations we can not circumvent and Catering organisations (if not already) should be aware of that. Unconscious consumption will remain to exist and get priority over Conscious values and subject like locality. Taste, appearance, price saving, we found again like other research, to have the primary importance of consumers when it comes to food consumed during lunch. Therefore, persons who want to promote sustainable conscious consumption should incorporate and possibly take advantage of these priorities instead of neglecting them.

#### 8.2.3. Theoretical reflection

Practice theory and Science and technology studies were two theoretical branches, we drew inspiration from to frame our data in two different styles. One focused on how to change a specific practice with interconnected elements, another to show relationships between actors and see obstacles that prevent local food consumption. Additionally, both branches had modern tools and vocabulary to envision design results and break from the traditional structure presented in the literature. For practice theory, we tried to bridge the gap between envisioning futureoriented ideas to present changing design. For actor-network theory, we utilised the traditional mapping of an actor-network, but diverted from a translation process and used the design thing as an initial foundation for what our design should incorporate to. We found that Practice theory and Science and technology studies complement each other. Both theories had adaptations to the design literature that have overlapping features and theory specific ones that tackle two sides of our goal: The dynamics in a practice context, and the development process of concern.

#### **Practice theory**

Until now, we used the frameworks of practice theory only to map out the practice of lunching at the canteen and describe opportunities from the images we gained. However, practice theory itself is most valuable for envisioning future change of practices, which we will briefly do now. In the theory we explained that a practice can be recrafted, substituted or change the interlocked structure between practices. From the analysis we found that the latter two required data and insights beyond our scope of observations and questionnaires. Substituting, required more insights in the food market around the canteen and interlocking practices needed extensive research to what consumers do before and after lunch. Additionally, they were also the most abstract and did not provide methods on how we could start a change in the present. We thus divert from the

statement of Spurling et al(2013) on changing how practices interlock, as being the superior methods. In our context, it is important to first start from a practical and experimenting perspective where small changes in elements of the practice are better than envisioning a large network of practices changed. We do not have the resources of policy makers to realise these abstract changes, instead we are design researchers that have the skills to experiment and create new opportunities for conscious consumption.

Therefore, recrafting the lunching at the canteen practice will briefly be envisioned, First of all here we found next to given approaches by Spurling et al(2013) on changing consumers images on the canteen practice or replacing their identity more options were possible. We found other element could be changed too, like key stuff that covers large parts of the practice or useful sub-practices that are suitable or accepting change.

We still consider the sub-practice of 'eating and drinking' to be suitable for the site of recrafting the lunching practice for it happens over a long duration in time and for the majority involves interaction with other consumers. Here, we can also introduce new stuff, like an adaptation of the design game as will be further explained in the perspectivation. We also found there was sufficient space to introduce another object like out design game. Extra images and skills can also be added. Discussing food with colleagues and sending an occasional recipe to the canteen can be new skills that shift the practice towards more sustainable consumption as explained before. Images will then also be created like 'I have the power to change what I eat at the canteen' or 'I like my food to be environmental conscious or local.' Especially with future involvement of social sustainable aspect, images can rise like 'I support local farmers by buying food at the canteen' or 'I want to know where my food is coming from'. When recipes(more stuff) are send to the canteen staff for inspiration, we get into a more interesting practice shift. When canteen staff receives recipe requests for inspiration and see sustainably conscious qualities such as 100% local dish or 100% seasonal, this can then be promoted as special dish of the day(a key stuff). This quality can also communicated at the food sections(another key stuff) during lunch with credits to the inspiring consumer and more consumers might be tempted to hand in recipes with other or more qualities. This might create a snowball effect on the practice change, where the canteen staff who can be inspired within their limited assortiment to create dishes that suit the consumers' values.

#### Science and technology

Science and technology studies also helped us with structure in in the final part of the process. First of all in mapping out a network of actors, which we found relevant in the local context of one canteen. Here, we could highlight obstacles in relations between actors as explained in the analysis. Solely explaining these obstacles instead of creating a strategies to solve them by persuading the different actors was unorthodox according to Callon(1986.a/b). However we did take action with the more modern and design adaptation by Storni(2012, 2015) in using the design thing. This concept of materialising concerns of all actors and remaining an open attitude towards feedback of all was very useful for us.

The design thing, forced us to collect and merge as many concerns as possible by actors into the object. We succeeded to create a design thing(the design game) that incorporated the practical restriction on food supply and cooking methods by the canteen staff, the interest and taste of consumers on food as well as environmental information for transparency in local food consumption. In our final interactions with the design game, we tried incorporate more concerns from the client and consumers by analysing their feedback, discussions and actions.

In these final interactions, we found however that the client as institution did not see relevance interacting with the game, but only might set boundaries on nutrition or organic content if continued. Consumers did embrace the game and also indirectly gave more concerns like cultural importance and other importance of nutrition, health, price etc. that they desired to be incorporated. On the other hand we found that the design game was already quite saturated with information on seasonality being to much to weight next to personal preferences of ingredients as well as their environmental impact on production and transportation. We therefore might have hit the limit of keeping all concerns of the actors inside one design thing that is still functional as tool to create awareness as required by Storni (2015). Additionally we have not yet exposed our design thing to the catering organisation. Who we expect to embrace insights from the design thing, but also might have additional managerial concerns,

We therefore see the design thing as useful concept to push design researchers to keep an open attitude towards concerns of all actors and create a space of "co-habitation" (Storni, 2015, p. 171). Still, we also foresee that further iterations will need compromises especially on functionality to create awareness with an easy and engaging design as the design game tool we created.

# 8.3. Perspectivation

In this section, we communicate the future intentions of our design thing/ game and opportunities for continuation of this research.

In the short term perspective, our tool can involve the kitchen staff, through further development of the recipes that consumer provided. As

acknowledged in the design phase, the design game does not include elements of sequential steps of cooking nor quantity of ingredients. In this sense, the canteen staff can receive the game information(recipes) which they stated to be open to accept and shape it accordingly to their professional knowledge to create a proper dish that satisfies consumers.

Furthermore, in our workshops, we chose on exposing the environmental impact of food to the consumers and AAU client. The environmental impact has a calculable characteristic which allowed easy translation to the consumers and clients. Yet, as we recognize sustainability as a triple bottom research field, social and economic sustainability elements should be later integrated to the current design thing through assimilation of narratives that enable the reconnection to what can be locally grown and socio-economic arguments to support it. The sustainability director of Fazer stated the importance of positive storytelling and narratives that shows consumers the possibilities for improvements and encourage for more sustainable practices(Appendix 10).

The facilitation approach during our experimentation, enables to challenge people to get a low impact on their food. However, if the concept had been an object placed with no further intervention, consumers engagement would have resulted in poor interactions, qualitative data results and creation of awareness would have been low. Hence, we recognize the facilitation element has a big impact in our tool which for future iterations needs to be re-designed in ways that facilitation approaches are not necessary, and can be a stand-alone concept.

Another element for change is engaging a larger number of consumers that allows getting more insights on how to shift the practice towards more sustainable options and expand the discussion to gather more concerns. For instance, offering easier access to the design thing can be achieved through the development of a digital platform which consumers

of the canteen can access through their personal mobile phones. In this space, interactive information (environmental, economic and social) can confront consumers with the impact of their limited choices raising their level of awareness and giving the chance to communicate their inquiries directly to the canteen staff, or the organisational client of the catering organisation.

As eating practices are constantly changing(Spurling et al, 2013), integrating the design thing into the lunch practices under a practiceoriented design framework would seek to assimilate the design thing into the current routines of the practice and see how it reveals new issues or take hold (Scott et al. 2012), As we identified and picked the sub practice of 'eating and drinking' as the intervention point, other opportunities are present along the practice, for example the sub-practices of obtaining drink or standing in the waiting line while navigating are relatively long, thus presenting an opportunity to drag consumers attention through interaction with elements embedding information. This elements as our tool can be new and attempt to integrate it to the practice or repurpose an existing element such as dishes to displaying narratives about social benefit of local food. Furthermore, Spurling et al, (2013). suggest that to facilitate change in practices often multiple integrated interventions can be tested like placing interactive labels, next to the food options displaying the origin of food and boundary objects placed on tables on table for consumers to interact with.

In order to achieve a meaningful integration of the design thing within the practice, further research needs to be carried out about the interactions and connection between the elements that affect the practice and their deeper relation, like catering contract, consumers preferences, culture or the system restrictions on local sourcing(economic or capacity). Likewise, engaging different groups within the organisations can ensure the further development of the issue. For instance, at the researched university,

student environment council or students organisations can serve as support to raise the concern farther in the system,

Catering organisations are susceptible to consumers demand according to Kristofer (Appendix 10). In the long term perspective, if the design thing is circulated and stabilized consumers demanding more local source products can lead to the opportunity of local suppliers and caterer organisations forming stronger partnerships. It is recognized by Goggins(2016) the need for more collaboration and engagement of more actors in the catering system such as local producers, government, and retailers in providing a sustainable food supply for organisational meal by developing holistic strategies to tackle unsustainable food patterns in the system.

As well, public demand can enact discussion among governmental organisations or policymakers. This can lead to modification of trading agreements and policies to improve promotion on local suppliers. Though, *"policy makers can only intervene in processes that are already underway. Cast in these terms the task and the challenge is one of monitoring and tracking these ongoing trajectories and intervening carefully and selectively – in ways that recognise and appreciate history and context, locally and on a wider scale"* (Spurling et al, 2013). As we pointed out, the European Union has already the initiative of conveying the information on the origin of food(See State of the Art) to help consumer's choices, perhaps a future step with this initiative is to lead consumers to more appreciation of European or regional products.

At last, the circulation of this practice towards local food can restrict the diversity of current lunch menus at canteens, hence leading to a change of consumers diet. In this sense, this could allow an association with gastronomic trends such as the nordic cuisine movement, which seeks to encourage more quality gastronomy through seasonal and locally source products.

# 8.4. Contribution as Sustainable Design Engineers

There are several reasons for answering why we considered this project interesting as a valuable contribution to the profession as Sustainable Design engineers. We supported our choice in some quotes from the literature that can be visualised in Figure 41 along with the explanation that can be found as follows;

#### Why is it relevant?

"Food consumption is amongst the main drivers of environmental impacts." (Sala, 2016, p.753)

"Consumers have the power to have an impact positively or negatively on the environment via their dietary choices." (Lea, 2005, p.21)

"Consumer behaviour towards green/sustainable consumption is the key point to make production systems and consumption environmentally sustainable" (Peattie, 2010)

"The public sector has the power to influence the food system" (Goggins, 2016) Public sector has power to connect the producer and consumer by adjusting *"its food procurement* strategies" (Wiskerke and Viljoen, 2012)

Sustainable Design Engineers by studying practices and behaviours in the canteens, change consumers choices towards sustainable ones and have an impact on the food system.

Figure 41 Relevancy for sustainable design engineering in quotes

**Why food?** By steering food consumption towards more local options environmental impact can be reduced as well as enriching local economy and supporting social movements.

Why consumers? As the food system often becomes a reply to consumers demands, the last one becomes an essential actor to make a shift in consumption towards a more sustainable one.

How to approach the problem? By studying consumer behaviours/ practices towards consumption we identify where and how to actionate triggers that challenges pre-establish images by introducing food origin and enabling local choices.

Why canteens? The public catering sector has the power to influence the food system and also to connect the consumer and producer by the food procurement systems.

Additionally, Sustainable Design Engineers should acquire the capacity of understanding socio-technical systems and make a change towards a more sustainable future. In this regards, we touched upon different topics on the project developing the diverse skills entailed in the previous understanding of our role:

**Engineering skills:** Collecting and analysing technical data on the carbon footprint of the different ingredients presented in the "design thing".



Figure 42 Sustainable Design Engineers

**Design skills:** Exploring and observing consumers practices. Facilitating a design thing where they created their own recipe and in this way filling an information gap in the system.

**Sustainability skills:** Informing in lower impact choices in the canteen by encouraging also local food consumption (social and economic impact). Building upon a sustainable mindset in the system.

As a conclusion, our choice of working with a social dimension towards a sustainable change in the behaviour of consumers has been challenging. It is a picture of the limitations that we as Sustainable design engineers will face in our professional future. Some of them are expressed by Ceschin and Gaziulusoy (2016) such as the ethical implication on the extent to which designers could affect or drive the consumer's behaviours. Other challenges found are translated into questions faced in our process too, such as; How measurable is the impact of our 'design thing' in the consumers? Is the environmental choice of pushing locality the best, taking into consideration the trade-offs pointed out? Not forgetting the economic part, which is one of the biggest obstacles that we would confront: How to engage the business stakeholders in implementing the strategies when the economical profit do not cover fast enough the investment required? (Ceschin and Gaziulusoy, 2016). The answer to these questions might not be clear, but that is were our challenge reside. We, however, see our research and contribution to the system valuable since it builds upon a global concern such as sustainability on food. An opportunity for changing consumer behaviour is detected by bringing information such origin of food to the consumers. This is for instance what we added to the system, knowledge creation and sharing through our design.

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# Appendices

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## Appendix 1 Foodscale by Goggins (2016) (1/5)



## Foodscale

#### By Gary Goggins (2016)

In order to measure sustainability in catering organisation, G. Goggins(2016) developed in his thesis a framework to asses the different operational policies, considering the triple bottom sustainability: social, economic and environmental factors.

#### How the FOODSCALE works

"As previously outlined in section 3.3.2, the FOODSCALE deploys a points system ranging from 0-100, only using integers to make the results easy to understand and to facilitate comparisons both within and between cases. The maximum score of 100 points is distributed across 11 categories and 36 indicators. Each of the 11 categories are weighted to a maximum score of 5, 10, 15 or 20 points, with scores for each indicator ranging from 6 to 1. Higher scores indicate greater sustainability (see column 1 in Table 5.1 for details). Greater weight is given to categories that are considered to have a more significant impact on overall food sustainability and that reflect a positive attitude towards providing healthy, sustainable food for consumers, combined with a significant commitment to change. Allocating scores across a number of categories and subcategories helps to clearly identify where current practices are sustainable or where they are insufficient or can be improved. Further information on each of the main categories and their relative importance in food sustainability is provided below." (Goggins, 2016, p. 111)

# Appendix 1 Foodscale by Goggins (2016) (2/5)



	1		1	
Category	Social	Environmental	Economic	FoodScale Indicators
1. Organic (10 points)	<ul> <li>High ethical and animal welfare standards</li> <li>Greater bio-diversity and crop diversification</li> <li>Societal health benefits from restricted use of antibiotics</li> <li>Facilitates social connectedness and personal relationships</li> </ul>	<ul> <li>Avoids use of artificial chemical fertilizers leading to lower environmental impact</li> <li>Restricted pesticide use protects bio-diversity</li> <li>Greater crop diversification</li> </ul>	<ul> <li>Reduces external costs to society associated with conventional food systems</li> <li>Fulfils growing demand for organic produce</li> </ul>	- Percentage of total food organic certified - Percentage of fruit and vegetables organic certified
2. Seasonality (5 points)	<ul> <li>Fresher/less processed food</li> <li>Increased food security</li> <li>Supports traditional food, techniques and culture</li> <li>Fosters educational relationships between growers and consumers</li> </ul>	Reduces need for chemical treatments to increase shelflife     Decreases energy used for storage     Lower transport emissions     Food produced with natures natural rhythms	Reduces transport, storage and packaging costs Facilitates local producers to provide food all year round Creates more resilient farming system Importation of out-of season produce narrows balance of trade	- Changing menus to suit seasons - Displaying a seasonal food calendar for the region - Growing own herbs/ vegetables
3. Fairly traded produce (5 points)	Improved well-being for farmers in developing countries     Minimum health and safety standards enforced     Investment in social and	Minimum environmental standards enforced Sustainable farming methods promoted Investment in environmental	Greater access to overseas markets for poorer farmers Guaranteed minimum price for farmers	- Using fairly traded coffee, tea and bananas

# Appendix 1 Foodscale by Goggins (2016) (3/5)



	business development • Reduces child labour • Builds alliances among small-scale producers	projects	Potential to lift poor farmers out of poverty	
4. Meat (15 points)	<ul> <li>Reduced meat consumption benefits human health</li> <li>Certification maintains high animal welfare and health and safety standards</li> <li>Less intensive farming and routine use of antibiotics reduces spread of zoonosis and other diseases</li> </ul>	Reduces GHG emissions     Discourages deforestation     for meat production     Prevents soil damage due     to overgrazing and loss of     biodiversity caused by     intensive animal farming     Certification to a quality     assurance scheme that     incorporates environmental     standards	<ul> <li>Low conversion rate from grain to meat results in high production costs</li> <li>Increased consumer demand for fully traceable and certified meat products</li> </ul>	<ul> <li>Percentage of total food and drink budget spent on meat</li> <li>Percentage of total meat budget spent on red meat</li> <li>Animal welfare certification for meat products</li> <li>Percentage of main course dishes containing meat</li> </ul>
5. Sustainably sourced seafood (5 points)	<ul> <li>Protects source of food and livelihood for millions of people</li> <li>Addresses animal welfare concerns associated with intensive aquaculture</li> <li>Prevents displacement of poorer coastal communities for aquaculture developments</li> </ul>	<ul> <li>Protects against overfishing, catching of non-target species and marine biodiversity loss</li> <li>Prevents damage to coral reefs and other sensitive habitats (especially due to bottom trawling)</li> <li>Responsible fish farming can prevent disease and parasites (e.g. sea lice)</li> <li>Discourages destruction of important natural habitats for aquaculture development</li> </ul>	<ul> <li>Discourages illegal and unregulated fishing that undermines markets</li> <li>Responds to increased consumer demand for sustainably produced fish</li> </ul>	- Seafood sourced from recognized accredited scheme which incorporates sustainability
6. Eggs (5 points)	• Organic and free-range eggs produced to higher animal welfare standards	Organic and free-range eggs produced to higher environmental standards	Higher returns for producers     Responds to	-Type of egg used (e.g. organic, free-range, regular, bottled) - Traceability and quality

# Appendix 1 Foodscale by Goggins (2016) (4/5)



	<ul> <li>Higher quality produce increases taste and flavour</li> <li>Quality Assurance Scheme accreditation ensures health and safety standards</li> </ul>	Quality Assurance Scheme accreditation maintains environmental standards	consumer demand for higher quality produce	assurance
7. Water (5 points)	<ul> <li>Healthy alternative to sugary drinks</li> <li>High cost (of bottled water) may deter consumers from drinking water</li> <li>Tap water highly regulated and safe to drink</li> </ul>	<ul> <li>Drinking tap water reduces environmental impact of bottled water including production, transport and disposal costs</li> <li>Locally bottled water has lower transport emissions</li> </ul>	Bottled water more expensive than tap water Eliminates waste costs for disposal of plastic bottles Supplying locally bottled water contributes to local economy	<ul> <li>Source available for customers</li> <li>(e.g. filtered water free of charge, tap water, bottled water only)</li> <li>Origin of bottled water</li> </ul>
8. Food waste (10 points)	<ul> <li>Lower food waste increases food security</li> <li>Minimizing use of oils and fats reduces waste and leads to healthier food</li> <li>Food waste reduction initiatives raise awareness and can lead to healthier eating habits</li> <li>Unused food can be donated to feed people and reduce waste</li> <li>Waste prevention initiatives can increase communication between staff, management and consumers</li> </ul>	Reducing food waste also reduces environmental costs     Food waste can be recycled to produce compost, fuel or animal feed     Raises awareness of environmental issues     Encourages other sustainable practices such as using reusable or recyclable supplementary materials	<ul> <li>Less food waste reduces costs for producers, consumers, caterers and intermediaries</li> <li>Reducing food waste can lead to more efficient overall business management procedures (e.g. stocktaking, ordering, storage)</li> </ul>	<ul> <li>Staff trained in waste minimization</li> <li>Separate composting for organic material</li> <li>Donating edible unused food</li> <li>Using cooking techniques that minimize quantities of oils and fats used</li> <li>Other waste reduction initiatives</li> </ul>
9. Origin of food	<ul> <li>Sourcing food locally/in</li> </ul>	Reduces long-distance food	<ul> <li>Contributes to</li> </ul>	-Provenance of five key foods to

# Appendix 1 Foodscale by Goggins (2016) (5/5)



(20 points)	the region increases food security and resilience to external shocks in food system • Links producers and consumers • Facilitates education • Protects local food cultures	transport impacts • Reduction in energy used for storage • Protection of biodiversity • Reduced risk of contamination and disease	local and rural economy • Can improve efficiency of delivery systems • Generates employment in rural areas • Can reduce procurement costs	local, regional, national or international origin -Number of intermediaries between producer and consumer
10. Consumer engagement (10 points)	<ul> <li>Improved health and nutrition</li> <li>Increased awareness</li> <li>Producer-consumer relationships built on trust and reciprocity</li> </ul>	Promotes sustainable food activities     Educates consumers about environmental benefits and costs of certain food items	Promotes food provenance and locally produced goods Consumer input can reduce costs	-Nutrition information on menus - Health/sustainability promotion activities -Customer surveys - Menu information re food provenance - Good choice of allergen-free dishes and options
11. Engaging with smaller producers and local communities (10 points)	Provides educational opportunities for local community Fosters relationships between local producers and consumers	Educates workers about environmental impacts of food choice Promotes environmentally sustainable food	<ul> <li>Increased business opportunities for small producers</li> <li>Contributes to resilient local economy</li> <li>Keeps money in the local community for longer</li> </ul>	<ul> <li>Hosting information events (re tendering) for small and local producers</li> <li>Incorporating specifications into contracts that increase opportunities for smaller and local producers</li> <li>Activities to promote local food -Staff training in product information (origin, environmental and social quality of products)</li> </ul>

(Source: Goggins, 2016, p. 112-115)



#### WS: Literature Strategies

Category	Strategy	Source		
Labels	Communicating labels without further references (e.g Eco- footprint, CO2 label)	(Spaargaren, G. et al. (2013) 'Consumer Responses to the Carbon		
	Introducing label as one element of a more elaborate package of interventions into the practice	Labelling of Food : A Real Life Experiment in a Canteen Practice', 53(4), p. 22. doi: 10.1111/soru.12009.)		
	Keyhole labelling for healthier consumption	Lassen, A. D. et al. (2018) 'The nutritional quality of lunch meals eaten at Danish worksites', Nutrients, 10(10), pp. 1–11. doi: 10.3390 /nu10101518.		
	Labelling food by fat or fibre content	consumption of fruits and vegetables: results from the Danish "6 a		
	Labelling and point out of purchase display	day" Work-site Canteen Model Study', Public Health Nutrition, 7(02). doi: 10.1079/PHN2003532.		
	Programmes and campaigns promoting healthy food consumption			
Campaigns	Advertising and PR campaign about environmental concerns directly targeting end-consumers	Lassen, A. D. et al. (2018) 'The nutritional quality of lunch meals eaten at Danish worksites', Nutrients, 10(10), pp. 1–11. doi: 10.3390/nu10101518.		
Nudging	Place fruit and vegetables garnish at beginning of buffet and free of charge	Lassen, A. et al. (2003) 'Successful strategies to increase the consumption of fruits and vegetables: results from the Danish "6 a day" Work-site		
	serve vegetarian meals once or twice a week	Canteen Model Study , Public Health Nutrition, 7(02). doi: 10.1079 / PHN2003532.		
	Offer appetising mixed salads			
	Fast-food meals can also be healthy, e.g. tortillas with mashed beans,			
	Make a vegetable snack bar,			
	Sell snacks in bags containing 100 g of raw vegetables			
	Place plenty of fruit and vegetable garnish together with the meat on the same dish			
	Mix fruit and vegetables into rice, pasta, roasted potatoes and mashed potatoes			
Category	Strategy	Source		
Canteen staff,	staff were educated in how to serve more vegetables and fruits in the lunch meals Train staff in product information	Quoted from page 269 Lassen, A. et al. (2003) 'Successful strategies to increase the consumption of fruits and vegetables: results from the Danish "6 a day" Work-site Canteen Model Study', Public Health Nutrition, 7(02), doi: 10.1079/PHN2003532.		
catering	Recoming Green caterers	From abstract Mikkelsen, B.E. et al. (2006) Are green caterers more likely to		
School and		Ruae, D, and Mikkelsen, B, E. (2013) 'Local public food strateaies as a		
teaching	Cooking classes at Schoolds	social innovation: Early insights from the LOMA-Nymarkskolen case study', Acta Agriculturae Scandinavica Section B: Soil and Plant Science, 63(SUPPL.1), pp. 56–65. doi: 10.1080/09064710.2013.793736.		
	Field trips to local fams			

# Appendix2 Literature strategies (2/2)

	Grow herbs/vegetables.	Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption', Journal of Cleaner Production. Elsevier Ltd, 112, pp. 257–266. doi: 10.1016/j. jclepro.2015.06.035.	
	Display a seasonal food calendar		
	Gather Consumers opinions on sustainable food		
	Information feedback mechanisms		
	Provide information about food provenance	Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the	
	Consumers engagement to promote food education	sustainability of food provided for public consumption', Journal of Cleaner	
	Provide Information of food suppliers on menus and notice boards	- Floddetion. Elsevier Etd, 112, pp. 257-200. doi: 10.1010/3.jotepro.2015.00.035.	
	Promote healthy and sustainable food Education through menu development		
	to give to the consumers the possibility to make choices based on better information.	From abstract Mikkelsen, B.E. et al. (2006) Are green caterers more likely to serve healthier meals than non areen caterers.pdf'. Public	
	check menu changes or expression of nutritional/caloric content.	Health Nutrition. soeborg: Public Health Nutrition, 9(7), pp. 846–850. doi: 10.1017/PHN20055913.	
Information Management	Video, posters and question at the cash desk:	(Spaargaren, G. et al. (2013) 'Consumer Responses to the Carbon Labelling of Food : A Real Life Experiment in a Canteen Practice', 53(4), p. 22. doi: 10.1111/soru.12009.)	
Category	Strategy	Source	
	Use bottled water from local sources		
	Use bottled water from local sources Use local suppliers for some fresh food items, as proximate businesses can deliver at short notice	Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the	
	Use bottled water from local sources Use local suppliers for some fresh food items, as proximate businesses can deliver at short notice developing a local and regional food culture, building relationships, supporting local business and rural development.	Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption', Journal of Cleaner Production. Elsevier Ltd, 112, pp. 257–266. doi: 10.1016/j. jclepro.2015.06.035.	
	Use bottled water from local sources Use local suppliers for some fresh food items, as proximate businesses can deliver at short notice developing a local and regional food culture, building relationships, supporting local business and rural development. partnerships have been established with the goal to make healthy choices easy and accessible for all (e.g. the Meal Partnership, the Danish Salt Partnership, and the Wholegrain Partnership	Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption', Journal of Cleaner Production. Elsevier Ltd, 112, pp. 257–266. doi: 10.1016/j. jclepro.2015.06.035. Lassen, A. D. et al. (2018) 'The nutritional quality of lunch meals eaten at Danish worksites', Nutrients, 10(10), pp. 1–11. doi: 10.3390 /nu10101518.	
Supply chain engagement	Use bottled water from local sources Use local suppliers for some fresh food items, as proximate businesses can deliver at short notice developing a local and regional food culture, building relationships, supporting local business and rural development. partnerships have been established with the goal to make healthy choices easy and accessible for all (e.g. the Meal Partnership, the Danish Salt Partnership, and the Wholegrain Partnership Local farmers, suppliers and producers were persuaded in participation via a public meeting organised by the municipality of Svendborg. Here farmers by themselves offered to do workshops and provide lessons on local food production.	Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption', Journal of Cleaner Production. Elsevier Ltd, 112, pp. 257–266. doi: 10.1016/j. jclepro.2015.06.035. Lassen, A. D. et al. (2018) 'The nutritional quality of lunch meals eaten at Danish worksites', Nutrients, 10(10), pp. 1–11. doi: 10.3390 /nu10101518. Ruge, D. and Mikkelsen, B. E. (2013) 'Local public food strategies as a social innovation: Early insights from the LOMA-Nymarkskolen case study', Acta Agriculturae Scandinavica Section B: Soil and Plant Science, 63(SUPPL.1), pp. 56–65. doi: 10.1080/09064710.2013.793736.	
Supply chain engagement	Use bottled water from local sources Use local suppliers for some fresh food items, as proximate businesses can deliver at short notice developing a local and regional food culture, building relationships, supporting local business and rural development. partnerships have been established with the goal to make healthy choices easy and accessible for all (e.g. the Meal Partnership, the Danish Salt Partnership, and the Wholegrain Partnership Local farmers, suppliers and producers were persuaded in participation via a public meeting organised by the municipality of Svendborg. Here farmers by themselves offered to do workshops and provide lessons on local food production. Offer better tariffs and subsidies for specific foodstuff.	Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption', Journal of Cleaner Production. Elsevier Ltd, 112, pp. 257–266. doi: 10.1016/j. jclepro.2015.06.035. Lassen, A. D. et al. (2018) 'The nutritional quality of lunch meals eaten at Danish worksites', Nutrients, 10(10), pp. 1–11. doi: 10.3390 /nu10101518. Ruge, D. and Mikkelsen, B. E. (2013) 'Local public food strategies as a social innovation: Early insights from the LOMA-Nymarkskolen case study', Acta Agriculturae Scandinavica Section B: Soil and Plant Science, 63(SUPPL.1), pp. 56–65. doi: 10.1080/09064710.2013.793736. Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption', Journal of Cleaner Production. Elsevier Ltd, 112, pp. 257–266. doi: 10.1016/j. jclepro.2015.06.035.	
Supply chain engagement Prices and	Use bottled water from local sources Use local suppliers for some fresh food items, as proximate businesses can deliver at short notice developing a local and regional food culture, building relationships, supporting local business and rural development. partnerships have been established with the goal to make healthy choices easy and accessible for all (e.g. the Meal Partnership, the Danish Salt Partnership, and the Wholegrain Partnership Local farmers, suppliers and producers were persuaded in participation via a public meeting organised by the municipality of Svendborg. Here farmers by themselves offered to do workshops and provide lessons on local food production. Offer better tariffs and subsidies for specific foodstuff. Sell whole fresh fruit at favourable prices, or you can offer fruit at reduced prices if customers buy more at a time (waste handling facility)	Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption', Journal of Cleaner Production. Elsevier Ltd, 112, pp. 257–266. doi: 10.1016/j. jclepro.2015.06.035. Lassen, A. D. et al. (2018) 'The nutritional quality of lunch meals eaten at Danish worksites', Nutrients, 10(10), pp. 1–11. doi: 10.3390 /nu10101518. Ruge, D. and Mikkelsen, B. E. (2013) 'Local public food strategies as a social innovation: Early insights from the LOMA-Nymarkskolen case study', Acta Agriculturae Scandinavica Section B: Soil and Plant Science, 63(SUPPL.1), pp. 56–65. doi: 10.1080/09064710.2013.793736. Goggins, G. and Rau, H. (2016) 'Beyond calorie counting: Assessing the sustainability of food provided for public consumption', Journal of Cleaner Production. Elsevier Ltd, 112, pp. 257–266. doi: 10.1016/j. jclepro.2015.06.035.	

source: own development.

## Appendix 3 Danish feedback on the FIC (1/4)



# Appendix 3: WS Danish Feedback on: Commission Implementing Regulation on the provision of voluntary indication of origin or place of provenance of foods

Feedback reference: F9065 Submitted on: 27 January 2018 Submitted by: Pia Lenau User type: EU citizen Country of origin :Denmark Initiative

Commission Implementing Regulation on the provision of voluntary indication of origin or place of provenance of foods

CAOBISCO Needs to understand that it is necessary for the consumer to know the origin of ingredients in manufactured products. To be able to determine our purchase in relation to eg slave labour. These days a trademark does not guaranty much. What would be the best solution is a standard labour rights trademark as well as eg organic stamp. Fairtrade as well. A suggestion could be a barcode necessary/mandatory to scan and read before purchase rewarded with a discount when read.

#### Feedback reference: F9054

Submitted on: 24 January 2018 User type:EU citizen Country of origin:Denmark

**Initiative:** Commission Implementing Regulation on the provision of voluntary indication of origin or place of provenance of foods Article 1 (2) dubious Trademarks are designers work. They are important. More organic ingredients are necessary. Original product country even city would be nice. All ingredients of products need to be specified with country of origin. Non-eu countries must comply equally. When you buy a Mac burger would be nice to know if it is industrial or organic and where the ingredients come from. If they are local or what? This draft is really lacking. Not comprehensive enough. It's rubbish to tell the truth.

#### Feedback reference: F9189

Submitted on:1 February 2018 Submitted by:Caroline Nordentoft User type:Business association Organisation:The Danish Brewers' Association Organisation size:Micro (1 to 9 employees) Country of origin:Denmark

Initiative: Commission Implementing Regulation on the provision of voluntary indication of origin or place of provenance of foods

The Danish Brewers' Association, representing the Danish brewers and producers of soft drinks and bottled waters, thanks the European Commission for the opportunity to provide feedback on the draft Commission Implementing Regulation on Article 26(3) of Regulation (EU) No 1169/2011.

### Appendix 3 Danish feedback on the FIC (2/4)



The Danish Brewers' Association is a member of The Brewers of Europe and UNESDA, the European federations representing the European brewing industry and the European soft drinks industry.

The Danish Brewers' Association strongly supports the inputs provided by The Brewers of Europe, UNESDA and FoodDrinkEurope to the present consultation.

Feedback reference:F9172 Submitted on:1 February 2018 User type:Business association Organisation: VAREFAKTA DENMARK Country of origin:Denmark Initiative: Commission Implementing Regulation on the provision of voluntary indication of origin or place of provenance of foods

The definition of origin is given in (EU) 1169/2011, Article 2, 3. The reference to Articles 23 to 26 of Regulation (EEC) No 2913/92 is no longer in force. Repealed by Regulation (EU) No 952/2013 of the European Parliament and of the Council of 9 October 2013 laying down the Union Customs Code. As the definition of the true country of origin or place of provenance of the food is an essential part of this regulation, it would be appropriate to have an applicable definition in this regulation. It would especially be relevant to clarify article 24 in Regulation (EEC) No 2913/92. Repealed by Regulation (EU) No 952/2013 of the European Parliament and of the Union Customs Code article 60.

Feedback reference: F9166 Submitted on: 1 February 2018 Submitted by: Sofie Risborg User type:Consumer organisation Organisation: The Danish Consumer Council Organisation size: Medium (50 to 249 employees) Transparency register number: 39456841401-09 Country of origin: Denmark Initiative: Commission Implementing Regulation on the provision of voluntary indication of origin or place of provenance of foods

#### The Danish Consumer Councils comments to draft - Commission Implementing Regulation on COOL for the primary ingredient(s) of a food

The Danish Consumer Council welcomes the opportunity to comment on the draft EC implementing regulation concerning the labelling of the origin of a food's primary ingredient(s) when it differs from that of the food itself (Art. 26"3) of Reg. (EU) 1169/2011). Unfortunately the draft does not meet the EU consumers' expectations for food origin information, and if implemented, it may even end up being very confusing for the consumers.

#### Origin labelling should be mandatory

Studies done by BEUC show that 70% of Europeans want to know where their food comes from (1). Demand is even stronger for meat and milk – both sold fresh and used as an ingredient – for which over eight in ten EU consumers want to know the origin (2,3). This calls for mandatory country-of origin labelling

## Appendix 3 Danish feedback on the FIC (3/4)



requirements. If not on all food, then at least for those foods/ingredients for which consumers' interest is the strongest. Furthermore we would like to comment on the specific content of the drafts Article 2.

#### It should be stated which country the main ingredient is from

Indications such as 'EU', 'non-EU' or 'EU and non-EU' are not meaningful for consumers. It is also not sufficient, that the food manufacturers can simply state that the main ingredient's originates from another country than the food itself. BEUC's survey on COOL carried out in Austria, France, Poland and Sweden found most consumers want to know the specific country their food comes from (4). Therefore it should be stated which country the main ingredient is from and not be up to the manufacturer to decide on the geographical level of precision.

#### The place of provenance (e.g. farming) should be stated on the products

It is also problematic if the manufacturer gets to decide whether to indicate the place of last substantial transformation or the place of provenance (e.g. farming). This will result in confusion for the consumer as different manufacturers will choose differently. BEUC's research (5) showed consumers are in general most interested to know the place of farming of a food's primary ingredient(s). Therefore we believe it should be mandatory to indicate the place of provenance (e.g. farming) on the products.

1: BEUC (2013). Where does my food come from?: http://www.beuc.eu/publications/2013-00043-01-e.pdf

2: European Commission (2013). Report on mandatory origin labelling for meat used as an ingredient in processed foods:

https://ec.europa.eu/food/sites/food/files/safety/docs/labelling\_legislation\_com\_2013-755\_en.pdf

3: European Commission (2015). Report on mandatory origin labelling for milk and milk used as an ingredient in dairy products:

https://ec.europa.eu/agriculture/sites/agriculture/files/milk/origin-labelling/com-2015-205\_en.pdf

4: 50% (in France) to 78% (in Sweden) of consumers said they want to know the country their food comes from. Most of those not interested in the country of origin said they want to find even more precise information on the label, i.e. the region their food comes from (from 13% in Sweden to 36% in France). Only 4% (in Austria) to 13% (in Poland) of consumers were satisfied with EU/non-EU labelling. 5: BEUC (2013). Where does my food come from? : http://www.beuc.eu/publications/2013-00043-01-e.pdf

Feedback reference: F9070 Submitted on: 29 January 2018 Submitted by: Peter PETERSEN User type:Company/business organisation Organisation: Danske Slagterier Organisation size: Micro (1 to 9 employees) Country of origin: Denmark Initiative: Commission Implementing Regulation on the provision of voluntary indication of origin or place of provenance of foods

Danske Slagterier/Danish Bacon and Meat Council welcomes the draft Commission Implementing Regulation laying down rules for the application of Article 26(3) of Regulation (EU) 1169/2011 of the European Parliament and of the Council on the provision of food information to consumers, as regards the rules for indicating the country of origin or place of provenance of the primary ingredient of a food where different to that given for that food. Danske Slagterier supports

### Appendix 3 Danish feedback on the FIC (4/4)



overall the draft proposal and recognizes that a harmonized approach is needed to make a step forward towards the implementation of the origin labelling requirements laid down in the Regulation (EU) 1169/2011 and to reinforce the Single Market of foodstuffs.

#### Whereas 7 and Article 1:

Scope While Danske Slagterier agrees that the implementing regulation would not apply to registered trademarks. It is furthermore important to take into account that article 3 of the Trademark Directive (EU) 2015/2436 defines a trademark as an indication aimed to distinguish the goods or services of one undertaking from those of other undertakings. Therefore the whereas 7 'The purpose of trademarks is to allow the consumer to identify a particular commercial source or trade origin in connection with specific good and/or services.' Should correctly be: According to Directive (EU) 2015/2436 a trademark shall be defined as an indication aimed to distinguish the goods or services of one undertaking from those of other undertakings. For example, if you like shoes from the brand Nike – you should be able to distinguish those from shoes from the brand Adidas. To add to this the whereas 29 of the Food Information Regulation suggests that any indication related to the name, business name and address of the FBO shall not constitute an indication of origin. To this extent the trademarks should be treated as the name and business name and, as such, not to be considered an indication of the country of origin or place of provenance of food within the meaning of this Regulation, as required by article 2.2 (g) of the Regulation (EU) 1169/2011. The Directive (EU) 2015/2436, in any case, prevent any use of the trademark that would mislead the consumer by requiring that those trademarks which are of such a nature as to deceive the public as to the geographical origin of the goods or service shall not be registered or, if registered, shall be liable to be declared invalid.

#### Resource:

European comission : https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-34773/feedback\_en?size=10&p\_id=157803

# Appendix 4 Observations in theoretical framework (Private)

Sub-practice	Skills	Stuffs
Preparing (making necessary actions for starting the serving of food)	Get a plate, grab cutlery, clean oneself, sanitize hands, grab glass, staring around, putting cultery in back pocket of pants, talk in a group, talking with a colleague, carrying plate under arm	plate, cutlery, finger, glass, table, hand sanitizer, soup-spoon, colleagues, back pocket of pants,
Selecting food (observing and evaluating what to eat)	Staring around, staring at food, waiting in line for food, carrying plate, let people pass by, talking to colleague, checking out wine, observe food on the plate, waiting in the queue for bread, smelling food, communicate smelly food, look from a long distance, inspect content of the bowls, making a duck face, checking the cheese, indecisive picking and discarting bowls, looking at food over/past another person, carrying plate under arm, interaction with staff, reading blackboard with ingredients, discussing about food with colleague, playing with the plate	Plate, warm bowl(soup), salad, small bowl(cold), bread, warm dish of the day, black board with ingredients, cheese, different salads, pasta salad, colleagues, fruit, vegetables (carrots, coliflower, peas, tomatoes, radish)
Obtaining the food (collect desired food out of the offers)	pick one bowl, carrying full plate and glass and cutlery, serving salad on plate with pincer, serving salad on plate with spoon, cutting bread, smiling to a person, putting dressing on the salad, organise food on plate, waiting in line for food, waiting in queue for bread, carrying bread in the hand, decorating bread with cheese, ask staff to pour soup on bread, stacking small bowls on top of each other, carrying both a disch and two bowls in two hands, ballancing bowls on plate, indecisive picking and discarting bowls, eating food while walking, picking specific ingredients out of a bowl, interaction with staff, dosing the amount of food on the spoon, put down cutlery	Plate, pincers, serving-spoon, warm bowl(soup), salad, small bowl(cold), bread, warm dish of the day, cheese, different salads, pasta salad, colleagues, fruit, vegetables(carrots, coliflower, peas, tomatoes, radish), finger, canteen staff,
Navigating through the canteen	carrying full plate and glass, let people pass by, starring around, talking with colleague, walk inside the kitchen, waiting in line for food, waiting in queue for bread, playing with the plate, rushing from one place to another, scouting the serving area while walking, ballancing plate on one hand, carrying plate under arm, joking with a colleague, eating while walking,	Plate, hands, glass, table, chair, Salad bars, warm dish of the day section, warm bowl serving table, small bowl serving table, Bread table, waiting line, pilar, colleagues, other lunch persons
Obtaining drinks (choosing, pouring and carrying)	Open drawer, grab a glass, fill the glass with a drink(water with lemon, water with cucumber, juice, milk), carrying full plate and glass and cutlery, control the milk dispencer, control the juice dispencer, checking if glass is clean, put glass on the service table, serve water for a colleague, return to the canteen area for a drink,	Glass, drawer, water container, lemon in water, cucumber in water, plate, cutlery, milk dispencer, juice dispencer, service table, colleague
Eating at the canteen	sitting down, talking with colleague, observe food on plate, deciding where to sit, saving a seat for colleagues, eating food while walking,	Plate, glass, cutlery, colleagues, all food on the plate, bowls, table, chair
Context (what is related to practices before or after lunching)	talking to colleague, checking out wine, smiling to a person, hand over empty bowl to kitchen staff, walk inside the kitchen, serve water for colleague, laughing with colleague, talk in a group, saving a seat for colleagues, joking with a colleague,	Colleague, wine, kitchen staff, kitchen, water,
Other (Remarkable and category not covered anywhere else	return to the canteen for more food, checking out wine, asking staff to pour soup on bread, stacking small bowls on top of eachother,	soup on bread, small bowls,

# Appendix 4 Observations in theoretical framework (Public)

Sub-practice	Skills	Stuffs	Images
Preparing (making necessary actions for starting the serving of food)	Grabbing a plate, Ways of being hygienic, grabbing cutlery, pouring water in a glass, explaining the canteen to outsiders, deciding re-usable or disposable cutlery, ways of carrying more than one object	Plate, cutlery(plastic and metal), hands, napkins,glass, water, water filling section, guide, disposable boxes	Hands should be clean before serving food, the canteen needs explaination before outsiders get food, products for eating (cutlery, plates, etc.) can be used by everyone regardless if they buy food or not
Selecting food (observing and evaluating what to eat)	preferences of food, deciding sequence of food serving, ways of getting food information (staring around, asking staff,), ways of reducing time spent in the canteen (quick decision making), Ways of judging which food(Sandwich) is better, Observing others, inspect sauce, observe from a distance, examine sandwich options, walking through the canteen while looking at today's offers, evaluate the salad, talk with the cook	Lights, vegetarian dish, salad table, salad bar, today's special dish, sandwich, smoothie, vegetable section, staff of the canteen, guide, canteen pathway, sauce, meat, vegetarian snack, barley, salad	Looking around helps making decisions of what to choose, People get influenced by others in decisions, one should be polite to staff, feeling lost in the canteen
Obtaining the food (collect desired food out of the offers)	Ways of putting food on the plate, ways to organise food on the plate, carrying a plate, ways of carrying more than one object, waiting in line, ways of packing food (sandwich, soup, smoothie), picking sandwich with a spade, grab a bag, grabbing water bottle, ballancing plate, deciding quantity of food, ways of combining different food(with sauces/dressings)	Plate, spoon, pincers, hands, vegetarian dish, salad, salad dressing, today's special dish, the queue, sandwich, smoothie, luxury sandwich, topping, panini heater, fruit, bread, disposable boxes, the soup area,	One can also use disposible boxes as carrier of food,
Navigating through the canteen	Ways of navigating the space in the canteen (alone, in a group), Following a specific direction, deciding the sequence of food serving, carrying a plate, ways of carrying more than one object, deciding which queue to take, waiting in line, carrying cutlery, ways of interacting with people, ways of reducing time spend(walking quick or slow), ways of eating of a plate, Observe from a distance, walk to a specific serving area,	plate, cutlery(plastic and metal), hands, heating station, counter, lights, salad table, vegetarian section, salad bar, today's special dish, the queue, the soup area, guide, pants,	One needs to respect others time while choosing, canteen is a place where personal interactions happen, disposible boxes are provided to carry food
Paying for food	Deciding which queue, waiting in line, ways to pay(Card, cash, mobilepay through phone), Knowledge about the payment machine, weighing food, ways of interacting with people, ways of reducing time spent in the canteen(switching lines), Interacting with staff, Carrying plate with food, explaining the canteen to outsiders	Plate, cutlery(Plastic or metal), hands, waiting line, scale, credit/debit card, recipients, paying desk, purse, wallet, phone, cash, scale, sellection screen, card reader	Hesitation of waiting lines, Standing in a waiting line can be tiresome, Impatience, The machine for paying is confusing (demands userfriendliness), one should be polite with the staff, products for eating (cutlery, plates, etc.) can be used by everyone regardless if they buy food or not
Eating	ways of interacting with people, ways of eating foor from the plate(also inside the canteen), observing others, being hygienic (sanitize hands), eat standing	Plate, cutlery, hands, vegetarian dish, salad, salad dressing, today's special dish, sandwich, smoothie, luxury sandwich, topping, fruit, bread, disposable boxes, napkins, glass, water, colleagues, fellow students	Importance for waiting for the group
Context(what is related to practices	preferences of food, ways of interacting with people, ways of reducing time spent at the canteen, ways of judging which food is better, deciding where to eat, explaining the canteen to outsiders, talk with cook	phone, colleagues, fellow students, waiting line, guide, tupperware, canteen pathway	the canteen is a place where interaction with people can happen, they busy time to go to the canteen is at 11.45, Importance of waiting for the group
Other (Remarkable and category not covered anywhere else	eating standing, talk with cook,	tupperware, canteen pathway, panini heater, disposable boxes	products for eating(cutlery, plates, etc.) can be used by everyone regardless if they buy food or not
# Appendix 5 Environmental impact data for design game

Ingredients	Category	Country	Distance (km)	Company	Total Emissions (kgCO2-eq/kg)	Total Emissions (kgCO2-eq/kg	Lca SimaPro(KgCO2-eq) Actual	Database in Simapro	Observations about data	Season in Denmark
Beetroot	Vegetable	Denmark	100				0,04	Ecoinvent 3 (point of substitution	Swiss production of sugar beet, field.	Fall, winter
Carrots	Vegetable	Denmark	100	Limfjords	0,22	0,25	0.09	Ecoinvent 3 (point of substitution	Netherlands production.	winter,summer, fall
White carrots	vegetable	Germany	69:	1		0.37	0.09	Ecoinvent 3 (point of substitution	Netherlands production.	-
Tomato (Pasta can)	vegetable	Italy	2060	Kokken catering		1.28	0.12	Ecoinvent 3 (point of substitution	Italian production of 1 kg of processing grade tomato.	Summer, fall
Fish	meat	DK (')	100	2	4.47	9,62	0.14	Agri-footprint- mass allocation	Landed fishfrom fishery, DK,	-
Icoborg lottuco	Voqotablo	Spain	2480	Kittos / Alimors	0.45	5	0.15	Ecoipyont 2 (point of substitution	Swiss production. Greenhouse.	Summor
Lollo rosa	Vegetable	Spain	2405	Autos/Autilets	0.45		0,15	Ecoinvent 3 (point of substitution	Swiss production Groophouso	Summer
Durgur	vegetable	Turkov	2409	3			0,15	Econivent 3 (point of substitution	Swiss production, dreenhouse.	-
Datata	grain	Turkey	35/0	Downot nototogo	0.57	0.40	0,15	Feeinwent of a shotik tion	Deet of the world detended	(Spring), Summer
Polalo	vegetable	Onited Kingdom	1010	Bennet potatoes	0.5/	0,42	0,10	Econvent 3 (point of substitution	Rest of the world database.	winter,spring, summer, ratt
Crimed)	vegetable	Denmark	100	Axell Mansson	0,48		0,19	Econvent 3 (point or substitution	Netriertarios production.	Winter,spring, summer, fall
Squash	vegetable	Italy	2060	0			0,25	other, literature	Approx. value from literature.	
Spinach	vegetable	Denmark	100				0,27	Agri-footprint- mass allocation	Netherlands.	Spring,Summer
White cabbage	Vegetable	Italy	2060		0,29	0.47	0,27	Ecoinvent 3 (point of substitution	Swiss production, Greenhouse.	Winter,fall
Red cabbage	vegetable	Portugal	2823	3	0.29	0.47	0,28	Ecoinvent 3 (point of substitution	Swiss field production.	Fall, winter
Cauliflower	Vegetable	Spain(*)	2489	9	0,61	-	0.34	Ecoinvent 3 (point of substitution	Swiss production, Greenhouse.	Summer, fall
Fennel	Vegetable	Swiss(*)	1280				0.37	Ecoinvent 3 (point of substitution	Swiss production, Greenhouse.	Summer, fall
Broccoli	Vegetable	Spain	2489	9 Kittos	1.67	1,65	0,40	Ecoinvent 3 (point of substitution	Swiss production, Greenhouse.	Summer, fall
Celery	Vegetable	Spain	2489	9			0.40	Ecoinvent 3 (point of substitution	Swiss production, Greenhouse.	Fall, winter
Peas	legume	Denmark	100	2			0,62	Agri-footprint- mass allocation	German production.	Summer
White asparagus	vegetable	Netherlands	764	4			0.74	Ecoinvent 3 (point of substitution	French production.	-
White asparagus	vegetable	Belgium	947	7			0.74	Ecoinvent 3 (point of substitution	French production.	-
Rice (Risotto)	grain	China(*)	10500	)	3.74	1,20	0,81	Ecoinvent 3 (point of substitution	China production.	-
Bread	Grain	Denmark	100	0			0,83	Ecoinvent 3 (point of substitution	Wheat grain, modelled for Global.	
								· · · · · · · · · · · · · · · · · · ·	Netherlands regular tomato production,	
Cherry tomato (tomato a	Vegetable	Netherlands	764	4	2,60	6.04	1,01	Ecoinvent 3 (point of substitution	Greenhouse.	-
Chopped tomatoes(Can	Vegetable	Italy	2060	Kokken catering		1,28	1,01			Summer, fall
Radish	vegetable	Netherlands	764	4			1,04	Ecoinvent 3 (point of substitution	Swiss field production.	Spring, Summer
Black beans	legume	Netherlands (*)	764	4	1,24	0,81	1,29			Summer (General beans)
Red beans	legume	Italy	2060	Sisto can	1,24	0,81	1.29	Agri-footprint- mass allocation	Netherlands, beans canned	Summer (General beans)
Lentils (Black)	legume	Canada	625	1		1.47	1,51	Agri-footprint- mass allocation	Canadian production,	-
Rice(Long Grain)	grain	India/ pakistan	8500	Kokken catering	3.74	1,20	1.82	Ecoinvent 3 (point of substitution	India production.	-
Pasta	grain	Italy	2060	2	1.03	0.69	1.03	other, literature	Danish market info	-
Rice(Short Grain)	grain	France	1600	2	3.74	1.20	2.04	Ecoinvent 3 (point of substitution	Rest of the world database.	-
Bell pepper (red)	Verretable	Netherlands	76/	4	0.71		2.24	Ecoinvent 3 (point of substitution	Swiss production Greenhouse	-
Mushrooms	Vegetable	Poland	105	1			2.50	other literature	USA	Summer fall
Cucumber	Vegetable	Netherlands	76	4	3.00		2.70	Ecoinvent 2 (point of substitution	Swiss production. Greenhouse	Summer
Chickness	legume	Australian plane(	14400	*	3,00	1.00	2.79	Agri-footprint- mass allocation	Australia production	- Summer
Eggplants	Vogotablo	Nothorlands	76	Sonsation		1,00	3:73	Econvent 2 (point of substitution	Swiss production. Greenhouse	
Eggptants	vegetable	DK (*)	/0/	4 Sensation			2.90	Econvent 3 (point of substitution	This process describes the production of pig	-
Pork	meat		100	<b>D</b>	5.57	3.94	4.68	Agri-footprint- mass allocation	the Netherlands.	-
Salami	meat	Italy	2060	<b>0</b>			4.69	Agri-footprint- mass allocation	the slaughterhouse, in the Netherlands.	-
Serrano Ham	meat	Spain	2489	9		-	4.69	Agri-footprint- mass allocation	The production of pig meat and co-products in the slaughterhouse, in the Netherlands.	-
Chicken	meat	DK (*)	100	D .	5,21	2,71	6.47	Agri-footprint- mass allocation	Production of chicken meat and co-products in the slaughterhouse, in the Netherlands	-
		DK (')			27.99	13.46			The production of beef meat from Irish beef and co-products in the slaughterhouse, in	
Beef	Meat		100				17.30	Agri-footprint- mass allocation	Ireland.	-
Ramslog/ rams	vegetable	Denmark	100	Krydder Gront			-			-
Lovage	Spice	Denmark	100	Krydder Gront						Spring
Mint	Spice	Denmark	100							N/a
Barley	Grain	Italy	2060	Pedon		0,18				-
Bay leave	Spice	Italy	2060							-
Parsley	Spice	Italy	2060	0						-
Chilli	Spice	Spain	2489	Engros- Frescove	r					-
Garlic	Spice	Spain	2489	9						Winter, Summer, Fall
Small round chilli	spice	Israel	4755	5						-
Thyme	spice	Israel	4755	5						-
Chervil	Spice	Kenya	9826	5						Spring
Green Herbs	Spice	Kenya	9826	5		2,11				
l					1					,

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# Appendix 6 Beregninger\_Madservice[10303] (1/4)

LambLamb,fresh,Sweden,cooked430.091666.410.34138LambLamb,frozen,Sweden,cooked460.091666.410.61636LambLamb,frozen,overseas,cooked520.091666.411.16632LambSusage,fresh,Sweden,cooked300.091666.48.04988LambIamb,stew,Sweden,cooked180.091666.48.04988LambIamb,average9.86475ChickenChicken,frozen,Sweden,cooked390.0916603.20810ChickenChicken,frozen,Sweden,cooked390.0916603.57474ChickenChicken,frozen,Sweden,cooked130.0916601.83320ChickenSusage,fresh,Sweden,cooked130.0916601.83320Chicken*chicken,stew,cooked430.0916603.66640PorkPork,frozen,Sweden,cooked430.0916603.94138Chicken*chicken,average2.71314PorkPork,frozen,Gentral Europe,cooked440.0916603.94138PorkPork,frozen,Sweden,cooked700.0916691.58222PorkPork,frozen,Sweden,cooked700.0916691.58222Pork*ortk,faverage2.63110BeefBeef,fresh,Sweden,cooked750.0916691.138316BeefBeef,fresh,Sweden,cooked750.0916691.1384843<	Category	Food Specification	Life Cycle Inputs (MJ/kg)	Danish Energy Conv. Factor (kgCO2-eq/MJ)	Additional Inputs (kgCO2-eq/kg)	Total Emissions (kgCO2-eq/kg)
LambLamb, frozen, Sweden, cooked460.091666.410.61636LambLamb, frozen, overseas, cooked520.091666.49.14980LambSausage, fresh, Sweden, cooked180.091666.48.04988LambHamb, average9.86475ChickenChicken, frozen, Sweden, cooked350.0916603.20810ChickenChicken, frozen, Sweden, cooked350.0916603.75876ChickenChicken, frozen, Central Europe, cooked130.0916603.83806ChickenChicken, frozen, Sweden, cooked130.0916601.833201ChickenChicken, frozen, Sweden, cooked330.0916603.66640PorkChicken average2.71314PorkPork, frozen, Sweden, cooked440.0916603.94138PorkPork, frozen, Central Europe, cooked440.0916603.1644PorkSausage, fresh, Sweden, cooked700.0916601.55822PorkPork, frozen, Central Europe, cooked700.0916691.548750PorkSausage, fresh, Sweden, cooked700.0916691.548750BeefBeef, fresh, Sweden, cooked700.0916691.548750BeefBeef, fresh, Sweden, cooked700.0916691.548750BeefBeef, fresh, Sweden, cooked700.0916691.548750Beef<	Lamb	Lamb, fresh, Sweden, cooked	43	0.09166	6.4	10.34138
LambLamb, frozen, overseas, cooked520.091666.41.16632LambSausage, fresh, Sweden, cooked300.091666.49.14980LambLamb stew, Sweden, cooked180.0916603.20810ChickenChicken, fresh, Sweden, cooked390.0916603.20810ChickenChicken, frozen, Sweden, cooked390.0916603.20810ChickenChicken, frozen, Central Europe, cooked130.0916601.83320ChickenSausage, fresh, Sweden, cooked130.0916601.91518ChickenChicken stew, cooked130.0916601.91518ChickenChicken stew, cooked130.0916603.66640PorkPork, frozen, Central Europe, cooked400.0916603.66640PorkPork, frozen, Central Europe, cooked400.0916603.66640PorkPork, frozen, Central Europe, cooked400.0916603.116430PorkPork, frozen, Central Europe, cooked410.0916603.26310PorkPork, stew, cooked750.0916603.26310PorkPork, Stewden, cooked750.0916691.584270PorkBeef, frozen, Central Europe, cooked750.0916691.345431PorkBeef, frozen, Central Europe, cooked750.0916691.345431BeefBeef, stew, cooked760.09166 <td< td=""><td>Lamb</td><td>Lamb,frozen,Sweden,cooked</td><td>46</td><td>0.09166</td><td>6.4</td><td>10.61636</td></td<>	Lamb	Lamb,frozen,Sweden,cooked	46	0.09166	6.4	10.61636
LambSausage,fresh,Sweden,cooked300.091666.49.14980LambIamb stew,Sweden,cooked180.091666.48.04988LambIamb,average9.86475ChickenChicken,fresh,Sweden,cooked350.0916603.57474ChickenChicken,frozen,Central Europe,cooked390.0916603.75806ChickenSausage,fresh,Sweden,cooked130.0916601.83320ChickenSausage,fresh,Sweden,cooked130.0916603.66640Chicken*chickenstew,cooked400.0916603.66640Chicken*chickenstew,cooked430.0916603.66640PorkPork,frozen,Central Europe,cooked430.0916603.94138PorkPork,frozen,Central Europe,cooked430.0916604.03304PorkPork,frozen,Central Europe,cooked170.0916601.55822PorkPork,sweden,cooked700.0916691.541620PorkPork,frozen,Central Europe,cooked700.0916691.541620Beef,fresh,Sweden,cooked700.0916691.541620BeefBeef,fresh,Sweden,cooked740.0916691.34584BeefBeef,fresh,Sweden,cooked740.0916691.34584BeefBeef,fresh,Sweden,cooked750.0916691.34584BeefBeef,fresh,Sweden,cooked760.9	Lamb	Lamb, frozen, overseas, cooked	52	0.09166	6.4	11.16632
LambLamb stew,Sweden,cooked180.091666.48.04988Lamb*Iamb,average9.86475ChickenChicken,frosh,Sweden,cooked350.0916603.20810ChickenChicken,frozen,Sweden,cooked390.0916603.75806ChickenChicken,frozen,Central Europe,cooked100.0916601.83320ChickenSausage,fresh,Sweden,cooked200.0916601.83320ChickenSuisage,fresh,Sweden,cooked130.0916603.75806Chicken*chicken,average2.71314PorkPork,fresh,Sweden,cooked440.0916603.94188PorkPork,frozen,Sweden,cooked440.0916603.94183PorkPork,forzen,Sweden,cooked340.0916603.26310PorkSausage,fresh,Sweden,cooked340.0916603.26310PorkPork,average3.263103.26310PorkSausage,fresh,Sweden,cooked700.0916691.514201BeefBeef,fresh,Sweden,cooked750.0916691.514201BeefBeef,sten,Sweden,cooked240.0916691.314316BeefBeef,average1.346831BeefBeef,average1.346831BeefBeef,average1.346831BeefBeef,average1.346831 <t< td=""><td>Lamb</td><td>Sausage,fresh,Sweden,cooked</td><td>30</td><td>0.09166</td><td>6.4</td><td>9.14980</td></t<>	Lamb	Sausage,fresh,Sweden,cooked	30	0.09166	6.4	9.14980
Lamb*lamb,average9.86475ChickenChicken,fresh,Sweden,cooked350.0916603.20810ChickenChicken,frozen,Sweden,cooked390.0916603.75406ChickenChicken,frozen,Central Europe,cooked200.0916601.83320ChickenSasage,fresh,Sweden,cooked130.0916601.9158Chicken*chicken,average2.71314PorkPork,frozen,Sweden,cooked400.0916603.94138PorkPork,frozen,Sweden,cooked430.0916603.94138PorkPork,frozen,Sweden,cooked440.0916603.94138PorkPork,frozen,Central Europe,cooked340.0916603.16440PorkSasage,fresh,Sweden,cooked170.0916601.55822PorkSasage,fresh,Sweden,cooked700.09166915.41620PorkSeef,frozen,Central Europe,cooked700.0916691.584500BeefBeef,sweden,cooked260.0916691.584500BeefSweden,cooked260.0916691.1984644BeefBeef,sweden,cooked260.0916691.1984644BeefBeef,sweden,cooked260.0916691.1984644BeefSweden,cooked260.0916691.1984644BeefBeef,sweden,cooked270.0916691.1984644Beef	Lamb	Lamb stew,Sweden,cooked	18	0.09166	6.4	8.04988
ChickenChicken,frozen,Sweden,cooked350.0916603.20810ChickenChicken,frozen,Sweden,cooked390.0916603.57474ChickenChicken,frozen,Central Europe,cooked410.0916601.83320ChickenSausge,fresh,Sweden,cooked130.0916601.9158Chicken*chicken,areage2.71314PorkPork,frozen,Sweden,cooked400.0916603.66640PorkPork,frozen,Sweden,cooked430.0916603.94138PorkPork,frozen,Central Europe,cooked430.0916603.94138PorkPork,frozen,Sweden,cooked440.0916603.66640PorkSausge,fresh,Sweden,cooked170.0916601.55822PorkSausge,fresh,Sweden,cooked170.09166915.41620PorkSeef,fresh,Sweden,cooked700.09166915.87450BeefBeef,fresh,Sweden,cooked260.09166911.8336BeefSweden,cooked260.09166911.9984BeefBeef,sweden,cooked260.09166911.9984BeefSweden,cooked260.0916690.206230Beef, average1.36843Beef, average1.36843Beef, average1050.0916600.206230Fish & crustacesHering,fresh,Sweden,cooked3	Lamb	*lamb,average	-	-	-	9.86475
ChickenChicken,frozen,Sweden,cooked390.0916603.57474ChickenChicken,frozen,Central Europe,cooked410.0916603.75806ChickenSausage,fresh,Sweden,cooked200.0916601.19158ChickenChicken,average130.0916603.66404PorkPork,fresh,Sweden,cooked400.0916603.66404PorkPork,frozen,Sweden,cooked400.0916603.94138PorkPork,frozen,Sweden,cooked440.0916604.03304PorkSausage,fresh,Sweden,cooked440.0916603.11644PorkSausage,fresh,Sweden,cooked340.0916603.26310PorkSausage,fresh,Sweden,cooked700.0916601.55822PorkPork,saverage3.26310PorkBeef,frozen,Central Europe,cooked700.0916691.138316BeefBeef,frozen,Central Europe,cooked750.0916691.138316BeefBeef,frozen,Central Europe,cooked240.0916691.138316BeefBeef,swe,cooked1050.0916699.62433BeefSub,Swe,den,cooked1050.0916609.62433BeefSub,Swe,den,cooked1050.0916609.62433BeefSub,Swe,Swe,Swe,Swe,Swe,Swe,Swe,Swe,Swe,Swe	Chicken	Chicken, fresh, Sweden, cooked	35	0.09166	0	3.20810
ChickenChicken, frozen, Central Europe, cooked410.0916603.75806ChickenSausage, fresh, Sweden, cooked200.0916601.83320ChickenChicken stew, cooked130.0916601.9158Chicken*chicken, average2.71314PorkPork, frozen, Sweden, cooked400.0916603.66640Pork, frozen, Sweden, cooked400.0916603.61640PorkPork, frozen, Central Europe, cooked440.0916603.11644PorkSausage, fresh, Sweden, cooked340.0916603.1644PorkSausage, fresh, Sweden, cooked170.0916601.55822PorkPork, average3.263103.6610PorkBeef, fresh, Sweden, cooked700.09166915.87450BeefBeef, frezen, Central Europe, cooked750.09166911.38316BeefBeef, stew, cooked240.09166911.38316BeefSweden, cooked1050.09166911.39843BeefBeef, average13.46843BeefSweden, cooked1050.0916600.62430BeefSweden, cooked1050.0916600.62430Fish & crustaewaKaterustaewa1050.0916603.62430Fish & CrustaewaKaterustaewa1050.0916603.62430 <t< td=""><td>Chicken</td><td>Chicken,frozen,Sweden,cooked</td><td>39</td><td>0.09166</td><td>0</td><td>3.57474</td></t<>	Chicken	Chicken,frozen,Sweden,cooked	39	0.09166	0	3.57474
ChickenSausage,fresh,Sweden,cooked200.0916601.83320ChickenChicken,average130.0916601.9158Chicken*chicken,average2.71314PorkPork,fresh,Sweden,cooked400.0916603.66640PorkPork,frozen,Sweden,cooked430.0916603.94138PorkPork,forzen,Sweden,cooked440.0916604.03304PorkSausage,fresh,Sweden,cooked440.0916604.03304PorkPork,forzen,Central Europe,cooked440.0916601.55822PorkPork,average3.26310PorkSeusage,fresh,Sweden,cooked700.09166915.81620BeefBeef,frezen,Central Europe,cooked750.09166911.38316BeefSweden,cooked260.09166911.38316BeefSeus,Goxed240.09166911.38316BeefSweden,cooked1050.0916699.62430BeefSweden,cooked1050.0916600.201652Fish & crustacemKarens,Sweden,cooked220.0916602.01652Fish & crustacemKarens,Sweden,cooked370.0916603.39142Fish & crustacemKarens,Sweden,cooked370.0916603.39142Fish & crustacemKarens,Sweden,cooked370.0916603.39142Fish & crust	Chicken	Chicken, frozen, Central Europe, cooked	41	0.09166	0	3.75806
ChickenChicken stew,cooked130.0916601.19188Chicken*chicken,average2.71314PorkPork,fresh,Sweden,cooked400.0916603.66640PorkPork,frozen,Sweden,cooked430.0916603.94138PorkPork,frozen,Central Europe,cooked440.0916604.03304PorkSausge,fresh,Sweden,cooked340.0916603.11644PorkSausge,fresh,Sweden,cooked340.0916603.15822PorkPork stew,cooked700.0916601.55820PorkBeef,resh,Sweden,cooked700.09166915.41620BeefBeef,resh,Sweden,cooked750.09166911.38316BeefSusge,fresh,Sweden,cooked240.09166911.38316BeefSusge,fresh,Sweden,cooked240.09166911.38316BeefSusge,fresh,Sweden,cooked1050.09166911.38316BeefSusge,fresh,Sweden,cooked1050.0916609.62430BeefSusge,fresh,Sweden,cooked1050.0916602.01652Fish & crustaesHering,fresh,Sweden,cooked370.0916603.39142Fish & crustaesGanet una,overseas440.0916603.39142	Chicken	Sausage, fresh, Sweden, cooked	20	0.09166	0	1.83320
Chicken*chicken,average2.71314PorkPork,fresh,Sweden,cooked400.0916603.66640PorkPork,frozen,Sweden,cooked430.0916603.94138PorkPork,frozen,Central Europe,cooked440.0916604.03304PorkSausage,fresh,Sweden,cooked340.0916603.11644PorkPork stew,cooked170.0916601.55822Pork*pork,average3.26310BeefBeef,fresh,Sweden,cooked700.09166915.87450BeefBeef,frozen,Central Europe,cooked750.09166915.87450BeefCow,fresh,Sweden,cooked260.09166911.1984BeefBeef,sozen,cooked240.09166911.1984BeefStew,cooked240.09166911.1984BeefStew,cooked1050.0916699.62430Fish & crustacessKocken,fresh,Sweden,cooked1050.0916602.01652Fish & crustacessMackerel,fresh,Sweden,cooked220.0916602.01652Fish & crustacessKockerel,fresh,Sweden,cooked370.0916603.39142Fish & crustacessKockerel,fresh,Sweden,cooked370.0916603.39142Fish & crustacessKockerel,fresh,Sweden,cooked370.0916603.39142Fish & crustacessKockerel,fresh,Sweden,cooked37 <td>Chicken</td> <td>Chicken stew,cooked</td> <td>13</td> <td>0.09166</td> <td>0</td> <td>1.19158</td>	Chicken	Chicken stew,cooked	13	0.09166	0	1.19158
PorkPork,fresh,Sweden,cooked400.0916603.66640PorkPork,frozen,Sweden,cooked430.0916604.03304PorkPork,frozen,Central Europe,cooked440.0916604.03304PorkSausage,fresh,Sweden,cooked340.0916603.11644PorkPork stew,cooked170.0916601.55822Pork*pork,average700.0916691.541620BeefBeef,fresh,Sweden,cooked700.09166915.87450BeefBeef,frozen,Central Europe,cooked750.0916691.38316BeefCow,fresh,Sweden,cooked260.0916691.138316BeefBeef,stew,cooked240.0916691.19984BeefStew,cooked1050.0916691.346843BeefStew,cooked1050.0916699.62430Fish & crustacesKarseng, Sweden,cooked220.0916602.01652Fish & crustacesKacel,fresh,Sweden,cooked370.0916603.39142Fish & crustacesKacel,fresh,Sweden,cooked370.0916603.39142Fish & crustacesKacel,fresh,Sweden,cooked370.0916603.39142Fish & crustacesKacel,fresh,Sweden,cooked370.0916603.39142Fish & crustacesKacel,fresh,Sweden,cooked370.0916603.39142Fish & crustacesKacel,fresh,	Chicken	*chicken,average	-	-	-	2.71314
PorkPork,frozen,Sweden,cooked430.0916603.94138PorkPork,frozen,Central Europe,cooked440.0916604.03304PorkSausage,fresh,Sweden,cooked340.0916603.11644PorkPork stew,cooked170.0916601.55822Pork*pork,average3.26310BeefBeef,fresh,Sweden,cooked700.09166915.84260BeefBeef,frozen,Central Europe,cooked750.09166911.38316BeefBeef,sweden,cooked260.09166911.38316BeefBeef,sweden,cooked260.09166911.38316BeefSeef,average13.46843BeefShef,average1050.0916609.62430Fish & crustaceasGod,fresh,Sweden,cooked220.0916602.01652Fish & crustaceasMackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceasKackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceasKackerel,fresh,Sweden,cooked370.0916604.03304Fish & crustaceasKackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceasKackerel,fresh,Sweden,cooked370.0916604.03304Fish & crustaceasKackerel,fresh,Sweden,cooked370.0916604.03304Fish & crustaceas<	Pork	Pork,fresh,Sweden,cooked	40	0.09166	0	3.66640
PorkPork,frozen,Central Europe,cooked440.0916604.03304PorkSausage,fresh,Sweden,cooked340.0916603.11644PorkPork stew,cooked170.0916601.55822Pork*pork,average3.26310BeefBeef,fresh,Sweden,cooked700.09166915.8426BeefBeef,frozen,Central Europe,cooked750.09166911.38316BeefCow,fresh,Sweden,cooked260.09166911.19984BeefBeef,stew,cooked260.09166911.19984BeefStew,cooked1050.09166913.46843BeefCod,fresh,Sweden,cooked1050.0916609.62430Fish & crustaceasHerring,fresh,Sweden,cooked220.0916602.01652Fish & crustaceasMackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceasCanned trun,overseas440.0916604.03304	Pork	Pork,frozen,Sweden,cooked	43	0.09166	0	3.94138
PorkSausage,fresh,Sweden,cooked340.0916603.11644PorkPork stew,cooked170.0916601.55822Pork*pork,average3.26310BeefBeef,fresh,Sweden,cooked700.09166915.41620BeefBeef,frozen,Central Europe,cooked750.09166915.87450BeefCow,fresh,Sweden,cooked260.09166911.38316BeefBeef,stew,cooked240.09166911.19984Beef*beef,average13.46843Fish & crustaceasCod,fresh,Sweden,cooked1050.0916609.62430Fish & crustaceasMackerel,fresh,Sweden,cooked370.0916602.01652Fish & crustaceasCanned truna,overseas440.0916604.03304	Pork	Pork,frozen,Central Europe,cooked	44	0.09166	0	4.03304
PorkPork stew,cooked170.0916601.55822Pork*pork,average3.26310BeefBeef,fresh,Sweden,cooked700.09166915.41620BeefBeef,frozen,Central Europe,cooked750.09166915.87450BeefCow,fresh,Sweden,cooked260.09166911.38316BeefBeef,stew,cooked240.09166911.19984Beef*beef,average13.46843Fish & crustaceasCod,fresh,Sweden,cooked1050.0916609.62430Fish & crustaceasHerring,fresh,Sweden,cooked220.0916602.01652Fish & crustaceasMackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceasCanned tuna,overseas440.0916604.03304	Pork	Sausage,fresh,Sweden,cooked	34	0.09166	0	3.11644
Pork*pork,average3.26310BeefBeef,fresh,Sweden,cooked700.09166915.41620BeefBeef,frozen,Central Europe,cooked750.09166915.87450BeefCow,fresh,Sweden,cooked260.09166911.38316BeefBeef stew,cooked240.09166911.19984Beef*beef,average13.46843Fish & crustaceanCod,fresh,Sweden,cooked1050.0916609.62430Fish & crustaceansHerring,fresh,Sweden,cooked220.0916602.01652Fish & crustaceansMackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceansCanned tuna,overseas440.0916604.03304	Pork	Pork stew,cooked	17	0.09166	0	1.55822
BeefBeef,fresh,Sweden,cooked700.09166915.41620BeefBeef,frozen,Central Europe,cooked750.09166915.87450BeefCow,fresh,Sweden,cooked260.09166911.38316BeefBeef stew,cooked240.09166911.1984Beef*beef,average13.46843Fish & crustaceanCod,fresh,Sweden,cooked1050.0916609.62430Fish & crustaceansHerring,fresh,Sweden,cooked220.0916602.01652Fish & crustaceansMackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceansCanned tuna,overseas440.0916604.03304	Pork	*pork,average	-	-	-	3.26310
BeefBeef, frozen, Central Europe, cooked750.09166915.87450BeefCow, fresh, Sweden, cooked260.09166911.38316BeefBeef stew, cooked240.09166911.19984Beef*beef, average13.46843Fish & crustaceanCod, fresh, Sweden, cooked1050.0916609.62430Fish & crustaceansHerring, fresh, Sweden, cooked220.0916602.01652Fish & crustaceansKackerel, fresh, Sweden, cooked370.0916603.39142Fish & crustaceansCanned tuna, overseans440.0916604.03304	Beef	Beef, fresh, Sweden, cooked	70	0.09166	9	15.41620
BeefCow,fresh,Sweden,cooked260.09166911.38316BeefBeef stew,cooked240.09166911.19984Beef*beef,average13.46843Fish & crustaceanCod,fresh,Sweden,cooked1050.0916609.62430Fish & crustaceansHerring,fresh,Sweden,cooked220.0916602.01652Fish & crustaceansMackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceansCanned tuna,overseans440.0916604.03304	Beef	Beef,frozen,Central Europe,cooked	75	0.09166	9	15.87450
Beef Beef stew, cooked 24 0.09166 9 11.19984   Beef *beef, average - - 13.46843   Fish & crustaceas Cod, fresh, Sweden, cooked 105 0.09166 0 9.62430   Fish & crustaceas Herring, fresh, Sweden, cooked 22 0.09166 0 2.01652   Fish & crustaceas Mackerel, fresh, Sweden, cooked 37 0.09166 0 3.39142   Fish & crustaceas Canned truna, overseas 44 0.09166 0 4.03304	Beef	Cow, fresh, Sweden, cooked	26	0.09166	9	11.38316
Beef*beef,average13.46843Fish & crustaceansCod,fresh,Sweden,cooked1050.0916609.62430Fish & crustaceansHerring,fresh,Sweden,cooked220.0916602.01652Fish & crustaceansMackerel,fresh,Sweden,cooked370.0916603.39142Fish & crustaceansCanned tuna,overseas440.0916604.03304	Beef	Beef stew,cooked	24	0.09166	9	11.19984
Fish & crustaceans Cod,fresh,Sweden,cooked 105 0.09166 0 9.62430   Fish & crustaceans Herring,fresh,Sweden,cooked 22 0.09166 0 2.01652   Fish & crustaceans Mackerel,fresh,Sweden,cooked 37 0.09166 0 3.39142   Fish & crustaceans Canned tuna,overseas 44 0.09166 0 4.03304	Beef	*beef,average	-	-	-	13.46843
Fish & crustaceans Herring, fresh, Sweden, cooked 22 0.09166 0 2.01652   Fish & crustaceans Mackerel, fresh, Sweden, cooked 37 0.09166 0 3.39142   Fish & crustaceans Canned tuna, overseas 44 0.09166 0 4.03304	Fish & crustaceans	Cod,fresh,Sweden,cooked	105	0.09166	0	9.62430
Fish & crustaceans Mackerel, fresh, Sweden, cooked 37 0.09166 0 3.39142   Fish & crustaceans Canned tuna, overseas 44 0.09166 0 4.03304	Fish & crustaceans	Herring,fresh,Sweden,cooked	22	0.09166	0	2.01652
Fish & crustaceans Canned tuna, overseas 44 0.09166 0 4.03304	Fish & crustaceans	Mackerel, fresh, Sweden, cooked	37	0.09166	0	3.39142
	Fish & crustaceans	Canned tuna, overseas	44	0.09166	0	4.03304
Fish & crustaceansSalmon, farmed, Sweden, cooked840.0916607.69944	Fish & crustaceans	Salmon,farmed,Sweden,cooked	84	0.09166	0	7.69944
Fish & crustaceans Clams, tinned, Sweden 19 0.09166 0 1.74154	Fish & crustaceans	Clams, tinned, Sweden	19	0.09166	0	1.74154
Fish & crustaceansShrimps, without shells, Sweden2200.09166020.16520	Fish & crustaceans	Shrimps,without shells,Sweden	220	0.09166	0	20.16520
Fish & crustaceans *seafood, average 6.95307	Fish & crustaceans	*seafood,average	-	-	-	6.95307
Milk, cheese Milk, Sweden, 4% fat 5.9 0.09166 0.7 1.24079	Milk, cheese	Milk,Sweden,4% fat	5.9	0.09166	0.7	1.24079
Milk, cheese Milk, Sweden, 1.5% fat 5 0.09166 0.7 1.15830	Milk, cheese	Milk,Sweden,1.5% fat	5	0.09166	0.7	1.15830
Milk, cheese Cream, Sweden, 40% fat 19 0.09166 6.4 8.14154	Milk, cheese	Cream,Sweden,40% fat	19	0.09166	6.4	8.14154
Milk, cheese Yoghurt, small pots, Sweden 11 0.09166 6.4 7.40826	Milk, cheese	Yoghurt,small pots,Sweden	11	0.09166	6.4	7.40826
Milk, cheese Yoghurt, small pots, Central Europe 12 0.09166 6.4 7.49992	Milk, cheese	Yoghurt, small pots, Central Europe	12	0.09166	6.4	7.49992
Milk. cheese Cheese. Sweden 60 0.09166 6.4 11.89960	Milk. cheese	Cheese.Sweden	60	0.09166	6.4	11.89960
Milk. cheese Cheese. Central Europe 64 0.09166 6.4 12.26624	Milk. cheese	Cheese.Central Europe	64	0.09166	6.4	12.26624
Milk cheese Cheese Southern Europe 65 0.09166 6.4 12.35790	Milk, cheese	Cheese Southern Europe	65	0.09166	6.4	12,35790
Milk cheese Milk powder. Sweden 58 0.09166 6.4 11.71628	Milk. cheese	Milk powder.Sweden	58	0.09166	6.4	11.71628
Milk, cheese *dairy, average 8.18765	Milk. cheese	*dairy.average	-	-	-	8.18765
Fgg Eggs Sweden cooked 18 0.09166 0 1.64988	Føø	Eggs Sweden cooked	18	0.09166	0	1.64988
Legumes Brown beans,Sweden,cooked 8.9 0.09166 0 0.81577	Legumes	Brown beans,Sweden,cooked	8.9	0.09166	0	0.81577

# Appendix 6 Beregninger\_Madservice[10303] (2/4)

Legumes	Yellow peas,Sweden,cooked	5	0.09166	0	0.45830
Legumes	Soya beans, overseas, cooked	7.9	0.09166	0	0.72411
Legumes	Brown beans, overseas, cooked	11	0.09166	0	1.00826
Legumes	Beans, canned, overse as	20	0.09166	0	1.83320
Legumes	Beans, canned, overse as	16	0.09166	0	1.46656
Legumes	*legume,average	-	-	-	1.13658
Sugar & candies	Sugar, Sweden	9.8	0.09166	0	0.89827
Sugar & candies	Honey,Sweden	1.3	0.09166	0	0.11916
Sugar & candies	Honey, overseas	5.6	0.09166	0	0.51330
Sugar & candies	Candies, Sweden	18	0.09166	0	1.64988
Sugar & candies	Chocolate,Central Europe	44	0.09166	0	4.03304
Sugar & candies	Chocolate,Sweden	43	0.09166	0	3.94138
Sugar & candies	Ice-cream,Central Europe	15	0.09166	0	1.37490
Sugar & candies	Ice-cream,Sweden	14	0.09166	0	1.28324
Sugar & candies	*sugars,average	-	-	-	1.72665
Oil & fat	Rapeseed oil, Central Europe	15	0.09166	0	1.37490
Oil & fat	Sun flower oil,overseas	20	0.09166	0	1.83320
Oil & fat	Soya oil,overseas	14	0.09166	0	1.28324
Oil & fat	Olive oil,Southern Europe	24	0.09166	0	2.19984
Oil & fat	Butter,Sweden	40	0.09166	6.4	10.06640
Oil & fat	Margarine,Sweden,80% fat	17	0.09166	0	1.55822
Oil & fat	*oil/fat,average	-	-	-	3.05263
Fruits	Apples, dried in the sun, overseas	18	0.09166	0	1.64988
Fruits	Apples, dried with commercial energy, overseas	38	0.09166	0	3.48308
Fruits	Apples, fresh, Central Europe	4.8	0.09166	0	0.43997
Fruits	Apples, fresh, overseas	8.6	0.09166	0	0.78828
Fruits	Apples, fresh, Sweden	3.5	0.09166	0	0.32081
Fruits	Bananas, fresh, overseas	12	0.09166	0	1.09992
Fruits	Cherries fresh, Central Europe	6.2	0.09166	0	0.56829
Fruits	Cherries fresh,Sweden	5	0.09166	0	0.45830
Fruits	Cherries, fresh, overse as	9.6	0.09166	0	0.87994
Fruits	Grapes, fresh, overseas	9.7	0.09166	0	0.88910
Fruits	Grapes, fresh, Southern Europe	7.8	0.09166	0	0.71495
Fruits	Oranges, fresh, overse as	9.4	0.09166	0	0.86160
Fruits	Oranges, fresh, Southern Europe	6.8	0.09166	0	0.62329
Fruits	Raisins, dried in the sun, overseas	23	0.09166	0	2.10818
Fruits	Tropical fruit, canned, overse as	13	0.09166	0	1.19158
Fruits	Tropical fruit, fresh, overseas by plane	115	0.09166	0	10.54090
Fruits	*fruit,average	-	-	-	1.66363
Vegetables	Broccoli,frozen,Europe,cooked	18	0.09166	0	1.64988
Vegetables	Broccoli, frozen, overseas, cooked	20	0.09166	0	1.83320
Vegetables	Carrots, canned, Central Europe	11	0.09166	0	1.00826
Vegetables	Carrots, canned, Sweden	8.1	0.09166	0	0.74245
Vegetables	Carrots, fresh, Central Europe	4	0.09166	0	0.36664

# Appendix 6 Beregninger\_Madservice[10303] (3/4)

Vegetables	Carrots, fresh, Sweden	2.7	0.09166	0	0.24748
Vegetables	French fries, Sweden, cooked as four portions	30	0.09166	0	2.74980
Vegetables	French fries,Sweden,cooked as one portion	60	0.09166	0	5.49960
Vegetables	Olives, canned, Southern Europe	15	0.09166	0	1.37490
Vegetables	Peas, frozen, Central Europe, cooked	12	0.09166	0	1.09992
Vegetables	Peas, frozen, Sweden, cooked	10	0.09166	0	0.91660
Vegetables	Potatoes mashed powder,Sweden,cooked	5.6	0.09166	0	0.51330
Vegetables	Potatoes,Sweden,baked	29	0.09166	0	2.65814
Vegetables	Potatoes,Sweden,cooked	4.6	0.09166	0	0.42164
Vegetables	Tomato, fresh, Southern Europe	5.4	0.09166	0	0.49496
Vegetables	Tomatoes, canned, Southern Europe	14	0.09166	0	1.28324
Vegetables	Tomatoes, fresh, greenhouse, Sweden	66	0.09166	0	6.04956
Vegetables	Vegetables, canned, overse as	18	0.09166	0	1.64988
Vegetables	White cabbage,Central Europe	5.1	0.09166	0	0.46747
Vegetables	White cabbage,Sweden	3.7	0.09166	0	0.33914
Vegetables	*vegetable,average	-	-	-	1.56830
Jam	Wild berry jam, factory in South Sweden, 55% fruit	11	0.09166	0	1.00826
Jam	Wild berry jam, factory in South Sweden, 45% fruit	11	0.09166	0	1.00826
Jam	Raspberry jam, factory in Northern Sweden, 55% fruit	16	0.09166	0	1.46656
Jam	Raspberry jam, factory in Northern Sweden, 45% fruit	16	0.09166	0	1.46656
Jam	*jam,average	-	-	-	1.23741
Breakfast Cereals	Müsli with sun dried apples, Sweden	15	0.09166	0	1.37490
Breakfast Cereals	Müsli with sun dried raisins,Sweden	17	0.09166	0	1.55822
Breakfast Cereals	Oat flakes,Sweden	11	0.09166	0	1.00826
Breakfast Cereals	Oat flake porridge,Sweden,cooked	2.5	0.09166	0	0.22915
Breakfast Cereals	Baked cereal,Sweden	37	0.09166	0	3.39142
Breakfast Cereals	Baked cereal,Central Europe	38	0.09166	0	3.48308
Breakfast Cereals	*breakfast cereal,average	-	-	-	1.84084
Berries	Raspberries, frozen, Central Europe	16	0.09166	0	1.46656
Berries	Raspberries, fresh, Central Europe	7.5	0.09166	0	0.68745
Berries	Blueberries, frozen, Central Europe	9	0.09166	0	0.82494
Berries	Blueberries, frozen, Sweden	7.8	0.09166	0	0.71495
Berries	Strawberries, fresh, Sweden	6.2	0.09166	0	0.56829
Berries	Strawberries, fresh, Southern Europe	8.6	0.09166	0	0.78828
Berries	Strawberries, fresh, Middle East, by plane	29	0.09166	0	2.65814
Berries	Strawberries, frozen, Central Europe	16	0.09166	0	1.46656
Berries	*berry,average	-	-	-	1.14690
Cereals	Whole wheat, Sweden, cooked as one portion	4.4	0.09166	0	0.40330
Cereals	Whole wheat, Sweden, cooked as four portions	2.9	0.09166	0	0.26581
Cereals	Rice, overseas, cooked as one portion	7.4	0.09166	0.525	1.20328
Cereals	Rice, overseas, cooked as four portions	6.1	0.09166	0.525	1.08413
Cereals	Pasta, Sweden, cooked	6.8	0.09166	0	0.62329
Cereals	Pasta,Southern Europe,cooked	7.5	0.09166	0	0.68745
Cereals	Fresh pasta,Sweden,cooked	8.9	0.09166	0	0.81577

# Appendix 6 Beregninger\_Madservice[10303] (4/4)

Cereals	Barley,Sweden,cooked	2	0.09166	0	0.18332
Cereals	Couscous,Central Europe,cooked on a hot plate	5.3	0.09166	0	0.48580
Cereals	Couscous, Central Europe, cooked with a kettle	5.1	0.09166	0	0.46747
Cereals	Rye flour,Sweden	5.2	0.09166	0	0.47663
Cereals	Wheat flour,Sweden	5	0.09166	0	0.45830
Cereals	*cereal,average	-	-	-	0.59621
Bread & Pastries	Bread, fresh, local bakery	8.9	0.09166	0	0.81577
Bread & Pastries	Bread, frozen, local bakery	12	0.09166	0	1.09992
Bread & Pastries	Bread, fresh, bakery far away	9.7	0.09166	0	0.88910
Bread & Pastries	Bread,frozen,bakery far away	13	0.09166	0	1.19158
Bread & Pastries	Crispbread, Sweden	14	0.09166	0	1.28324
Bread & Pastries	Sponge cake,Sweden,with butter	16	0.09166	0	1.46656
Bread & Pastries	Sponge cake, Central Europe, with butter	19	0.09166	0	1.74154
Bread & Pastries	Sweet bread, Sweden with butter	19	0.09166	0	1.74154
Bread & Pastries	Sweet bread, Central Europe, with butter	21	0.09166	0	1.92486
Bread & Pastries	Sweet bread, Sweden, with margarine	15	0.09166	0	1.37490
Bread & Pastries	Sweet bread, Central Europe, with margarine	18	0.09166	0	1.64988
Bread & Pastries	Biscuits,Sweden,with butter	23	0.09166	0	2.10818
Bread & Pastries	Biscuits, Central Europe, with butter	26	0.09166	0	2.38316
Bread & Pastries	Cream cake,Sweden	16	0.09166	0	1.46656
Bread & Pastries	Apple cake,Sweden,with butter	18	0.09166	0	1.64988
Bread & Pastries	Apple cake,Sweden,with margarine	14	0.09166	0	1.28324
Bread & Pastries	*breads,average	-	-	-	1.50437
Drinks	Soft Drinks,Sweden	5.9	0.09166	0	0.54079
Drinks	Soft drinks, Central Europe	7.1	0.09166	0	0.65079
Drinks	Wine,Southern Europe	12	0.09166	0	1.09992
Drinks	Wine, overseas	14	0.09166	0	1.28324
Drinks	Beer,Sweden	12	0.09166	0	1.09992
Drinks	Water from tap	0	0.09166	0	0.00000
Drinks	Water from bottle, Central Europe	2	0.09166	0	0.18332
Drinks	Orange juice, overseas	10	0.09166	0	0.91660
Drinks	Apple juice, Central Europe	7.1	0.09166	0	0.65079
Drinks	*drinks,average	-	-	-	0.58357
Spices	Herbal spice,Southern Europe,commercially dried	36	0.09166	0	3.29976
Spices	Herbal spice, Southern Europe, sun dried	16	0.09166	0	1.46656
Spices	Herbal spice, overseas, sun dried	23	0.09166	0	2.10818
Spices	*spice,average	-	-	-	2.29150

## Appendix 7 Interview with Eleni, staff of the AAU-CPH canteen (1/2)

8th of February, 2019 Interviewers; Matthijs, Luis and Inés Interviewee: Eleni Arvaniti Methods of interviewing: Semi-structured interview

### Summary:

Based on experience and assumptions made by interviewee. And edited based on listening to the audio recording by a second interviewee

#### About waste organization;

Not that much food waste, depending on the period of the year or specific dates they know approximately how much they need to cook for not overproducing. One example is the examination period. Eleni assumes it is based on experiences and not statistic made, perhaps also there is an interaction between the university and the Canteen. Eleni made emphasis on the fact that waste food is money for them, and as a business, they try to reduce as much as possible because they cannot have an economic loss.

Everything that is cooked can be saved it in the freezer, not for the next day, but later in the week or for the next week or served in sandwiches. The raw products, like sandwiches, that cannot be saved for long, sometimes they freeze and they sell them next day (lower prize) or they throw them. Marianna another AAU student that worked in the canteen tried not to have them thrown away, but there was some kind of logistic problems where they needed to write down the card number to take the food, not to make a bad use of it. So, the canteen is not responsible for food poisoning risks, because the sandwiches have been out of the freezer/ refrigerator over the given time. Lately, Eleni hasn't seen many wasted of sandwiches.

They use some of the spare food for next day dishes. There is a day of fish

every week. They cook almost everything on their own ( bread, pastry, sandwiches...) Eleni assumes that there is no dietist that advised the chef on nutritional value.

In the breakfast all the pastry left over is thrown by the end of the day, also the cheese (if there is a small piece that you cannot present the following day) and ham slices (max. 10 per plate) are thrown away directly.

Recycling is not easy while preparing meals, everything mixed. Just recycle big cardboards or big things. Milk packages, plastic wraps/ wrappings. With a weighting system, there is not much food thrown away according to Eleni.

What is in the plates/pans/trays are thrown away by the end of the day.

Eleni's opinion about the opportunity to make a takeaway service for the leftovers was not so optimistic, because there should then be an employee tasked and paid for selling them. Also, the closing time is early, so food has to be stored until dinner. However there is already a subscription fee, so we could link that.

#### About menu:

Morten is the one designing the menu and the schedule for the week along with the cook(cooker). (We need to talk with him). He does a preparation and orders what is needed for the week. Every week there are trucks coming with the food supplies.

He is interested in vegan meals and asked a vegan employee for advice on vegan dishes. This is because he has seen that there is a bigger amount of vegan people at AAU and the purpose of the business is to make money. Also to make this situation better for vegan people. He is

# Appendix 7 Interview with Eleni, staff of the AAU-CPH canteen (1/2)

interested in making appealing veggie dishes.

Allergies/ingredients are specified in the blackboard next to the food in the canteen.

About the organisation:

The great business is the money they get out of the conferences. Eleni says that some of the leftovers from these events are put in the canteen for the students.

Compass Group is the company behind the canteen at AAU-CPH. The work day starts at 7am and ends at 5 pm. The food for the next day is prepared in the afternoon. The cashier is working till 1pm but you can buy food till 2/3pm.

Danish have a specific way of working, Morten has it too. There is a card for the sandwiches and coffee.

25th of February, 2019 Interviewers; Matthijs, Luis , Zeina. Interviewee:Morten Pedersen Methods of interviewing: Semi-structured interview Participants: Luis (Lu), Matthijs (Ma), Morten (Mo), Zeina (Ze).

### Transcript:

Ma: So our first subject is a bit about how is the system around getting food in and serving it on weekly basis and we were wondering... you get your food from prima frugt is still?

Mo: Yeah, we get our fruit and vegetables from prima frugt and all the other things are from catering engro, that's our main supplier.

Ze: That's from all compass.dk

Mo: Yeah , catering engro and below prima frugt and then other suppliers for some other stuff.

Ma: Like?

Mo: Kviling (Danish name) fisk for fish, or Multiline for sandwich.

Ma: You can decide which weekly basis comes in?,what you aorder? how does this process goes usually?

Mo: Of course we talk about a main menu for the upcoming week, we need to have some certain kind of.. to that. One day when we have fish and we cannot have pork all the other rest of the days, so poultry, some pork, some beef, maybe some lamb, we have to mix it a little bit.

Ze: You have meat every day?

Mo: Yes that's in the contract. Here in Aalborg University in Copenhagen we have the same contract as where the big university in Aalborg and also is, in Esbjerg. So it is the same contract.

Ma: What does that contract states? Is meat what do you have to serve every weak?

Mo: Meat... one hot dish that have meat, and one day with fish, and then there should be some kind of smaller dish.

Ze: Like side dish?

Mo: Not a side dish but we have done it sort of vegetarian dish. That's actually not in the contract, that it has to be vegetarian, it could be meat.

Ze: What would be the smaller dish? Because I eat here today...

Mo: The vegetarian.

Ma: You could decide that, "let's make this vegetarian dish the small one".

Mo: We have to serve two hot dish. then we have to have certain amount of sandwiches. Three types; two regular sandwich and one luxury. Same thing goes with the hot dish that you have to change the filling of the sandwich from day to day, we always the vegetarian or the bio.

Ze: How many types of sandwiches do you usually have?

Mo: 3 or 4, and then there is the salad bar where we have around 8 to 10 different options.

Ma: Per week?

Mo: Per day.

Mo: We try to make it as much mix salad as possible, because we think that's the most exciting thing, but actually is not necessary, it could also be clean...

#### Ze: Like do it yourself salad bar?

Mo: That's just my opinion, is not for me. some people like that.. but we try to mix it as much as possible. But we also have just salads, sometimes tomatoes, or cucumbers whatever...

Ma: Do you buy the same product every week?

Mo: There are certain things we buy every week. like salad...which type of things?

#### Ma: Raw ingredients.

Mo: Always carrots, onions , always salad, always cucumber, tomatoes, almost every week pepper, red and yellow pepper. Not the same type of meat, if you haven't guessed it already we buy a lot of chicken.

Ze: Can you describe what a typical work day is for you?

Mo: I get here at around 6.30 and sometimes is me who is baking the bread, we bake bread, do everything ready with bread now so it is ready for tomorrow, AND THEN ITS ready to rise and it takes quite some time, actually.. and then opening the door, and then you have to prepare breakfast for being ready at 7:30, you know turn on the coffee machines,

if there is anything to clean from the day before you do that. Some dishwash and then, the goods and grocers are coming from catering engro 2 or 3 times a week.

#### Ze: The pastry?

Mo: No, all the products. There is a lot of containers. It takes 30- 45 min to put everything where it should be, and then we are ready to start. If there is some dish that requires a lot more time than the other, I'll ask one of the chefs to start with that and not help with the other products. That's pretty much how it works, we have talks, we have a lot of meetings around conferences that would require special treats.

Ma: And that's also prepared in this kitchen?

Lu: So the menu is basically frame by the contract with Aalborg?

Mo: No the menu, what should be on the menu. They don't tell us there should be a coco bun.

Lu: But do they tell you like you have this amount of meat this many times.

Mo: Ish, we need to have a feeling on how much we should buy, need.

Ma: Does it specify something about fair trade, organic or...?

Mo: No not in the contract. No we actually ask for the organic. I started 3 years ago and I wondered why we didn't live up to any organic standard but that's not in the contract.

Ze: My supervisor started 5 years ago when they cut the budget of the canteens, to make it a place of engagement a place where food would

be local, supporting local businesses, organic, and all that, but they cut down the budget, so...

Mo: I know, I wont say anything .... but yeah that's true.

Ze : Is something you don't want to say on the record...

Mo: Yeah.

Ma: It is something in the contract? Like it is decided by AAU, Aalborg university in general also with compass group ...

Mo: And then it runs for 5- 6 years.

Ze: So its AAU the boss in terms what is on the contract...

Mo: Yeah, we have to have this standards, we want 2 hot dishes, whatever everything is possible when you make a contract but there is also some economy on it, to be honest.

Ze: With the food suppliers, so do you communicate with them pretty often?

Mo: Regarding what?

Ze: Regarding what kind of food you get...

Mo: The quality?

Ze: The quality, the quantity, the type, do you entertain the communication with the suppliers to know which kind of ingredients you' re gonna get...

Mo: No, we have a system where I decide what i want to get it.

Ze: So it is an online platform?

Mo: yeah, If it's in the system, they have to delivery.

Lu: Is this system compass group as a whole, and they just order as compass group and deliver...?

Mo: We have an "incubes", in our office, 4-5 people and we have the communication....and tell them what we want to be able to buy to the long period of time.

Ze: So how long ahead of time do you have to decide?

Mo: It depends on what parts green vegetables and fruits, it changes through the year. But cheeses and dairy products you can get them all year around for the same price, pastry...

Ma: What kind of information do you receive from the register, apart from being a proper food, does it say where it comes from?

Mo: It always says where it comes from.

Ma: and that's in the label?

Mo: Yes that's in the label.

Ze: when you make a menu, is there any attempt to make it seasonal?

Mo: Of course there is an attempt to try to use more fruit in the summertime, whatever... you try to find the products that are in season, with fish as well,

and it is also reflected when we buy stuff, when its season the prices are lower of course.

Lu: In regards to the suppliers are you bound or are you free to choose?

Mo: We are not free to choose.

Lu: So local kind of...?

Mo: In a small scale, much smaller scale, that wouldn't be a problem... it should make sense (economically speaking).

Mo: I have had people asking me before, asking if we can make some kind of work together they had some products, actually they have never return, we had some students, with salads some herbs...

Ma: That was my group, to be honest the project run to a dead end, we wanted lo have a label, the label was too expensive and the container as well, it was like 10.000 dollars, and unfortunately we couldn't find people to harvest,...

Mo: And I totally understand that because it is very difficult and have so many obstacles in the way, especially for small producers, so it's very hard, to get to work to together those things...

Ma: Yeah, and it was too expensive to serve you...

Mo: Yeah and i totally understand and I had a feeling, But that's the good thing about being young and optimistic... The real life is different.

Ma: Sorry for not coming back to you.

Mo: No worries, I know the procedure. I just remembered, was it last year?

Ma: Yes, last year this semester as well.

Ze: Where there any changes in organisation, in terms how you run things? To know if changes in contract on the way of supply is something that can happen or not...

Mo: No, in the contract have not been any changes, but we... I on a regular basis talked to some contact persons in this house in Aalborg and I talked to them this days and there haven't been any major things changed, not in my time here. I think before that, maybe changes there.

Ze: And you have been here for 3 years?

Mo: Almost 3 years yeah.

Ze: Is there any food or ingredients training to the staff? What's in the product...?

Mo: Not everyone, but most of them I think. But i think we only have one not trained.

Ze: Are they trained in ingredients?

Mo: They should know, as many other things some people are better...

Lu: regarding regulation, what is the framing, operation? Like schemes, the smiles...

Ze: You mean user feedback?

Lu: Hygiene, safety and risk...

Mo: Oh yeah we often do , well not often, but it depends on how much, we haven't had anything with the hygiene, so they come once or twice a year, they come and ask, There haven't been any problems, otherwise they would come more often. Security, there are also some unannounced sometimes, they come sometimes, but not often.

Lu: There is not other kind of regulation you need to follow? the smiles is more than it...

Mo: Yeah and of course we need to live up to the contract.

Lu: Contract and smiles are the main control systems.

Mo: Yeah towards aalborg, but we also have for the Compass group. You know a decent economy, and some workers, to do good about the job,

Ze: Do you have any system to get users feedback, what do they think about the food...

Mo: The facebook site, i don't think they use it...

Ze: You have facebook site? Does people know?

Mo: Yeah we do... I don't know, should be on the entrance.

Ma: And you get feedback from that?

Mo: It was long time ago, i think there are experts, at some point there would be a group, the people responsible of contract would like to have students to talk about what they think or if it should be any changes.

Ze: How much food is left a day? Food at cheaper price, any initiatives...?

Mo: We sometimes sell it cheaper, but of course we use as much left as possible, again, the day after.

Ze: So you use it to make the day after?

Mo: Yes for example the dish today, there are some eggplants, some tomatoes, if you are not mixing everything together at eleven o'clock, If you do that at two o'clock it would look like shit to be honest. If all the things are left apart then it's easier to use in the salad bar the day after, and do that with everything, reduce the waste very much.

Ze: Ok, so if you have, for example, a big plate of tulle, you mix it and present it?

Mo: Actually we know when the most busy moments are, i would be very angry if you fill a very big plate fifteen minutes before we close, we know there are just one or two customers coming. If something touches the buffet, you have to throw out, so of course you don't do that, and when we get close to closing time it shouldn't be filled up, because you need to throw that.

Ze: What about the salad bar? Does it has to be thrown up?

Mo: Not if you can eat that again, but it is difficult to eat that, and of course there is a hygiene thing, this rules are what we have in Denmark.

Ze: So if you have tomatoes in the salad bar, you can heat them up for the next day?

Mo: Yeah, you can use them for a soup, solse or whatever, but it is difficult to heat up a cucumber.

Ze: Someone that tried to take waste food from the canteen last year...

Ma: Mariana, sandwiches thing, but we all signed a paper saying that we were responsable, it wasn't compass group default food poisoning.

Mo: Yeah I remember she was trying.

Ze: So today's people can't do that, after two o'clock, except from the sandwiches...

Mo: Actually that is an hygiene thing, we can sell them cheaper, but we cant give them away.

Ma: we were thinking do you know Too Good to Go? We were thinking if there is food waste to do it, but as said it is limited... But will be able to implement something like this, where there is some salad left...

Mo: I think it is possible, but something like that should go through the main university in Aalborg, it is not easy, we are an external company its not easy to play by the rules, if they find out in Aalborg that we needed to do something like this then it would be something but it is not gonna happen, it is not a small company/business you cannot do whatever you want...

Ze: But it is interesting that it is Aalborg who decides.

Mo: Yes there is where the main characters are.

Ma: Yeah and in discussion with compass group...?

Mo: Yeah, yeah.

Ma: We had this policy on food origin transparency, and now there are some allergens....

Mo: yeah you can ask.. You can ask about anything, we don't type everything down, it's very big work to do to write everything down.

Ma: So in 2020 it is going to be mandatory to all canteens to provide information of food, so if it comes from spain, meat from Germany...

Mo: Should it be checked in the menu or people could ask like with the allergies, do you know that?

Ma: It didn't really say, but what would it imply if it needs to be in text?

Mo: It wouldn't mean much but i don't know how... something like German meat.

Ma: Yeah something like that have the plates and next to it...

Ze: Yeah so what is interesting about this regulation is that people from some business try to get a head out of the game, and try to use this as an argument to change things in the canteen, like frokost Dk. And this is why it is so important, because for branding putting the main ingredient will force to have something that you're proud of...

Mo: I understand that.

Lu: We are also working with customers references in choices, if they can influence in eating,

Mo: That would be great if people could influence that because sometime it is difficult to get some inspiration and we also have foreign students that have food from their own country that they can share...

#### Lu: Through facebook or...?

Mo: Yeah or now, whatever. It is always nice with feedback and requests. one thing to keep in mind in this university and any other unis, it is not a private company, there is limited economy.

#### Ze: AAU is public or compass group?

Mo: No no. They are contracts, where in private companies they pay a lot of money to other companies to say it should be the best food, best fish, 90% organic... I don't think they have this chance in public. But of course you can do it, you just have to keep it in mind.

Ze: It was really interesting everything you said.

Mo: Anything that surprised you?

Ze: Something that surprised me (and i am happy about) that you use a lot of recycled ingredients.

Mo: Yes we do, maybe mariana have told you there is a lot of food waste, but for a canteen of this size there isn't that much...

Ma: Yeah, Eleni told us that.

Mo: It isn't. But there is a problem because we don't know how much people will came so if we make 300 sandwiches, and only 200 are sold

what are you gonna do with the rest?

I have been in canteens where omg, even if the clock is five minutes to two, the buffet should be filled so you can imagine what happens with that food.

Ze: Would you be able to quantify the waste?

Mo: Between 10 to 40 liters i would say, per day. But include solse, i will probably say that we make 300-500 kg of food. Of course there will be more waste on a friday than monday. There will be less quantity on friday but you can use the food on friday because they can last for the weekend. Friday you tend to use what you gather together during the week, of course there is fresh food but you know, if you have something left from tuesday then it has to be used by friday because that won't last till monday.

Ze: And fruits and stuff the loose fruits you have, until they are rotten?

Mo: Yeah.

Ze: Thanks it was interesting.

Mo: Do you think you will use it?

Ze: Of course.

Ma: Yes, maybe we will contact Aalborg university...

Mo: You should.

Ma: Also, I don't know if it is relevant, but we would like to tell you that we sent an email to compass group to ask about more on the origin of food,

how will it imply, suppliers, interaction between customers...

Mo: Did they answered?

Ma: Yeah yeah, so the sales department I think, something like this, so we will have one interview.

Mo: Perfect, sounds good.

Ze: We have one question; resume, what is the goal of your operation? Goal by the end of the day?

Mo: I can't say it in one line, there are some factors you know, happy customers, happy employers, some good financial situation, it goes together.

Lu: Any specific concerns when you design the menu of the week?

Mo: No, no specific concern.

Lu: You look for inspiration...?

Mo: Yeah.

Ze: Thank you for the talk !

Mo: No prob.

6th of March, 2019 Interviewers; Matthijs, Ines. Interviewee: Elomaa Nina Methods of interviewing: Semi-structured interview Participant: Mathjis(Ma), Ines(In), Elomaa(Elo)

### Transcript:

Ma: so we are currently working on our master thesis about canteens, as you may have understood from the email, and we are very interested getting to know the organization behind the canteens or that supplies them,

First of all, we are a little bit interested in what you do, is it correct that you have been sustainability director for 5 years at Fazer already?.

Elo: yeah, my title is sustainability director at Fazer group, so I have been working at Fazer for over a little of 5 years. I came in this exact position when I started at Fazer.

The main responsibility area for me is actually to have the strategic point of view when it comes to the sustainability of the whole group. let's say the strategy itself, the approach, the KPIs and then, of course, supporting the different business areas of Fazer group.

In sustainability we have a team which is fairly small in my view, so we got 3 persons who are directly reporting to me, one person in the matrix and one person in Russia she has no reporting to me.

About Fazer group and the different business areas, so we work with the food services which is the biggest and that includes the canteens services. We are known for our confectionery products that are another business area and the third business area is called Fazer bakery so it creates our bakery products. The other business area is Fazer lifestyle food, that is

the newest business area which focusing on plant-based and non-dairy products. Then we have Fazer retail which we don't call business area but is a group business unit and there we have the bakery shops, and cafes and small micro bakery shops.

Ma: then the three areas in the middle, so, confectionary, bakery and lifestyle food is all sold to shops or supermarkets?

Elo: yes, they are selling their products to the retailers, so to the big shops. yes, so the bread is going to the shops and the chocolate, confectionery and of course the lifestyle products. There is one small business unit there in the lifestyle products which is mills, so we are also in the milling business making flour from the grain and then we don't sell flour to the retailers, but to the bakery who can bake the bread, so that is not selling directly. But mainly customer is the retailers. yeah.

Ma: so in everyday life you cover all these parts on the sustainability and the strategic point I believe?.

Elo: yeah that is basically our job, to support this business. but as you can understand that's quite big and a lot of things. So the idea has been in Fazer that we have the group level strategy, we called now the sustainability approach which was updated recently so it was approved last year by the management team. We had a separate sustainability strategy and vision, but as we have been working with sustainability quite a long time. so we don't need a separate kind of strategy because the idea is to include sustainability through the business so, it is part of the normal processes and part the normal functions have to be taken into account in the business decision.

So we felt we didn't need a second strategy anymore but we called the sustainability approach. and that's basically the idea that business

includes the sustainability problems through the business strategy and through the daily activities and then also makes annual action plans focusing now in sustainability and in the development also continuity of the activities that you have already started. so that's why we have very small sustainability team. because we have to try to push it through the company and make it happen, and we have many colleagues working with it and supporting our area.

Ma: then as I see their part in organizational stuff and they do sustainability as incorporated:

Elo: Yeah. let's take a practical example. Product development, so when we have people developing new products, when they are thinking of raw materials: "what I want to put into the product", they should consider the sustainability point of view. "should I put something that has a huge environmental footprint, or can I do something about it and make it more environmentally friendly". Should I make a product that contains animal pest ingredients or would I go for vegan? So that's basically the thinking that they have taken in account and we help them to create checklist and process and how can you take it into your work and think about it when you are doing the decisions. Because we are trying to go for more plantbased materials, we want to halve the emission by 2030, and we want to halve the food waste by 2030. and those are the goals we have set ourselves now, they were published on Monday this week

so we have 4 goals that we are trying to promote that is:

50% fewer emissions s by 2030 50% less food waste 100% sustainably sourced And more plant-based. Ma: Nice, ambitious.

elo: ambitious yes, but let's say the agenda 2030 so the Sustainable development goals was the inspiration for this we understand because who has such a huge impact on people and to the environment and to society and we also felt as a company we need to take this. If we think of how big the impact we have to work with this. and we have been working with it. is not like we just started. Now is like we are raising the level of ambition and intensity on our activities.

ma: that's what we like to focus on How can we make a change on the consumer or in the food industry and in that regard we have a more specific subject like food transparency or the origin of food. And on your website, we can still find your corporate responsibility review 2017 and some aspect are in transparency and origin of food and. in that's what we like to talk you about. and then the first thing we would like to ask is:

how sensitive are your customer or consumer to these sustainable concerns? do you get information from them?.

elo: our customer, the retailers, they have requirements towards us, one thing could be being more transparent and having the dialogue on these topic with them but, if we jump to the consumers because we also have direct contact, they have questions. and we have people in our communication who are having this conversation live most of the time. They have this discussion with the consumer. If we receive the question like where are the raw ingredients coming from.

In the canteens we have had this topic on the agenda from a very long time. If there is a little bit between the countries. If I take as an i example in Finland. I think it was many many years ago, that we started publishing

on the origin of meat and fish that is something we have tried to do. To put it there so they can see when they go to the canteens also on the menus; what kind of ingredients does your lunch contains and where the raw materials are coming from. This is not applicable to all raw materials but there are certain origin country or certain raw materials where we have good information about the origin country.

when is easy I think is also important for the restaurant or the consumer to know where the raw material is coming from. But there are of course when you think about food served in a restaurant there is a lot of ingredients in it. So it can be difficult sometimes when you think that the meat maybe the vegetable that is the easy part. but if it contains a lot species and other kinds of process ingredients, like sauces that can be a bit trickier because you don't necessary know or its difficult to tell because e.g this sauce or this ketchup is coming from Germany or other country that can be more difficult because has already being process and is hard to tell where is that tomato in that sauce coming from, that's more trickier but basically telling the information about the country is something we have been doing and we are happy to tell, of course if we keep getting the question then we find it out. but in this all kind of automated processes when you print the menu every day, you need to have it in the system in certain format that everybody can see it so it becomes more fluent, normal process. when we get better, when we get more information we would be able to a to tell more and open up more.

ma: so communication is mainly by menus?

elo: yeah menus, also in the website is something about certain raw materials where we get a lot more question. but if I think for example in the food services our sourcing direct has something over 10,000 different lines of different ingredient therefore you can also understand there's a huge amount of information.

we have around `10,000 suppliers so that's a huge amount of information but we try to share the information in a way that does not become overwhelming. that's why for certain ingredient you can find some information on the website. And yeah could be much more transparent on what we share but we have to try to find the balance in what we published and something people is really interested so if we get the question, ok we can tell more and more. There is a lot of thing that people is not interested about. we try not to drown them in information

ma: yeah probably a lot of consumer get tired pretty easily and then something we have been thinking is if you have the information on the origin of food or the impact of certain countries, do you also communicate that?

elo: yeah, when we have raw materials that comes from areas where there are sustainability related. for example, cocoa that is an interesting material for consumers that are not using chocolate and enjoying it, we have tried to kind of when we have this raw material that are coming from the origin that there is more risk about the sustainability to the social aspect and to the environmental aspect. then we kind of focus more where there are more topics and more issues related. In cocoa there is a lot of discussion in the child labor and the social issues and there is also discussion about environmental topics, like biodiversity related things then we take this raw materials

and an also evaluate what we can do in order to make it more sustainable. and to take those actions and try to make them better for those farmers but we are not doing it in only those countries (developing countries), we have this activities also in nordics where we are working with the bakery and the farmers, in the sustainable calculation of grain so it is not only focusing on risk countries but. we do these activities where we have a big impact, and where we can make a difference so it is not all those little

countries.

ma: what are the main challenges in communicating this to the consumers?

Elo: I think is time and attention.....(Bad connection)

Ma: hello?... you are falling away a bit...... sorry the connection broke a little bit could you repeat a little bit

Elo: I was saying that is probably that the consumer .. is the time and the attention that you can get. There so much on going and people are busy and how can you tell about your sustainability activities in a interesting way that reaches the consumers.

#### Ma:that's a good one.

Elo: I think that's the kind of the problem, because we have a lot of activities going on how can we tell it in an interesting way and also in an understandable way that consumer will understand what we are doing.

Ma:so, I can see from your story, you do it in thematic ways, so cacao is one part, and interesting or very relevant subject and you communicate that and next is the grain .

Elo: yeah there are many things we are talking, we also have been talking about how to improve our energy, what are we doing with the food, what consumer you can do to reduce environmental/climate impact, and go to more plant based and try also to encourage people.

I think is more how to reach the consumer in a also in a positive way that people don't get that somebody is now pushing but is more that this is a good thing and we can do it, because I have felt that some people is feeling looming and that climate change is there, and what can I do about it?...So we have try to make it positive that there is a possibility there is no need to be negative about it. In that sense also having a good tonality into the discussion.

Ma: How do you bring this positivity, in a storytelling?

Elo: yeah, storytelling, trying to say : hey lets do it and make thinking about the tonality trying to make it positive, saying this is a thing we as a company can do and you can also participate. For example, our bakeries are trying their consumer communication about their sustainability activities here in finland and they want to take the plastics discussion.

Theres alot of consumers concern about the plastic and plastic in the ocean has been a big discussion that has calm down, but people are concern and of course we had hack the bread from the plastic and for good reasons. because is protecting the product and its because if you put it in the paper bag then you through it away easier, we try to use cleaner materials as possible, and in a nice review we are saying: hey you, what are you saying about the recycling because then we get new kind of products and it can be recycled and recycled if you have the possibilities. because we have the facilities in finland of making new products out of plastic and its recycle. so we are encouraging people to do that. so we saying that we are doing this, and you can also participate.

ma: how is the communication channels. you already said the internet, and also canteens?

Elo: yeah I think in canteens we are doing the communication, also in some canteens we have big screen where we can share the stories, then we also do it in social media. for example the bakery example is going to be share into social media channels, so I assume in facebook, and they are into video so instagram pictures. So we are using all possible

channels that we can. and we are communicating in different channels, then of course there is normal, traditional media, journalist writing the story that's one channel where we are as well. I would say whatever kind of communication channel that you can think of we are there. so the challenge is to reach the consumer and they click in that though.

Ma: this is the exactly the point we want to work on, mostly...

In: how to engage the consumers towards a more sustainable consumption of the food in the canteens and I think is really interesting the different things that you are making.

Elo: I think the one thing but of course I don't know what your view is, what we have also try in the canteens is the nudging method so that has been used. we have tried and tested in certain canteens how can we make people eat more plant based and there has been positive results. Kind of how you organize the buffet if you put the vegetable first and the salad first people go there first and take more vegetables in their plates and that has actually reduce that they take meat, fish or any kind of animal protein.

So basically that has been one thing that we have been introducing the nudging methods, the different methods that you can do and how you organize and guide people to take the food or things like that. Interesting example was when we had water cans and you go to the canteens and you put strawberries or basil leaves to the cans people start drinking more water. another thing is we had fruit, we had full apple or full orange people wouldn't take it. but when the fruit was sliced people started eating it. So it's very interesting, is also a method where you don't consciously do it. you just go there and makes you behave in a more sustainable way. Nudging is a method we have been applying so it stands beyond conscious behaviour, that you can change and has very interesting see

that it works.

Ma: interesting, we thought we were in a new area, but you have surpass most of our assumptions, but then my concern as master student in sustainable design, what would be new challenges to work on?, what areas are underdeveloped?

ELO:I think one thing of course when you think about consumer behavior what is the best way to make things mainstream because I think that's the biggest challenge

is not only for certain people. I don't know how you feel about that in denmark but sometimes is like if you think that consumer and people need to consciously do the decision the change is happening and people are more concern and they are changing their behavior but in the other hand i think sometimes it takes such a long time to truly change their behavior so that it becomes the new habit and get rid of the old one. so that what i been thinking how can we mainstream the sustainable way of living and ho to make people consume less. How can we make them behave in such a way they feel is bad to throw food away or things like that. how you make the majority of people are doing this, and not only some, like the new generation not only the old generation. but this is the way to do it.

In: We were thinking at the beginning about this connection between people and food like how we feel it. like we have an attachment towards food or not and that's why we are throwing more food than before because before you were the one producing it so right now with those over consumption with this kind of mindset we can get whatever we want that is also affecting that like we waste much more than before.

Elo: yes I think one of the things that I have been this is very delicate issue to discuss about is it so that everything is too cheap so we can afford to

do that. and of course i understand that there is people who can't afford to buy food. or they can afford it so i think that's also very delicate issue but if i start thinking about it why is it, how is it possible because i remember for example my grandmother she was a disaster if something get spoil when we talked about food. she was like this is horrific thing, i can't throw it away how could this happen. it was like a really something that you never did. and it was very very bad if you do that. and i think that is probably one thing that I thinking myself is that we throw it away because we can afford it. Like you mention is possible, but earlier it was not, and I think that's probably also quite difficult issue to raise if you think from the political or societal discussion. "let's pay more on food hahahaha.." (laugh)

In: I think that's more related to maybe households because we have some investigations on the canteen, at our university. and actually the food waste is not that big compare to the amount of food that we have here. and i also think that is because we are students like we look alot into the economy and everything we buy here we eat it (laugh from ines and eloma) that's another thing that can influence.

elo: and of course if there are other kind of technical things, if we look at the food kind of chain you are right. there is a huge amount of food waste in the households, you are right. so basically what the other part is also that there is something of course that also companies can focus on make some difference is then in the beginning of the food chain in the farms because there is also that there is food spoil, and for example I know that there are companies that have been working with the starting point of the value chain.

For example, the milky industry, in some of the developing countries that when they have the milk when they don't have anywhere to put it cooling, I mean they don't have a fridge there, of course, it gets spoil immediately and of course, that's something you can do that. there is also the possibility to keep the food in good condition and it is something we can do there. Then, of course, thinking the seasonality thing in food, that when there is a season you can use certain vegetable, for example, let's use them in the canteens because now is time for carrots, well that's a bad example. Now is time for mushrooms or something like that, let's make food from that. Because then it doesn't being use actually as a food and not staying in the farmers field because of course they don't pick it up there if nobody is going to eat it and then it means it has been growing there, all the resource has being used in vain of course it will turn again into soil, but it still food and we need it because we have put some resources in it a now we have lost it. and that also a thing that i think that must change. like "ok, lets.." and that's also something we have been trying to change in the canteens. there is also the seasonality we use during certain period of time, certain ingredients and I think that's also from the totality perspective to help reduce the food waste.

ma: in that regard, we found an article that made a holistic measurement, food and sustainability wise and then there were a couple of subjects and this man from the article made like sort of priority, like this is more important than other thing but we are really curious to what fazer thinks is important in this area, so we have like a list and maybe you can comment on what you thinks is the most important thing. so you have

organic food seasonality fair trade product meat in like meat consumption fish, more in sustainable source way food waste origin of food supporting local community and practices

elo: how many can i chose?

laughter...

In: you can select which one you think are more important

#### Ma: yeah maybe or ranking

elo: i think that the important part for many many aspects is the food waste, then i think that also the last one. if is understood as working with the locality if it can also be reach to the very beginning of the chain with for example cocoa i think is very important that we also have a connection to the origin country farmers and work with them in order to make the cocoa grow more sustainable, if i understood it correctly i think that's really important.

i also think seasonality is very important, then we are working very much with fish so we follow that they are serving the right fish on the restaurants and then also turning into more plant based, reducing the meat consumption and is very very relevant.

Ma: and then the other two sort of already label, like organic food and fairtrade. this is my assumption correct me if i'm wrong that is already developed in a sort of way that those are processes already on going

elo: i think that the fairtrade label, or any label, or certification label. we don't put so much on packs even though we buy 75% of raw materials are organic, those are label and we serve them as well but i think from the very very sustainability point of view i would put more effort on the topics that i mentioned, they are existing systems you can jump in but the other things are more development needed and i think that's why i feel personal that area where should put focus much more In: diving a little bit, into local food. i don't know if this consider, or is not that important or relevant in sustainable matters.

Ma: like in the nordics there is a certain movement going on about local production here in the nordics here in denmark for example.. even the european union has some agendas in this area what's your opinion about that. is it a good thing or ?

elo: i think that also quite understandable at least we have noticed that for consumers it has a huge meaning. it has a big meaning that in finland for example, they want finnish origin in denmark they want denmark origin . so i think is also coming from the consumers, and when you think about food is quite natural that people wants to know where does it comes from and at least, we have a lot of domestic ingredients.

in finland meat percentage finnish meat is around 90% of the meat we use so is finnish origin and the meat products things like that. our grains are 100% finnish in other countries the same thing eggs finnish.

is very much that consumers wants local and for example i don't know the situation in denmark but if you travel around in finland, in southern finland we have different breads that central finland, there is different bakeries, there is local bakeries and people wants their bread. fazer bread is all around but they have also their local bakeries, so people wants also their local bread. and that is something we have to respect and that's of course when you think about the transportation and all the issues related to transport things and negative environmental impacts i think it has a good to support the local and consumers really want that so there is no possibility to say" no we can't" is kind of a requirement coming from the consumer more or less

ma: do you have any more questions?

in: i think that i am fine

ma: yeah me too, we got a lot of information, that's really valuable for us

elo: well great, if there come something that you want to clarify or you have more question just drop me an email and i'll try to reply as soon as i can.

in: thank you so much fo everything.

elo: thank you and good luck with your work. have a great rest of the day..

13th of March, 2019 Interviewers; Matthijs, Ines. Interviewee: Kristofer Kjellman Strategic development director Methods of interviewing: Semi-structured interview Participant: Mathjis(Ma), Ines(In), Kristofer(Kr)

### Transcript:

Kr: This is our Csr report from 2018,

In: We didn't have access to that one, not in the website (It was available)

Kr: Should be published. It's probably there but I can send it to you. I think what is relevant when we talk about our purpose we have three strategic priorities: People, because we are people for our businesses with almost 600,000 associates; we can be anything but focusing on our people delivering the services any other priority would be wrong.

Performance, this is where we are talking about the financial performance of the company as we are a large corporate. We of course have our, shareholders to understand having an add value by investing in compass group. And on purpose we are really transparent as well.

I think is very highlighted here, we have purpose about people, development and engagement and creating diverse and inclusive environments as our vision is in denmark. Our vision it's together with the client create the best workplaces, that is our vision.

And then on social purpose we have safety. Safety for our business due to that we have a lot of associates and our first priority is safety. So, we don't want anyone to get harm while working for compass group and of course none of our guests. So, we have a safety leadership, we have knowledge in sharing and simplification, because the simpler, the easier it is, and you can actually reduce the number of injuries and we measure that in lost time and injuries that means that if you get hurt or injured at work that means you need to have 6 days that is called lost time injury. And that's what we get measured by in the compass group so we are really aware of that and you can understand in a business like our with a lot of knives, hot pans it's impossible to get you a 0% but that is our ambition.

and then health and wellbeing, better nutrition choices, mental health and healthy lifestyle is something we are here to stimulate. that is one of our purposes, better for the world, sourcing responsibility, enriching local communities that could be collaboration that we have with charity in denmark for example called (Danish name) there is a link in my e-mail signature.

And then collaborating for big change that is our partnership with the stop food waste, are you familiar with the danish movement of food waste? with selina juul. I actually have a meeting with her this afternoon because we are in a strategic partnership with her. So that is what we are doing to secure that we are doing better for the world.

But on environmental game changers we are focusing on local food waste, of course. Single plastic reduction, and plant forward meals. Meaning that we are trying to get more proteins from other sources than meat. So, this framework is quite important to understand when you are looking at compass group and why are we doing the things we are. I don't think is really answers any questions from your sheets but is quite important knowledge to have and to be honest of course because social purpose and the focus that is put from large companies and all the companies, today I would say this is very sustainable framework, I'm really proud of working with this framework, because I actually believe we can do some

change.

Ma: I think it kind of overlaps with ours, for example, plant forward meals, social responsibility and enriching local communities. is the last one rather here in Denmark or abroad?

Kr: well, we let our colleagues in other countries take care of the broad things, so we haven't pointed out one global purpose or one global partnership because we believe, we are more powerful with doing that locally and decide locally just to give you an example when I joined the compass group one year and a half ago, the market manager was also reporting to me she showed me at least financial transactions from our bookkeeping where we had actually sent our charity to and that was like 500 Dkk to some great initiative in Aarhus and then 10.000 dkk to some football equipment for a local team and that was you know an array of things which basically doesn't create any value at all.

Now everything in that direction is no go, and all our charity is by Danish leadership and then we appointed our cause of heart and that's (Danish name: min 6:18) which supports young people between 7 and 14 years old to eat healthier 98% of them are accepted in the program they accept about a thousand youth every year on their fine sites. Around 98% of them coming to jutland aquieme staying are overweight for example. But they are also social challenges, maybe they have been bullied at school maybe they have a condition with self-esteem for us that's a great alignment with the local community and it is also about food.

So just to understand where we are coming from, why I say: " yes it's interesting to talk to students about this thing because even if may not have all the answers for their questions some of them we probably can find out but this is how we see, this is how my t-shirt looks when I get my dress on.

In: So, we wanted to ask you, what do you do?. what does your work involve, but that might has been answered from the framework you described.... I don't know.....

Kr: I think you need that you need to be as accurate as possible, and I say from a nice point of view and that's probably easier to write about. easier to prove your thesis around the particular data.

Ma: Yeah, so more concrete what does your daily basis looks like and how much of that involves this sustainable strategy?

Kr: but you don't mean me as a person?

Ma: yeah yeah, as in partner system is what's your implements in what you describe.

Kr: I think when it comes to how we work, we have different disciplines in our company and one of the biggest impacts is what we get from our sourcing because as more than 70% of our revenues in Denmark comes from food services then what we can make a change or have an impact is through our sourcing and I am not in the sourcing department they are out hiring and being busy with so many things but this is our procurement department. They organize a bit different from us so actually the procurement director for Denmark doesn't report to the ND as the only one in leadership that reports Nordic project director which reports to continental europe director for purchase and that is because we can't make big deals with our suppliers if we do it in a large scale. So, it's a lot about scalability when we talking about sourcing that means that some of the..... we can always influence in the sources and since we are complying under danish regulations but most of them is actually european when it comes to food almost all of it is european. So is easy to comply with that.

But you can also say: "we do that, but we don't do that". just as an example in continental europe in canteens frozen vegetables are rarely common but you can't serve frozen vegetables in canteens in denmark. if you do it maybe some corn or some peas or smaller things like that but you can't base your green vegetable purchase on frozen but of course is more cheaper, and you can import it in a larger scale and you can get great deals with frozen vegetables. We can't just offer that to our people we use also arguments said that: copenhagen is the city with the biggest number of michelin stars restaurants. I am not saying that our guests expects michelin restaurant food, but it has certain standards and certain expectations.

When it comes to sustainability that is the exact same thing. If we are surrounded by smaller restaurant businesses that has very clear green offset like Emmerys( min 12:10) Which is all organic, if our audience is used to go to Emmerys their will become more aware about organic food for example, and then they will probably expect at least that we have position on the organic or biodynamic food.

Our position as a danish company is that we respect where there is a need or demand for organic purchasing where we do in many universities for example you are familiar with the bronze, silver gold standard. I don't know exactly for your canteen, but I guess is a bronze certification.

#### Ma: not even.

Kr: ok that is govern by the client basically, but in many universities we have at least a bronze certification, but that is based on weight basically. I wouldn't call it neutral but you have to base on something. We can of course buy large amount of organic potatoes and that would be a very significant part of it. And that why we are not going out actively from our commercial point of view saying to our client: "We believe you should do a silver certification on organic food because that would just mean that we just need to run faster to be able to cover for the extra cost. The client their don't want to see that as an extra cost because the might see it as a hygiene factor. Also you can ask yourself what kind of footprint do you do with 30% organic purchasing? my personal point of view either you do it or you don't but instead we are trying to focus on organic purchasing where is feasible where we actually see it add some value to the business and of course if the client request this. But it can also be we want to try something new or we want offer that to our consumers, not only on chartwells but also in business and industries sites like this one out side. They do a lot of their production. They bake it and do it in the kitchen and is really good for them to try out some times, for example organic muesli bars they can do it themselves, no problem at all, and that adds some value image because at the end of the day the consumers will deem organic food feasible or not feasible, relevant or not relevant.

In: yes, we are aware that they produce some in their own kitchen at our university does, so is interesting that you mention that. but also .... we have this organic but we also know there are some trade-off in between between: is organic food the most sustainable or not, regarding sustainability and more like local product and how to engage consumer to eat local products maybe is not as sustainable as we thought in the beginning but is another approach that we have. How do you engage the consumer in this case, because maybe you engage the people that work within compass group but how does it is translated to them?

Kr: and that is a really relevant question, because I think there is a lot to do in that sense. and just from us having this discussion always triggers some of the must win battles with our consumers, or tell them: "that I know the apple in your fruit basket which we also deliver a lot, isn't perfectly wax, that comes from argentina because is just a long way for an apple to

travel. When you can get kind smaller nor perfect apples from five danish traditional fruit production. This is where the consumers are making that decision, if i may be frank.

So as a consumer when i am standing at the fruit i really like (red kinda) apples so I don't even see if their come from spain or argentina. they definitely don't come from denmark.

There is scandinavian apples, they are smaller, they don't look that tasty, I know they are not sweet I will go for that apple anyway. and when we do that as consumer we also move the demand and that demand also moves into the catering business. So we would stand with the same demand, because why will I want to eat less attractive fruit on my workplace compare to what I buy at home so that is the criticism we also receive when we try some efforts, we can see that when we measure the satisfaction we get a lot of comments on that, then we also see why we have a big gap between what we actually do and what the consumers know we are actually doing because we are really aware of seasonality for example and sometimes we have sometimes the issue telling our clients, because I say why can't we get the strawberries cake for our meeting in february because we are in denmark and of course is very easy for us to import that from poland or slovenia or something like that where their grow the whole year around. However, we all know that's incoring?(min: 19:17) their haven't seen real sunlight ever. Do we really want to import for a heap load of money? no we don't, we just don't do it.

so the procurement people they have what we call prove product lists and when we move out of seasonality their just block it it can't be purchased in our food chain and of course that makes sometimes our people, our consumers and clients a bit disappointed but they have to trust us that we are making the right decision when it come for example reducing emissions because we can by far reduce any emission if we say that the demand from one canteen is steering what we actually import from the other side of the globe.

In: but that's a really good point that you had. and i think translating that to the consumer is our goal. because what we think and we have the literature proven that this organizations push the practices at the home of the consumers. so if we make the consumer aware that this product is not good now because is not season then he won't buy it because he knows.

Kr: and from our point of view we make contact with round 60.000 consumers every day that's how many people eat at our canteens and seen it out of the workforce in denmark there are like 2.8 million employed in denmark maybe that's not a lot but on the other hand, we could impact on the 60.000 people potentially, in compass group Denmark every day.

One of the thing that we actually do very concrete is that we have once a year a day "Stop foodwaste" which is always in the late april this time is the third time it happens globally. The second time we joined in Denmark because we didn't know what it really was. it's a compass group thing. It was founded in the U.S and they had a huge success with it and actually what we think is best what we can do with that day is to educate our audience.

Basically, we didn't do that, we were all about engaging our own people, but we didn't understand how much engagement they already had about reducing food waste. they do a lot in our canteens that we didn't know about. I think I have a book is in Danish. but just as an example; we have an IT competition that there were allowed to send directly to our menting director it was her competition so they just send the best food waste reduction ideas or how to use food waste for other purposes to give food a longer life. and it was amazing how many ideas she had received, we didn't expect it. because we just put things on the internet which nobody

reads and we don't have it anymore because we look over the application but the engagement was huge. what we do in this year is almost just ... we don't call that to our consumer's faces but is education about how to reduce food waste and the most basic things we can do our audience do is to eat what they take on their plates, basically.

And on universities we have the least problem because a lot of the buffet is on weight, so you actually pay per 100 gr which is a good way reducing food waste because then you actually take what you intend to eat. when you have a free buffet, there is an imperative there which is to eat all you can because that is how many people see a buffet and that's a real shame and we do a lot of things to reduce that. Another concrete example is that we try to move away from buffets to front cooking, where is actually the chef handing out and also we have a second opportunity to also educate our audience if they ask why don't you serve this anymore?, they can simply say because is out of season. That's a great opportunity to do that, face to face because the word of mouth is very strong especially around canteens food. If you don't have anything else to talk about you can always talk about the food in the canteen that's a good collection point. so just instead of just having buffets, we do something we called small wonders. we have different ways of cooking in small portions so if you take a bowl on your plate it actually feels a little and then maybe you take 2 of them which almost fill your plate but actually with very little food and is very tasty cook and everything is in place and I do that myself I can't really fit so much into the plate and then I have to go twice or three times. There is actually no limit how many times can you go to the buffet but especially men of my age we take as many as we can and fill the plate up but we don't necessarily eat the whole thing, so it's going to waste that is one of the campaign we do.

We try to do 4 campaign every year, now this year we'll do 3 plus stop food

wasting where we are also trying to educate, our audience last year for example we had one about.. I don't know how to explain it ... do you know imperfect vegetables, because there are alot of imperfect vegetables that are discarded because their grew too close to each other, they are not perfect, and we actually want to source that. and make things out of that. because in a canteen kitchen there are very few things that need to be perfect, because we are doing things with it. Plus if we go to the vegetable supplier and we want to buy a cucumber everythings is filled in plastic and everything is by perfect length to fit the boxes so their can get as many kilos as possible into the boxes. that's great but the problem is that their discard a lot of cucumbers to cover that point, we don't want the plastic, we don't want them to discard anything. So we want to actually buy the discarded things and that's not easy, that's really really hard to even be able to source what is called in danish class 2 vegetables.

so actually together with stop food waste organization we have applied to the government to be part of a project just to ease the way how we can source class 2 vegetables, and of course there is an economic incentive to that for us as well because class 2 is made one third of the price and we can make just as much out of it what we do need to invest is a little more time because if you have carrot that doesn't fit into a machine that is going to chop it you might have to chop it 2 times with a knive before you can handle the machine, but that is what we are going to find out in the project how we are going to make that work right now we just have an issue with the source, the procurement people out here their biggest dream right now was just a wholesaler that sold us cut cucumbers but we can't get it, is discarded earlier in the process.

#### Ma:

So when it comes down, like you do a lot of things about sustainability and maybe is us living in the university, but how do you... on a daily base we don't really get these changes and involvement like sometimes feel

like the mainstream audience is not aware of what's already being done. and that's why we have our main thing one a daily basis, like campaigns are really good way to do it and then we think like: hey, in daily basis how can you make consumers aware and that's where we think, we might have a chance of getting some more information or empirical data by gathering from what people do, or how people move around, what their think like the general audience.

#### Kr:

but what you also would like to try to retain or get hold of data from consumer perspective.

Ma & In: yeah

In: the costumer will be the university in this case right?

Ma: the consumer, but also the costumer that's also critical you have always like clients

kr: we have the clients that is in your case the university and then we have the consumer. when we say customer we mean both of them then we talk about someone who is receiving.

So the clients and the consumers are customers for us. there is a very big difference between this, because we need to approach this on totally different way. and this is transformation because traditionally canteen business if you just have a great relationship you can come with a great price to the procurement manager of any company, their run the canteen, their don't really care, they will be unhappy anyway. that's not how the business works anymore we really to bring this people over and that also means credibility so if we don't talk about what we are doing, then why are more credible than our competitor. for example the facility manager will say why to work with compass group, why not the competitors; because compass do all of this great things.

With all that said, back to my example we don't even know ourselves and all the things we do. So what we figure out and this is less than a year ago how much is done in our canteens already, especially in chartwells they are front runners in almost everything but we don't always know about it because that also i think it was (Danish name 31:42) in odense where they had the great dialogue with the client which had been talking to the consumer that say why are all the fork and knives plastic, and that was easy for us. For a little bit more money we could source wooden cutlery. This things can be done and sometimes they can be easy, much easier when it comes from the consumer demand, to the client to us. Instead of us trying to think all this things and trying to prioritize it right because when we do this centrally most of them probably say yeah that's good but we have another focus so for us is better to let the sites be quite independent on their work an we try to coordinate. We try to make it easier for them to share ideas.

Just as example in october we launch our associates application, sometimes call it social word, where their can share this kind of practice and that is also a great thing.Because most of this initiatives doesn't come from head office we have the framework and we make sure that we deliver on what is measurable. The procurement has a lot of impact and they do that already. They look specially to seasonality. They make sure all the organic ingredients are available for their buyers, like 30% organic for example. We do a lot of things already. But what is relevant for the consumer to know that is actually quite tricky because when we do our campaigns for example with the skilldrifts vegetables we get a lot of positive feedback from them but when the campaign is over there is little sustainability in that. So what we should do... what happend is when you bring the focus to awareness, awareness awareness the campaign

ends and with a good plan we have the next initiative taking over and then that's end. an so and this is how it goes this is how you create sustainability and if you do it in that direction you create upper mind and for some consumers as myself am aware of my behavior and it creates credibility for the company and in my opinion credibility doesn't come from a CR report it come from what you do, make it noticeable for your consumers so they tell their clients this is a credible delivery. That's how we can create a topper brand around sustainability or purpose.

In: and that's why we also focus on the consumers

#### Kr: good because that's

In: their are going to make a pressure, on the clients and also in that sense pressuring the system.

Kr: and I will be so happy, because we probably can change a lot but the big impact would be in the long term, that is their daily purchases. That is how the consumers are empowered, this is restricted empowerment but when their go down to the local supermarket and what their buy from there. that is consumer power that is how change is done and that takes a lot from the society and also that's why all my respect for the research and for you thesis

In: we are aware that is going to be a bit hard to change but we have this practice theory behind like how to study behavior.

Kr: yeah, and it is about behavior. it's all about behavior, is also how i'm nudge to make my decisions as consumer and how that decision is make looks like, and we still educate the consumer for example, that they should eat all of their plate, they should chose that instead of that, but at the end of the day that is indirect payment but with a direct payment which most of them do in the supermarket that's where it is.

Ma: that a good point because behavior is one thing, but practice is more like habits but you got it connected like you go to the supermarket and so we want to dig more into this overall system and like really analyse how people eat in the first place or how do we go around this canteen and curiously, there is no so much info about the sustainable aspects well also because the contract with aalborg : organic? no we don't do that as minimal as can be in that sense I think would be really valuable to get more insights to get more information, is it possible to go other canteens.

Kr: how would you do it?

Ma: I don't think we have that much time

Kr: try to make a draw of it. This is a tenant house but we could go to this canteen because

that would be a good chance for you to see how does it looks like we have over 600 guess at that canteen every day. Also If you need in industries I would find one for yo. I would just talk to the clients an chose one where I have a friend and also say is it observation, is it interviews are you going to measure something and try to build an scope to that .

### Appendix 11 Interview with Simon Holmen Reventlow, Study environment

Appendix 11: Interview with Simon Holmen Reventlow, Study environment Coordinator at Aalborg university CPH, 2nd of April, 2019 Interviewers; Matthijs, Ines, Luis Interviewee: Simon Holmen Revenlow Methods of interviewing: Semi-structured interview

### Summary:

He is in charge of everything related to students. Advising and coordinating boarding consistent on students and staff, they meet 6 times a year, 3 per semester. Discussions about study environmental issues shared across departments. They talk about study start, welcoming events, inclusion international students, challenges and best practices to spread out, also ideas on how to make things better. Food is also a topic discussed mostly when they have input from the students, but there is a limit on how they can affect because they have a contract.

They have a very good dialogue with the canteen, respecting the prices with high standard food. Students when they have an inquiry they mostly come to Simon, Thomas, Martin or through the information desk, which is the link between them (shared services) and the canteen. Input from various sides discuss it in the study lining group and also in the weakly coordinating meetings, also discuss many other things.

They cannot change the contract between Aalborg and the canteen, they could come with keep the prices as low as possible both for students and also because they cannot subsidise the canteen anymore. The can put some markers about sustainable cutlery or organic food. The company behind the canteen need to make profit, they have low prices compared to others in the sector.

Covered budget for the university and make sure the money they get is

as wisely as possible used. Question what to prioritize.

Raising the fee is possible? It's within the contract, they don't know how it works. The prizes are assessed once a year. It will be possible to push the limits of the contract to change, and challenging the assumptions behind the contract if there is a case. There was a discussion on the facebook group about vegan options in the canteen, they talked with the canteen to inform clearly if the sandwich is vegan or vegetarian. Always a vegetarian dish. The vegan is more challenging to the canteen to operate, to make them properly and nutritious, much more expensive. There is always a dialogue on how to accommodate the desires within the limits of the contract. And also in reference to the cost because they hear students complaining about the price, but it is very difficult to find canteen with prices in our range. Sandwiches pretty expensive but main dish reasonable price for being Denmark.

About communication: Students find ways to communicate. Thomas is a student working also at the uni so he is a bridge. Simon says he is the one at the end of that bridge. Make the study live more well known, the best way to get in touch with them. They think about all the emails they receive.

Extra communication system? It is A very big challenge to set up a new platform. Students think they have too many platforms, systems to use. Information screens, talk to Thomas to get a broader scope in communication, facebook pages and students, to reach out, concentric circles spread around it, to get information. It's really difficult to get information across studies. Cannot spam with emails (just when they need).

Concerning the contract: Study environment group not direct link to the canteen but to the study environment council. Bring cases to them, and

## Appendix 11 Interview with Simon Holmen Reventlow, Study environment

they decided to bring up to the renegotiation of the canteen contract. But to affect the canteen here, reach Thomas or Simon to proposals forward to get a discussion with the canteen whether they can accommodate these proposals in one way or another, some of them they can some cannot. Some things out of the acting borders, i.e. vegan dish every day. Vegans are a small group compared to all the consumers of the canteen. If the canteen has everyday people asking for something they would also reach them to see if they could accommodate it, so information goes both ways.

What would it take to put more information? More work for the staff in the canteen. The cost; rent, weights big part of the cost. The staff knows the allergies information, there is a sign to come and asks us if it is in the dish. Its minority of the students, it's actually a big deal to write all that is in the dish, when the person that makes the dish knows what is on it.

Time	I am able to find the right food to my preferences. (Select one option)	I get all the information I need about my food at the canteen. (Select one option)	What did you chose to eat today at the canteen for lunch? (You can select multiple option)	What are the reasons you choose to eat this food today ?	What priorities do you have while selecting food? (Select one option for each priority) [Taste]	What priorities do you have while selecting food? (Select one option for each priority) [Locally grown]	What priorities do you have while selecting food? (Select one option for each priority) [Health]	What priorities do you have while selecting food? (Select one option for each priority) [Enviromental concerns]	What priorities do you have while selecting food? (Select one option for each priority) [Appearance]
				W/as the most					
8/04/2019 11:51:26	Most of the times	Sometimes	Pasta Bolognese	interesting option	Highly important	Not important	Slightly relevant	Not important	Important
							<u> </u>		
			Pasta Bolognese, Bread,						
8/04/2019 11:56:50	Most of the times	Always	Cheese	Taste	Important	Slightly relevant	Slightly relevant	Slightly relevant	Important
0 (0 / /0040 44/20/2		A	Colord	I am not that fond of pasta and I don't feel that the soup mætter					Niek immendensk
8/04/2019 11:59:54	Most of the times	Always	Salad	enougn	Slightly relevant	Not important	Sugnity relevant	Not important	Not important
8/04/2019 12:12:21	Most of the times	Always	Salad	I hats that I eat	Hignly important	Highly important	Highly important	Highly important	Highly important
8/04/2019 12:17:00	Most of the times	Most of the times	Pasta Bolognese, Bread, Some bread and a chocolate cookie	Always like a good white bread to accompany a warm dish. The cookie is for later.	Important	Slightly relevant	Slightly relevant	Important	Slightly relevant
8/04/2010 12:17:12	Most of the times	Always	Salad Pasta Bolognese	Looked nice	Highly important	Slightly relevant	Highly important	Important	Slightly relevant
8/04/2019 12:17:56	Always	Always	Sandwich	I love the paninis and the sandwich lady is so sweet	Highly important	Not important	Slightly relevant	Slightly relevant	Important
8/04/2019 12:18:07	Alwavs	Alwavs	Sandwich	I <b>♥</b> PANINI	Highly important	Not important	Slightly relevant	Not important	Important
8/04/2019 12:21:12	Always	Always	Salad, Pasta Bolognese	I eat the dish of the day most days. And I always get a side salad with it to be healthy and get my vitamins, minerals and nutrients.	Highly important	Important	Important	Slightly relevant	Highly important
				I had my own food with					
8/04/2019 12:31:15	Most of the times	Most of the times	I had my own food	me	Highly important	Not important	Slightly relevant	Slightly relevant	Slightly relevant
8/04/2019 12:33:59	Always	Sometimes	Pasta Bolognese, Bread	I dont like blended champignon Soup. And too hungry to only eat a sandwich	Important	Slightly relevant	Important	Important	Slightly relevant
8/01/2010 12:45:15	Always	Always	Sandwich	Itvis easy	Important	Important	Important	Important	Important
8/04/2019 12:48:05	Most of the times	Most of the times	Sandwich	I had pasta yesterday, so I chose a different option	Important	Not important	Slightly relevant	Important	Important

Time	I am able to find the right food to my preferences. (Select one option)	I get all the information I need about my food at the canteen. (Select one option)	What did you chose to eat today at the canteen for lunch? (You can select multiple option)	What are the reasons you choose to eat this food today ?	What priorities do you have while selecting food? (Select one option for each priority) [Taste]	What priorities do you have while selecting food? (Select one option for each priority) [Locally grown]	What priorities do you have while selecting food? (Select one option for each priority) [Health]	What priorities do you have while selecting food? (Select one option for each priority) [Enviromental concerns]	What priorities do you have while selecting food? (Select one option for each priority) [Appearance]
8/04/2010 12/51/02	Mact of the times	Most of the times	Salad, Meat, Cheese, Pesto	I almlost always eat a salad with some protein (hot or cold) on the side. As I don't eat many carbs this is my deliv raction	Slightly relevant	Slightly relevant	Important	Important	Important
07 047 2019 12.51.03	Most of the times	Most of the times	ThayOffinaise	daily foutilite.	Slightly relevant	Sugnity relevant	Important	Important	Important
8/04/2019 13:21:45	Always	Always	Pasta Bolognese, Smoothie	I line it	Important	Not important	Slightly relevant	Not important	Slightly relevant
8/04/2019 13:52:05	Most of the times	Always	Pasta Bolognese, Smoothie	Det var hurtigst	Highly important	Slightly relevant	Important	Important	Highly important
9/04/2019 11:35:07	Always	Always	Salad, Meat, pasta	hungry	Highly important	Important	Important	Highly important	Highly important
9/04/2019 11:37:27	Always	Always	Salad, Meat, Cheese	My liking	Important	Slightly relevant	Important	Important	Important
9/04/2019 11:43:24	Most of the times	Most of the times	Salad, Bread	Best veg option	Highly important	Highly important	Highly important	Highly important	Highly important
9/04/2019 11:49:22	Sometimes	Never	Salad Meat	Because id rather have vegetables and meat than bread or sandwich for lunch any day	Important	Not important	Important	Not important	Slightly relevant
9/04/2010 11:49:24	Sometimes	Most of the times	Salad Cheese Bread	Xx	Highly important	Highly important	Highly important	Highly important	Important
9/04/2019 11:50:37	Most of the times	Always	Salad, Pasta Bolognese, Meat, Cheese, Bread, Sandwich	I love Meat, i love pasta and potatoes and bread and i like tomato salad with mozzarella.	Important	Not important	Slightly relevant	Not important	Slightly relevant
9/04/2019 11:56:30	Most of the times	Always	Salad, Vegetables	Vegan	Important	Slightly relevant	Important	Highly important	Slightly relevant
9/04/2019 11:57:23	Most of the times	Always	Salad, Pasta Bolognese, Meat	It was the hot dish of the day	Important	Not important	Important	Not important	Slightly relevant
9/04/2019 11:57:09	Always	Always	Salad, Meat	Hungry	Highly important	Not important	Slightly relevant	Not important	Highly important
9/04/2019 12:00:10	Most of the times	Most of the times	Salad, Vegetarian dish (eggplant and pasta)	It looked nice and suits my vegetarian lifestyle	Important	Slightly relevant	Important	Important	Slightly relevant
0/04/2010 12:06:28	Most of the times	Always	Salad	Lavt på kulhvdrat	Highly important	Slightly relevant	Highly important	Important	Highly important
9/04/2019 12:11:17	Most of the times	Always	Salad, Grilled Aubergine, Pasta pesto, Pork, Cheese, Bread, Small cup of meat	Looked good and felt like a reasonable nutritious choice	Important	Not important	Important	Slightly relevant	Important
9/04/2019 12:13:57	Never	Always	Salad, Bread	I have a high cholestrol level and lactose intolerance	Highly important	Not important	Highly important	Not important	Slightly relevant

Time	I am able to find the right food to my preferences. (Select one option)	I get all the information I need about my food at the canteen. (Select one option)	What did you chose to eat today at the canteen for lunch? (You can select multiple option)	What are the reasons you choose to eat this food today ?	What priorities do you have while selecting food? (Select one option for each priority) [Taste]	What priorities do you have while selecting food? (Select one option for each priority) [Locally grown]	What priorities do you have while selecting food? (Select one option for each priority) [Health]	What priorities do you have while selecting food? (Select one option for each priority) [Enviromental concerns]	What priorities do you have while selecting food? (Select one option for each priority) [Appearance]
9/04/2019 12:14:32	Always	Most of the times	Salad, Pasta pesto, Pork, Fish Salad	Hungry	Highly important	Slightly relevant	Important	Slightly relevant	Not important
9/04/2019 12:15:17	Most of the times	Most of the times	Grilled Aubergine, Pasta pesto, Fish Salad, Bread	Usually try to eat the vegitarian option	Slightly relevant	Slightly relevant	Important	Highly important	Important
9/04/2019 12:59:41	Always	Always	Grilled Aubergine, Pasta pesto, Small cup of meat	Looked and smelled really delicious - and it tastes so good	Important	Slightly relevant	Slightly relevant	Important	Important
9/04/2019 14:15:42	Sometimes	Most of the times	Salad, Pasta pesto, Small cup of meat, Cold chicken salad	It looked ok	Highly important	Not important	Slightly relevant	Not important	Highly important
9/04/2019 16:25:14	Sometimes	Most of the times	Salad, Bread	There was no vegan option	Important	Important	Important	Important	Important
9/04/2019 20:02:11	Most of the times	Most of the times	Salad, Grilled Aubergine, Fish Salad, Bread, Chick pea salad	Not a lot of laktose free options today	Highly important	Important	Important	Important	Important
10/04/2019 8:32:24	Always	Always	Checken ladagne	Looked delicious, and taster event Better :-)	Important	Slightly relevant	Important	Important	Important

Time	I am able to find the right food to my preferences. (Select one option)	I get all the information I need about my food at the canteen. (Select one option)	What did you chose to eat today at the canteen for lunch? (You can select multiple option)	What are the reasons you choose to eat this food today ?	What priorities do you have while selecting food? (Select one option for each priority) [Taste]	What priorities do you have while selecting food? (Select one option for each priority) [Locally grown]	What priorities do you have while selecting food? (Select one option for each priority) [Health]	What priorities do you have while selecting food? (Select one option for each priority) [Enviromental concerns]	What priorities do you have while selecting food? (Select one option for each priority) [Appearance]
				Was the most					
8/04/2019 11:51:26	Most of the times	Sometimes	Pasta Bolognese	interesting option	Highly important	Not important	Slightly relevant	Not important	Important
				0 1			<u> </u>		
			Pasta Bolognese, Bread,						
8/04/2019 11:56:50	Most of the times	Always	Cheese	laste	Important	Slightly relevant	Slightly relevant	Slightly relevant	Important
0 /0 / /				l am not that fond of pasta and I don't feel that the soup mætter					
8/04/2019 11:59:54	Most of the times	Always	Salad	enougn	Slightly relevant	Not important	Slightly relevant	Not important	Not important
8/04/2019 12:12:21	Most of the times	Always	Salad	Thats that Leat	Highly important	Highly important	Highly important	Highly important	Highly important
8/04/2019 12:17:00	Most of the times	Most of the times	Pasta Bolognese, Bread, Some bread and a chocolate cookie	Always like a good white bread to accompany a warm dish. The cookie is for later.	Important	Slightly relevant	Slightly relevant	Important	Slightly relevant
8/04/2019 12:17:13	Most of the times	Always	Salad, Pasta Bolognese	Looked nice	Highly important	Slightly relevant	Highly important	Important	Slightly relevant
8/04/2019 12:17:56	Always	Always	Sandwich	I love the paninis and the sandwich lady is so sweet	Highly important	Not important	Slightly relevant	Slightly relevant	Important
8/04/2019 12:18:07	Alwavs	Alwavs	Sandwich	I♥PANINI	Highly important	Not important	Slightly relevant	Not important	Important
8/04/2019 12:21:12	Always	Always	Salad, Pasta Bolognese	I eat the dish of the day most days. And I always get a side salad with it to be healthy and get my vitamins, minerals and nutrients.	Highly important	Important	Important	Slightly relevant	Highly important
				I had my own food with					
8/04/2019 12:31:15	Most of the times	Most of the times	I had my own food	me	Highly important	Not important	Slightly relevant	Slightly relevant	Slightly relevant
8/04/2019 12:33:59	Always	Sometimes	Pasta Bolognese, Bread	I dont like blended champignon Soup. And too hungry to only eat a sandwich	Important	Slightly relevant	Important	Important	Slightly relevant
8/04/2010 12:45:15	Δίνανς	Δίγγογς	Sandwich	Itvis pasv	Important	Important	Important	Important	Important
8/04/2019 12:48:05	Most of the times	Most of the times	Sandwich	I had pasta yesterday, so I chose a different option	Important	Not important	Slightly relevant	Important	Important
What priorities do you have while selecting food? (Select one option for each priority) [Enviromental concerns]	What priorities do you have while selecting food? (Select one option for each priority) [Appearance]	Are there any other priorities you want to add?	Do you have any other opinions or ideas regarding the offers at the canteen? (E.g food concerns, improvements on the canteen, information provided, price, etc.)	Which of the following foods are part of your general diet? ( You can select multiple option)	Tell us the reason why you eat these products.	You want to know more about the project?			
--	--	--	---	--	---	--			
Important	Important			Diary products, Plant based food	Environmental and personale prefferences	No, thank you			
Not important	Highly important			Meat, Fish, Diary products, Eggs, Plant based food	Taste	No, thank you			
Important	Slightly relevant			Meat, Fish, Diary products, Eggs, Plant based food	Cause I like it??	No, thank you			
Important	Slightly relevant	Freshness	Extra seasoning by demand	Meat, Fish, Diary products, Eggs, Plant based food	Because I can , and I don't cook myself	No, thank you			
Slightly relevant	Slightly relevant			Meat, Fish, Diary products, Eggs, Plant based food	I eat anything I feel like in moderation	No, thank you			
Slightly relevant	Important			Meat, Fish, Diary products, Eggs, Plant based food	To have a balanced diet.	No, thank you			
Important	Important		Sometimes more info on ingredients would be great.	Meat, Fish, Diary products, Eggs, Plant based food	To survive	No, thank you			
Slightly relevant	Not important			Meat, Diary products	I like meat and cheese	No, thank you			
Not important	Highly important			Meat, Diary products, Plant based food	Because I like it and try to be healthy	No, thank you			
Slightly relevant	Important	Nutritional value. It would be nice if calorie count would be added.		Meat, Fish, Eggs, Plant based food	For a balanced diet	No, thank you			
Slightly relevant	Important			Meat, Fish, Eggs, Plant based food	They taste good an heath	No, thank you			
Slightly relevant	Important		Information about ingridiencies / allergies.	Meat, Fish, Diary products, Eggs, Plant based food	Tradition, habits, taste.	No, thank you			
Important	Important		Eco-food, lower prices though these combined are probably impossible	Meat, Fish, Diary products, Eggs, Plant based food	Because I like to eat a broad variety of foods	No, thank you			
Slightly relevant	Important		More food varieties should be exposed. Information on boards should be stated only in English because of international people. Prices are quite high for a school canteen. The self juice corner is a great idea, could be better with some indicative dose information according to different cup sizes. Different drinks like milk bottles can also be offered for sale. The canteen can be like a small market as well, ie: CBS Canteen.	Meat, Fish, Diary products, Eggs, Plant based food	To have a balanced diet.	Sure!			
Slightly relevant	Not important		No, everything is quite comfortable	Meat, Fish, Eggs, Plant based food	Because such of this foods create my healthy diet	Sure!			

What priorities do you have while selecting food? (Select one option for each priority) [Enviromental concerns]	What priorities do you have while selecting food? (Select one option for each priority) [Appearance]	Are there any other priorities you want to add?	Do you have any other opinions or ideas regarding the offers at the canteen? (E.g food concerns, improvements on the canteen, information provided, price, etc.)	Which of the following foods are part of your general diet? ( You can select multiple option)	Tell us the reason why you eat these products.	You want to know more about the project?
Slightly relevant	Highly important		It would be nice to have food or any available option after the canteen is closed. At 13hrs is already difficult to find good variety of options	Meat, Diary products, Eggs, Plant based food	I like them	No, thank you
Slightly relevant	Highly important	Variety	I would like more information, but not too much at the same time	Meat, Fish, Diary products, Eggs, Plant based food	Tradition, nutrition, price	Sure!
Important	Important			Meat, Diary products, Eggs, Plant based food	I like to eat a bit of everything, taking care of the portions, because it contributes to a healthy metabolism, and I also like a tasty meal.	No, thank you
Important	Important			Meat, Fish, Diary products, Eggs, Plant based food	I like them	No, thank you
Slightly relevant	Important	No	I am a fan of the food so no	Meat, Diary products, Eggs, Plant based food	Because i like them	No, thank you
Slightly relevant	Slightly relevant	If the meat has a lot of fat or other disgusting parts then I'm really disapt	There could be themed weeks like, eg. italian week, french week, etc. where they offer food inspired by these countries. It's also pretty expensive.	Meat, Fish, Diary products, Eggs, Plant based food	Everything with moderation including moderation	No, thank you
Important	Important		Keep it simple	Meat, Fish, Diary products, Eggs, Plant based food	Taste and variety	No, thank you
Not important	Highly important		More selections about veggies. Most of the time they are mixed between them with spicies and sauces. I would like to choose between them as individuals	Meat, Fish, Eggs, Plant based food	I'm trying to maintane a balance diet	No, thank you
Important	Important	Variety	Price is not logical! Also the food is disappointing latelyrepeats itself and now it seemed they have like leftovers pretty shitty i have to say. Also opening times! why they close like 14:30 when its supposed to close 15:00, it makes hell of a difference! dont do that! And please prolong it to 16:00 at least	Meat, Fish, Diary products, Eggs, Plant based food	to get all nutrients	No, thank you
Slightly relevant	Highly important		The food today did not taste good at all. Tasted like leftovers. The only good thing is the soup and the smoothies, they are always good. They should make themes, Mexican, danish, polish etc. They are missing some creativities. They should also make it possible to make wishes and maybe serve 'wish of the week'	Meat, Fish, Eggs, Plant based food	I need food that's why	No, thank you

What priorities do you have while selecting food? (Select one option for each priority) [Enviromental concerns]	What priorities do you have while selecting food? (Select one option for each priority) [Appearance]	Are there any other priorities you want to add?	Do you have any other opinions or ideas regarding the offers at the canteen? (E.g food concerns, improvements on the canteen, information provided, price, etc.)	Which of the following foods are part of your general diet? ( You can select multiple option)	Tell us the reason why you eat these products.	You want to know more about the project?
Not important	Important			Meat, Fish, Diary products, Eggs, Plant based food	I believe in eating varied food gives me a better health	No, thank you
Important	Important		Healthier options	Plant based food	They are good for you	No, thank you
Important	Important			Fish, Diary products, Eggs, Plant based food	I want to eat healthy food	Sure!
Important	Highly important		Cheaper food, if you only choose vegan	Meat, Fish, Diary products, Eggs, Plant based food	I need food	No, thank you
Slightly relevant	Highly important	Varieret mad	Vægtene er ustabile og tallerkener vejer ikke det samme	Meat, Fish, Diary products, Plant based food	Varieret kost	No, thank you
Important	Slightly relevant			Meat, Fish, Eggs, Plant based food		No, thank you
Slightly relevant	Highly important			Meat, Fish, Diary products, Eggs, Plant based food	They are all a part of a balanced healthy diet.	No, thank you
Highly important	Slightly relevant	Vegetarian	The price is to high	Fish, Diary products, Eggs, Plant based food	For smag og helbred	No, thank you
			More information of ingredients eg. What is inside the sandwhiches	Fish, Eggs, Plant based food	I like to eat something that is not too heavy. Sometimes meat makes me feel overly full so i prefer to eat plantbased most of the time. Its also better for the environment	No, thank you

Time	I am able to find the right food to my preferences. (Select one option)	I get all the information I need about my food at the canteen. (Select one option)	What did you chose to eat today at the canteen for lunch? (You can select multiple option)	What are the reasons you choose to eat this food today ?	What priorities do you have while selecting food? (Select one option for each priority) [Taste]	What priorities do you have while selecting food? (Select one option for each priority) [Locally grown]	What priorities do you have while selecting food? (Select one option for each priority) [Health]
		Never	Carrie Duagal	list	l lindel, sinne e vienet	luces output	
27 047 2019 11.52.08	Most of the times	never	Soup, Breau	ΠΟΙ	Highly important	Important	Sugnity relevant
2/04/2019 11:52:11	Most of the times	Sometimes	Salad, Polenta, Turkey	Looked nice	Important	Not important	Important
2/04/2019 11:52:43	Most of the times	Most of the times	Salad, Polenta, Turkey	Forgot my lunch	Highly important	Important	Important
2/04/2019 11:52:47	Most of the times	Most of the times	Salad, Turkey	I like warm food	Important	Slightly relevant	Important
2/04/2019 11:53:30	Most of the times	Sometimes	Soup	I like soup	Important	Slightly relevant	Slightly relevant
2/04/2019 11:54:35	Most of the times	Sometimes	Salad, Polenta, Turkey, Vegetarian dish	Preferences	Important	Slightly relevant	Important
2/04/2019 11:54:50	Most of the times	Most of the times	Salad, Polenta, Turkey	It looked tasty	Highly important	Slightly relevant	Important
2/04/2019 12:02:49	Most of the times	Most of the times	Soup	Because i was hungry	Important	Not important	Slightly relevant
2/04/2019 12:04:08	Most of the times	Never	Salad, Polenta, Turkey	I don't want to make my own lunch at home	Highly important	Not important	Important
2/04/2019 12:04:14	Most of the times	Always	Salad, Polenta, Turkey, Vegetarian dish	Meaty proteins, low carb and lots of greens + black olives for natural fats	Important	Not important	Highly important
2/04/2019 12:04:29	Most of the times	Always	Salad	It looked good	Highly important	Slightly relevant	Important
2/04/2019 12:07:41	Most of the times	Never	Salad, Turkey	I was hungry.	Important	Slightly relevant	Slightly relevant
2/04/2019 12:37:31	Most of the times	Most of the times	Sandwich	It is fast to get because there's never a line for these as for the warm food. They are somewhat cheap	Important	Slightly relevant	Slightly relevant
2/04/2019 13:53:07	Most of the times	Most of the times	Polenta, Turkey, Vegetarian dish	It was like the only main dish.	Highly important	Not important	Important

Time	I am able to find the right food to my preferences. (Select one option)	I get all the information I need about my food at the canteen. (Select one option)	What did you chose to eat today at the canteen for lunch? (You can select multiple option)	What are the reasons you choose to eat this food today ?	What priorities do you have while selecting food? (Select one option for each priority) [Taste]	What priorities do you have while selecting food? (Select one option for each priority) [Locally grown]	What priorities do you have while selecting food? (Select one option for each priority) [Health]
2/04/2019 13:53:41	Always	Most of the times	Sandwich	I came too late and most of dishes had were eaten :)	Slightly relevant	Not important	Important
2/04/2019 13:54:31	Sometimes	Sometimes	Salad, Polenta, Turkey	They look fine	Highly important	Not important	Important
3/04/2019 7:07:33	Most of the times	Never	Salad, Turkey, Mixed vegetables	Cheap, good, fast	Highly important	Not important	Highly important
3/04/2019 10:32:51	Most of the times	Most of the times	Salad, Polenta, Turkey, Vegetarian dish	Like to eat salad with meat, and wanted to try the polenta. Plus the vegetarian dish looked good.	Highly important	Slightly relevant	Highly important
3/04/2019 12:08:27	Most of the times	Most of the times	Sandwich	l always choose a sandwich	Important	Important	Important
3/04/2019 12:09:29	Most of the times	Always	Salad, Pork	It looked really good	Highly important	Slightly relevant	Important
3/04/2019 12:11:07	Sometimes	Sometimes	Pork	I had my own pasta so I just needed some sauce and this was the only suitable thing.	Important	Slightly relevant	Slightly relevant
3/04/2019 12:11:35	Most of the times	Always	Salad, Potato-onion puree, Pork, Vegetarian dish	Looked good	Highly important	Slightly relevant	Important
3/04/2019 12:11:35	Most of the times	Sometimes	Potato-onion puree, Pork, Vegetarian dish	It was looking good	Important	Slightly relevant	Important
3/04/2019 12:12:09	Most of the times	Never	Potato-onion puree, Pork, Vegetarian dish, Smoothie	nothing better availablei just mix to get somewhat decent meal	Highly important	Slightly relevant	Highly important

Time	I am able to find the right food to my preferences. (Select one option)	I get all the information I need about my food at the canteen. (Select one option)	What did you chose to eat today at the canteen for lunch? (You can select multiple option)	What are the reasons you choose to eat this food today ?	What priorities do you have while selecting food? (Select one option for each priority) [Taste]	What priorities do you have while selecting food? (Select one option for each priority) [Locally grown]	What priorities do you have while selecting food? (Select one option for each priority) [Health]
3/04/2019 12:12:59	Most of the times	Sometimes	Salad, Potato-onion puree, Pork	That was what they served unfortunately	Highly important	Slightly relevant	Important
3/04/2010 12:14:23	Most of the times	Most of the times	Potato-onion puree, Pork	Lwas hungry	Important	Not important	Not important
5/ 04/ 2019 12:14:23				i was nangry	Important	Not important	
3/04/2019 12:14:35	Most of the times	Most of the times	Sandwich, Smoothie	I was hungry	Highly important	Important	Highly important
3/04/2019 12:15:48	Most of the times	Most of the times	Vegetarian dish, Smoothie	l want to eat more vegetables	Important	Not important	Important
3/04/2019 12:15:50	Always	Most of the times	Salad, Vegetarian dish	It looked like a good alternative to meat	Highly important	Slightly relevant	Important
3/04/2019 12:17:52	Always	Most of the times	Sandwich	Fast to get a sandwich	Highly important	Slightly relevant	Important
3/04/2019 12:18:26	Most of the times	Always	Salad, Potato-onion puree, Pork, Vegetarian dish	I,m too lazy to måske my own	Highly important	Not important	Highly important
3/04/2019 12:55:41	Most of the times	Most of the times	Sandwich	It looked so delicius.	Highly important	Slightly relevant	Important
3/04/2019 17:17:13	Most of the times	Sometimes	Salad	Jeg har selv en rugbrødsmad med også er det dejlogt at få lidt grønt.	Highly important	Slightly relevant	Highly important
28/03/2019 10:25:30	Sometimes	Sometimes	Salad, Pasta, Vegetarian dish, Bread	l felt like it			

## Appendix 14 List of food derived from AAU canteen



# Appendix 14: List of food derived from AAU canteen

General observation: Ingredients are susceptible to change their origin depending on the supplier business or season (Simone).

Ingredients	Country	Company
Tomato (Pasta can)	Italy	Kokken catering
Chopped tomatoes(Can)	Italy	Kokken catering
Cherry tomato	Netherlands	
Iceberg	Spain	Kittos/Alimers
Red cabbage	Portugal	
Carrots	Denmark	Limfjords
White carrots	Germany	
Cucumber	Netherlands	
Fennel	Not found	
Beetroot	Denmark	
Broccoli	Spain	Kittos

Cauliflower	Not found	
Bell pepper (red)	Netherlands	
Onion	Denmark	Axell Mansson
Mushrooms	Poland	
Potato	United Kingdom	Bennet potatoes
Rice(Long Grain)	India/ pakistan	Kokken catering
Rise(Short Grain)	France	
Rice (Risotto)		
Burgur	Turkey	
Pasta	Italia	
Chickpeas	N⁄a	
Black beans	Not found	
Red beans	Italy	Sisto can
Green beans	Denmark	
Lentils (Black)	Canada	
Pork		
Serrano Ham	Spain	
Salami	Italy	

## Appendix 14 List of food derived from AAU canteen



Beef		
Chicken		
Fish		
Creme Fraiche		Arla
Coconut milk	Thailand	Kokken Catering
Salt	-	Broste
Pepper	-	
Garlic	Spain	
Thyme	Israel	
Basil	Not found	
Chilli	Spain	Engros- Frescover
Small round chilli	Israel	
Coriander	-	santamaria
Dill	Not found	
Chervil	Kenya	
Liquorice	Not found	
Bay leave	Italy	
Mint	Denmark	

Parsley	Not found	
Rosemary	Kenya	
Ginger	Thailand	Fresh & New
Eggplants	Netherlands	Sensation
Radish	Netherlands	
Ramslog/ rams	Denmark	Krydder Gront
Spinach	Denmark	
White sparragus	Netherlands	
Pic 2	Italy	Legnago
White sparragus	Belgium	
Celery	Spain	
Green Herbs	Kenya	
Lovage	Denmark	Krydder Gront
Persille	Italy	
Lollo rosa	Spain	
Cabagge	Italy	
Barley	Italy	Pedon

## Appendix 14 List of food derived from AAU canteen



https://docs.google.com/spreadsheets/d/1QGn1hBEyzsOLhGFIs7Cz Zzb0\_qwEzZIFtDiKe9Pclbk/edit?usp=sharing

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4053929/

#### Example cases

#### Potatoes

https://lf.dk/viden-om/landbrugsproduktion/planter/kartofler

#### Onion

https://drive.google.com/open?id=1FfA0EY4Yjjula3oc76I0X7TakQQA e5Bb

#### Green beans

https://drive.google.com/open?id=1RlBUi3vpEaVW7jKfAOjWnqOoFHL PfoEO

**Cooking methods** 4 times 6 methods, 24 rectangles.

#### Fry-7.5MJ/kg

Deep fry- 7.5MJ gas or electricity/kg Boil- 3.5MJ gas or electricity/kg Oven Low heat- 9MJ/kg Oven High heat- 9MJ/kg Steam-( similar to boiling)

Steam and boil green, Fry and deep fry dark yellow, oven red.

REFERENCE: Some reference information to many common cooking methods such as 0.8 MJ electricity/kg for microwaving, 9 MJ gas or electricity/kg for roasting, 3.5 MJ gas or electricity/kg for boiling, and 7.5 MJ gas or electricity/kg for frying could be used to estimate the impacts of varied choices on the environment when there is no value for the energy use appropriate to the specific food (Foster et al., 2006) page 50

Xu, Z. et al. (2015) 'Research developments in methods to reduce carbon footprint of cooking operations: A review', Trends in Food Science and Technology. Elsevier Ltd, 44(1), pp. 49–57. doi: 10.1016/j.tifs.2015.03.004.

## LCA data and sources

Swedish LCA from Michael very relatable and comparing national and international impact

## Appendix 15 Idea box and Brainstorm session (Design phase)

Through the semester, doing our investigation, the research team have collected ideas that have been inspired during research. These ideas have been stored in paper to the moment the research team start to pursue design stage, we have called this process "Idea box".

After, uncovering the "Idea box" these were also categorized under the themes that have been developed during the strategies review. After, a Brainstorm session was held to see if more ideas had been inspired after the review and discussion, giving us a list of 30 ideas in total.

- 1. Discussion cards with the food subject on a plate
- 2. Boundary object: "How to eat more sustainable?"
- 3. Interactive website
- 4. consumer cooking challenge with local ingredients
- 5. Dish of the consumer weekly recommended by consumers
- 6. Interactive workshop
- 7. Measuring sustainability
- 8. Make a local food promotion campaign to educate people
- 9. Informative cube on the tables
- 10. State in a infocard/infographic if x product was local what positive impact would it mean or do it for the already locally sourced.
- 11. Create a movement, do radical stuff provotype. show how little people eat from the local sourced list.
- 12. Set a menu where people knows what they are choosing(info) and how it affects the environment.
- 13. Promote a local ingredient sandwich
- 14. Theme lunch base on 1 environmental discourse(local, food waste, seasonality, etc)
- 15. Sustainable dish of the day
- 16. Alternative economy that encourages local consumption (blockchain technology)

17. Serve a piece/portion local dish with a story included (farmer)

- 18. Give a coupon to the people that consume more local
- 19. Make a sustainable cookie.
- 20 The local snack sold a special time with video on qr code for info
- 21. Make some sort of packaging or recipient for people to get more sustainable choices

22. At the entrance a list of local products at the canteen day by day info of origin of a product,

23. Exhibition at mikado house showing the hard work of growing food24. Counting system on how much resources people is saving for future generations. promote local production

25. Book a trip to a local farm with consumers + compass group.

26. Make a trivial game about sustainable choices.

27. Trivia: transform our interview into a game where people interact like kahoot

- 28. Give thanks for the food you are about to eat.
- 29. Make a path that the canteen will lead you to the best choice

30. Boundary object box, create a dilemma of what people want and can lead ly set ingredients inside, make own recipe.

## Appendix 16 Feedback Participatory design expert Tanja Rosenqvist

2nd of April, 2019 Interviewers; Matthijs, Interviewee: Tanja Rosenqvist Lecturer Participatory design and Designer and researcher.

Methods of interviewing: Semi-structured interview

### Summary

After explained the concept, Tanja asked how the object was going to help make people become conscious and change local food. Most notably, she asked why we wouldn't facilitate the board game? For people by themselves would probably engage very little in this object, asking afterwards would then also have little effect.

Additionally, she raised the idea of creating a labeling around the canteen with functional units or origin to see if it has an effect on people, by asking them afterwards and by making pictures/video while they are doing their canteen practice.

Then she connected both and said a whole journey through the practice could be a good method to document change ending with the game, there ignite a discussion. First facilitating it than later slowly stepping back and let the participants do the discussion. In doing so we can generate a lot of qualitative data.

This data can later then be used to convince, both supervisors/assessors and Companies about the idea. She said we could even call/contact catering organisations to ask if they are interested in this idea/concept by showing them a short 2 page report explains it.

Additionally, out of the interactions, a cooking book could be created and given to the canteen staff. Then with the help of the canteen staff, one recipe could be created and noted by the participants of the recipe and

then we could document their reaction on this event. Tanja mentioned getting 10 groups of participants of around 2 or 3 people in size.

With the facilitation, it also becomes possible to challenge people to get a low impact on their food consumed.

It is important to collect a lot of data, and quotes and pictures. Video can also be nice to create a promotional video for companies.

Every little design feature in this process should also be documented and reflected on.