Sustainable Concept of the Market Hall as part of the Cloud City Aalborg project

A circular experience economy approach

Master Thesis – Environmental Management and Sustainability Science

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Abstract

The point of departure focuses on the correlation between the growing population and the increasing demand of food, as well as consequently the increasing amount of food waste and the waste of resources. The potential to create a change within these phenomena can be found within the newest ongoing project, the Cloud City Aalborg, including the investment in a Market Hall. Therefore, the research aims to investigate how a local food market can influence a shift within the food consumption through providing value to the food by offering experiences of a circular and resource-efficient loop. The loop that is centred by the Market Hall utilizes the food waste flow of the Market Hall and the restaurants by generating fertilizer in the composting facility for the food production of the rooftop-farms. With the intention find the connection between experiences and food consumption, an elaborate literature review is conducted. Further information is gathered from the project leader of the Box Town market, that is going to be the frontrunner project of the Market Hall, temporarily located in the area of the Cloud City Aalborg. For the design of the circular loop, literature review is applied, as well as the stakeholders are defined based upon the initial investment plans and previous studies that were conducted on the Cloud City Aalborg. Eventually the research develops a proposal for a concept of a sustainable food market, as well as the concept of the loop including the stakeholders and the flows of the food waste and resources.

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Picture at the cover page: Cloud City Aalborg by Bjarke Ingels Group
(Bjarke Ingels Group 2016)

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Preface

The report has been developed by Daniella Domsa as part of the Master thesis project of the 4th semester within the Master's Program of Environmental Management and Sustainability Science at Aalborg University. The period of the project is from 1st of February 2017 – 20th of June 2017, with the supervision of Martin Lehmann (Aalborg University).

Reading guideline

The Master thesis report is divided into numerated chapters, and subchapter, as well as the Figures and Tables are numbered according to the chapters.

The report names the names, events, places in their original name, disregarding if it is Danish or English.

For the references and Bibliography, the Mendeley software is used with the application of Harvard referencing system.

Structure of the report

The structure of the report follows the guide of "IMRaD" structure, divided into the main chapters of Introduction, Methodology, Results and Discussion. The structure represents an hour-glass of the structure, where through the introduction, and topic presentation it narrows down to the formulation of the research questions. After the methodology provides the lines to open the research again through the findings and their discussion, as well as finally it broadens the horizon of the study through the conclusion and future prospects.

TABLE OF CONTENT

1. INTRODUCTION

The point of departure presents the correlation between the growing population and the growing demand of food, as well as a result, the increasing amount of food waste and the waste of resources. In Denmark, as a developed country, the consumption of food well-above increasing to the population growth, yet creating a rising impact in the production, as well as in the waste generation. The reasons of food waste differs from the responsibility of retailers for the not sufficient information about the preservation of food, and not offering enough incentives for the market of "second-tier food" (Ellen MacArthur Foundation 2015b). However, on the consumers' side, beside the lack of knowledge, the reason behind the increasing amount of food generation in the households are the disconnection with the origin and value of the food which of course also a result of technological development and the industrialization (Jacobsen 2008). Besides, people's connection with the food has changed over the decades, the way and places of accessing to food has been affected by the industrialization. Namely as during the historical times, the local food markets had the role of main distributors, and by doing so, contributing to the structures and development of cities. While today, the major places that provide the supply of food are the supermarkets, despite the name holds "market", they have lost their original role and created a negative impact on the environment (Steel 2009), such as the increase of food waste among retailers, the increased energy usage.

Therefore, the project aims to discover the potential of dress the food markets with their original role, to serve as a platform for the experience of food; as well as aims to provide high quality food that has a low impact on the environment. With the intention to find the sufficient concept for a sustainable food market, the research questions intent to examine the role of the circular experience economy approach. In addition, the concept objects to facilitate a shift within the urban population's consumption patterns, as well as to minimize the waste generation and increase the resource efficiency of the food market inside a circular system[1] among different stakeholders.

[1] The circular loop in the Cloud City are will be elaborated later.

1.1. Background

Parallel to the growing population around the world, the increasing demand of food production generates a risk in the security of the food system.

According to projections and megatrends, the global population rises by 1 billion by the year 2030 (United Nations 2015). Parallel to this growth, the total food demand of the growing population by 2030 will increase with 35% (PricewaterhouseCoopers n.d.), of course according to business as usual path of the demand.

In fact, reports predict that the world's population will exceed over 9 billion by 2050. (United Nations 2015). Therefore, to supply the future's population at the middle of the century, the food production and the supply of food calories need to be increased at least by 70 % (FAO 2009).

The level of the food consumption as the matter of calorie intake, however, differs between the developed countries, the countries under transition to the developing societies. The following 1.1. Table shows the inequality of the consumed food among regions, as well as presents the projection how the food intake is expected to be by 2030 (FAO 2002). The 1.1. Table also enhances the level of overconsumed calories among most of the regions, even the average calorie-intake of the world is above the recommended daily calorie intake, that is on the average for male and female is 2200-2800 kcal/day (USDA n.d.).

Region	1964 - 1966	1974 - 1976	1984 - 1986	1997 - 1999	2015	2030
World	2358	2435	2655	2803	2940	3050
Developing countries	2054	2152	2450	2681	2850	2980
Near East and North Africa	2290	2591	2953	3006	3090	3170
Sub-Saharan Africa[a]	2058	2079	2057	2195	2360	2540
Latin America and the Caribbean	2393	2546	2689	2824	2980	3140
East Asia	1957	2105	2559	2921	3060	3190
South Asia	2017	1986	2205	2403	2700	2900
Industrialized countries	2947	3065	3206	3380	3440	3500
Transition countries	3222	3385	3379	2906	3060	3180

1.1. Table- The food consumption division in the different regions (kcal per capita per day) (FAO 2002)

This enhanced growth within the calories consumed can be related to the increasing wealth of people in industrialized countries and transition societies, that encourages them to consume more protein and calories comparing to the level of demand in 2000 (Stuchtey & Rossé 2016).

To elaborate on the unequal food consumption patterns between the different regions the food/capita consumption can be examined. It reveals the correlation between the growing population and the food consumption, by presenting the level of overconsumption and the exploitation of food-resources. The level of the food consumption per capita differs between the developed and the developing societies, since currently the calories input per capita in a day is significantly less in the developing countries than in the industrialized countries (FAO 2002). This difference can be elaborated as,

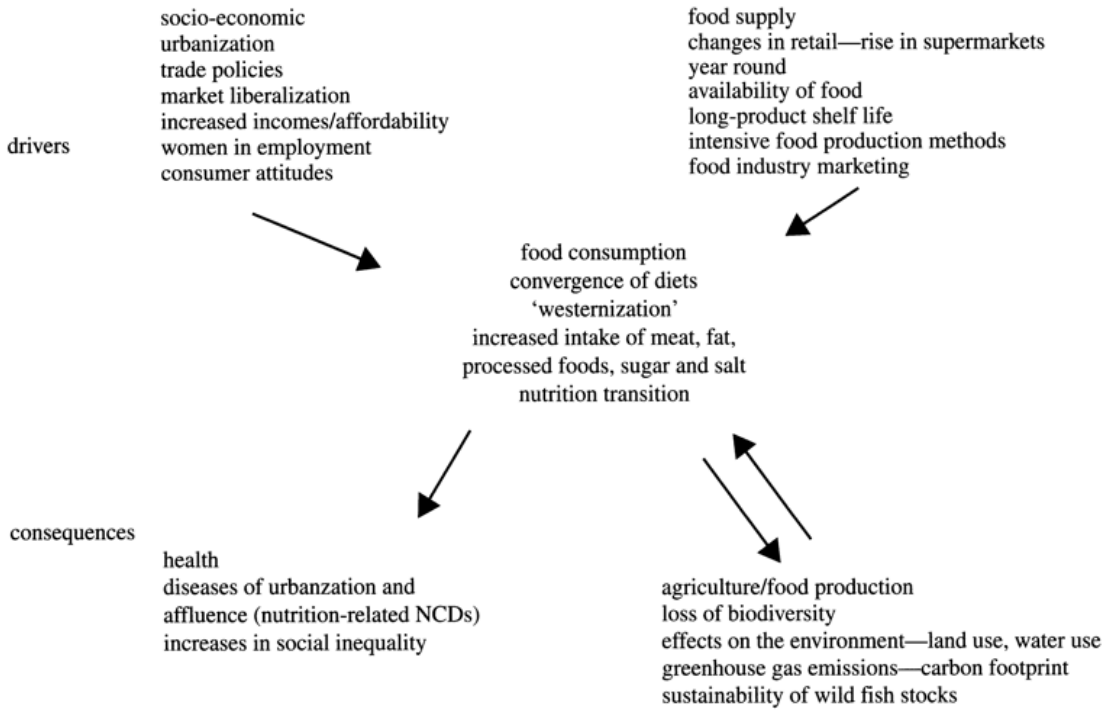
- in the developed countries, if the food consumption per capita is increasing more than the population, which means that not only the number of people is growing, but their consumption is rising with an enhanced rate due to the increasing demand of food.
- While, if the demand of food per capita is not increasing more than the population, the growth rate of the food consumption is directly proportional with the growth of the population.

1.1.1. The effects of the increasing food demand and supply

The increasing demand of the food supply results a more advanced land-use and fresh water usage by agriculture, with the intention to satisfy the need of nutrients in the growing population. The extended demand additionally results three major problems of the global food system:

- the system is wasteful,
- the system contributes to natural capital degradation and
- the system does not produce healthy outcomes (Stuchtey & Rossé 2016).

The reason why such problems has occurred in our global food system is mainly because of the negative effects that caused by the drivers of the food consumption (1.1. Figure).



1.1. Figure - The drivers and the consequences of food consumption changes with economic development (Kearney 2010).

Among the main drivers of the food consumption that are presented on the figure, the people's income also appears by influencing the quality and the amount of the consumed food.

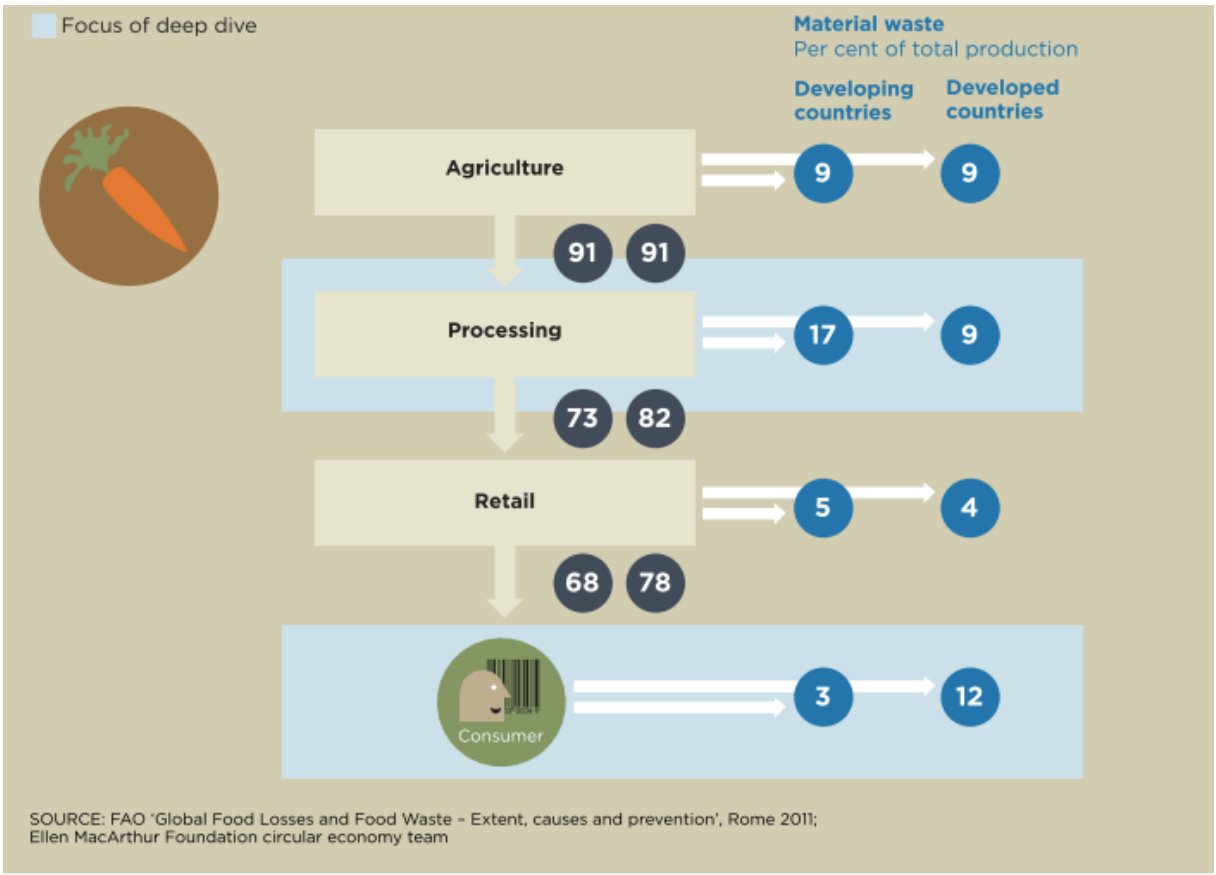
As both Kearney (2010) and Popkin (1999) also argue, the urbanization has a strong influence on the population's food consumption, therefore the challenges are more urgent to be tackled within the rapidly growing urbanization.

Further drivers that result the negative consequences of the food consumption are generated by trade liberalization, where the healthy and nutritious food loses the competition over the easily accessible, more cost-efficient unhealthy food. A main influential that creates a negative environmental is the different features of the supply, such as the spread of the transnational food corporations; the retailing, that resulted the wide-spread of supermarkets around the globe, even at developing areas where it has destroyed the local food economy, including the major role of local food markets. Such enhanced influence of the supply is mainly based upon the marketing strategies of the food industry that has usually not favoured for the healthy products. Finally, of course the behaviour and attitude of the consumers can also drive the

food consumption patterns that is related to the awareness and the pressure of the society (Kearney 2010).

Furthermore, in the era of consumerism the perception of the food has changed as well, thereby creating an increased negative impact of waste generation.

One of the huge problem with the food system is the waste of food and therefore the resources. According to the 1.2. Figure the waste-generation between the developing and developed countries is un-even in regards to the production and the consumption levels of the supply chain (Ellen MacArthur Foundation 2013b).



1.2. Figure - the major sources of waste through the production and consumption processes (Ellen MacArthur Foundation 2013b)

As the 1.2. Figure shows, in the developed countries the major percentage of waste generation is related to consumers. The increasing amount of food waste, therefore, enhances the impact on the food production as well, as it is shown on the following equation:

$$\frac{Production}{Capita} = \frac{Consumption + Waste}{Capita}$$

On the consuming side of the supply chain, 66% of the produced food is actually consumed, while the rest of it is wasted (which is 15% of the total amount of food). Thus, the food production equals with the total amount of the consumption and the waste which directly effects on the impact of the production. If the rate of both the consumption and waste generation is decreased then the rate of the production can be decreased as well. Also, in case of the stagnant production, the focus moves to lowering the inequalities of the consumption between the different regions of the world.

The level of consumption can be decreased in several ways from optimizing the processes through the change of consumer's behaviour to the practice of maximizing the quality of the food, while minimizing the quantity of it. The quality of the food in the current case can be increased by adding value to the products, as well as by extending with an experience that they can gain while visiting the food market. The price of the food products can be lowered by enhancing the efficiency of the resources and mitigating on the conventional costs of the production and transportation. Consequently, the energy intensity of the food production can be lowered, too, therefore the impact on the land-use, the energy and water usage can be mitigated as well.

1.1.2. Food consumption patterns in Denmark

The main features of the food consumption patterns in Denmark can be identified by the resource of the supply (retailers, supermarkets, food markets, private suppliers), by the type of food (such as meat, vegetables, fruits, dairy), by the quality of food (local, seasonal, organic) and by the efficient use of resources through the amount of waste generation.

As for the type of food that is consumed in Denmark, the highest consumed products is the meat. This increasing habit results an enhanced meat (especially pig) production within the agriculture sector. Thus, one of the major issue that has the biggest impact on the

environment is – after the energy sector – the agriculture (The Nordic Council of Ministers 2014).

Besides the major impact of meat consumption, still an urgent problem in Denmark is the avoidable amount of food waste, which also increases the energy intension of the food production. It is estimates that *"around 700,000 tonnes of food are wasted annually in Denmark in the entire value chain from farm to fork"* (Stop Spild af Mad n.d.), from which it is approximately 261000 tonnes thrown away by households. However, the misperception shows, according to surveys, that Danish citizens believe in the greatest potential to reduce food waste is in the supermarkets, while the total yearly amount of food waste in the Danish households is significantly more (Erin-Madsen 2015).

On the other hand, Danish citizens can be considered deeply conscious about their food consumption when it comes to organic products. Due to the recent trends, Denmark is considered one of the pioneer countries in relation to organic consumption (IFOAM EU Group 2016), where the consumption of organic products is the highest among the European countries, in fact 33% of the dairy consumption of Denmark is organic. That is supported by the fact, as 7% of the Danish farms are cultivated organically (Danish Agriculture & Food Council 2016).

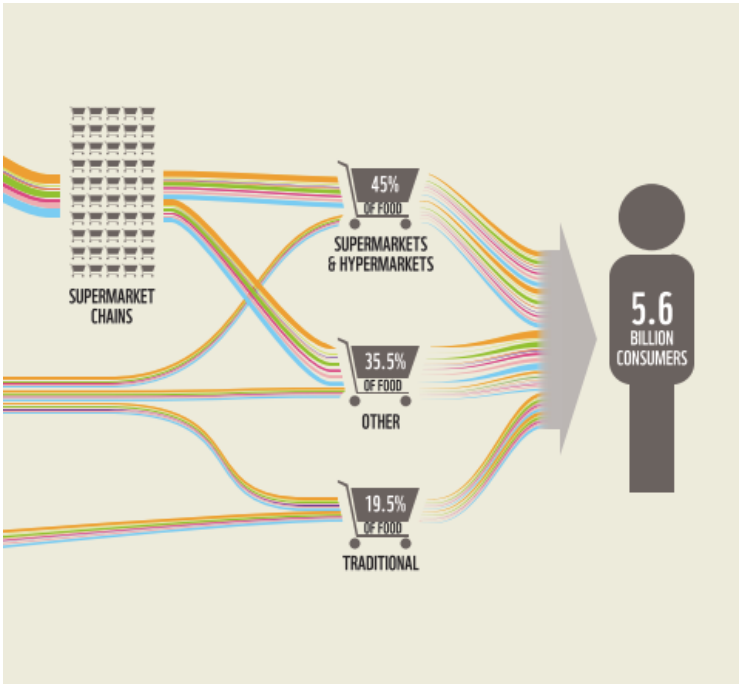
1.2. Topic Presentation

1.2.1. Local food markets

The local food markets and the flows of food used to have a major role to shape the structure of cities. Thus, before the preindustrial age, the cities could be considered as organic cities, until the appearance of the train which reshaped the flows of food into the cities by enabling to transport the food from longer distances. The flows of food had a different role as well by building a strong connection between the cities and lands, by the lands supplying the cities with food every day and the cities by creating the demand to maintain the production on the

lands. However, today's modern food system results an unbound between the consumers and the origin of the food (Steel 2009).

As the history approves, the food markets usually formed to supply the dwellers of the city, by creating local distribution within the food system. As 1.3. Figure reveals, this role nowadays has been taken over by the supermarkets (WWF 2016).



1.3. Figure – 45% of the food globally is supplied by supermarkets and hypermarkets (WWF 2016).

However, an increasing trend has been noticed as consumers are more interested in the quality and the origin of their food, resulting a wide and rapid spread of food market. This up-to-date phenomena is visible around Europe as well, such as the Boqueria market hall in Barcelona, the Torvehallerne in Copenhagen or the recently opened Markthal in Rotterdam (Neilson 2014).

The existing food markets (1.2. Table) have different concepts based upon the experience their offer, for instance the conventional type of local food markets, that mainly offer produce food or only products. Besides possessing the original features of food markets, they can offer the service of eating experience, such as in the case of street food markets. In addition, when it comes to food markets, a major factor is their availability, if they are open on a daily base

(Torvehallen, Copenhagen), on a weekly base (Grønttorvet, Aalborg) or merely once in a month (Fødevaremarked i Nordkraft).

Examples of food markets	Market mainly	Restaurants/Street Food	Mixture of the two
Produce only	Grønttorvet Aalborg	-	Box Town (?)
Products only	Fødevaremarked i Nordkraft, Aalborg	Lighthouse – Aalborg Street Food	Aarhus?? WestMarket, Copenhagen
Mixture of the two	Boqueria, Barcelona	-	Torvehallerne, Copenhagen Box Town, Aalborg Mercat de Santa Caterina, Barcelona

1.2. Table – the typology of food markets based upon the experience customers can access and the type of food they can purchase (Developed by author)(Appendix).

1.2.2. Local, seasonal, organic… what is a sustainable food?

The local markets usually provide the food products of the local farmers and manufacturers. However, the question comes up, as the locally produced food is sustainable, or what makes a sustainable food that can be sold on a environmentally sustainable market? Is it a food sustainable if it is local or seasonal or organic, or it is necessary to have all these features?

To answer the questions above, it is necessary considering the definitions of each feature of the food.

Generally, the definition of the *local food* is not universally determined, however it indicates the geographical feature of the food by considering the distance between the location of the food production and the food consumption (Martinez et al. 2011). Furthermore, the term of local food implies a short supply chain of the food. According to appearance of the term "local food" in Danish printed media as well, the meaning of it cannot be clearly defined, nevertheless, it is described with phrases that helps the understanding of the term such as, local food networks, food values, food system, food events and the local food in supermarkets (Eriksen 2014).

Arguments say that if a food product is produced locally or regionally, it does not mean necessary that it is sustainable as well. Such as in case of locally produced meat, which can be produced in an unsustainable way (GRACE Communications Foundation n.d.).

The definition of the *seasonal food* can be described more clear, as "food that is outdoor grown or produced during the natural growing/production period for the country or region where it is produced. It need not necessarily be consumed locally to where it is grown." (Defra 2009 p.3). Thus, relying on the definition, if the food is seasonal grown but not locally, the environmental impacts of the transportation need to be considered as well, which creates also a more unsustainable way of food production.

In the case if the food is locally and seasonally grown, it does not result obviously that it has been organically produced as well, therefore creating the impact of using pesticides and other chemicals.

In general terms, the definition of organic products and organic production relies on the different regulations that determines the conditions of the organic food. According to the regulation of the Council of the European Union/European Council (2007), the organic production is described with the following features:

- "sustainable cultivation systems
- a variety of high-quality products.
- greater emphasis on environmental protection
- more attention to biodiversity
- higher standards of animal protection
- consumer confidence
- protecting consumer interests." (European Comission 2007)

Besides the regulations of organic products, the application of organic labels, through their own requirement system, help consumers to identify the organic products. For instance, in Denmark the most commonly used organic label, "Statskontrolleret økologisk" is launched by the Danish authorities in 1989 and during the years became the most known and trusted ecological label among Danish consumers (Ministry of Environment and Food of Denmark n.d.).

1.2.3. Urban agriculture

The urgent shift toward the urban agriculture originates from the phenomenon of the growing food demand of the urban areas. Hence, by involving urban areas to the field of agriculture creates the potential to satisfied the needs by lowering the environmental impact of agriculture (Goldstein et al. 2016a).

Generally, the term of urban agriculture can be described as "horticultural, agricultural, and farming activities carried out on small plots of land in and around urban centres" (Ackerman et al. 2014, p.2). Urban agricultures besides several environmental benefits can contribute to the efficiency of food production by minimizing the distance *"from farm to the fork",* meaning the supply chain can be lowered by providing the produced food locally to the consumers, also as a result by lowering the energy (and consequently the costs) of transportation (Ackerman et al. 2014).

One type of the urban agriculture is the rooftop farming which recently has been spreading progressively (Buehler & Junge 2016). The rooftop farms have the benefit on the urban symbiosis (by utilizing the organic waste of the urban system), as well as on the energy systems of the building and eventually on the water system by its role of storm-water mitigation. (Goldstein et al. 2016b). In addition, the key advantage or roof-top farming, comparing to the other types of building-integrated agriculture, is that *"it does not compete with other land uses or uses of a building's interior, and it does not require fertile farmland"* (Buehler & Junge 2016, p.2).

1.2.4. Cloud City Aalborg

Considering the different perspectives that are mentioned above, the need for a shift in the local consumption can be found together with the attention of waste production.

The Cloud City Aalborg, the newest ongoing project in the city, with its goal to redesign the district of the old Akvavit factory, it has the potential to provide a shift in waste mitigation through food consumption and with the synergy of the facilities inside the area. The project delivers a sustainability concept as well, through the aspects of nature, social conditions, local values, environment and economy (Aalborg Kommune 2017).

By reshaping the appearance of Aalborg on the map both in local and international eyes the investment recreates the west part of the city and transforms it into a multi-facetted urban district, with the facilities of a hotel, restaurant, market hall and private accommodation. Besides, its cope is to preserve the industrial feature that identifies the history of Aalborg, therefore in the are a chocolate and micro-distillery amenity will be opened. Further on, the plans also target the recognition in the field of art and culture by opening an art centre and a new venue for the Aalborg Theatre.

1.2.4.1. Market Hall and the Box Town

As part of the area's recreation plans, the new Market Hall, that is planned to be the first of its kind in Aalborg, will host the place for both a food market, for street food and restaurants as well.

Figure Market Hall designed by Bjarke Ingels Group – BIG (Bjarke Ingels Group 2016)

Meanwhile the constructions of the final Market Hall are under progress, the Box Town project is under development as a mobile food market at the area of the old factory. It also offers the opportunity for a pilot experiment through its similar approach to the planned Market Hall. The ongoing Box Town market project is planned to be established from

containers, by offering a further benefit as the structure of the market as well. According to the leader of Nebula-group, who's the investor of the Box Town project, the mobile container market presents six principles:

1. *Box Town combines market for local food, street food & "experimentarium" for food culture and sustainability.*
2. *Box Town is owned by the small, local farmers & their allies themselves. Market will be run by a non-profit Association of Box Town.*
3. *Box Town is frontrunner for Cloud City and do experiments for sustainability to be implemented in the Food Court of Cloud City.*
4. *Box Town has a unique design, not comparable to anything inside Denmark (but inspired by container cities, e.g. in Netherland & London).*
5. *Box Town enlighten the story of local food production & animal well-fare.*
6. *Box Town takes responsibility to work with schools & educational institutions for the improvement of food culture and sustainability.* (Kruhoffer 2017b)

1.3. Applied Theories and Concepts

In this chapter, the following theories and concepts are addressed with the purpose to find the connections between the experiences as offerings and the food consumption, as well as to investigate how to utilize a circular system within the Cloud City Aalborg area.

1.3.1. The experience economy

The term of the experience economy was first described by Pine and Gilmore (1999) in the book of the *"The experience economy: Work is Theatre & Every Business a Stage".* The experience was defined as the fourth economic offering, distinguished from the commodities, goods and services as the moving force of – in the same order – the agrarian, the industrial and the service economy. The point of departure of the experience economy is by offering not only products or services but also experiences for the customers, the value of the initial commodity can be increased in relation with the level of the experience (Pine & Gilmore 1999). To achieve the creation of the experience, the engagement of the customers is

essential by generating a personal connection and a memory (Pine & Gilmore 1999). Therefore, the experience economy not only offer goods or services, but a memorable moment that differs from one to another customer.

However, the first recognition of the experience offering can be found in the entertainment industry, it clearly appears in sectors of tourism, urban planning and in the food and eating culture as well.

1.3.1.1. Experience economy in the centre of urban planning

Despite, utilizing the experiences first appeared in the business economy world, it also has a relevant role within the urban development and planning. Recently the focus is enhanced on involving the experience economy approach in cities' growth strategy, especially in Danish cities and coastal towns (Lorentzen 2009).
Providing experiences for customers and guests was firstly offered by companies, however the concept as businesses act as stages by performing the experiences (Pine & Gilmore 1999) can be applied in the case of urban planning where the companies can be replaced with the cities as actors (Skot-Hansen 2008).

1.3.1.2. Experience economy shapes the food and eating culture

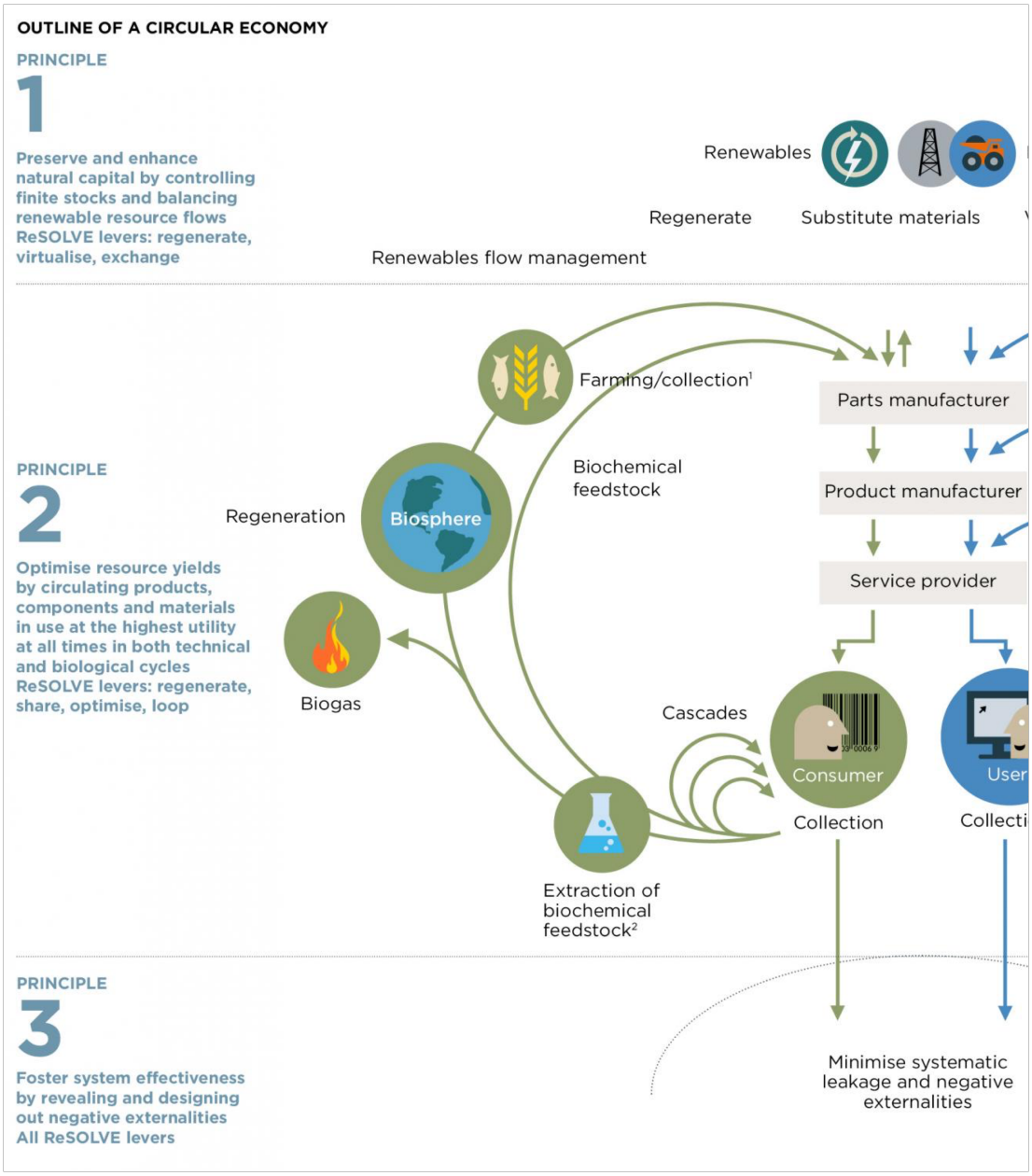
During the last decades, the role of the food and eating patterns has changed, as well as the concept of the food culture. While the food used to be prepared only at households, and the produces were gathered usually from near to homes, recently the preparation of the food majorly taken over by the industries. As the civilization and societies have developed, the food became a centre of the life and society, as well as most activities can be related to food and eating. Therefore, creating a potential to develop the eating activity around the experience economy. (Jacobsen 2008).

1.3.2. Circular economy

The concept of the circular economy has been advocated and further developed by the Ellen Macarthur Foundation with the aim to limit the linear economy and consumption, by considering our finite resources. The approach provides a solution by disrupting the conventional “take-make-dispose” model of the products (Ellen MacArthur Foundation 2013a) into a system where the products are reused, recycled, upcycled by regenerating the end of the life-cycle.

The concept applies the pattern of biological cycle appears in the nature, where the end of the life-cycle becomes the resources of the following life-cycle (Ellen Macarthur Foundation n.d.). Therefore, it utilizes the maximum efficiency of the available finite resources.

The main principles of the circular economy are based upon the disruption of the linear economy, namely
to preserve and enhance the natural capital, as well as
to optimise resource yields and
to foster the system’s effectiveness (1.4. Figure).



1.4. Figure - The so-called butterfly diagram of the circular economy system. The figure currently only presents the biological cycle of the diagram (Ellen Macarthur Foundation n.d.).

In the Figure 2, the main actions of the circular economy are described by the so-called ReSOLVE framework (1.5. Figure), where the current project focuses on the main processes of optimizing and looping. Within these two, the optimization increases the efficiency of the product, as well as removes or minimizes the waste during the supply chain. While, the action of the loop includes the remanufacturing of the products or its components; the recycling of the materials; the anaerobic digestion of waste and also the extracting of the biochemical from the organic waste (Ellen MacArthur Foundation 2015a).

1.5. Figure - the ReSOLVE Framework of the circular economy (Ellen MacArthur Foundation 2015a)

1.3.2.1. Closing the loop in a regenerative food system

The biological cycle of the butterfly diagram (Figure) can be well-applied within the food systems, that is mainly relevant for the current project.

The basis of the regenerative food system is to restoring natural capital and recover the nutrients by "closing the loop", as well as it includes the optimization of urban food production (Stuchtey & Rossé 2016). During the process of closing the loop, the "waste equals food" approach can be functioned, for instance as during the historical times, when all the leftovers of food has fed the animals or moved for composting, that eventually could be processes again for food production (Ellen MacArthur Foundation 2013b).

In order to reshape and recover the food system, the actions of the ReSOLVE framework can be applied (Stuchtey & Rossé 2016) with the emphasis on the processes of the 'optimse' and the 'loop' (1.5. Figure).

1.3.2.2. Circular economy strategy in Denmark

Among other European countries, Denmark also aims to place a leader position within circular economy, by considering it an opportunity to achieve environmental benefits and to improve businesses (State of Green 2016). Several Danish companies has already achieved to deliver solution in the circular economy, however there is still existing room for improvement in the case of treating waste and by-products as valuable resources. Among five sectors, according to the case study of Denmark, the Food and Beverage sector has been identified as a major potential in the circular economy. Of course, in order to achieve such effective transition towards the circular economy, within the food sector as well it is required to create a collaboration between policy-makers, businesses and the society (Ellen MacArthur Foundation 2015b).

Within the sector of food and beverage, Denmark has a great focus and potential to accelerate the transition through industrial investments in bio-refining. Besides, the country has also an enhancement on the reduction of – especially – avoidable food waste (Ellen MacArthur Foundation 2015b).

1.4. Problem Formulation

The initial plans of the Cloud City Aalborg project also involve an investment of a market hall within the area. However, the growing demand of food and the increasing trend of a high-quality food triggers a need to a distribution platform of local, seasonal and organic food. Therefore, the main research question of the project investigates in a concept to design the food market by applying the concepts of the circular economy and the theory of the experience economy:

How to build a concept of a sustainable food market through the circular and experience economy approach as part of the Cloud City Aalborg project?

The development of the Market Hall also aims to contribute to the urban scape by minimizing the negative impact of the recreational district (through food waste treatment and resource efficiency), as well as to maximize the positive benefits the quality and the flows of the food.

Since, the research question examines two different approaches, it is divided into two sub-questions to support the way of the conceptualize process. The sub-questions are formulated based upon the role of the food market from different approaches.

Firstly, the aim of the food market is to increase the quality of the food products through their sustainable way of producing, as well as to create an added value through the experience the customers can gain at the food market. Therefore, the question aims to find a way to achieve a sustainable way of food consumption:

How the food market facilitates the shift toward the sustainable food consumption through creating experience?

Furthermore, besides shifting towards a sustainable food consumption - meaning a sustainably produced and lowered level of consumption - the food market also play a role within the increase of the resource efficiency, as well as to contribute to a disruption in the waste generation, by closing the loop. Therefore, the second sub-question considers how it is possible to achieve and who are the different stakeholders within the loop:

How the food market can generate a "closing the loop" approach within the area of the Cloud City Aalborg and which stakeholders/steps can be involved during the cycle?

2. METHODOLOGY

2.1. Research Design

The development of the project

The research problem has been chosen based upon personal interest and the potential of the research from different topic related to the project of the Cloud City Aalborg.

After the research problem has been defined as a possible design of the food market, a draft of the circular system has been sketched and the main research question has been formed with the consideration of the possible research methods and conceptual framework.

As the proposal of the master thesis has been formed, the research has started with literature review, and the mapping of the keywords. Since the literature review is crucial from the perspective of the research, an elaborate and thorough review has been conducted to define the key topics of the study. Thus as the point of departure, the major keywords were mapped according to their spectrum, such as boarder, related and narrowed ones (Clifford et al. 2010) to identify the most relevant ones.

The sub-questions have been defined based upon the role of the food market from different aspects, such as the experience economy, the food consumption and the waste generation and resource flow within the circular economy approach.

The current research has been led by the flow of a concept creation, precisely to develop a design concept of the sustainable food market through the framework of the experience economy and the circular economy.

The type of the current research cannot be clearly defined by one style of research design; however, it possesses the elements of different research design schemes. The project mainly designed through a case study research, using the case of the Cloud City Aalborg project, and the pilot project of the Box Town market. Besides, the project is also developed through an exploratory design of research.

The type of research design

Exploratory research

The elements of exploratory design appear within the research of the circular system in the area, where food market has an essential role within closing the loop of the waste and resource flows in the Cloud City Aalborg. Since, in the current available literature there has been no examples found on such concept (USC 2017), the current research, based upon the different steps of the loop, exploring the possibilities to build up a resource efficient circular system with the participation of the food market, the restaurants, the composting and the rooftop farming facility, as well it explores the connection between experiences and consumption.

Case study research

As basis of the research, the case of the market hall of the Cloud City Aalborg project has been applied. However, since the market hall is a soon to be ongoing project, as a frontrunner of the market, the Box Town pilot project has been examined. The concept eventually is developed for the case of the CCA. The fact that from one single case study it is possible to improve a general concept is supported by the argument of Flyvbjerg (2006), as he disapproves the misunderstanding of case studies, as *"one cannot generalize on the basis of an individual case"* (Flyvbjerg 2006, p.221). Furthermore, as case studies can be applied for theory-testing as well (Bhattacherjee 2014), the current research tests the theory of the experience economy (how it influences the customers consumption), as well as the concept of the circular economy through the approach of the closing the loop as part of the circular system.

2.2. Methods

To answer the research question and the sub-questions, qualitative research methods was chosen.

In the case of the first sub-question, the information and data are gathered through the method of interview and literature review. Besides, a personal observation at the food market in Nordkraft, Aalborg provided insights about food markets. The surveys with customers was

planned at the opening of the Box Town, however it has not been conducted, since the opening of the Box Town market has been postponed.

As for the second sub-question, mainly the concept of circular economy is applied. The investigation focuses on minimizing the waste of the area. To identify the stakeholders, the stakeholders are mapped is through the steps of the Market Hall, the restaurants, the composting facility and the rooftop-farming. To gather the data, mainly literature review has been conducted. Furthermore, it was planned to gather data through interviews with the different food providers at the Aalborg Street Food – the Lighthouse opening day, however, the opening of the food market has been postponed due to lack of permits.

2.2.1. Primary data sources

Documentation review

To gain primary data and information about the initial plans of the market hall at the Cloud City Aalborg and its frontrunner, the Box Town food market, the available documents about these projects has been reviewed and applied in the current research.

Interview

To gain additional insight of the Box Town project, a face-to-face interview was conducted with the leader of the project team, Jens Kruhøffer. The interview was held in the home of the interviewee and followed by a brainstorming session. With the purpose of further analysis, the interview was recorded. The semi-structured interview was conducted with the help of the interview guide, while during the session some of the questions were changed based upon the responses of the interviewee. The interviewee were chosen based upon his “elite” role within the Box Town project, therefore providing a reliable information. (Kvale & Brinkmann 2008).

Observation

The only observation was conducted at the *Fødevaremarked i Nordkraft,* due to the postponed opening day of the Box Town market. At the monthly food market, the observation was mainly focused on the personal impression of the event and the venue. The observation

took place on the 1st of April, between 12-13 pm by observing the flow of people around the area, as well as documented by pictures (Appendix).

2.2.2. Secondary data source

Literature review

The literature review was mainly conducted to summarize the relevant journals, papers, web sites regarding the research topics. Through the current research the main source of information and data is gathered through literature review, since the project is in the initial phase and no existing implementation is available at the Cloud City Aalborg area yet. Therefore, due to the lack of in-situ data from the district – such as measurements, observations, surveys – the core of the analysis and discussion is the literature review, in order to develop the concept of the Market Hall.

2.3. Tools

Stakeholders mapping

Mapping the stakeholders as a tool has been applied with the reason to identify the segments of the stakeholders. The stakeholders of the "loop" has been identified based upon the initial plans of their potentials, as part of the preliminary investment plans. Such as the plans of the restaurant at the area and inside the food market, the plans of the composting facility, as well as the potential, that is provided by the building of the food market and even the additional buildings, for utilizing the rooftops as farms. The stakeholders that are connected to the food market has been recognized primarily based upon their relevancy.

2.4. Limitations and delimitations

The research study can provide a limited data access and results due to the preliminary state of the Cloud City area. Further on, only the type of stakeholders is identified through the steps of the loop, and not actually named, since their appearance is still unknown.

The current research report only focuses on the development of the general concept of the Market Hall, and does not aim to elaborate on the further steps, such as feasibility studies, a stakeholder analysis with the actual participants of the loop and research on the implementation.

Furthermore, the results of the research were limited, since the planned openings of the two different food markets were postponed over the deadline of the report. Therefore, generating a lack of data for a more thorough discussion.

3. RESULTS AND DISCUSSION

This chapter presents the major findings of the research, combining with the reflection and discussions with the purpose of answering the sub-questions and developing the concept of the sustainable market hall.

3.1. Creating experiences towards sustainable food consumption.

3.1.1. The role of the food markets in Aalborg

The growing number of food markets around Denmark presents its popularity among customers. On the wide range, the food markets offer a platform for local food (Grønttorvet), for organic products (partly Fødevaremarked I Nordkraft), for culinary specialities (Aarhus Central Food Market). Thus, the wide spread of food markets also signifies the need for the high quality of food.

As Jens Kruhøffer (2017a) enhanced during the interview about the Box Town market, the motivation behind the idea was initiated by the fact that for instance in Aalborg, customers can only buy local and/or organic products from several different places around the city, from supermarkets through local producers to local food markets.

3.1. Picture – Customers visiting the monthly Fødevaremarked i Nordkraft (taken by author)

Currently, one of the available options in Aalborg to visit local food markets are the monthly *Fødevaremarked i Nordkraft* that provides the experience of a regular event rather than a permanent food market. On every first Saturday of the months the food market takes place at the Nordkraft, Aalborg, where local manufacturers form around Aalborg and Nordjylland gather and sell their products. The suppliers usually provide for the visitors the opportunity of *tasting*

with the intention to increase the engagement with the food and to enhance the experience of the market. Among the different product suppliers, the customers can find permanent and occasional stands as well, that can vary at each month providing a wide range of products such as chocolate, sausage, flower, jam, spice, beer, cheese, extended with special offers, cocktails and insects.

3.2. Picture – Supplier at Fødemarked i Nordkraft (taken by author)

Further options for customers of food markets, is the weekly Grønttorvet, Aalborg that supplies mainly produces of local farmers and dealers by creating a regular experience of a farmer's market (Grønttorvet n.d.).

As a new player among Aalborg's food markets the Aalborg Street Food – the Lighthouse is planned to offer a diverse range of street food from cuisines around the world. According to the plans the street food is open permanently on a daily base.

As the typology of food markets presents, the different markets provide diverse products, services and experiences depending on their principles and concepts.

The currently available options in Aalborg offer a monthly, weekly and daily experience.

Nevertheless, the role of the Box Town market is to combine the above mentioned concepts and create the experience of a local food market as well as of a street food market, by offering them on a daily opening base (Kruhoffer 2017a). Additionally, the role of the market also depends on its target group, such as in the case of the Box Town, is the construction workers of the Cloud City Aalborg area., the students and employees of the two educational institutions, as well as the companies around the district. The favourable location also attracts

customers from the west part of the city. However, the food market also aims customers from other parts of the city, basically the "green segment" of the citizens. Finally, the market open for tourist visits as well (Kruhoffer 2017a).

3.1.2. Experiences of the Market Hall and the Box Town market

The Box Town food market aims to offer experiences as part of a so-called 'Eksperimentarium' (such as the Exploratorium) where the customers not only can gain the knowledge through an exhibition or to look at the food, but to build a more engaging connection to it. As Kruhoffer explained the 'Eksperimentarium', it is a *"hands-on, as people can come and taste and smell"*-experience. Furthermore, the visitors can even play in the Dome, they need to be active to gain something out of it. (Kruhoffer 2017a).

The Box Town market aims to deliver the experiences through the engagement to the food. The experiences are presented in a 360° experience room, where the customer can become familiar with the story about the animal welfare and about the origin of the food (Box Town n.d.).

Furthermore, during the interview it was asked, what further opportunities the Box Town can offer to provide experiences. Kruhøffer enhanced the aims of involving people practically through the example of inviting schools for a "shop-running" half a day. He explained it as *"they could put up the shops, make some signs, offers, make some food and services, and learn a lot through having fun. They would also have a big responsibility, they would have to discuss how to do the best"*. Therefore, the purpose of the food market would be to educate people through experiences by engaging them as "people can come, look at it, buy them and being involved" (Kruhoffer 2017a).

During the discussion, if the experiences gained in the food market able to influence people's food consumption by facilitating a sustainable shift in it, Kruhøffer expressed that their overall umbrella is to develop a food culture and sustainability. The idea of the Box Town market aims to be accessible, easy and offer prices that are acceptable, besides the story told should be well-known. He explained the concept through the example of "if people will go home they

should say that it was easy to buy the products and even if it was a bit more expensive, it is okay, because they know what they got" (Kruhoffer 2017a)., Hence, the Box Town market aims to create the experience by generating a personal connection and a memorable moment for customers (Pine & Gilmore 1999) and by doing so, encourage people to visit the food market. However clear knowledge and experiment has not been conducted yet about the connection between experiences and food consumption inside the market[2].

The latest habits of society show the trend, on the one hand of a forming culture around prepared food and eating experience by becoming a major actor of the social life (Jacobsen 2008), on the other hand of a disconnection between people and the origin and value of food (Steel 2008). Therefore, the Market Hall aims to offer an additional experience besides what the Box Town offers, by creating a minimized food waste and a resource efficient circular system towards a high-quality food production by utilizing the value of the food waste (next section).

Therefore, the Market Hall aims to be offered through the value of the food that changes the perception of the food to appreciate it, and by doing so, attempts to create a shift towards a sustainable food consumption.

The experiences of the Market Hall are aimed to be creating a shift in regards to the major drivers of food consumption (Kearney 2010).

Through creating value of the food, the experiences deliver the opportunity to choose the healthier and more nutritious food over the unhealthy one. The over-consumption patterns also enhances the overconsumed calories mainly among developed countries (FAO 2002) through meat, fat, processed food, sugar, therefore the experience of the high-value food targets to create the shift toward a lowered protein source and as a result, decreasing the environmental impact of high-protein and processed food (WWF 2016).

The increased quality of the food products offered by the Market Hall also encourages consumer's choice towards less amount of food consumption, consequently the valued food is less likely become wasted. Therefore, in the developed countries such as the Netherlands

[2] The planned observation aimed to gather information about it, however due to the postponed opening it has not happened.

the 15% of the waste generated, that is estimated in 340 euros, can be lowered by consumers (Westerduin 2014).
As the equation of the production and consumption shows, the decreased amount of "consumption waste" also generates a reduction within the food production, by lowering its negative impact on the environment.

3.1.3. Impact of a local food market on the production and consumption

When it comes to the choice of supplies, the local food markets can offer a hands-on experience that supermarkets are not able to provide.
As creating the negative impact of food consumption, the wide-spread of supermarkets has playing a major role by substituting the function of local farmers' market and providing convenient option for shopping. In addition, the worldwide chain of retailers created a large negative impact on the environment through to their supply, their maintenance and their waste generation.

As shift in people's daily food consumption, the Box Town market and the Market Hall also aim to provide an easy accessible, high-quality and affordable food supply of local, seasonal and organic products.
As through the experience that the Box Town market aims to provide, the customers can have the opportunity to be personally connected to the origin of the food, while it is not possible during the shopping in big retailers.

Furthermore, both markets have an intense focus on supplying seasonally grown local products, besides the promotion of organic food culture. However, it is commonly debated the effect of organic farming as it requires an enhanced land use. On the other hand, the role of the Market Hall provides the opportunity to off-set the increased land-use impact of organic farming, as well as to provide an alternative for land-use – as the facility of the rooftop-farms within the circular loop of the Market Hall (next section). Further options of off-setting the possible negative impact of organic production, the decreased quantity of food consumption, as well as waste generation can provide an answer for lowering the impact of the production.

In addition, some argue that merely locally produced food still can have further negative impacts on the environment (in case of not seasonally or organically produced), however in that case the same effect of lowered food consumption can happen.

3.2. Generating a closing the loop approach with the contribution of the Market Hall.

3.2.1. Stakeholders involved in the circular system

Several previous projects have been conducted within the Cloud City Aalborg area that introduce solutions for the food distribution of the food market, the food-supply of restaurants, the composting facility, as well as the potential in rooftop farming. Therefore, these projects offer the opportunity to connect these facilities.
The stakeholders, that are identified upon the initial plans, are proposed to contribute to a circular system together with the food market. Based upon their role within the flow of the food and resources, their inner and outer material flows are elaborated.

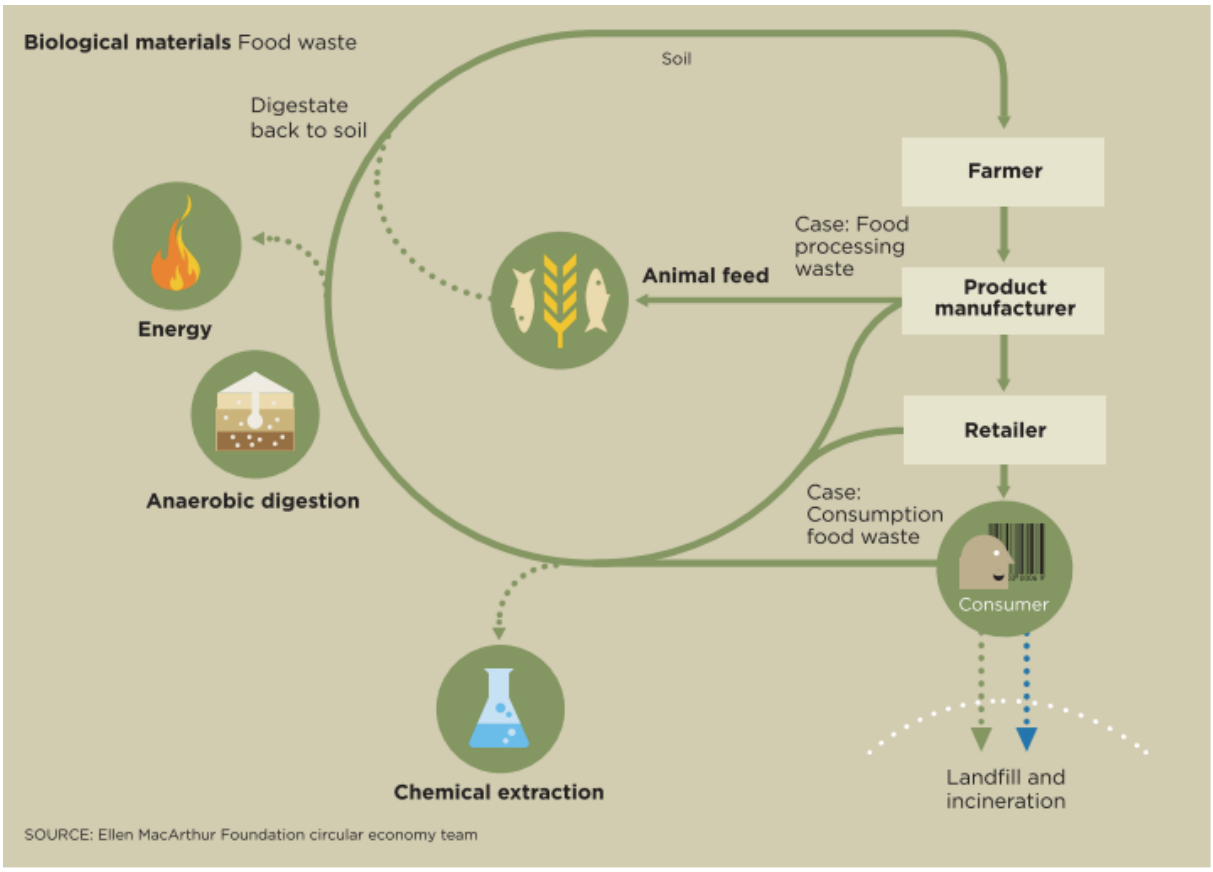
The inner resource flow of the **restaurants** basically equals the food supply of the place, including the location and the nature of the food source.
The major outer flow of the restaurants is the flow of the wasted food; however it does not only appears in the weight of the food, but in the costs of un-used food and waste-treatment. Therefore, there are several options to be considered in order to decrease the food waste generation in restaurants.

The main inner flow of the **composting facility** is the organic food, while the outer flow is presented by the production of digestate, that can be provided as fertilizer for the agriculture (Ellen MacArthur Foundation 2013b). The produced fertilizer of the composting facility can be the inner flow of the **rooftop-farming** by facilitating an organic food production. While the other flow from the rooftop-farming provides the produces, with the potential of organically grown.

3.2.2. Closing the loops

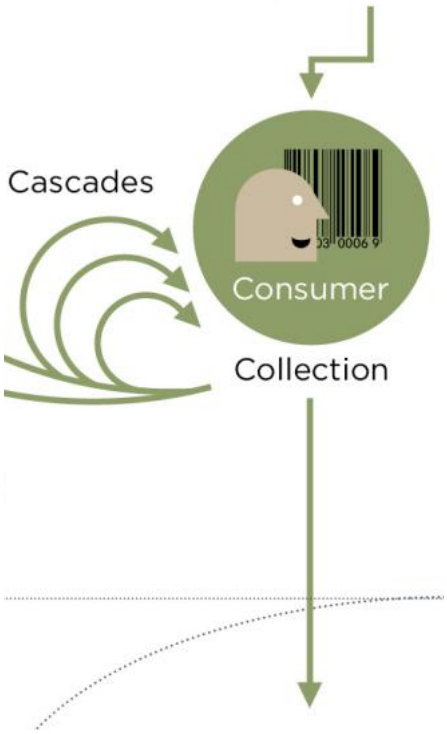
Toward creating the experience, the food market aims to generate a cycle of food-waste and resources by utilizing the efficiency of the flow of food-waste. By recognizing the importance of the food-waste, the food market targets to contribute with a “closing the loop” approach to a resource efficient circular system.

Within the Cloud City Aalborg area, by closing the loop the aim is to minimize the so-called “consumption waste” (Ellen MacArthur Foundation 2013b) which includes the waste of the food market, the households (customers) waste, as well as the waste generation of the food services and restaurant (3.1. Figure).



3.1. Figure – Material and food-waste flows through producers, retailers and consumers (Ellen MacArthur Foundation 2013b).

The first step is to mitigate the food waste on the consumer side is to maintain the value of food in its original performance, as a food by making the cascades more efficient (3.2. Figure). Households can minimize their 15%-waste generation by treating the food in a better way. As



3.2. Figure – The cascades representing how consumers able to keep the products within the loop of consumption (Ellen Macarthur Foundation n.d.)

it was mentioned above, through the experience of the food market, the consumers can to value the higher quality food and as a result to decrease the amount of it (Experience creates value!!). Furthermore, through different household practices, the amount of wasted food can be lowered. Several guidelines provide practices that can be applied through for instance the right storage and preparation processes. To extend the quality and freshness of food, effective habits can be on the one hand to freeze and preserve the fresh food, and on the other hand by storing them separately (especially vegetables and fruits). To preserve the freshness of food it is essential to be familiar with their way of treatments as well. Preparation methods also includes to freeze the food by sliced or cut, as it can be ready to consume. Besides these practices that effectively reduce the amount of food waste, they are also cost-efficient, such as to cook food that it lost its freshness, such as vegetables for soup. Therefore, it is crucial to be aware of the expiration dates of food as well. Furthermore, the surplus prepared food can be stored and eaten at another time (US EPA n.d.).

However, it is not only the consumers that can apply different practices to avoid *food consumption waste*, but the food market and food services (restaurants) can offer options as well. For instance, by providing the opportunity to purchase the so-called "ugly produce" as well earlier before the opening hours of the market hall (UDS project). Besides, the restaurants can offer customized portions (UDS project) that fits to the request of the customers, as well as provide the opportunity of conveniently packed left-overs for forthcoming meal (US EPA n.d.).

On the other hand, the unavoidable amount of food waste needs to be treated within the Cloud City area by connecting the different facilities of the district.

3.3. The Concept

Based upon the results and findings of the current research, the following concept is formulated to be proposed.

3.3.1. The Concept of a Sustainable Food Market

A local Food Market is an alternative shopping experience of what customers cannot have, for instance, in supermarkets and at other retailers. Besides, a food market has the potential to enhance a sustainable approach by creating the value through the experiences for instance.

Therefore, the following criteria aims to build up the sufficient available requirements for the sustainable approach of the food market. Since, the local food markets are a meeting platform of the food production and consumption, it is necessary to investigate how both the food production and the consumption can be shifted to become sustainable.

Within the food production, the resources and footprint of the product is essential to be assessed. Thus, the CO2-footprint of the product needs to be calculated through the production process, how it effects on the environment by considering social aspects as well. The major aspects that needs to be assessed are proposed to be the following ones:

- the production impact of vegetables, seeds and meat
- local, seasonal and organic feature of vegetables, seeds and fruits
- impact of processed food products (the assessment need to elaborate through the production phase, such as the source material, the energy and water usage, land use, etc.)
- handmade from ecological resources

Furthermore, the major aspects of social impacts reflect on if the product is

- Fair Trade production
- Locally produced in a sense of local job creation

Finally, besides appearance and resource of the food products is to consider the waste generation, especially from food-waste perspective and the package of the food. Therefore, the waste prevention and treatment opportunities are proposed to be the following ones:

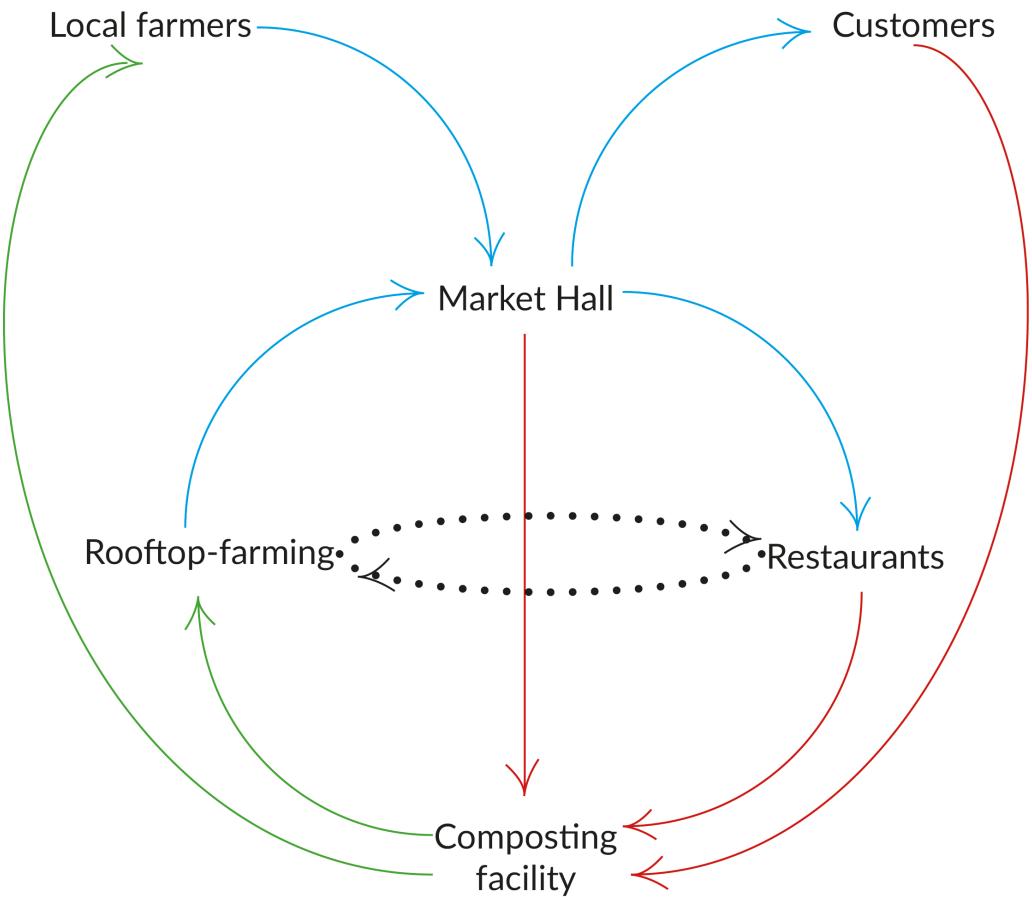
- Circularity with the closing the loop approach
    - The generated food can appear in a form of leftovers and food waste.
- Packages can influence waste prevention and treatment through
    - Not using plastic as package
    - Rather using recyclable or reusable packages e.g. textile or glass or paper
    - Not using packages at all, which of course requires the attitude from consumers
- influence on food consumption

Within the food consumption, a sustainable food market also can offer an opportunity to create a shift within the food consumption, thus the main approach to achieve it is to encourage people

- to buy products that has the lowest ecological footprint
- to buy “enough”, and avoid the overconsumption as well as the generation of the household waste

The influence of the food market on the sustainable food consumption can be considered as an indirect impact of the market.

3.3.2. The Circular model of the Market Hall.



3.3. Figure – Closing the loop with the contribution of the Market Hall, blue arrows: flows of food, red arrows: flows of food waste, green arrows: flows of fertilizer, dotted arrows: flows of inner loops (developed by author)

As the 3.3. Figure shows the Market Hall has a centred role within the circular loop by presenting the inner and outer flows of food (blue arrows). The Market Hall, such as the Box Town market provide the platform for the supply of local farmers where the customers can access to a high quality and affordable food produces and products.

The role of the restaurants within a circular system of the Market Hall is multiplied. On the one hand the restaurants include the street food services as well as the restaurants within the area of the Market Hall and inside the Cloud City Aalborg, therefore to use the food supply (blue arrow) of the Market Hall and minimizing the transportation and environmental costs of their food supply. Furthermore, the restaurants can provide their surplus food and left-overs

either for customers on a discount price (for instance through the initiative of ToGoodToGo[3]) and by that utilizing the potential of the cascades within the loop, or to transport it as a food waste for treatment at the composting facility (red arrow).
Furthermore, by avoiding the increased food waste and maximizing the resources of the restaurants, an inner loop between the restaurants and the rooftop-farming can be utilized as a re-growing system of vegetables' leftovers (Ecotonix n.d.). Therefore, by locally re-growing certain vegetables, are not only effect on the food waste flow of the restaurant but on its supply flow as well.

Additionally, to the benefit of the food waste and resource efficiency, the restaurants located at the area of the Market Hall and around it contributes to the efficient utilize of the urban space as well by attracting visitors to the area after the closing time of the Market Hall.

As the figure shows, the role of composting is to generate fertilizer (as part of the resource for food production) as the outer flow (green arrow) from the inner flow of the food waste that is provided by the Market Hall and the restaurants, as well as offering an opportunity to collect the organic waste from customers (for instance households of Cloud City Aalborg) as well. Besides, there is the potential to provide fertilizer for local farmers outside of the Cloud City Aalborg.

According to a previous report that was developed about the rooftop-farming possibility of the Cloud City, the rooftop-farm was only considered to take place on the top of the Market Hall, however, the total rooftop-surface of the buildings have also the possibility to be utilized as rooftop-farm. Besides the inner loop potential with the restaurants, the rooftop-farming can provide a surface for organic food production by using the fertilizer from the composting facility and to supply the Market Hall with fresh produces (blue arrow).

[3] TooGoodToGo is a food-start-up that provides a network for affordable left-overs of restaurants, website: http://toogoodtogo.dk/

3.4. Conclusion

The current master thesis' research considered the phenomena of the growing population, as well as the more enhanced food consumption through the increasing demand of food and intake of calories. Besides the growing food consumption in the developed countries, the increasing amount of food waste generation impacts on the food system as well. Therefore, the research aimed to find a solution for decreasing the level of food consumption, through answering in the sub-question of "**How the food market facilitates the shift toward the sustainable food consumption through creating experience?**

the sustainable food consumption through creating experience?" by investigating what kind of experience the food market can offer and how it increases the value of the food, consequently effecting on the quality based food consumption instead of the quantity-based one.

Furthermore, the current study also targeted a potential of a resource efficient circular system for the treatment of the food waste by answering the other sub-question of "**How the food market can generate a "closing the loop" approach within the area of the Cloud City Aalborg and which stakeholders/steps can be involved during the cycle?"** by developing a proposal for a circular loop with the centre of the Market Hall and the further stakeholders of the restaurants, composting facility, rooftop-farming and of course the local farmers and customers.

The overall goal of the research was to develop a concept around the Market Hall that provides the value of the products through a circular experience approach.

Finally, based upon the role of the Market Hall within the food system, a food market has the potential to not only play the role of the food distributor, but to provide a sustainable solution – in a direct or indirect way – for the other segments of the food system (3.4. Figure).

3.4. Figure – The different steps of the food system and where a food market can be located (Sustainia & EAT Initiative 2015)

3.5. Future prospects

Since, the current research about the Market Hall within the Cloud City Aalborg project is the first step towards the implementation of the investment, it requires to be elaborated on the further research views. The future potential of researches include further observations and experiments within the frontrunner Box Town project (after the planned opening in August 2017). Furthermore, towards the implementation phase of the idea it is necessary to conduct feasibility studies about the circular system among the stakeholders, considering perspectives such as resource- and cost-efficiency, financial benefits as well as to map the possible business opportunities inside the loop. The feasibility studies are proposed to investigate in the amount of food waste that provide a resource efficient food production system as well through the composting facility and the rooftop-farms.

As the current investigation merely mapped the possible flows between the stakeholders, as a future research it is necessary to measure the amount of food and waste flowing around the loop. For instance, to decrease the food consumption of households (as an example

considering the local households of the Cloud City area), that is currently 15% on an average, a target needs to be defined as well as the amount of purchased food and wasted food needs to be measured precisely. However, similar measurements also should be considered at the system of the Market Hall, as well as in the restaurants as well.

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APPENDIX

I. Food Markets in Europe

Copenhagen, Denmark

Torvehallen - https://torvehallernekbh.dk/

WestMarked - http://westmarket.dk/

Copenhagen Street Food - http://copenhagenstreetfood.dk/

Aarhus, Denmark

Aarhus Central Food Market - http://aarhuscentralfoodmarket.dk/en/aarhus-central-food-market-new-food-mecca-heart-aarhus/

Rotterdam, the Netherlands

Markthal - https://markthalrotterdam.nl/

Barcelona, Spain

La Boqueria - http://www.boqueria.info/index.php?lang=es

Mercado de Santa Caterina - http://www.barcelonaturisme.com/wv3/es/page/471/mercado-de-santa-caterina.html

Budapest, Hungary

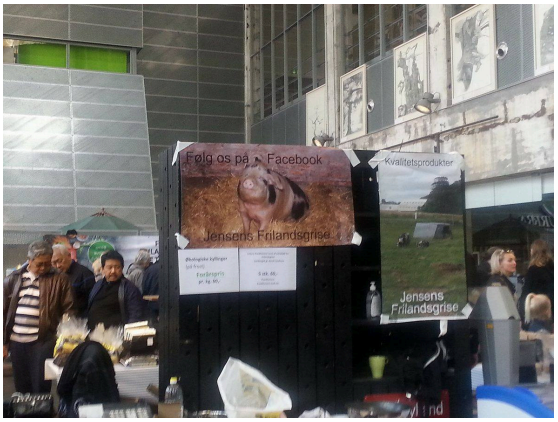
Budapest Market Hall - http://budapestmarkethall.com/

II. Observation

The observation were taken place on the 1st of April, 2017 between 12-13pm., at the Fødevaremarked I Nordkraft. The focus was on the personal impression about the market, as well as to examine the floe and behaviour of people. A special tasting opportunity was offered by suppliers at the spot.

Besides the visitors, the observation enhanced the attention on suppliers as well, that later contributed to the proposal of the sustainable food market.

Pictures taken at the Fødevaremarked I Nordkraft on the 1st of April, 2017.



III. Interview guide

Questions:
Personal Question:

- Can you please introduce yourself?
- What projects have you worked before? (Nebula, JKInnovation)

About the Box Town / Byens Torv project:

- What is the main difference between the Box Town and the Byens Torv?
- Where the idea of a food market came from?
- When the project was started to develop?
- What is the major plan, a food market or street food market as well?
- Why a mobile food market built from containers?
- Who is involved within the project, who are the stakeholders in the project?

About the Sustainability approach:

- How do you apply a sustainable approach within the Box Town project?
- What do you think how it is going to influence people's food consumption?

The BT in practice:

- When is going to open?

- How often are you planning to be open, every day or only occasionally?
- Who is your target group, the customer segment?
- How are you planning to actively engage the customers?
- What is going to happen with the BT after the Market Hall will be built in the Cloud City area?

IV. Interview summary

Interview conducted: 21.03.2017, at Jens Kruhøffer's home

Interviewee: Jens Kruhøffer

Interviewer: Daniella Domsa

Interview recorded available:

https://drive.google.com/open?id=0BzYRgWNGGCnOM2FLdkVtX3FZaDg

After the interview a brainstorming session was done, that is available here:

https://drive.google.com/open?id=0BzYRgWNGGCnOM2FLdkVtX3FZaDg

Personal Question:

- Can you please introduce yourself? What projects have you worked before? (Nebula, JKInnovation)

Jens Kruhøffer is the chairman of Nebula (availability), an association that works for sustainability and experiences, also a consorter for small and micro companies that work together. Two years ago they came up with the idea of a local market in Aalborg, and got into contact with famers who were interested in it. It is called Box Town

Before the rest of the interview Kruhøffer presented the 6 main principles of Box Town. (Find them in the text).

V. BoxTown combines market for local food, street food & experimentarium for food culture and sustainability.
VI. BoxTown is owned by the small, local farmers & their allies themselves. Market will be run by a non-profit Association of BoxTown.
VII. BoxTown is frontrunner for Cloud City and do experiments for sustainability to be implemented in the Food Court of Cloud City.
VIII. BoxTown has a unique design, not comparable to anything inside Denmark (but inspired by container cities, e.g. in Netherland & London).
IX. BoxTown enlighten the story of local food production & animal well fare.

X. BoxTown takes responsibility to work with schools & educational institutions for the improvement of food culture and sustainability.

About the Box Town project:

- Where the idea of a food market came from, why it seemed necessary?

The situation in Aalborg, if you want to get a local, especially a local ecological food, you have to go to different places in the city to collect it. It can be the large supermarkets, but you cannot see where it is from. They wanted to make a place where you can get everything, where the story about the food is told.

- When the project was started to develop?

They used a lot of time for different processes. From the beginning, they had the idea to combine different things and to talk with lot of people from the food produces through the container developers, talk with educational institutions, because of the context of sustainability they wanted to get the necessary knowledge behind it. In the first year, they looked for location and built up the contacts.

- What is the major plan, a food market or street food market as well?

As it was said in the Principle 1, it will be the combination of them and create an experimentarium. To explain the term of experimentarium: where you can make an exhibition about knowledge and food and look at it which is nice but not engaging enough. The experimentarium is “hands-on”, as people can come and taste, smell. They even can play in the Dome (part of the Box Town Masterplans), they need to be active to gain something out of it.

- Why a mobile food market built from containers, where the idea came from?

The reason behind is, that there’s a final date for the BT, it will be closed on the summer of 2020. It is a temporary installation which was clear from the beginning when they made the agreement with Cloud City. The inspiration had many sources, they looked around and visited places, so containers seemed to be an interesting solution and they can be very nice and great (e.g. in Easter-London).

- Who is involved within the project, who are the stakeholders in the project?

Small food producers, the producers of experiences, and themselves. There are some green associations as well, that work for waste and develop ecological methods or to deliver local ecological food for citizens. Also, stakeholders who produces e.g sustainable tableware (from palm leaves) and a business that generates energy out of insects. It results to get a short distance between associations and food producers, educational institutions, as universities (AAU, UCN, AOF - sustainable courses such as “green gastronomy”). The idea is to make a close relation to them at the same area, you can make a jump from someone who makes gastronomy courses to someone who wants to hear about education at UCN, get information, to someone who wants to start citizen gardens and get advice.

About the Sustainability approach:

- How do you apply a sustainable approach within the Box Town project?

To make a lot of circles in the large circle.

- What do you think how it is going to influence people's food consumption?

Any methodology has not been done yet, therefore would be nice if someone would do it. Personally, he aims to involve people in practical terms. For example, if they work together with schools, they could invite them to make a “shop-running” for half a day. They could put up the shops, make some signs, offers, make some food and services, and learn a lot through having fun. They would also have a big responsibility, they would have to discuss how to do the best. He believes, this way of education works better, because people want to be part of it not just look at it. That is how they imagine the food market, as people can come, look at it, buy them and being involved. At the Technical Gymnasium, he was presenting for 4*80 students about the Box Town, and asking questions about their lunch habits. They got the feedback of interest in having not expensive, good quality lunch, but they don’t have any access for food around the school. He asked them how it should be developed and they received more than a hundred of suggestions on how it should be developed. Finally, a jury selected the two best and they will be invited for a VIP lunch in BT. His purpose was not to sell them something but to make the students to sell him something, their good ideas. That could work as a motivation.

My hypothesis: Through the experience that they can gain in the food market, it can influence/nudge people towards sustainable food consumption, to choose the local and

seasonal, more vegetable based diet over meat. In my perception, this is my main motivation to have an added value from this perspective.
That is what they aim with the BT, too, since, their overall umbrella is to develop a food culture and sustainability. Besides involving people, it should be accessible, easy and the prices should be acceptable, and the story should be well-known. E.g if people will go home they should say that it was easy to buy the products and even if it was a bit more expensive, it is okay, because they know what they got.
He agreed that this is basically the main plan to engage the customers.

The BT in practice:

- Who is your target group, the customer segment?

From the beginning they will have a customer group, a sort-of inner market, the 200-300 construction workers of Cloud City using the market as a cantina; the two educational institutions around the area with around couple of thousands students; companies around the area; few departments of AAU; small companies around. The so-called outer market is people who want to get local-ecological food, who would come to the area to get it, the "green segment" of the citizens. The two more groups are, the people in the western part of the city who usually shop locally in the shops of the area; as well as it will be interesting for tourist, especially with the placement of the dome, because it would be the first of its kind.

- When is going to open?

According to the current plans, they're aiming to open on the 24th of May, 2017. At the beginning, they are going to have less containers and some extra things to present until whole Box Town will be established in August.

- How often are you planning to be open, every day or only occasionally?

6 days per week, not on Sundays. Only if there is some event happening. That is also for the evening's opening hours. The peak period will be at lunch time, the market will be opened from the morning until 6pm in the afternoon. There is also going to be a Café with a morning opening hours until the evening.

- What is going to happen with the BT after the Market Hall will be built in the Cloud City area?

People and food producers basically will go into the Market Hall in the Cloud City, and the association who runs the market will go into the Cloud City into the food court. The containers will go somewhere else, and used for other purposes or other places.

Additionally, it was discussed the case of another food truck market close to the Cloud City area, and how the competitors still can be considered as a boost for the Box Town.