Coffee drinking in Copenhagen

On the path to a sustainable to-go cup system

Master's thesis in Techno-Anthropology, AAU CPH, June 2021

Project period: February 1, 2021 - June 4, 2021

Group members:

Cecilie Møhl Andersen   student nr. 20163480

Kira Wolf Olsen   student nr. 20166719

Supervisor: Torben Elgaard Jensen

Keystrokes: 186,217 characters (77,6 pages)

0.0 Abstract

It is proposed that we move to a circular economy to deal with the environmental impact that consumption causes. Single-use packaging is one area of consumption that needs to be improved. Especially within the practice of drinking coffee to-go, high numbers of single-use cups are wasted. It has therefore been suggested to replace single-use cups with circular systems of reusable cups, which can align with the concept of circular economy. This thesis aims at describing the actors that are constituting the networks around the practice of drinking coffee to-go in Copenhagen to identify the alliances and resistances that emerge when multiple actors are trying to shape the development. Based on these descriptions we will discuss the possible paths that the future can bring. The study is based on ethnographic fieldwork including participant observations and interviews with the involved actors. Based on our findings, we can conclude that change is emerging in the practice of drinking coffee to-go. Alliances between the involved actors are created through the process, based on common understandings of sustainability and the urgent need for change. Simultaneously, resistances arise due to the practicalities of the reusable cup, both in terms of design of the cup and the system. We identify the element of convenience to be the all-important factor for all users in terms of accepting the development. The future for the practice of drinking coffee to-go relies on where the responsibility for change is placed and which actors that are mobilized in the networks

Indholdsfortegnelse

1.0 Introduction

Adapting more sustainable practices is on the agenda within a range of sectors and climate actions plans have been created to ensure a sustainable future. Despite the urgency of changing our patterns of consumption, it is still a matter that struggles. One could ask why it is so difficult to find a definitive solution, when there is a global consensus about combating the environmental impact that consumption causes. Unfortunately, the matter cannot be simplified in such a way, and instead, its complexity needs to be captured as a web of heterogeneous actors which all play a role in shaping the situation.

Our motivation for investigating the practice of drinking coffee in single-use cups took a starting point in the consumption of plastic. In this context, we were reflecting upon the power that plastic has on our lives. Plastic is found in almost everything that we are surrounded with daily. As one informant expresses in an interview: *"It is terrifying that everything contains plastic"* (Appendix 4). Even in things that we are not aware of. Single-use plastic caught our attention as we began to think about the usability of it. We started to investigate the case of plastic objects which are found in our everyday practices. Often the single-use plastic products only have a purpose for a very short time span. Next, we tried to identify specific single-use products that could be made from a reusable material without losing its purpose. In this context, the coffee cup became visible. To drink coffee has over time moved from sitting down into being a practice that unfolds on the go, forcing the cup to shift shape. Aside from the environmental impact of the production, there is the issue of single-use products littering in nature. On the streets the single-use cups are also a permanent part of the picture. Thereby, most consumers are aware of the environmental impact and might even be concerned with the impact of their own consumption. As consumers we are provided with a range of options, which leaves us with the responsibility to make the right choice, but how are we managing this? Even though we might want to change, it can be difficult if the options that we are familiar with continue to be available.

These reflections intrigued us to explore how to phase out single-use cups in a local context of Copenhagen. We see the city as a network full of actors and subscribe to the understanding of technology as: *"[...] the notion that 'technology' refers to the use of artifacts in practice [...] it becomes clear that understanding human practice is integral to developing technology"* (Christensen 2013, 388). Thus, we perceive the to-go cup system as the artefact of this study and the users around it as shaping the technology. As it has been widely acknowledged globally that we need to move from a linear to a circular economy, we are captivated to study the actors that are trying to introduce reusable cup systems which align with the concept of circular economy.

2.0 Problem statement

One approach to combat the environmental impact that consumption causes is suggested to be the adaptation of a circular economy to reduce the use of finite resources. Studying the practice of to-go coffee in Copenhagen, we aim to investigate how a circular cup system can be implemented and what factors that need to be taken into consideration to make the system functional for all actors. This leads to the following problem statement:

What does the network around the consumption of to-go coffee in Copenhagen consist of, and how does all actors become involved in phasing out single-use cups?

- Which actors are present in the networks of to-go coffee in Copenhagen and what actors attempt to define their roles?
- How is interessement created among actors? Based on the needs and understandings of the different actors, what elements are important when creating alliances?
- How is it (if at all) possible for the actors to reach their imagined futures?

3.0 Reading the report

To capture the essence of our study, we will clarify the two terms, *reuse* and *recycling*, as they will be used consistently through the report. For reusable cups, we draw on the European Commission's definition presented in the Directive 94/62/EC on packaging and packaging waste: *"Reusable packaging shall mean packaging which has been conceived, designed and placed on the market to accomplish within its lifecycle multiple trips or rotations being refilled or reused for the same purpose for which it was conceived"* (European Union Law, 2018), whereas recycling refers to the *"recovery and reprocessing of waste materials for use in new products"*. ("Recycling", n.d.).

The report is structured in a chronological order with a starting point in our motivation for investigating this specific field. This is followed by reviewing the existing literature and initiatives related to reusable packaging and circular economy, which frame the field of study. We will then unfold our theoretical and methodological framework that constitute our understanding and approach to the field.

7.0 Understanding consumption is unraveling consumption in relation to environmental impact of production and single-use objects, consumption of coffee and its social aspects, as well as understanding circular economy in the context of reusable systems, and the waste of single-use packaging. In *8.0 Unfolding the network,* we are identifying the relevant actors and in chapter *9.0 Uncovering the dynamics between the actors* their relations will be analyzed, including the tensions and alliances formed. The thesis will in *10.0 Unleashing the paths to the future* discuss the potential paths to phase out single-use cups in the to-go coffee practice in Copenhagen by debating if it is possible for the actors to reach their visioned futures.

4.0 Reviewing the field

As it is pressing to find new practices that have less impact on the environment, there has been a great amount of research and case studies suggesting potential ways of dealing with the problem. An area of research within this field has been concerned with consumption habits and changing these patterns. Other studies have been focused on the production and use of natural resources and finding new ways of handling our economy that can contribute to more sustainable practices. In relation to this, moving from a linear to a circular economy has been suggested as an approach to reach the UN's Sustainable Development Goals (United Nations, *n.d.*). In return, a circular economy can be a means to achieve the goal of sustainability transitions in cities by changing the systems used within consumption practices (Schroeder et al 2018).

One area that particularly has been in focus is the consumption of single-use plastic and finding alternatives to it. Single-use plastic is being used for food packaging and takeaway, single-use coffee cups being one case of the use. In regard to this, The European Parliament and The Council of the European Union have created a Directive on packaging and packaging waste, suggesting that the waste management in the European Union should be improved to protect the environment by promoting the principles of circular economy (European Union Law 2018). In the case of to-go coffee cups, it is suggested to switch to reusable cups managed by a system connecting the coffee shops that sell coffee to-go in a particular city. By adapting to this solution, there is a potential for optimizing the level of sustainability within to-go coffee consumption by reducing or eliminating single-use cups.

Different actors have been occupied with investigating alternative solutions to the single-use coffee cup. First step of this transition has been shifting to biodegradable single-use cups, but the impact of this change has been questioned. One argument for this is the fact that resources are still wasted to the same degree, when using biodegradable cups. If the cup ends up in landfills or the ocean it will still need a high temperature to demolish. The Ellen MacArthur Foundation suggests that biodegradable plastic packaging cannot be seen as a definitive solution. Instead, it should be considered as a method for specific, targeted applications (Ellen MacArthur Foundation, *n.d.*-b). Thus, a focus on reducing the use of resources is needed, and to the degree it is possible, we need to investigate the approaches for shifting from recycling to reuse. Various studies have examined the implementation of reusable systems and how to reduce consumption in different ways. These studies range from a focus on specific approaches to develop and manage reusable systems to studies that are focusing on the consumption and waste of single-use plastic in relation to consumers' behavior.

4.1 Management of resources

Plastic is one of our biggest environmental challenges as the plastic waste is polluting our environment. Both in terms of litter as well as the production of plastic because the production is very reliant on non-renewable resources (UNEP 2018, 2). Plastic packaging accounts for almost half of all plastic waste globally, and what is even more problematic is that the plastic item, in many cases, is used for only a few minutes before it is thrown away. UNEP argues that even at this point we are not capable of coping with the amount of plastic waste. Moreover, it is only 9 % of the plastic waste ever produced in the world that is recycled and 79 % of plastic waste is ending up in landfills, dumps or in the environment (UNEP 2018, 6). Plastic bag bans have already been adopted in many countries, but UNEP suggests that to tackle the problem of plastic overuse, governments need to improve waste management practices and introduce financial incentives to change the habits of consumers, retailers, and manufacturers, enacting strong policies that push for a more circular model of design and production of plastic. Furthermore, there is a need for governments to finance more research and development of alternative materials. In relation to this, UNEP argues that governments must engage a broad range of stakeholders in the decision-making process (UNEP 2018, vii).

In line with the European Union's ambition to move to a circular economy (European Union Law 2018), the Ellen MacArthur Foundation has in collaboration with the United Nation among companies, academics, citizens, cities, philanthropists, policymakers, and NGOs made the initiative *The New Plastics Economy* focusing on making the economy of plastic circular, in which plastic never becomes waste. They argue that we need to move away from today's take-make-waste model and instead rethink the way we design, use and reuse plastics (Ellen MacArthur Foundation, *n.d.*-b). In relation to this, it is mentioned that while improving recycling is an important step, it is not possible to recycle our way out of the plastic crisis, which is also the argument that the Ellen MacArthur Foundation presents in relation to the waste management hierarchy (UNEP, 2018). In opposition, reuse should be the preferred method to reduce single-use plastic packaging. To achieve the goal of reusing, recycling, and composting all plastic packaging, a combination of redesign and innovation in business models, materials, packaging design and reprocessing technologies should be used. The initiative *New Plastics Economy* argues that it is the businesses that are selling and/or producing packaging who hold the responsibility beyond the design and use of their packaging, which includes that the packaging is being managed responsibly. Furthermore, they argue that governments play an essential role in setting up effective collection infrastructure, facilitating the establishment of related self-sustaining funding mechanisms, and providing an enabling regulatory and policy landscape. The use of plastic should be completely decoupled from the consumption of finite resources. All plastic packaging should in the future be free of hazardous chemicals and the health, safety, and rights of all people involved are respected (*The New Plastics Economy: Rethinking the Future of Plastics & Catalysing Action*, 2017).
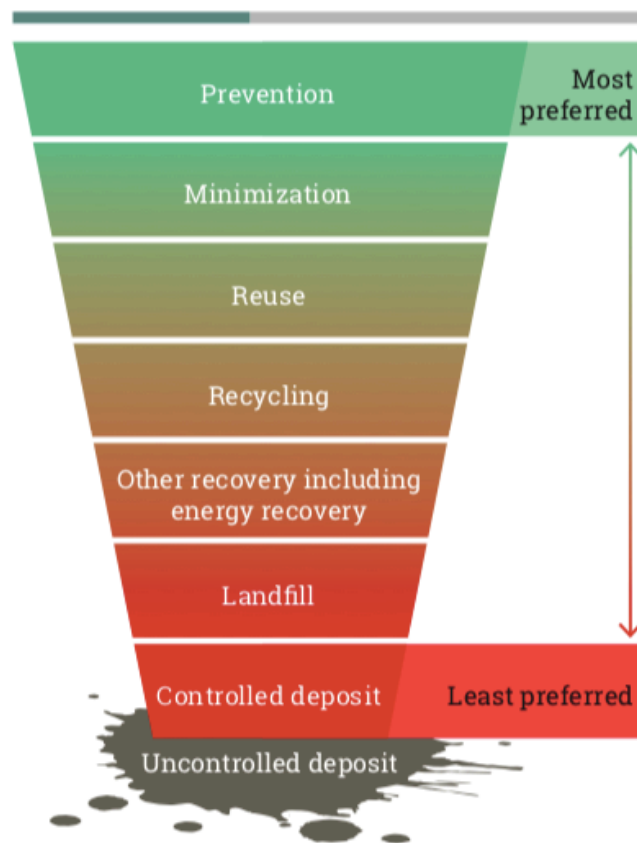
Figure 1 Waste Management Hierarchy (UNEP 2018, 7)

As mentioned above, it is essential to consider the resources that are being used, and if there is a possibility to use less resources for our different consumption habits. In UNEP's report *Single-use plastics: A roadmap for sustainability* (2018) there is a focus on waste management, and both the qualities and the environmental impact of plastic are discussed. They introduce the waste management hierarchy describing how waste preferably should be handled, which they illustrate as in the Figure 1 above. It ranges from prevention to uncontrolled deposit, where the most preferred is to prevent waste, the second best is to minimize waste before going down the ladder to reuse and then recycle. This figure is important in understanding the necessity of reducing waste on the path to a more sustainable practice of to-go coffee cups, and we find it important to highlight the fact that recycling is not the preferred choice even though it plays a role in the process of making the use of natural resources more sustainable (UNEP, 2018). We acknowledge that on one hand, we need to reduce consumption and thereby waste on a general plan, but on the other hand, we need to face the fact that humans will not stop consuming. Instead, we need to find solutions that can limit the irresponsible use of natural resources by finding the areas where the single-use items can be replaced by reusable objects.

Even though it is preferred to prevent waste, it must be acknowledged that it is difficult to prevent entirely due to consumption. Reuse is one aspect of turning to a circular

economy, as it focuses on making more durable products and repairing them when possible. It is thereby important to consider the options for reusing products and materials when possible. In the report *Reuse* (2019), the Ellen MacArthur Foundation describes six main benefits of reuse instead of single-use products: reduce costs, the opportunity of building brand loyalty, improving user experience, adapt to individual needs, optimize operations and developing smart systems (Ellen MacArthur 2019, 11). In relation to this, the Ellen MacArthur Foundation suggests four models for reuse, which all are business-to-consumer based:

1. Refill at home (e.g., refills delivered through a subscription service)
2. Return from home (e.g., packaging picked up from home by a logistics service)
3. Refill on the go (e.g., users refilling a product in their reusable item in a store)
4. Return on the go (e.g., users returning the packaging at a drop-off point or in a store) (Ellen MacArthur Foundation 2019, 13).

In the context of a to-go coffee cup system, return from home and return on the go are the two main options as it is concerned with the packaging, and the packaging needs to be kept within the circulatory system in a closed loop. The Ellen MacArthur Foundation points out that the challenge of this solution is to establish a local reverse logistics and cleaning infrastructure to ensure economic and environmental feasibility. Furthermore, this solution requires a deposit and reward system as it can be difficult to find a balance between ensuring that the users return the packaging without scaring them away with the deposit. This exact matter is one aspect of the system that we aim to uncover and discuss. Return on the go is the solution that according to the report fits the widest range of takeaway options as it can substitute most single-use items without changing the existing purchase practice (Ellen Macarthur 2019, 19).

The waste management hierarchy is important for the understanding of the priority of handling the use of natural resources. More specifically, it constitutes the basis for why we argue that it is essential to reuse coffee cups and by that closing the loop. The proposals of how the return system should work within a circular system, contributes to our understanding of what elements that need to be taken into consideration when shifting to a reusable cup system.

4.2 Using nudging strategies to reduce consumption of single-use packaging

In the attempt to implement sustainable practices, there has been a focus on the consumers and how they can contribute to making the world more sustainable. This has been done by looking into consumers' behavior and habits. One approach that is suggested in the report *Next Steps: Tackling Plastic Litter* (2021) is to nudge consumers in a desired direction from an

institutional level by including it in policy actions. Freddie Lymeus aims to shed light on the opportunity for using nudging strategies to reduce people's consumption of single-use cups as an addition to traditional policies such as regulation and economic incentives. Lymeus describes how the culture of grabbing a coffee or other beverages on-the-go has grown significantly over the past decades, which has led to a marked increase in the consumption of single-use cups. He describes how consumers are aware of plastic pollution as an environmental problem, but despite this, they fail to translate this awareness into more sustainable behavior. As a solution to bridge the gap between awareness and action, scholars within the field of behavior science have advised policymakers to make use of behavior sciences to explore new strategies to reduce plastic litter and pollution. Lymeus explains that unlike the traditional policy tools, nudging builds on people's existing ways of thinking and making decisions. In relation to this, Lymeus highlights that the report focuses on interventions aimed at changing behaviors at the user level with individual consumption behaviors (Lymeus 2021, 5).

In the report the focus is on directing the attention to the environmental problem of plastic pollution and litter and how governments worldwide are prioritizing the issue and addressing the urgency of investigating potential policy tools. Simultaneously, it is acknowledged that although policymakers, businesses and consumers are aware of the problem, the awareness does not lead to sustainable behaviors and actions (Lymeus 2021, 9). The investigation is based on scientific literature, documented experiences, and stakeholder interviews to investigate and determine whether nudging is feasible, by introducing three green nudges that could likely reduce the consumption of single-use cups. Nudge 1 that Lymeus suggests: *"A soft new default for coffee ordered over the counter implies that single-use disposable cups will no longer be the default option"*. The second, Nudge 2 implies bringing your own cup for convenient self-service that facilitates the replacement of single-use cups by making personal reusable cups the quicker and more convenient way of getting coffee in self-service locations. Nudge 3 is *"refillable cups augments reusability with the psychologically, environmentally and economically more impactful and attractive property of refillability. It elevates reusable cups to markers of identity and status and provides a way for coffee chains to build long-term customer relations by tying coffee subscription plans to branded cups. At the same time, it ensures that reusable cups get reused enough times to compensate for the environmental impacts of their production"*. Lymeus argues that the three nudges can be used individually but are expected to produce the greatest benefits if used in combination (Lymeus 2021, 12).

The proposition of leaning towards nudging strategies puts a focus on making changes in the practice in a sense that will encourage people by action to make a more sustainable choice in their habits and behavior without forcing them by law and regulation. This study contributes to our understanding of strategies to reduce consumption of single-use cups among consumers. Even though we acknowledge the importance of finding ways to make it easier for the consumers to make sustainable choices as a urgent step on the path to reduce the environmental impacts of consumption, we argue that it is important not to put the entire responsibility of reducing environmental impacts on the shoulders of the

consumers. Instead, we need to collectively face the problems by including all relevant actors. Thereby, we aim to unfold the resistances of the involved actors, by paying attention to the complexities of the issue.

4.3 Circular economy and the Sustainable Development Goals

In the paper *The Relevance of Circular Economy Practices to the Sustainable Development Goals* Patrick Schroeder, Kartika Anggraeni and Uwe Weber are exploring the relationship between circular economy and the sustainable development goals (the SDGs) in terms of examining if circular economy can contribute to the achievement of a significant number of the SDGs. To investigate this, the authors assessed the 169 SDG targets to map which of them circular economy practices could contribute to reach (Schroeder et al 2018, 81). As the UN's sustainable development goals are at the center of both global and national work, it is essential to find more universal paths to reach the goals and ensure the future of a planet and humankind. Thus, the transition from a linear to a circular economy could be of potential to reach a higher level of sustainability in different sectors. Schroeder et al are primarily focusing their study on using a circular economy in relation to achieving SDGs in developing countries, as the circular economy approach is commonly known and used in developed countries both on a local, national, and global level. Despite this focus on developing countries, this investigation can contribute to our understanding of the relationship between the concept of circular economy and the SDGs in general terms. First, the authors underline the fact that there does not exist one simple definition of the concept of circular economy, but they are following the concept definition of the European Environment Agency (EEA), in which circular economy is defined through specific actions and practices such as eco-design, reuse, refurbishment, remanufacturing, repair, product sharing and industrial symbiosis. In relation to this, they add that they consider circular economy practices as important elements for the transformation to systems of sustainable consumption and production (Schroeder et al 2018, 79). The list of benefits when turning to a circular economy is long; it can contribute to environmental benefits such as making countries more energy efficient and increasing material efficiency by minimizing waste and maximizing reuse and recycling compared to today's linear economy. It is argued that the transition to circular economy practices requires strong action by the private sector. In our study of the to-go coffee system in Copenhagen, it is relevant for us to investigate the role that the circular economy is playing on an institutional level and how it is related to sustainability (Schroeder et al 2018).

4.4 Collection Modes of Reusable Takeaway Containers

On the path to uncover how the concept of circular economy can benefit the development of circular cup systems within the practice of to-go coffee, it is essential to investigate the practical details of building such a system. There is a need for mapping the different

opportunities for creating a return system for reusable cups. For this specific matter, our study can benefit from the experience within similar systems, to understand the considerations that the users of the system might have. Because of that, we will draw on the examples to help us identify the most important features of a circular system. The starting point for the research paper *Research on the Design of and Preference for Collection Modes of Reusable Takeaway Containers to Promote Sustainable Consumption* (2020) is the development of online takeaway ordering systems on the Chinese Market. The problem that comes with the rapidly growing popularity of takeaway food is the number of single-use containers used for delivering the food which results in a large amount of packaging waste. The paper states that around 240 m3 takeaway litter is generated per day (Jiang et al 2020, 2). The goal of their study was to better identify the interests and preferences of merchants and consumers and explore the factors that influence these preferences related to reusable takeaway systems. The authors aim to provide scholars with guidance for decision making regarding sustainable consumption and the promotion of reusable takeaway containers to contribute to the improvement of sustainability and resource conservation (Jiang et al 2020, 4).

In the paper Jiang et al investigate different collection modes of reusable takeaway containers. The study is not concerned with the technical details of the containers. Instead, the focus of the study is the collection of the takeaway containers from the consumers, and how to get the takeaway containers back to the merchant. Through the research, the authors are involving both experts, the consumers, and the merchants to identify their concerns and preferences related to the potential shift from single-use takeaway containers to reusable alternatives. Before digging into the investigation of the reusable takeaway containers, the authors examine other alternatives to the single-use packaging. Here, they discuss biodegradable containers, which they refer to as environmentally friendly and degradable. More specifically, they assess the expanded polystyrene (EPS) containers, as they have the lowest impacts due to the lower material and electricity requirements in their manufacture. However, the containers made from EPS are rarely recycled and go to waste incineration instead. The issue with EPS is that it tends to go into smaller pieces, which leads to littering. The conclusion is that the reusable and non-disposable options are prioritized in most countries rather than the biodegradable containers (Jiang et al 2020, 2). In relation to the question of using biodegradable food containers, Jiang et al mentions three reasons why the biodegradable containers are not sustainable and useful enough; first, the material does not go well for especially Chinese food and other liquidy food. Second, the price of biodegradable food containers is higher than non-biodegradable containers, and third, the low recycling rate of biodegradable items must be taken into consideration, whether it is environmentally beneficial. In the short term, the cost of the reusable takeaway container is higher than the biodegradable ones, but Jiang et al assess that on the long term, the cost advantages of reusable meal containers will gradually become apparent based on their reusability (Jiang et al 2020, 4). This argument that the authors present here can also be supported by the preferred stages in the waste management hierarchy, where reuse is considered as more sustainable than recycle (UNEP, 2018).

Their research draws inspiration from reusable takeaway systems in Japan and from policies in European countries. Jiang et al are pointing out how such a reusable takeaway system works in practice: *"[...] takeaway merchants provide reusable containers for consumers to use, and consumers return the containers to a collection point, thus enabling the reuse of the containers"* (Jiang et al 2020, 3). In the example from Japan, the reusable containers are made from porcelain bowls and lacquer bowls, which has been implemented through two recycling modes. One mode is with a deposit that the consumer pays and then washes the container before delivering it to a fixed location where the merchants collect the containers. The other mode involves the consumer washes the container and then delivers it to a collection center. In studies of the Japanese system, it was concluded that offering a cash reward improved the collection rate of the wasted containers. Another experiment showed that social influence has an impact on the consumer's behavior, which means when some consumers rent reusable containers, others will follow suit. On the other hand, putting a message on the counter in the restaurant about the option for rental has no impact on consumers' choices. Jiang et al argue that further research about how to promote reusable takeaway containers is needed, because it is unclear whether consumers and merchants are willing to accept reusable containers. It needs to be investigated whether a system of reusable takeaway containers will conflict with the merchants' interests and the consumers' need for convenience (Jiang et al 2020, 3).

As a part of their research, the authors are developing four prototypes for modes of collection of the reusable takeaway containers. This is based on an early-stage interview with experts consisting of professors from local universities and senior managers from the two major takeaway platforms. The experts were invited to contribute with the following: a) guidelines for the collection mode, b) the criteria for judging the reasonableness of the collection mode, c) several feasible collection modes, d) a list of questionnaire questions for the questionnaire survey. This research is different from a potential Danish case as it is mentioned that the takeaway consumers do not go in-store, and by that, they do not have the opportunity to bring back the reusable takeaway container to the merchants themselves (Jiang et al 2020, 5). The research has been conducted through structured interviews which they call face-to-face questionnaire surveys with merchants and consumers. Through these surveys, the authors have gotten insight in the preferences and concerns of promoting reusable takeaway containers, including the choice of collection modes (Jiang et al 2020, 6).

> *"The consumers of takeaway are more concerned about the hygienic status of the takeaway containers, the distance of the collection bins, the increased cost, and the merchants of takeaway are more concerned about the hygienic status of takeaway containers and the increased cost"*
> (Jiang et al 2020, 11)

Issues such as the locations of dishwashing facilities, the increased costs and the hygienic status of takeaway containers must be taken into consideration. Jiang et al recommend that the collection bin needs to be located within 500 meters of the consumers and the

dishwashing center should be within 5 km of the merchant. Another recommendation is to implement some sort of a reward system in the takeaway platforms, which could reward both consumers and merchants with points for completing the collection of takeaway containers once. It is also proposed to seek support from the government administrative departments to smoothen the implementation process of the collection process. As informants expressed the concern of hygienic status, the authors argue that the consumers' trust in the reusable takeaway containers and their sanitation are important. Not at least, the system needs to be easy to use (Jiang et al 2020, 14).

This research can contribute to our understanding of implementing reusable systems in the to-go coffee sector as well by identifying the most important factors to take into consideration when assessing different systems. The focus on the collection mode is essential to truly investigate whether a reusable system has the capacity of being successfully implemented. Even though the culture and takeaway system in China might differ significantly from the case in Denmark, it still shows the concerns and preferences of a consumer based on their demography. We aim to put a bigger focus on the materiality of the non-human actor, the cup, in order to understand what role it plays in the network of the to-go coffee culture. We have so far identified what is happening within the academic field of adapting circular economy practices, which leads to where we aim to place ourselves in the field in relation to the existing literature and initiatives.

5.0 An actor-network theoretical approach

In the network of to-go coffee in the neighborhoods of Copenhagen, a complex web of actors is found. Some aspects of the consumption of coffee have changed over time, because of new trends and habits, but as the involved actors have been collaborating for years, the relations in between them are to some degree stable and embedded in the everyday lives of many people.

As we aim to study the complexity of the field by researching the possibilities for moving the practice of drinking to-go coffee in a sustainable direction by finding an alternative system to the single-use cups, we will explore the field and identify the actors of the related networks by investigating the process of translation. At the core of actor-network theory is the notion of heterogeneous networks which refers to the suggestion that "*society, organizations, agents and machines are all effects generated in patterned networks of diverse (not simply human) materials.*" (Law 1992, 380), and in continuation of this, that all social life consists of patterned networks of heterogeneous materials. For us, this means that to study and understand the social, how people act and behave, we will explore their relations to materials as these hold a role in the shaping of the social (Law 1992, 381).

As an approach to the work with networks, John Law (1992) introduces the concept of punctualization, which is described as "*network patterns that are widely performed*" meaning that they are embedded enough to be simplified (Law 1992, 385). The reasoning behind using punctualizations is that a network sometimes can act as a single block, an actor itself, and because of that be seen as a functioning resource. When a network is considered in this way, the effect of that given network is invisible and at that time irrelevant. Punctualization can lead to routines, resources or other embedded practices being overseen or taken for granted. The simplifications can face resistance and become the reason for a failing network. Nonetheless, one must keep in mind that punctualization is also an effect of a network and therefore relational and not an exact constant (Law 1992, 385). Subscribing to the notion of punctualization a person entering a coffee shop and making their purchase could see 'a cup of coffee' as just that; a simplified actor in the consumption of to-go coffee in Copenhagen. But 'a cup of coffee' is also a network consisting of (among others) the specific type of coffee bean used, the machine or method used for brewing and the cup used for serving. In our research we wish to highlight and unfold certain simplifications that are made in the consumption of to-go coffee as we believe they hold some of the answers to understanding the basis for change within the networks. As we, even before entering the field, have been a part of the practice of consuming coffee to-go, we are aware that our objectivity might somehow be clouded, and we thereby can be blind to certain punctualizations.

5.1 What are we and what do we want?

As a part of conducting this study, we acknowledge the importance of defining our mission, as well as our role in the network, before moving on with our exploration of the field. This is because we are both the researchers of this study as well as taking part in the performance of the network as users of to-go coffee in Copenhagen (Callon 1986, 7). As researchers our role is to investigate, examine and describe the networks of to-go coffee drinking in Copenhagen with all its orders and any resistances. We have found inspiration in the circular initiatives for reusable coffee cups which are successfully implemented in Germany (*FreiburgCup - die umweltfreundliche Alternative zum Einwegbecher*, n.d.; *RECUP - das deutschlandweite Pfandsystem für Coffee-to-go* 2021).

In relation to this, we are observing that initiators in Copenhagen are seeing the potential for implementing circular cup systems. Actors are beginning to develop and test different types of circular systems for to-go coffee similar to the structures of systems seen in other countries, such as in Germany. Since sustainable transitions are complex and can be difficult to implement, we aim to examine and describe the possible paths to a more sustainable coffee practice in Copenhagen by providing knowledge and insights about the networks. Instead of just following one actor, we acknowledge that multiple networks are existing, thus we aim to explore the multiplicity of the consumption of coffee cups by looking into how coexisting and partly connected versions of reality are enacted, inspired by Signe Vikkelsø's perspective on multiplicity-oriented actor-network theory. This approach allows us to study the multiple networks that exist around the practice of drinking coffee in to-go cups (Vikkelsø 2007, 301). Vikkelsø argues that looking into the many versions of reality, enables the opportunity to analyze the negotiations and political choices that follow the attempts to change a certain practice. Furthermore, it also gives the possibility to explore the specific ways that different practices can be enacted simultaneously (Vikkelsø 2007, 302).

5.2 The process of translation

An actor-network theory-oriented approach focused on the process of translation is used to "*explore and describe local processes of patterning, social orchestration, ordering and resistance.*" (Law 1992, 386). In this context, it is important to be aware that a network, a social structure, is a relational effect that is never complete or final, but constantly generated and that social order therefore is not a stable condition (Law 1992, 386). Thus, our aim becomes to determine how order is generated within the network of to-go coffee as the network has reached a rather stable state. Moreover, we will assess how change is happening in this relatively stabilized network and how any resistance can be overcome. To do so, we will draw on the framework of translation used by Michel Callon in "*Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay*" (1986). This paper is particularly relevant for our case, because Callon is describing how certain actors are in charge of strategically changing the network, which is what we see happening in our case

with the initiators behind the circular to-go systems. Inspired by Callon, we will therefore follow the development of the consumption of to-go coffee in Copenhagen, which leads to networks that can take different forms. We acknowledge that the moments of a translation process can overlap but strive to concretize their differences to get an understanding of how the involved actors are trying to shape the unfolding process in real-time (Callon 1986, 6; Garud et al 2010, 770).

5.2.1 Problematization

The first moment of translation, the problematization, will touch on elements from both the social and natural worlds to involve all relevant actors (Callon 1986, 7). The research question we ask for our study is:

What does the network around the consumption of to-go coffee in Copenhagen consist of, and how does all actors become involved in phasing out single-use cups?

Based on empirical data we will define the identity, relationships and goals of the actors involved in the development, which include the ones that are involved with or have a direct concern with the practice related to consumption of to-go coffee (Callon 1986, 15). The definition of the relevant actors will be unfolded by an explanation of how they are involved, what they want and why they are or should be concerned with the questions asked as well as their relation between each other (Callon 1986, 6-7).

5.2.1.1 Obligatory passage point

As mentioned in *1.0 Introduction*, single-use packaging is a challenge that needs to be tackled due to its environmental impact. In our case we are concerned with single-use cups as they only are used for a very short time frame. There is already a great focus on the waste problem on an institutional level. Action plans and legislation within this area are already planned to be implemented soon, and non-profit organizations are providing information and advice for handling this change. Even with the information and requirements for the residents and businesses in Copenhagen it seems like something is missing. Actors or entities of a network might have different goals and therefore face different obstacles or problems to reach their goal. These goals and obstacles are identified during the problematization. An obligatory passage point is the thing that all actors must relate to and form alliances around to overcome the obstacles or problems they are facing as individuals (Callon 1986, figure 2). For all actors to move towards the same direction and their individual goals, which for some actors is to eliminate single-use coffee cups and for others are to comply with regulation and legislations on single-use packaging, it is essential that movements are accepted, and alliances need to be formed (Callon 1986, 8).

As multiple networks are performed around the to-go coffee practice in Copenhagen, it is not clear what the obligatory passage point is. The overall problem that everyone at

some point will have to relate to is the environmental impact that single use brings. Though, for some actors this is not yet a problem as the current system of single-use cups is sustaining their coffee practices.

5.2.2 Interessement & enrolment

The identity of the actors given in the problematization needs to be tested in action because this is where identity is formed and adjusted.

"Each entity enlisted by the problematization can submit to being integrated into the initial plan, or inversely, refuse the transaction by defining its identity, its goals, projects, orientations, motivations, or interests in another manner."
(Callon 1986, 8)

The moment of interessement is created to ensure that the identity given to the actors is the one they practice, which is done as a part of the creation of alliances. By creating interessement with each involved actor, one would ensure that they accept their identity and that any initial friction between the potential allies and their given roles can be managed and thereby avoided (Callon 1986, 10). If we are to reach enrolment, the negotiations done through interessement will have to be successful. Enrolment is described as: *"the group of multilateral negotiations, trials of strength and tricks that accompany the interessements and enable them to succeed "*(Callon 1986, 10), and will be achieved if the actors accept their roles. Enrolment is an ongoing process as demands from actors can change, which creates ground for new roles and thereby new negotiations. This can break alliances otherwise agreed on. To ensure enrolment and to get the actors to conform to their roles, the questions of the research programme should be transformed into statements that indicate a certainty within the hypothesis made (Callon 1986, 10).

We find that these two steps follow and overlap each other closely, especially because we are dealing with networks in constant development. Identities are therefore ever changing and negotiations an ongoing process. As some initiatives on circular systems are already set in motion in terms of coffee to-go, we can draw on these to see how they achieved or keep achieving enrolment through their alliances.

5.2.3 Mobilization

With inspiration from Callon (1986), we will identify and negotiate roles based on representatives of the different relevant actors. These individuals become spokespersons, negotiating on the behalf of the group or population they are a part of (Callon 1986, 13). There is no certainty that the entities behind a spokesperson will follow them if negotiations are not made to reflect an accurate goal. It can be either too specific or too generalizing. While it can be difficult to align and generalize within the group of human actors, it can be equally difficult to define and articulate an accurate goal for the actors without a language.

There is therefore a need for *"continuous adjustments and devices of interessement that are infinitely more sophisticated."* (Callon 1986, 14). The consensus and alliances can be contested at any moment leading back to the notion on how translation is a process of overlapping phases. This means that even if we succeed in describing constraining networks of relationships, the network could change or break if just one actor decides not to follow along, leading to a new problematization and therefore a new translation process (Callon 1986, 15).

The development we choose to investigate is still in its early stages, but we must acknowledge that some actors, with roles as initiators in the transition to circular systems, are more established than others and thereby already somewhat mobilized. This does not mean that we choose to neglect other initiators or focus solely on the "stronger" actor, as ANT approaches have previously been criticized for. Instead, we subscribe to Vikkelsø's (2007) notion that:

> *"If this [an ANT analysis] is managerial research, it is a managerialism that does not exclude any actor with management ambitions; it is one that keeps open the agenda by pointing to the specific ways phenomena come into place and with what consequences."*
> (Vikkelsø 2007, 304)

By following Vikkelsø's notion, we must find a way of balancing the symmetry of the focus we grant the different actors and be aware that the stronger actors might take up more space in the overall view of the network. Even though this might be the case, following both the strong and the weak actors let us trace the performances within the practice, including their relations to each other and the obstacles that might occur. By catching the multiplicity, we get an insight in the dynamics of the situation and its possible directions of development.

As the mobilization of the networks is in its first tentative beginnings, which also implies that the consensus and alliances can be contested at any time, as well as new networks arising, we are interested in examining the possible futures of the to-go cup. On the account of this, we aim at investigating the innovation process and the possible paths by drawing on the perspective of path creation. By applying this perspective, we will discuss how the different networks develop and the possible futures for the practice of drinking coffee to-go.

5.3 Exploring the multiple paths to the future

Through the perspective of path creation, Raghu Garud and Peter Karnøe aim to draw attention to *"phenomena in the making"* by looking into the processes that constitute a phenomenon (Garud and Karnøe 2001, 3). Raghu Garud, Arun Kumaraswamy and Peter Karnøe define path creation as *"[...]we conceptualize agency as being distributed and emergent through the interactions of actors and artefacts that constitute action nets"* (Garud et al 2010, 761), and the aim is to explore how embedded actors attempt to shape and navigate in

structurational processes, along with the fact that other actors are trying to do the same: *"[...]structure is both a medium and outcome of action. Rules and resources, drawn upon by actors in their interactions are reconstituted through their interaction"* (Garud and Karnøe 2001, 10). Furthermore, Garud et al highlight how actors can generate meaning and functionality around something, possibly random, that they come across, which they explain to be because of luck (Garud 2010, 762).

In path creation, the past, present and future are intertwined, where the actors are playing active roles in determining what aspects of the past that they wish to mobilize in support of their imagined futures, and in relation to this, it is a temporal flexibility that generates agency. It is mentioned that actors can choose the time frames to explore their future as well as exploiting what they have learned from the past: *"It [entrepreneurship] is a reconstitution and transformation of the past in such a way that continuity and change are both preserved in the act of path creation"* (Garud and Karnøe 2001, 27). The different actors in a process each have their own pasts and thereby different expectations about the future, which also are affecting their starting points when experiencing and describing their journey. As the journey unfolds, emergent events will generate new connections to the past and to new imagined futures, and thereby Garud et al argue that initial conditions are not given, and instead they are defined and constructed in a flexible way through negotiations by actors (Garud et al 2010, 763). This can be related to Law's (1992) notion of punctualizations. If the actors can construct a common starting point, the negotiations behind can be simplified and, at least while the relations remain, become invisible and irrelevant for the process of moving forward.

In our investigation of the opportunities for turning to more sustainable consumption patterns, we find it essential to examine the paths of the initiators to get a deeper understanding of the process of transitioning to a circular economy. When working with a network such as the consumption to-go coffee in Copenhagen, it is relevant to investigate the structures that define it. In our analysis of the network that exists around the to-go coffee, we aim to study and understand the actions of the initiators of the reusable cup systems within this network as they navigate meaningfully in a flow of events. These initiators can be considered as what Garud and Karnøe refer to as entrepreneurs, as they are the ones trying to find innovative paths to a more sustainable consumption of coffee consumed on-the-go. In the path creation perspective these actors play an active role as they are trying to shape the emerging social practices that exist around the coffee drinking culture which may result in the creation of a new technological field.

By taking the stance of the path creation perspective we subscribe to the idea that entrepreneurship is a collective effort where paths are continually and progressively modified as new technological fields emerge, which is the reason why we find it important to include all relevant actors in the process of a phenomena in the making (Garud and Karnøe 2001, 3). The path creation perspective is a response to path dependence. The perspective of path dependence argues that a path is dependent on a negotiation of the past, where the path creation perspective argues that the path is formed by unfolding events as

the entrepreneurs are constituting them. The field of reusable systems is an emergent path. Most of the systems are still in the test phase, which is why it is a field where the temporal processes are shaping the constitution of the technological field (Garud and Karnøe 2001, 3). A reason for applying the path creation perspective is that it allows us to perceive the actors more than just passive observers within a stream of events. Instead, it is important to acknowledge their influence and see them as knowledgeable agents with capacity to reflect and act in other ways than those prescribed by existing social rules and taken-for-granted technological artifacts.

Drawing on the concept of a process of translation introduced by Callon, the path creation perspective refers to a shared space, in which a presented idea is understandable by others. In relation to this, it is mentioned that entrepreneurs may present the same idea, but in different ways, which is seen in the case of the initiators presenting different approaches to develop reusable coffee cup systems: *"In doing so, entrepreneurs attempt to enroll others by strategically drawing upon others' past experiences and by evoking appropriate pictures of possible futures"* (Garud and Karnøe 2001, 16). The translation process implies a transformation of the given idea through interaction; thus, this transformation is required in the process of overcoming potential resistance (Garud and Karnøe 2001, 16).

An important aspect of the path creation perspective which also is very essential for our understanding of the field of to-go coffee and circular economy, is the fact that the entrepreneurs attempt to shape the paths in real-time. This is an important point to highlight, because we have seen the different startups developing a lot through the time, we have conducted the fieldwork, as well as the issue of single-use plastic has been highly in focus by policymakers and NGOs in the previous months (Garud and Karnøe 2001, 2). In path creation, Garud and Karnøe explain that entrepreneurs practice mindfulness and deviation, implying that they are capable of disembed from existing structures defining relevance as well as an ability to mobilize a collective condition despite resistance (Garud and Karnøe 2001, 1). They argue that entrepreneurs might intentionally deviate from the existing artifacts and structure of the practice, while they are aware that this deviation can cause inefficiencies in the present, but the entrepreneurs will recognize that this is a necessity to create new futures. These deviations can be threatening to the existing orders, and therefore, the entrepreneurs will make these deviations tolerated in the meantime (Garud and Karnøe 2001, 7). Garud and Karnøe argue that most deviations are met by apathy or resistance, and in relation to that, it is important how the entrepreneurs deal with this, for a path to emerge (Garud and Karnøe 2001, 15). This exact point is essential to draw on in relation to understanding the processes that the circular systems might go through when it is recently introduced. In case that the entrepreneurs' own approaches are unable to gain momentum, path creation requires the ability of the entrepreneurs to shift emphasis to alternative approaches that potentially have a better chance of succeeding (Garud and Karnøe 2001, 7).

Some of the challenges that entrepreneurs might face is the case of an entrepreneur becoming deeply embedded in a technological field, resulting in the entrepreneur

reproducing existing practices and avoiding new tests, because of a vision of the future that differs from the present. Another risk that is pointed out, is if the entrepreneurs find themselves believing that the existing system is so great, resulting in not exploring and creating new structures (Garud and Karnøe 2001, 10).

6.0 Methodological framework

To grasp the different societal challenges, ethnographically based cultural analysis can be used to strategically engage with depictions of everyday life to consider it as an activity that are interlinking a multiplicity of practices, theoretical perspectives, and representational forms, as described in *Cultural Analysis as Intervention* (Jespersen et al 2012, 4). In this article, they argue that engagement with innovation is needed for nations to thrive, and this can be done by making closer connections between science and society (Jespersen et al 2012, 5).

The pollution that the plastic production is responsible for and the impact of single-use items on the environment has led to policy makers agreeing on new legislations on the area with the aim of reducing waste by transitioning to a circular economy to make our consumption less polluting. Even though most actors are willing to adapt to these new regulations, there is a challenge in finding best practice that works for all actors and that can be adapted to existing practices. This goes for a lot of different sectors, to-go coffee being one example of a case where involved actors need to make radical changes to make the system work and still contribute to the process of reducing the environmental impacts of the sector. We argue that it is important to include the voice of all relevant actors in the process of finding a solution to the problem. Being in the middle of a pandemic, we acknowledge that it sets some limits in conducting fieldwork. Choosing the to-go coffee system as a case has been a way for us to work with an area that was a bit more accessible than the rest of the service industry. As society partly has reopened through the spring, we have had the opportunities to do our fieldwork more freely. However, it has been a period where a lot of pressure has been put on the restaurant sector leaving almost no extra time for the people within this business. We have therefore tried to find our path through the field by doing observations around the streets where people buy their coffee on-the-go.

6.1 The interview process

Our approach to the field in terms of conducting interviews has been following the seven stages of an interview inquiry as described by Steiner Kvale in *Doing interviews* (2007, 35-36). The starting point for thematization was based on the topic of eliminating single-use coffee cups. The reason for this starting point is twofold: First, to clarify what we specifically wanted to investigate, and secondly, we aimed to shed light on the significance of the case and why it should be investigated. The *what* of this case is the possibilities of change within the system of single-use coffee as it is now. The *why* is mainly concerned with the environmental impact, and therefore the need for change, as well as our personal frustration of single-use cups littering in streets all over the city. Background research was conducted in the form of document analysis. Observations have been used to gain deeper knowledge into the present and past of the network, as well as explorations into what is happening now in terms of changes.

This was followed by the process of planning our interviews and formulating questions. In relation to this, we have structured the interviews by finding the right order to conduct them, including reflections about the number of interviews needed. We decided to begin the process of conducting interviews by talking with the initiators of the new to-go cup systems, as we have aimed at getting a deeper understanding of these proposed systems and how it would change the existing system before moving on to interviews with the coffee shops and the users.

Following this methodologically path has led us to the decision of doing semi-structured interviews to ensure the requirements for the knowledge that we wanted to obtain through the interviews. Furthermore, the purpose of this has been to be open towards gaining insight in aspects of the practice that we otherwise would not have paid attention to. Semi-structured interviews have provided us with answers to our predetermined questions, giving direct insight for our research programme, as well as the opportunity for the different informants to elaborate in directions and paths that we otherwise would not have considered (Kvale 2007, 58). From an actor-network theoretical perspective this involves gaining insights into punctualizations (Law 1992, 385). We have conducted semi-structured interviews with different types of actors; with the consumers, the coffee shops and startups that have developed circulatory systems for to-go coffee cups. These interviews have been based on three different interview guides (Appendix 11; Appendix 12; Appendix 13). All three guides have had the same structure, but the questions have been directed to the kind of actor that we were interviewing. The approach is based on the a priori assumption in actor-network theory which argues that all actors need to be treated equally, and thereby we have used the same kind of words to describe the practices and situations.

6.1.1 Interviews with initiators of circular systems

Our initial interviews were conducted with Danish initiators of circular systems for to-go coffee cups. These informants pose as motivators for the development of alternative systems to the single-use to-go cup and are already testing and positioning themselves on the Copenhagen market. This means that some of them are already forming alliances with cafes and coffee shops and are therefore able to provide insight on their initial negotiations. Questions in these interviews have been focused on their motivation and the choices and considerations the initiators have made while creating their systems. We have been aiming at getting an insight to the reflections they have made about the structure of the system, both in terms of how it should work technically and which considerations that have been made about fitting it to the coffee shops and the consumers. By talking with the initiators of the circular systems, we have gotten knowledge about what type of systems that exist and the reasoning behind the choices of that specific system. As we have found an interest in studying the development and future for the to-go coffee practice, we have taken a path creation perspective to examine how these actors that follow the road of entrepreneurs are navigating in structural processes and trying to shape the practices (Garud et al 2010, 761).

6.1.2 Interviews with the coffee drinkers

To get the full picture of the to-go coffee system as it is unfolding in its current state, we have had interviews with coffee drinkers that consume coffee from different places in Copenhagen. These interviews have been used to get an insight into what the users consider to be essential for them in their practice of drinking coffee on-the-go. We have talked to the users of to-go coffee, which also can be considered as the consumers. These are the ones that are upholding the to-go coffee practice in Copenhagen and therefore hold valuable information. It has been important for us to understand what their current practices around to-go coffee are and what they associate with drinking coffee. In relation to this, we have been aiming at getting insight about how much and what the informants are willing to change and do in terms of transitioning to more sustainable behavior.

As an approach to getting an insight in the consumers' practices, we have been inspired by the idea of kitchen entrance of culture introduced by Billy Ehn and Orvar Löfgren, which implies paying attention to insignificant trivialities of everyday life, as these can be used for identifying cultural patterns in everyday life (Jespersen et al 2012, 7). Therefore, we have dedicated a number of questions to the social aspects of drinking coffee in order to get a deeper understanding of the micro-processes of drinking coffee, as we wanted to observe if there are any connections between social elements and the choices that the users make when buying a cup of coffee.

By talking to the consumers of to-go coffee in Copenhagen we have also gotten the opportunity to identify different coffee shops and get an insight into to what degree the given coffee shops are implementing more sustainable initiatives. As a part of the interviews, we asked the informants what features they would want to have if they had to design a reusable cup system that fitted their needs. This contributed to our understanding of what kind of system that possibly would work best in practice.

6.1.3 Interviews with coffee shops

To get an understanding of the practice of brewing and making coffee to-go, we have talked with different coffee shops around Copenhagen. The selection of the coffee shops has been based on different parameters. First, we wanted to talk both with coffee shops that have adapted to circular systems as well as coffee shops that do not provide any other options than the single-use cup. Secondly, it has been an important factor that the coffee shop is either primarily selling coffee to-go or at least a decent amount. A third factor has been trying to include both coffee shops that have a big focus on sustainability and the ones that do not have it on their agenda. The reason for this is that we aim to embrace all present actors to get a broader understanding of the resistance that the coffee shops might face when introducing new systems.

We have chosen to walk into the coffee shops to ask questions about their cup system as we were regular customers buying coffee. The reason for this is that we aimed at getting to know about their daily practices as baristas based on their own experience. Most coffee

shops only have one or two baristas which means that they often are very busy, and because of that we have experienced that some of the coffee shops that we wanted to talk with did not have the time.

When reaching out to coffee shops, we experienced that many were busy planning, because our research collided with the re-opening of seating options after COVID-19 lockdown. Therefore, the response we got from the coffee shops that we contacted by email, was that unfortunately they did not have any time for doing interviews. We adapted to the situation and went into the field instead to conduct in-the-moment interviews at coffee shops after reopening, to get their perspective on potential systems and alternatives to the single-use cup. This has been done to foresee any possible resistance and reservations the coffee shops would have when/if changing to a sustainable alternative. Instead of reaching out to the coffee shops by email, we tried to map the different coffee shops considering what kind of coffee shop it was.

Because the interviews have been spontaneously conducted, they were fairly short depending on how busy the coffee shop was at that given time and depending on how much knowledge the barista had on the subject. Some of these interviews started out with us buying coffee as regular customers to observe the surroundings and what coffee cups that other customers chose.

By approaching the coffee shops directly, we have talked to the baristas instead of the managers. This has both advantages and disadvantages. An advantage is that the barista is directly in contact with the customers daily. The baristas are the ones who have the practical experiences and concrete examples of people's reactions toward the cup and the purchase. By talking with a barista, we have therefore gained insight in the practical knowledge connected to the cup. The disadvantage is though that the barista might not have as much knowledge about the reasons behind the option of cup in the coffee shop or about the visions of the coffee shop. Even though this might be the case, many coffee shops are elaborating on their visions and responsibility on their website, linking to specific initiatives.

6.2 Information from the silent actors

As we follow an actor-network theoretical approach, we must investigate the network in its heterogeneity, which implies finding a way to get informed by the non-human actors in a similar manner as we get information from our interviewees. To do so we have carried out participant observations and document analysis.

6.2.1 Participant observations

As circular cup systems are a rather new phenomenon in Denmark, we have decided to try it out ourselves to gain a better understanding of how such systems can work. We are ordinary participants, in the form of consumers, in the to-go coffee practice in Copenhagen as it is and have used participant observation to "*observe the activities, people and physical*

aspects of the situation", while engaging in the practice of coffee drinking to go (Spradley 1980, 54). As we are coffee drinkers ourselves, it is not possible for us to stay entirely unbiased as we have our own embedded preferences, but in the field of circular cup systems, we did not have any prior knowledge. Investigating these reusable cups has therefore been a new field for us. Hence, it has been a way for us to get insight into the physical aspects of exchanging the single-use cup for a reusable cup made in a different material. Conducting participant observation has thereby been an approach for us to get a grasp on the non-human actors of the networks. We have gotten the opportunity to observe how these entities were involved and how they interacted with other actors.

6.2.2 Document analysis

To understand the field that we are studying and to include the actors that we are not able to observe or interview, we have chosen to examine relevant documents of different characters. It has also given us the insight to identify actors that we otherwise would not have paid attention to, as well as giving us the opportunity to collect data that would not be accessible for us. Analyzing relevant documents has allowed us to gather new facts about the problem field and understand why it is currently carried out as it is. In our case we have used documents, primarily about circular economy, sustainability and the actions and regulations to reach the goals from the European Commission, Ellen Macarthur Foundation and from Danish policymakers (Mathison 2011, 2). Furthermore, the inclusion of documents has given us the opportunity to follow the process as it is developing. This covers both the process of actors trying to implement circular systems, their interaction with coffee shops in terms of replacing the cup, as well as organizations' focus on how to deal with plastic pollution and political regulations.

6.3 Handling the empirical data

After the interviews have been conducted the empirical data is to be processed. Still following the stages of an interview inquiry (Kvale 2007, 35-36), we have been transcribing our recordings (Appendix 1-8) and unfolding our observations (Appendix 9) in a manner that made it possible for us to work with the data. As most of our interviews have been conducted in Danish, only direct quotes used in this report will be translated into English. The stage of how we will conduct our analysis has been unfolded in the previous chapter about the use of the actor-network theoretical framework.

Kvale (2007) mentions the need to verify one's findings. This can both be done through reliability, which is how consistent the results are, and through addressing whether the study fulfilled its purpose of what it was set to investigate. We are aware that we are studying a practice that is different depending on the performer. Therefore, our results can be deemed as verified, if we are able to trace different patterns that are forming, and that the data gathered is answering the questions set for our study. This also leads to the last of

Kvales stages, which is reporting. Since we are using interviews and observations as the means to understand the practices happening around to-go coffee in Copenhagen, the claims made regarding this study will be based on this data. Discussions made will be rooted in the views of the informants and scientific research and elaborated in an easily understandable manner.

7.0 Understanding consumption

First step in getting closer to finding a path to a more sustainable to-go coffee practice in Copenhagen and adapting to a circular economy, is to understand consumption and how human beings relate to it. Understanding the role that consumption plays in peoples' lives is an important step on the path to uncover how consumption can act as resistance to adapting more sustainable patterns. This is both in relation to production and the responsibility of the producer, and how users are perceiving new systems and changes in a well-known practice. Elizabeth Shove introduces *Beyond the ABC: climate change policy and theories of social change* (2010) by:

"It is now widely agreed that the challenges of climate change are such that many familiar ways of life and many of the patterns of consumption associated with them are fundamentally unsustainable"
(Shove 2010, 1273)

Digging into the environmental problems that we are facing, and how different actors are trying to deal with these problems, the role of consumption must be seen in the light of how it is influencing our environment and earth by using different resources. The concept of consumption can be seen from many different perspectives, and it involves all types of sectors. It is everything that we ever buy and use. We are consuming different kinds of goods ranging from clothes, electronics to food and beverages. To understand the mechanisms of environmental problems, we argue that it is a necessity to unfold what consumption is and what role it plays in our social lives.

Consumption has been explained by many kinds of theories both within the social sciences by anthropological studies and within economic theory. Others advocate for framing the problems of consumption as a problem of human behavior, which according to Shove will marginalize and exclude proper engagement of other actors. Within the context of behavior change, the ABC framework has had a great popularity within policy making, suggesting that the responsibility for changing to more environmentally friendly patterns is thought to be in the hands of the individuals where their behavioral choices will make the difference. Shove argues that this perspective is letting the governments sustain the unsustainable practices of society, and thereby she argues to move beyond the ABC framework (Shove 2010, 1274). Her focus on rather the practice as a process constituted by different aspects than the individual's responsibility is an important point to include in the case of changing the system of to-go coffee cups. The importance lies within the understanding of how consumers will interact with a new reusable system if the well-known system of single-use coffee cups still are available at the coffee shops. Speaking of innovation, Shove recognizes that societal transformations involve a heterogeneous network of actors, such as user practices, regulations, and cultural meanings. Thus, the process cannot be reduced to only involve technological artefacts (Shove 2010, 1278).

In order to get a deeper understanding of the role of consumption in human life, we will draw on the thoughts that Inge Røpke presents in *The dynamics of willingness to consume* (1999), in which she includes how consumption has changed over time in history, as well as how social factors have influenced the practice of consumption. Røpke defines two interconnected forms of consumption: *consumption of resources* and *final consumption*. The first is primarily related to consumption of natural resources, which is important to highlight in relation to the production of single-use coffee cups and the choice of material. This type of consumption is leading to environmental problems in two ways: directly from the use of resources and indirectly from waste generated on the longer term from the extracted resources. Final consumption is the result of a chain production leading to a specific product that is consumed in the end due to "basic human needs". According to Røpke, these two kinds of consumption connect the economic system to the biosphere, thus the consumption has an impact on the environment (Røpke 1999, 400).

As human beings today are consuming these basic needs, consumption has become a natural part of everyday life in the sense that the activities associated with quality of good life are connected to consumption, which makes it difficult to decrease the aspect of consumption in everyday life (Røpke 1999, 403). Understanding the associations that people connect to drinking coffee are thus interesting for us to get an insight into what role consumption plays in the practice of drinking coffee. Consumption is an active process where the social context is redefined, and here, goods are consumed, and the stream of goods leaves a cultural structure. Røpke mentions that the process of redefinition only can happen when consumers meet, where they invite each other to take part in consumption rituals that lead to assessments and change (Røpke 1999, 409). In relation to this, Shove mentions that present social arrangements are thought to shape the conditions of their own future development (Shove 2010, 1278). We draw on this understanding of consumption as an integrated part of the social context, as we consider it as essential to study the individuals' interaction with each other and how they influence each other, instead of seeing the routine of drinking coffee and making choices regarding the type of cup limited to a definitive personal choice. However, we subscribe to the understanding presented by Shove stating that transitions toward sustainability should not depend on policy makers persuading individuals to make sacrifices. It does not deny the possibility of meaningful policy action, but it must be recognized that the effect of such policy action cannot stand alone: "*Interventions go on within, not outside, the process they seek to shape*" (Shove 2010, 1278).

In relation to consumption, we find it essential to shed light on the concept of practice, as consumption is connected to specific forms of practice. In our case, the aim is to make the practice of drinking coffee to-go more sustainable, which is done by designing circular cup systems. This change of system, forces elements of the practice to change. Shove argues that understanding social change is a matter of understanding how practices evolve, which implies changes in how the practice captures or loses its practitioners, and how systems of practice break into pieces or are shaped. More specifically, she argues that a practice is kept alive when people are performing the practice continuously in the same way.

In this case, coffee drinking can be seen as a practice being reproduced by a heterogenous set of actors (Law 1992, 381; Shove 2010, 1279).

7.1 Coffee consumption

Coffee drinking is a worldwide known phenomenon that a huge number of the World's population can relate to in different ways through production, transportation, and consumption. As mentioned earlier our primary focus is the consumption of coffee, which begins with an explanation of how coffee has become embedded in our lives. In *Coffee Culture: Local Experiences, Global Connections* (2011) Catherine M. Tucker explains that one of the reasons for coffee's popularity is the content of caffeine which were historically discovered through the energizing effect of coffee beans, leading to the interest in collecting and processing to in order to utilize the effect. She further clarifies that the popularity can no longer be attributed to caffeine alone as many now alternate the stimulating qualities after cultural and social dimensions by enjoying decaffeinated and weaker-made coffees (Tucker 2011, 6). Coffee has proven easily adaptable in individual cultural and social settings as the flavor can be changed and customized depending on occasion and demand. Tucker elaborates that:

"Coffee becomes meaningful for many reasons, which include the attachment or fondness that people develop for the ways that coffee is prepared and served, the places or context in which they consume coffee, and the ideas and feelings associated with drinking coffee."
(Tucker 2011, 7)

The way in which meanings can be attributed to different contexts and the way these contexts can evolve, makes it relevant to study coffee in a specific setting. Sometimes just to understand its significance and other times to use this significance as a basis for change. Because of the different interpretations depending on the setting, we limit the scope of our study to the to-go coffee practice that surrounds the urban area of the city of Copenhagen, limiting our study from the greater Copenhagen and suburbs.

7.1.1 The social aspects of drinking coffee

In Denmark coffee is somewhat embedded in how we refer to time as morning-, forenoon-, afternoon- and evening coffee are terms used in many households. On average a Dane ingests four cups of coffee a day, but often in different forms due to the many possibilities. This can also be related to how people use goods as means to understand our routines and practices: *"Goods are used as markers for discrimination: for instance, food is used for discrimination between morning and evening, between everyday life and celebrations"* (Røpke 1999, 407).

The practice of drinking coffee is based on routines and rituals, which means that in many instances people have associations with drinking coffee at a certain time and sometimes it has a social aspect. According to Røpke, rituals are used to establish meanings in a social context, and in relation to this, goods, which in this case is coffee, play a role in the rituals by making the world understandable. In relation to culture, goods are recruited for new projects of classification as the culture undergoes the process of change (Røpke 1999, 407). Information about *why* Danes drink coffee as opposed to *how* they like to drink it is sparse. Both on a national and city-centered level. The 'how' is mostly focused on the at-home habits, sustained by facts on the most known brands and preferred brewing methods.

With limited research existing on what specific role coffee plays in the Danish consumption, besides the fact that we consume a great amount of coffee, it is difficult to draw specific conclusions in this field. Thus, we find it an interesting field to study, and we aim at exploring this through our investigation. We can for now assign social interaction some influence in the coffee consumption pattern in Denmark based on recent studies of the Danes' intake of coffee.

"Coffee is an integrated part of the Danes' everyday life. We drink coffee with good colleagues at work and meet up with friends at cafes in the city. Even though many people probably feel that they also drink a lot of coffee at home, the assessment shows that the social element has a reinforcing effect"
(Own translation, Dansk Kaffeinformation, 2021)

The press release is suggesting that the general consumption of coffee in Denmark has decreased during the COVID-19 lockdown, because we usually use coffee as a social element for having breaks in between work at the office and meeting up with friends, and this has been limited as we have stayed home. Nevertheless, the statement acknowledges the social aspect of drinking coffee which we aim to explore in our fieldwork to get an understanding of the elements that constitutes the practice of drinking coffee and how it shapes the user' preferences in the design of the cup.

7.1.2 Coffee on the go and the issue of waste

As many other cities, Copenhagen has a variety of different coffee shops. These coffee shops usually have a vibrant atmosphere, as customers are swinging by to get a cup of coffee either to stay or to go. There can be many routines and habits related to on-the-go coffee drinking. Some buy to-go coffee on the way from home to work or school, in between two locations, while others buy a cup of coffee either at the beginning or during a walk alone or with friends.

Coffee on the go is a practice that is enabled by single-use coffee cups, as it creates room for "*caravan cafes offering only take-away coffees, drinking coffee during a commute or taking a café-bought coffee back to a work office*" (Niimi & Lynch 2017, 22). Even though the general consumption of coffee in the Danish market has decreased during the past 12 months of

COVID-19 pandemic, coffee shops and gas stations have seen a slight increase in the purchase of coffee on the go. The first reason for this is rather obvious, as cafes and coffee shops have been closed for indoor service, leaving customers with no other option than getting their daily coffee fix on the go or from home. The second reason is the simultaneous rise in walks as the Danes' new means of favorite pandemic-safe social activity, which is preferably done with a cup of coffee in hand (Nielsen, 2021).

This spring, in the progress of writing this thesis, the practice of drinking coffee is slightly different from the pre-pandemic situation, especially at the coffee shops. We are finding ourselves in the middle of a lockdown, which implies that all restaurants and cafes have been closed for guests. For the restaurants and cafes to survive, they are providing the consumers with the possibility of ordering takeaway and coffee to go, which has led to more single-use packaging. This increased consumption of coffee on-to-go is leading to an explosion in the use of single-use cups, and thereby single-use plastic.

This exact issue concerning an increased amount of single-use packaging is also a case that Danmarks Naturfredningsforening (Hereafter: DN) is addressing on their annual waste collection event in April 2021. For this year the focus of the waste collection was takeaway packaging because of the increase of takeaway due to the covid-19 lockdown. The reason for this focus was partly to remove the waste from nature, and partly as a method to map the scope of the problem. After the waste collection event, DN calculated how much waste that was picked up in the different municipalities in Denmark by visualizing the data on a map. One of the measurements of the mapping is how much takeaway packaging that was picked up. In the municipality of Copenhagen, the amount of takeaway packaging was 15,121 pieces (Danmarks Naturfredningsforening, 2021a). The amount of collected waste supports the worry of DN, who criticizes the effort that Denmark has made to combat single-use plastic. In the report about the waste collection event, they highlight the existing and most recent initiatives on reducing single-use waste in the EU. They state that Denmark is way behind in implementing reusable alternatives to single-use products compared to other European countries, and DN is considering Germany as a frontrunner, which is also supported by our fieldwork in which the initiators of the circular systems refer to inspiration from German systems (Appendix 6). DN mentions that earlier this year a new legislation was accepted, requiring that from 2023, reusable packaging need to be available for the consumers buying takeaway or beverages to-go. In addition, they suggest the option of reusable packaging must not be more expensive than single-use packaging (Danmarks Naturfredningsforening 2021c). Hence, there is an urgent need to identify the opportunities for phasing out single-use products by replacing them with reusable objects.

7.2 Why should we be concerned with single-use plastic?

Plastic can be used for a range of different things and as a material it has a lot of benefits as it is low-cost and has a high functionality (Ellen MacArthur Foundation 2017). Besides these positive things that plastic can be used for, it is also one of the most polluting materials.

Especially in the cases where single-use plastics could be replaced by reusable materials instead. Looking into the numbers of the amount of plastic waste, the European Union states in *Turning the tide of single-use plastics* (2020) that 80-85 % of marine litter found on beaches is plastic, and 50 % of EU marine litter consists of single-use plastics (European Union 2020).

There is a great focus on the problems related to single-use plastic and environmental problems in general on a global level. The UN's Sustainable Development Goals which were adopted in 2015, is one example of nations collaborating on finding a path to a more sustainable world. The goals are focusing on sustainability on different levels and different parts of societal issues, by building economic growth, addressing social needs, and tackling environmental pollution and climate change (Schroeder et al 2018). Different organizations such as the Ellen MacArthur Foundation and DN are also contributing to shedding light on initiatives that promote the idea of reducing waste. This combined with the circular initiatives for coffee cups we investigate in our case, shows that the focus on adapting more sustainable practices by reducing single-use plastic.

7.3 The concept of circular economy

Keeping the materials or the products within a loop as the concept of circular economy suggests can potentially be the path to a transition towards a more sustainable mode of consumption. This exact way of dealing with the environmental impact of consumption was adopted by the European Commission in 2015 in the form of their first action plan for a circular economy. In 2019, this action plan was supported by a comprehensive report on the implementation of the action plan (The European Commission, *n.d.*). A circular economy implies that we need to reduce waste by closing the circuits of products, which can be done by reusing and prolonging the lifetime of products instead of using single-use items. According to The Ellen Macarthur Foundation circular economy is described as:

> *"[...]a circular economy aims to refine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system"*
> (What Is a Circular Economy? | Ellen MacArthur Foundation, n.d.)

Circular economy can be seen as the contradiction to a linear economy. Besides aiming at reducing the negative impacts of a linear economy, circular economy represents a systemic shift that builds on resilience in the long term. Circular economy is based on the progress on moving towards renewable energy sources and building economic, natural, and social capital. The Ellen Macarthur Foundation describes a circular economy as consisting of the three principles of: 1) designing out waste and pollution, 2) keeping products and materials in use and 3) regenerating natural systems. In circular economy, economic activity is concerned with building and rebuilding the overall health of the system, and it is focused on the need of making it work at all scales both globally and locally: for all kinds of business no

matter their size, for organizations and individuals (What Is a Circular Economy? | Ellen MacArthur Foundation, n.d.).

7.3.1 Circular economy in the context of single-use plastics

On an international level, The European Union has made a directive on single-use plastics that became effective July 2019. The objectives of the directive aim to prevent and reduce the impact of certain plastic products on the environment. They also aim to promote the transition to a circular economy (European Commission 2021). Looking into the actions made on a national level, in February 2020, the Danish Minister for Environment, Lea Wermelin, made a written introduction of a bill for an extended producer responsibility: *"implementation of extended responsibility of the producer in terms of packaging and modernization of collection and handling of electronic waste)"* (Own translation, Lea Wermelin 2020). Lea Wermelin argues that an extended producer responsibility is an essential element in the process of establishing a more circular economy, in which we reduce waste and use our resources with consideration. The idea of extended producer responsibility is that producers take the responsibility for their products, including when they go to waste. When the producers have the responsibility for the waste process, they get an economic incentive to establish take-back services which can enable the possibilities for establishing closed materials loops. The bill includes three sub-purposes, where the second one is concerned with taking the first step in the direction of implementing a new system of extended responsibility of the producer in relation to packaging. This includes an improvement of the current high level of recycling and environmental protection with an intensified focus on increasing the reuse of plastic packaging waste (Wermelin, 2020). The action plan is gathering the national plan for prevention and handling of waste for 2020-2032, where there are three main foci: biomass, construction, and plastic. The action plan consists of 126 initiatives, where a lot of the initiatives are included in other plans and strategies. The aim of the action plan is to reduce the national CO2 emissions by 70 % in 2030 (Dansk Industri, 2020).

In a report conducted by Nordic Sustainability and PlanMiljø for DN, from April 2021, the upcoming system for producer responsibility is discussed in relation to how reuse can make Denmark a frontrunner when it comes to circular economy. The report has a starting point in the fact that statistics from Eurostat show that Denmark is one of the countries in the EU that generates the most waste per inhabitant. Thus, there is a need for preventing waste generation, which can be done by giving companies the incentives to design reusable products and to develop reuse systems, such as a circular cup system. In the report it is argued that reuse is good for both the environment and the economy, which means that there is a potential for Denmark when submitting our approach to the system of producer's responsibility in relation to packaging before 2025 (Danmarks Naturfredningsforening 2021b).

Due to an increase in the waste generation of takeaway packaging, including coffee cups under the covid-19 lockdown, DN announced the 12th of April 2021 in a press release that they aim to combat waste found in nature and on the streets. According to DN in order to solve the problem entirely, we need to stop using single-use packaging, and use more durable materials instead.

With these initiatives at an institutional level, it shows that there is a common aim to reduce single-use products by applying directives and laws pushing companies in the right direction. In the process of the replacement of the cup system, the new system must be designed in such a way that all actors will accept it. The political initiatives both on a global and a national level are still quite new and some of them have not even entered into force yet. This leaves the people (or the actors) with no prior knowledge about how to deal with it in practice. It is a common agreement that we need to move from a linear to a circular economy, but how do we break anchored habits and well-functioning systems?

8.0 Unfolding the network

As explained in *7.1.2 Coffee on the go and the issue of waste,* we are navigating the complex network around the development of circular systems for to-go cups that can lead the consumption of coffee toward a more sustainable future. Based on preferences and availability of options, different networks are already in the process of being formed. The aim of this chapter is to define the actors that are attempting to shape these networks. We identify the roles of following actors as a part of the problematization process; the to-go coffee system (both as it is now and the circular systems), the coffee shops, the users, and the cup. In addition, we will identify the role of different political choices, namely the extended responsibility of the producer and the waste management hierarchy. These identifications are based on both the roles that the actors are assigning themselves through interviews and research, as well as features designated to them from other related actors. This will be put into the context of consumption patterns of human beings to understand the basis of the resistances that the actors have towards changes in the existing system, and what role policy action plays in the process.

8.1 The to-go system and its reusable players

In the initial phase of this case study, we were investigating the field quite broadly both looking into takeaway packaging and to-go coffee cup systems, as we were interested in examining the innovative solutions that aim at reducing single-use packaging by turning to circular economy practices and introducing reusable packaging as replacement. The movement of using approaches that support the thought of circular economy is evident in our literature review, which presents different perspectives and approaches that the networks might be able to draw from. The single-use takeaway system is based on convenience and buy-and-throw-away in terms of its packaging, mainly in the form of plastic packaging (or Styrofoam) for food, and cardboard with inside coating for drinks. This system is supported all over the world, convenient for its users both caters and consumers. Looking into how the system affects the environment, it is contributing to a huge amount of waste ending up in the oceans and landfills, damaging the environment. Two major problems are related to consumption and single-use plastic: a) the incautious use of natural resources and b) the impact of the plastic when it ends up in landfills and the ocean (Røpke 1999; UNEP 2018). We are focusing on the development of more durable systems that have less environmental impact as the current systems that rely on single-use cups. The goal is not only to reduce but eventually eliminate the use of single-use cups.

Looking into trends of implementing reusable cups, several circular systems within to-go coffee are found on an international level. One of the most successful systems is the ReCup system in Germany, which we mentioned as a source of inspiration when defining our role, because it connects the entire country by a system of reusable coffee cups in

different sizes. Furthermore, The Ellen MacArthur Foundation has suggested different ways of structuring reusable systems depending on the type of product it is concerning as described in our literature review. These guidelines can be helpful for actors that try to develop circular systems for products, as it can provide knowledge about what works the best for a specific product of business.

As mentioned in our literature review, collection modes for takeaway containers are tested in a Chinese context, suggesting the pros and cons of the different systems (Ellen MacArthur Foundation, 2019; Jiang et al 2020). These findings show that the process of testing different circular systems has started to deal with the environmental impact of single-use items. As these types of systems are still in the early stages, testing of different solutions are made to figure out how it potentially can work in practice. In a Danish context the tests of these systems are in an even earlier stage. More specifically, the first tests of different systems have been made in the spring of 2021. These tests have found place in a very local context, such as in specific neighborhoods of Copenhagen. For now, the independent systems are working in accordance with an individual agenda, but they are sharing a common vision of preventing unnecessary waste when purchasing takeaway food and beverages.

8.1.1 Kleen Hub - the digital platform

Kleen Hub was established in January 2020 and their system provides cafes, coffee shops and restaurants with stainless steel cups and food containers as an alternative to the single-use packaging otherwise used in the takeaway business. They provide this service through an app, where the "rent of packaging" is registered by the partner/store where the takeaway is bought. The app stores the customer's payment details. In case the cup or box is not returned within 10 days, a fee of 100 DKK per box or 150 DKK per cup is drawn from the customer's account. It is possible for the customer to extend the rental period by another three days for 10 DKK. Kleen Hub currently provides one size of cup and is implemented in 40+ cafes and coffee shops around Copenhagen (Kleen Hub, *n.d.*).

Before interviewing Kleen Hub we had to sign a non-disclosure agreement which included that we were not allowed to record the conversation. As they are the only system, which at the time was implemented in Copenhagen, they have overcome resistances that other systems are still struggling with. Kleen Hub is a business that would like to keep their monopoly on the market, making them hesitant to share their experiences and evolution. They made it clear that they had been in contact with other startups (who will be defined shortly hereafter) but they were not interested in collaborations with them. In relation to this, we are drawing parallels to an argument by Vikkelsø, where she mentions the refusal of participation by actors and the influence this can have on an actor-network theoretical analysis and description (Vikkelsø 2007, 305). Kleen Hub did not refuse to talk to us, but were not forthcoming, which implied that they were not willing to let us describe their situation to help overcome resistances in other networks than their own.

Another feature which is used to define their role is based on a statement about the type of partners that Kleen Hub are attempting to attract. In our interview with Kleen Hub, they stated that the selection is based on brands with a healthy image that already have some type of sustainable strategy implemented in their business plans. This shows that the partners of Kleen Hub are expected to help them maintain a sustainable profile by appealing to a clientele that values quality and sustainability (Appendix 8).

8.1.2 BYKOP - a deposit system

BYKOP is a circular concept, which has created a circular deposit system that connects all cafes, coffee shops, bakeries, and to-go suppliers in a united return system. The concept of the system is that customers pay a deposit of 5 DKK for a cup at the coffee shop which they will get back when the cup is returned. In the interview with BYKOP, they were very focused on the material of the cup which is made of Polypropylene (PP), as they had put a lot of thought into the final choice of material. They mentioned the importance of designing a cup that looks quite similar to the standard paper to-go cup, but in a sustainable material, in the sense that the cup was durable enough to contain hot coffee, but not as durable as a thermo cup. As a part of the reflections about the material of the cup, BYKOP was also considering the price of the deposit. One concern that they had about the design of the cup, was the fact that the cup should not appeal to collecting and keeping the cups at home.

BYKOP has done tests with individual vendors, and the cups are in production, but are not yet implemented in any coffee shops. Our interview with BYKOP was conducted in the field in connection with one of their tests of the system, so we were able to see the system in action. Their collaboration with Plastic Change contributed to their knowledge and awareness about similar startups in progress. To reach their goal of eliminating the single-use cup BYKOP is looking for partners outside the typical coffee shops, such as McDonalds, because of their variety of customers and their reach across the country (Appendix 6).

8.1.3 Panter - the local startup

Panter is a startup which originates from a local café in Nordvest. The founders of the startup were all working at the café, and as they experienced that they used a lot of single-use coffee cups, they gathered to find a way to eliminate the use. They describe that the aim of the Panter system is to create a deposit system for café and coffee shops. The system is still in the early stage of development, and they express that their starting point for the system is in Nordvest, where they aim to connect the local cafes in this system. Panter has put a lot of thought into the design of the cup, and in the interview the co-founder describes how they have talked to friends and family about the most important features of a to-go cup. One of the things that they have a focus on, is designing a lid for the coffee cup, as the people that Panter talked with expressed the need for a lid when walking with a baby carriage. In Panter's path to finding the perfect cup for their system, they had a lot of

different ideas for the design of the cup. At first, they wanted to collaborate with a local ceramic artist in order to get a unique design but realized the expenses of this choice. Because of this, Panter has been searching for other alternatives. One factor which is very important for them, is that the cup was produced locally or at least in Europe to keep up with the European regulations and keep the carbon emissions from the transport at a minimum. The outcome of this is a collaboration with a German cup producer. These cups are made from a durable plastic that can be washed up to 1000 times, whereafter there is an 80% recyclability of the material when creating new cups (Panter, *n.d.*). In the interview the co-founder shows us one of the cups. It is black and it looks like a plastic version of a standard single-use cup. The one she is showing us was sent from the producer, and that exact one had been washed 900 times, which gives an insight in the durability of the material, which is one of the things that they valued the most. The deposit of the cup has not been set yet, but they are planning to put a deposit on both the lid and the cup (Appendix 7)

During the interview they describe themselves as very ideological. She expresses how they had to downscale their initial idea in order to design a functional system. Many of their partner agreements and support comes from cafes in their neighborhood that they personally know. Regarding the structure of the system, she explains that it is not settled yet. In continuation of this, she adds that they have some ideas about the distribution of cups between the involved cafes and coffee shops (Appendix 7).

8.1.4 New Loop - establishing a circular packaging solution

New Loop is a project which aims to create a circular system for takeaway packaging. The goal is to make a deposit system that ensures reduction of carbon emission, inspired by Dansk Retursystem. New Loop mentions the importance of the return percentage. They state that packaging can be produced as sustainable as possible, but if it ends up in the trash can and becomes incinerated, it means that new packaging needs to be produced, which in the end makes the practice very unsustainable. This is their argument for closing the loop in which the packaging can be reused as many times as possible, and then afterwards it can be recycled for making new packaging. This approach can be compared to the vision of the waste management hierarchy. The founder of New Loop got inspired by an American concept called Deliver Zero that delivers washable takeaway packaging in New York in 2019 (New Loop, *n.d.*-b). The founder Gitte Saaby Kjær discusses the idea of making reusable packaging systems with two others that have similar ideas and visions, Anders Barsøe and Anders Morgenthaler. With a vision of implementing a similar system in Copenhagen, the founder contacts Teknologisk Institut to help with writing an application for Innovationsfonden. As the startup is formed as a project, it is running from 2021 to 2024 where they collaborate with partners such as Prolog Coffee and Original Coffee, among other restaurants and cafes, Copenhagen Municipality, universities and Teknologisk Institut. Besides these partners, they also have "knowledge partners", which includes Dansk Retursystem and relevant persons from organizations such as Plastic Change, Coop,

Miljøstyrelsen and Dansk Erhverv. New Loop's history is also fairly young, and their process is moving forward along with this thesis. As well as the other circular systems, New Loop is also in the test phase, and looking for shareholders to become a part of the project (New Loop, *n.d.*-a).

8.2 The coffee shops

The development of new systems is dependent on the acceptance of the coffee shops. Thus, it is important to understand the current practices and existing systems of the coffee shops. Getting insight into the practices of the coffee shops and understanding what features of a cup system that they consider important is essential to assess whether they can adapt a new system. The general purpose of coffee shops is to serve coffee in a way that lives up to the expectations of the customers and which is consistent with the values and visions of the coffee shop. For some coffee shops this involves reaching a certain level of sustainability and corporate social responsibility in terms of the choice of coffee beans as well as the material of the cup (Appendix 9). Other coffee shops are not as far in the process of adopting sustainable practices, as they are not thinking in terms of more sustainable choices yet. These less sustainability-oriented coffee shops are finding themselves in networks that currently are quite different from the ones that we are focusing on in this study. This section is, as with the systems, an introduction to the coffee shops we have encountered, and a definition of their role based on interviews, observations, and information from their websites.

8.2.1 Riccos

Riccos Kaffebar was the first coffee shop that we interviewed. By the time we were interviewing them the coffee shop was still not open for guests to sit inside so they were primarily selling coffee to-go. Before approaching Riccos we were already aware of their sustainable brand and visions for their coffee shops. Over a year ago, the owner of Riccos chose to put a fee on single-use coffee cups, which is 4 DKK for a cup, besides the price of the coffee itself. If customers bring their own cup, they get a discount off the coffee on 2 DKK, which means that Riccos uses an economic incentive for their customers to reduce single-use coffee cups. The 4 DKK fee that Riccos charges the customers is used to plant trees in El Olmo, Mexico (Riccos, *n.d.*). When we walked into the coffee shop, we were met by two accommodating baristas. They were not busy at the time we walked in but because it is a small coffee shop, we were very attentive to our surroundings, but not sure of how they would react to our questions. The barista showed a poster on the wall that illustrated Riccos own vision for the climate through an illustration that looked like a rebus explaining that Riccos plants a tree every time a customer buys the single-use cup and took her time when answering our questions.

  Riccos is one of the coffee shops that have implemented Kleen Hub in their stores. We heard that they had their own reusable cup system before and asked them some

questions about how that worked. That cup was from the brand "KeepCup", and instead of lending the cup in the same way as Kleen Hub, a customer would buy the cup for 85 DKK and then get a discount on the coffee. Riccos had kept their own cup even though it was not as much in focus and as visible as the Kleen Hub system. The barista was very open to talking about their visions and the practices in the coffee shop. Looking around in the coffee shop, sustainability and their initiatives are very visible.

8.2.2 Darcys Kaffe

At Darcy's coffee shop they introduced a reusable cup mid-April. We did not know much about the system but were interested in learning more about their choice of implementing an individual system. One Saturday at noon we walked in buying a cup of coffee. Entering the coffee shop, we were met by a little café table with a sign "for used cups", where these blue reusable "KeepCups" were. We asked a few questions about the new reusable cup. They told us that the customer gets a discount on the coffee when using the reusable cup and said that the concept was already quite popular. Around 60 reusable cups were sold, and the manager explains that it is usually regulars buying coffee several times a day, who have chosen to buy the reusable cup (Appendix 9). We chose to have our coffee to go, and we were curious to see if we would be offered the choice of a reusable cup, but both from our own purchase and observing the other customers, it did not seem to be standard for the barista to inform about the existence of the reusable cup system.

8.2.3 Original Coffee

In our research of the existing coffee shops and chains in Copenhagen, we came across Original Coffee, which is a chain of ten coffee shops located in different areas of Copenhagen. On their website they state that they have a focus on the diversity and uniqueness of the neighborhood that the specific coffee shop is in, which they seek to reflect in the look and atmosphere of the coffee shop. When we started to investigate Original Coffee, a system of reusable cups was presented on their website. The brand of the cup was called "Frank green" and it costs 250 DKK. The cup had the logo of Original Coffee on the side, and the website stated that when buying the reusable cup, you would get three cups of coffee. Furthermore, they give a discount of 5% off your coffee purchases when buying this cup. This cup is made from BPA-free plastic, and they stated that the smaller parts of the cup are recyclable, and as they state: *Good for your coffee. Good for the environment. In as little as 15 uses, you'll begin to offset the environmental impact it took to create your frank green"* (Original Coffee, n.d.).

As these reusable cups differed from some of the other cup systems that we had come across, we went into one of their coffee shops to observe this type of cup. When walking into the coffee shop, we were met by the sight of a lot of stacked black thermo cups with the logo of Original Coffee. When we got to the bar, we asked the barista if he could tell us about their reusable cup system, while we pointed at the stack of cups. He said that it was

not the stacked cups that they used for their reusable cup system. He could inform us that they paused the use of the cups due to COVID-19 and the hygiene, but that the system in general did not work as it was supposed to.

After getting an insight about New Loop planning to test their circular cup system at Original Coffee at the end of May, we went back to visit the same coffee shop to explore how it had changed. All the thermo cups that we observed on our last visit were gone. Instead, they had stacked New Loop's reusable cups on the espresso machine. Instead of buying the cup, these cups are a part of a deposit system, and made of a less durable material, more similar to a traditional single-use cup. The deposit fee is 5 DKK, and the cups can be returned to any New Loop partner, which at the current time are Original Coffee and Prolog. Even though these cups were provided by New Loop, who also are the ones in charge of re-distributing the cups, it was Original Coffee who provided us the information about the infrastructure of the system (Appendix 9).

8.2.4 Zaggis

As we are interested in investigating the dynamics of the different kinds of coffee shops in Copenhagen, we also wanted to talk with smaller coffee shops. At Zaggi's they serve all kinds of espresso coffee for 20 DKK a cup, and it is primarily to-go. The coffee shop is located by the lakes on the city center side. The coffee shop is therefore an optimal choice for people going for a walk around the lakes. The two baristas were willing to talk to us about the coffee cups, but they started up explaining that they did not know that much about the choices that their manager made about these things and, as far as they knew, there were no plans of implementing an alternative to the single-use cup.

When asked about reusable coffee cups, they did not have that much knowledge about it. As we also were interested in hearing if the customers brought in their own cup, we asked them about this, but neither of the barista had experienced customers bringing their own cup. Both baristas expressed that they would be willing to serve coffee in customers' own cups though if they were asked about it. Thus, Zaggis would be not hindering a customer's attempt to act more sustainably, but they do not enforce it either. Zaggis is an example of a coffee shop that still has not taken a stance of reducing single-use, and when asked about it in the interview, it did not seem like they planned to implement alternative systems unless they are forced to.

8.2.5 Minas Kaffebar

Walking around in the streets of Nørrebro, one would notice the great amount of the conspicuous yellow single-use coffee cups. Minas Kaffebar is serving cheap coffee to-go, compared to other coffee shops, in their customized yellow cups. As it is cheaper and located very central on Nørrebro, it is a very popular coffee shop. The cup being very recognizable, it is easy to spot when it ends up as litter on the street. Their website is very focused on the local network at Nørrebro and "hygge", but it does not say a lot about

sustainability, which made us curious about their thoughts on sustainability and single-use coffee cups.

Their way of paying attention to sustainability in their coffee shop is by primarily using organic products, while their cups are part of their image and therefore hard to replace (Minas Kaffebar, *n.d.*-b). Similar to Zaggis, this type of coffee shop will not change before they have to and are therefore operating outside of the networks we are looking at while gathering experiences, but important to consider in terms of changes that they need to make before they are able to comply with the extended producer responsibility, which is initiated in 2025 (Dansk Industri, 2020b).

8.3 Identifying the users

We have conducted interviews with Copenhagen based customers who are buying their coffee to-go to understand their preferences and willingness to use alternatives to the standard single-use coffee cup. From the interviews we can observe that different types of customer groups are forming, overall creating three different types of users. The role of users in the coffee drinking practice needs to be considered as it can vary depending on the situation where the relations are to be defined. By this we mean that the users can be seen as users of the cup system, consumers of products and services, and customers at coffee shops, where they can be all kinds at the same time or shift between them. Our data shows that the habits pertaining to what they do as customers are also reflected in choices that they make in relation to their general consumption. Moreover, based on our fieldwork, we argue that some aspects of these different groups can overlap.

All three user groups have one goal in common: to be able to buy a cup of coffee on the go, but they differ in what they consider to be the preferred way to carry out the practice, which is reinforcing different networks. Another thing all user groups have in common is that they are supporting the current to-go system as they regularly buy coffee to-go as consumers and all end up using single-use cups occasionally.

8.3.1 The user that thinks in terms of sustainability

The first user group consists of customers who already act in a sustainable manner in their everyday lives. These people are already bringing their own cups to the coffee shop when buying coffee, because this is often the only alternative to single-use cups that coffee shops can provide. Thereby, it can somewhat be argued that this group of users are constituting their own network because they are keeping their practice of bringing a cup from home no matter how the dominant structure looks. They are still somehow dependent on the dominant network, because of unforeseen events such as COVID-19's influence on the possibilities within the system of to-go cups. More specifically, the case that many coffee shops under the pandemic have chosen to abandon the option of serving coffee in the customer's own cup. One user elaborates on this, while explaining her choice of coffee shop:

"[...]the reason why I buy coffee from her is because she uses bio cups. I don't know much about it, I haven't really checked up on it, but usually I'm pretty good at checking what they are using, when I'm not allowed to use my own cup. Especially under corona because it is not allowed to bring your own cup"

(Appendix 4)

When bringing your own cup is prohibited, it forces the consumer to act differently than they usually would, which means that they must act in a less sustainable way. One of these sustainable minded consumers expresses that she "is dying inside" every time she is forced to buy a single-use cup, because it goes against her beliefs. This means that they must interact with the dominant network, which potentially can lead to the motivation for this group of users to create alliances with other actors in the network to reach their visioned future (Appendix 4). Another sustainability-oriented user states the importance of making a sustainable choice, but in relation to that, she mentions that *"sometimes it feels a bit too sacred to bring your own cup"* (Appendix 1), which indicates the awareness of standing out in a not entirely positive way. Their goal is similar to the vision of the circular systems: wanting to remove single-use cups, but their main goal becomes to get a 'sustainable' cup of coffee on the go. According to this group of users, the standard of buying to-go coffee should be more sustainable than single-use cups, and this change should happen as soon as possible. They would comply with the action of removing single-use cups completely and adapt to the new system (Appendix 4).

Even though this group of users agree on the fact that a more sustainable to-go coffee cup system is needed, they express different visions for how this kind of system should be structured. This is especially in terms of whether the system should be based on a deposit or rent system, and how the return of the cup should be. Through our interviews, it became clear that within this group, multiple understandings of the concept of sustainability and how it is handled in practice, such as whether the cup should be washed and reused in a circular system or if it should be remelted as a part of the return system provided by Dansk Retursystem (Appendix 1; Appendix 4).

8.3.2 The user that would like to act more sustainable

There is a group of users who have the willingness to adapt to a new system, but to make the change, the system needs to be designed in such a way that it becomes the most convenient choice. They are aware of the environmental impacts of single-use products, but they do not know how to change their patterns. Furthermore, this group of users struggles in finding the most sustainable path, as they are navigating through the jungle of sustainability and sustainable products. More specifically, the general picture shows that the consumers have a hard time judging if a specific object or action is sustainable or not. One

example is the term *biodegradable*. When a user in an interview was asked about the effect of biodegradable cups, the answer was:

"I think it has an effect when you are outside the city. Even though it is biodegradable, it will take a long time before it disappears if the cup is lying on Strøget, but it would go much faster if it was lying in nature"
(Appendix 2)

This quote exemplifies how misleading the term is when it is not explained appropriately. This misperception of objects that are biodegradable, might lead to unsustainable practices despite the intention of switching to more sustainable alternatives. This seems to indicate that there is a need for improving the transparency of knowledge about products that are marketed as sustainable. This is important to include in the consideration of introducing new to-go cups.

Another aspect which is prevalent within this group of users is the importance of convenience. In the case that a circular system is implemented, and the practice of returning the cup is kept in an uncomplicated way, they would be likely to choose this option, even if single-use cups are available as well. For them to accept their role, convenience is an all-important factor. Their choice would be based on their knowledge about the impact of single-use and the easy option to act more sustainably. Several of the users mention that it is the available option of the single-use cup that makes it difficult for them to act more sustainable. As one user puts it: *"It would be fine for me if it (the single-use cup) was an opt-in option, and not as it is now, where it is a de-selection"* (Appendix 2). This user expresses the need for not being responsible for making the sustainable choice, but instead the person would follow the default system. In relation to this, the user also mentions that availability and laziness might be factors that play a major role in the challenges of implementing a circular cup system (Appendix 2).

8.3.3 The user that does not act sustainable

For one of the groups of users, convenience is the most important factor in relation to their coffee drinking practice. For them accessibility is the key. It should be convenient to buy the cup of coffee, but the disposal of the cup afterwards needs to be as easy as getting it:

"I just want to have the freedom of choice, including the possibility for taking the coffee to-go, and then toss it into the bin when I don't want it anymore, so I don't have to carry around the coffee cup, which is paradoxically compared to what I said earlier"
(Appendix 5)

This group of people are not counteracting the development to a more sustainable system, but as they value convenience the most, they will only sustain a new system if it is the most

convenient choice or the only available option. They are not unaware of climate change and the environmental impact that single-use items cause, but they do not care enough to adapt to more sustainable practices. There are two possible ways of enrolling them in a new network. The first, and possibly the most unrealistic way, at least in the case of coffee cups, is to change their opinion about sustainability and through that make them more likely to adapt to a changed practice of drinking coffee on the go. The other way would be to remove the system of single-use coffee cups in all coffee shops, making the choice of reusable cups the only one available. A user states that: *"I don't have anything against making this change, but I think that I need to be nudged a bit more than just having a choice, because I am not going to do it"* (Appendix 5). Having to make the active choice between two options, this user group will always choose the most convenient one, which is similar to the case of the group of users who wants to be more sustainable, but struggles. Thereby, it can be argued that there is one factor that plays a crucial role in the path to more sustainable practices within the to-go coffee system, which is the question of convenience.

8.4 The reusable cup

The goal of the reusable cup in this network is to provide the user with coffee to-go, which if achieved, should make it possible for reusable cups to replace single-use cups. We acknowledge that this is a simplified statement, as the cup also needs to enrol in relations with the other actors of the network it is placed in.

It is important to keep in mind how much waste is produced when drinking coffee from a single-use cup on a regular basis if it is considered that the cup is only used for a short time span. Thus, there is a need for addressing the environmental impact of the practice around single use items by finding solutions that reduce the waste. Many coffee shops have as a response to this begun to ask the customer if they want a lid, to reduce unnecessary use of plastic instead of putting the lids on the cup as a standard. But as coffee drinking has moved outside the coffee shop into the streets, where people often are walking with the coffee cup in their hand, most people will choose the lid, because of convenience. The association with convenience in drinking the coffee from a to-go cup is mainly related to the design of the cup, in the sense that many users are worried about spilling the coffee, when having it to go. This leaves some specific requirements for the to-go cup. The lid is in the focus of the users' reflections on the design of a well-functioning to-go cup. Our data shows that people tend to choose the lid no matter what as a precaution, and then they can decide whether they want to use it or not. One user expresses that: *"If I have the opportunity to stand still or sit down, I will take off the lid. But I do not deselect the lid, because I do not want to risk having troubles drinking the coffee and possibly spill it on myself"* (Appendix 2). This user will rather be safe than sorry even though the person is also very considerate when sorting garbage at home, where she always uses single-use packaging as many times as possible.

When speaking of environmental impact, the topic of the conversation often falls on the material the cup is produced from, especially when produced for single use, which is a

factor to consider when transitioning to a system of reusable cups. Some chains have been using Styrofoam before while paper cups are now the standard option. This is a misleading attempt to use a more sustainable material as most of these cups are lined with a thin plastic coating which must be separated for the material to be reused, but as this process is difficult and time consuming the cups most often end up in landfills (Link 2020). In our fieldwork, we have observed that some coffee shops started to use single-use coffee cups made from biodegradable plastics as a step in a more sustainable direction. Even though this might be a slightly better choice, we argue that the system as it currently is with single-use cups is not combated by changing the material if the system still uses single-use cups. This argument is also reflected in UNEP's report about single-use plastic in relation to the waste management hierarchy in which reduce, and reuse are preferred over recyclability (UNEP 2018, 7). The problem with biodegradable plastic is that it can only break down completely when exposed to high temperatures over 50 degrees, and such conditions are only reached in inclination plants, and rarely in nature (UNEP 2018, 14).

This leads to the topic of materials for reusable cups and how to decide which one might be the best to use. As mentioned, the initiators of the circular systems we have spoken to, chooses materials based on durability and recyclability. According to Kleen Hub, their stainless-steel packaging can be used up to 1000 times and after 30 times of use it can be seen as more environmentally friendly than "*disposable plastic, paper, aluminium, or "biodegradable" packaging*". When the cup is no longer usable due to wear it is melted down to other products. During the lifecycle of the packaging 134 kg of CO_2 is saved as opposed to producing and buying new ones for every use (Kleen Hub. *FAQ. n.d.*). The cup that BYKOP uses is made of polypropylene (PP), chosen because of a recommendation from the Danish environmental organization Plastic Change, proposing that PP as a pure type of plastic gives it a higher recycling potential than other types of plastic (BYKOP, *n.d.*).

In the interview with Panter they mention that they are collaborating with a German cup producer, who when a cup is worn out will take back the cup and recycle them to a food-grade standard to be used for beverages again (Appendix 7). According to Panter it can be challenging to recycle materials, especially plastic, in a way where the quality is durable enough after the first use, due to toxins and other components in the material. Thus, it is vital to consider the materials for a reusable cup when the aim is to keep the cup within the loop after being recycled.

9.0 Uncovering the dynamics between the actors

Different networks arise as a result of the multiple practices and relations that exist. To understand how relations are constructed through interessement and what resistance that might emerge, this section will explain how the actors enrol into the roles they have been identified as previously as well as where there are still negotiations to be made. To get a grasp on the dynamics of the network, we are looking into those relations that are facing resistance to shed light on the negotiations made between the actors. For a circular system to become implemented successfully, it will have to form alliances that comply with the needs and desires from the users and coffee shops on all parameters.

One thing all networks have in common is coffee shops that sell coffee to go. The practice is situated with the coffee shop as a common denominator, so we can define the relations between the coffee shops and the other actors of the network without an explicit paragraph dedicated to them.

9.1 The users' relations to the network

8.0 Unfolding the network presented the different roles a user can take. The users are the ones sustaining the networks. Without them buying coffee on the go, the networks would fall apart. Therefore, we define their relations to the other actors to understand how enrolment of users is created within these networks.

The relation between users and coffee shops exists both in terms of location, selections, and appearance, as these factors contribute to how the customers' practice is shaped, and to the practice existing between coffee shop and customer. Many customers have personal preferences when choosing a specific coffee shop for purchasing coffee on-the-go, while others value convenience and location by choosing the closest coffee shop. A user comments on the importance of the quality of the coffee, but explains that in the end she will base her choice on the location:

"I think quality is one aspect that I go for. However, placement is also important. It has to be located in between me and the friend I'm meeting up with [...] Then, I decide whether I'm going for the quality coffee or a coffee shop with a certain vibe. So, I would say that the location of the coffee shop matters a lot. I wouldn't choose a coffee shop on Østerbro, unless I was on the way home from my internship"
(Appendix 1).

When it comes to the type of coffee purchased at the coffee shop, the personal preference might also differ from the choice at home, because of the selection of brewing methods available at the coffee shop. For instance, most people do not have an espresso machine at home, as these can be rather expensive, but it is standard inventory at coffee shops, which is

giving the customer the choice of an "expensive feel" espresso-based coffee (Tucker 2011, 16). For some people, there might not be a difference in the preparation of coffee between the coffee shop and home but buying coffee from a coffee shop puts the responsibility on the skills of the barista, as the customer will have certain expectations of the quality and taste (Tucker 2011, 8). The preferences of the customers are to be considered by both the coffee shops and the startups developing the circular cup systems if they want to keep the users as customers.

Convenience and good service are factors mentioned by the greater part of our informants both in terms of distance and the atmosphere of the coffee shop they go to (Appendix 1; Appendix 3). If you are always waiting in line, you might end up choosing another coffee shop next time. This leads to one of the main resistances related to the implementation of the circular systems. While the general attitude towards circular systems and the development of sustainable alternatives to the existing practice is positive, the users express that they worry it will be too difficult to return the used cup if one must wait in line either to get the cup scanned out or get the deposit back. In relation to this, one user expresses some worries about spending time on figuring out where to return the cup (Appendix 2).

The users that think in terms of sustainability express concerns about the success of the implementation of a new system if the reusable system is introduced while the single-use cups are still available. Some of them have already tried Kleen Hub and are happy to use it as well as spreading the word about the new alternative, while the user that would like to act more sustainable needs more convincing in the form of convenience, which results in that these users more often will choose the single-use cup (Appendix 1; Appendix 5).

The following is another example of how parallel networks are developing. Some users express that they prefer a deposit system, in which the customer pays a deposit for the cup when purchasing a cup of coffee to-go (Appendix 5). This approach is offered by systems such as Panter, BYKOP and New Loop. The customer can then get the deposit back either next time they buy a cup of coffee or immediately after finishing the coffee. The other available system, provided by Kleen Hub, is already supported by some of the sustainable customers as it is implemented around the city, albeit not in a big enough scale to attract the semi-sustainable. A common resistance for both systems is that in their current state they are not expanded to enough coffee shops. This takes out as a resistance because the user then is required to carry the cup around until they find a coffee shop where the cup can be returned, which can be found inconvenient (Appendix 5).

In continuation of the resistance to carry around reusable cups, we acknowledge that this has been a standard practice for a lot of the sustainable-oriented users, which is why enrolment for these actors in new systems is a simple adjustment. In general, all informants have different preferences for the type of cup they prefer to get their to-go coffee in. Common for the users, the cup needs to be functional concerning the withstanding of hot liquids, both in regard to spills (Appendix 3) and ensure that the customers do not burn their fingers (Appendix 1; Appendix 5). The design of the cup is yet another point where the

networks differ as some prefer the Kleen Hub cup with its steel look and thermo effect, while this for others is unpleasant and mechanical-like (Appendix 5). Instead, they prefer a cup more similar to the existing single-use cup as they want the experience with the cup and coffee shop to be the same as now. One of the users who belongs to the group of sustainability minded elaborates on the issue of the lid when she was asked whether a new system of reusable cups should look like the current system of single-use cups:

"It doesn't have to look like the normal one. What I really liked about Kleen Hub was their lids because it is not the typical single-use lid, and I don't think it works very well on reusable cups. It is way smarter because this lid is tight to the cup, while these wannabe single-use lids that are used for reusable cups which are made of silicone or what it is, often aren't tight to the cup which is a mess. [...]therefore, I guess that it is fine that the new system is different from the old, because it also can persuade people about the performance it got"
(Appendix 1).

Overcoming this problem of single-use lids by introducing a new cup, might strengthen the relation between the reusable cup and its users (Appendix 3; Appendix 5). One way to form alliances with the customer groups that are not already on board with a transition is to provide information about the benefits of shifting to reusable cups and how it can combat the environmental impact. When we did some research about Riccos before visiting their coffee shop, we got the impression that the business has a very sustainable profile, addressing their responsibility for taking care of the environment as a coffee shop, especially because coffee production cannot vouch for being the most sustainable practice. It made us curious about exploring whether we would be met by the same visions when visiting one of their coffee shops. Talking to the baristas in the coffee shop, it gave us the impression that their everyday practices in the coffee shop were matching the visions of Riccos. When buying a cup of coffee, the baristas inform the customers about the price of the single-use cup, which they rationalize as their way of paying back to nature by planting a tree for the 4 DKK that the cup costs.

Original Coffee has a similar approach. On their website they have a site about their responsibilities as a coffee chain, which they consider as a social responsibility policy that is focused on human rights and their impact on the local environment. Within this CSR, they describe the responsibilities that they hold in relation to the environment. Here, they state that they use between 60-80% organic products in their coffee shops and the fact that they are trying to improve their performance within this field even further. Original Coffee states on their website that they do not serve bottled spring water, they have a well-functioning waste sorting system, and they only use electricity from Danish wind turbines (Original Coffee, *n.d.*).

9.2 The reusable cups' relation to the network

The relation between cup and customer has just been defined in its multiple forms, yet it is also important to explore the other relations of the cup. The single-use cup is usually the default option at coffee shops due to the ease of use and disposal. The relation between the coffee shop and the cup is central because the coffee shops rely on the stability of this relation in order to serve coffee for their customers. Thus, the quality of the cup is highly important for the coffee shop. Most coffee shops have printed their logo on the single-use cup, which also can be seen as an essential part of the coffee shop's branding and image. Most coffee shops also have different sizes of cups, customized to fit the different types of coffee. Resistance can therefore happen when adapting to a reusable cup system if it is not possible to have cups of different sizing (Appendix 7; Appendix 9).

Some coffee shops have tried to combat the use of single-use cups by providing the customer with the option of either bringing their own cup from home or selling reusable thermos branded with the coffee shop's logo, which the customers must buy and keep themselves in order to use. Sometimes the choice of using a reusable cup is rewarded with an economic incentive in the form of a discount on the coffee. As our focus is the concept of a circular economy connecting coffee shops on a broader scale, the systems that only work within a certain chain have not been granted as much attention as the ones connecting coffee shops across the city. When conducting the fieldwork, we observed that coffee shops providing their own reusable cup could be seen as a way for the coffee shop to reach a more sustainable brand and practice. Where some coffee shops experience success with this approach, it has been more challenging for other coffee shops to implement.

An example of how implementation of a branded reusable cup initially did not work, was found when we visited Original Coffee next to the lakes in Copenhagen. When walking into the coffee shop, before getting to the bar, we were met by a stack of reusable plastic coffee cups, which gave the impression that they were trying to make the customers aware of the reusable coffee cups' existence. We asked one barista if he were able to answer a couple of questions about these reusable cups and pointed to the stack of them. He said that the system was not working properly and grabbed another type of reusable coffee cup from behind the espresso machine to explain. He started out accounting for the benefits of this cup and how it was supposed to work, but he did not specify the answer about why it was not working, other than to him it seemed like they had given up on that system. When we got back from the coffee shop, we looked at their website once again to read about the reusable cup system, but the website did not give any information about the fact that the system was not working now (Appendix 9; Kleen Hub *n.d.*).

An argument that is pointed out by Niimi & Lynch about the transition to reusable systems is that not all shops are able to adapt to the option of reusable cups because of limited space, both to store non-disposable cups as well as having the facilities to clean them (Niimi & Lynch 2017, 23). This could include the threat for businesses such as mobile coffee

carts and small coffee shops without the proper facilities of shutting down due to phasing out single-use cups.

The co-founder of BYKOP mentions in our interview that COVID-19 has created resistance for customers to be able to use the options of bringing a cup at many coffee shops due to hygienic causes (Appendix 6), which means that the process of moving towards a more sustainable to-go practice, with initiatives also created by the coffee shops has been slowed down by some of the coffee shops themselves. This has been a present problem doing BYKOP's tests of reusable cups, as solutions had to be found to comply with this hygiene-issue. When interviewing Riccos, their perspective turned out to be different as they explained that they still accept customers' own cups, but instead they are handling the cup at a minimum, so the cup is not in touch with the espresso machine or the baristas (Appendix 9).

9.3 The circular systems' relations to the network

As one of the coffee shops that we have interviewed has already formed relations to circular systems by being partners of Kleen Hub, we are able to investigate how these relations are unfolding. As mentioned above, Riccos has a highly sustainable profile, which is influencing their relation to a reusable cup system. At Riccos, they are collaborating with Kleen Hub, but even before implementing their system, Riccos had the goal of reducing single-use cups by making individual actions within their chain. As mentioned earlier, this was done by offering a discount when buying coffee in Riccos' reusable cup or bringing a cup from home. Their approach to advocate for a more sustainable choice was by offering an economic incentive. The baristas in the Riccos coffee shop that we visited mentioned that they had more difficulties implementing their own system, than implementing and utilizing the Kleen Hub system. Joining in on a joint system can be seen as a further action for them to reach a common vision for a more sustainable future that moves beyond just their own business. When we walked into a Riccos coffee shop on Nørrebro, one of the baristas showed us how the Kleen Hub app works. She also explained that she would receive a discount if we chose the reusable cup. This experience shows us that the vision of Riccos seems to be authentic. Even though this shows a case of a coffee shop with a clear collective vision for a more sustainable future, we need to consider the obstacles that can occur when implementing a new system, where there is no prior experience to learn from. As a part of getting a deeper understanding of how the Kleen Hub system was working in the different coffee shops around Copenhagen, we ordered coffee in the steel cups from the different places. From the first to the second time that we tried the app, we observed that they improved some of the features, making it more accessible to rent and return the cup. Though, we also experienced a gap between the functionality of the system depending on what coffee shop that we visited. One day where we were investigating how Kleen Hub's system was working in one of the coffee shops located a bit further away from the rest of the connected coffee shops. In this coffee shop in Valby, we were asking for the opportunity of renting a reusable cup, but

the barista did not know what we were referring to. The Kleen Hub cups were located on the customer's side of the bar, but it was only because we had tried it before that we succeeded in registering the rent of the cup. After drinking the coffee, we wanted to return the cups to the same coffee shop, but the NFC code that we needed to scan to return the cup was missing, and the barista did not know what to do. Instead, we were asked to find another place to return the cups. The closest coffee shop available was at least some kilometers away. This example shows some of the disadvantages of a circular system, and it shows how important the relation between the circular system and the rest of the network is. This inconvenience might become one of the resistances towards using the reusable cups as it is not convenient enough for the user, but also for the individual coffee shop, and baristas, not knowing of or being taught about how to include the reusable cup in their practice of serving the customers coffee.

Another alliance in the making is between Original Coffee and New Loop. In May 2021 it was announced that Original Coffee was becoming shareholders of New Loop. As a part of this alliance, New Loop planned to make a pilot test of cups at Original Coffee's coffee shops the 25th of May (New Loop, *n.d.*-b). This development shows that finding a reusable coffee cup is highly valued by Original Coffee even though their first attempts did not work successfully.

The idea behind all the circular systems is to implement broadly to make the system practical to use, but with the option to return at different locations all over the city arises the question of (re-)distribution. The coffee shop lends cups from Kleen Hub, when becoming a partner and the (re-)distribution is handled by them, making sure that the coffee shops have the amount they always require. Both with the BYKOP and the Panter system, the coffee shops buy the needed number of cups from the system, and while BYKOP has a strategy in place for handling the redistribution, Panter has so far not decided how this is to be done.

A potential resistance that the circular systems face, based both on the parallels to Dansk Retursystem and statements from our users about how they use Dansk Retursystem (Appendix 3; Appendix 7), are the deposit collectors it might bring. These people would collect multiple cups, waiting to return the cups until they have reached a larger amount, rather than returning them closely after end use. Thereby, the cups end up leaving the otherwise closed loop for a time. This requires the providers of the cup systems to produce more cups for the coffee shops to lend/buy to fulfil the need of the system. This is not the idea behind this type of reusable system, as it will decrease the level of sustainability by using more resources (Røpke 1999, 400). We also observe that coffee shops are concerned about the case of having deposit collectors who would collect large amounts of cups at once, because these are associated with the people collecting bottles and cans on the streets. This group of people are not the users of the reusable cups, instead they return them to get money, which can be a worry for the coffee shops, if reusable coffee cups are becoming an integrated part of Dansk Retursystem alongside with the cans and bottles (Appendix 7).

On the other hand, the presence of the deposit collectors in the current return system ensures that bottles and cans that would otherwise be thrown out in the trash can are

collected and repurposed for the money. Thereby, it can be argued that the deposit collectors can be considered as important actors in the network of reusable coffee cups, as they could help to sustain the new system by remedying the potential risk of the customers not returning the coffee cups.

Despite the resistance, there is potential for more alliances in the making. When visiting Darcy Kaffe and learning more about their own system, it was mentioned that they had been contacted by Kleen Hub who asked them to become a partner in the Kleen Hub system. Darcy did not choose to become a part of Kleen Hub, because the manager of Darcy thought that the steel cup was too big. In relation to this, he explained that it does not fit their sizes of coffee, and particularly when people order an espresso, which as earlier mentioned, is a common resistance against the cup (Appendix 1; Appendix 7). The manager of Darcy expresses that he told Kleen Hub that they gladly would become a part of the system, if they introduce smaller cup sizes as well (Appendix 9).

Recognizing that the initial conditions for the system to function is not given, this type of resistance is negotiable in regard to the systems experimenting with sizing. This negotiation can therefore be the means to overcome the resistance that the system meets in the present time, creating a path for the visioned future and a succeeding reusable cup system (Garud et al 2010). In the interview with Kleen Hub in March, they already mentioned that they were aware about the issue of the size of the cup. Therefore, they were already planning to design new cups in other sizes, so they can meet the needs of different types of coffee shops. Furthermore, Kleen Hub mentioned that they from the early stage of the implementation of the system were aware of the issue of their cups not being able to stack. This exact issue would potentially lead to resistance among a bigger part of the coffee shops, if not already recognized, because the cups would require a lot of space for storing the cups (Appendix 8).

10.0 Unleashing the paths to the future

As our research shows, the practice of coffee drinking is a highly complex matter as it involves a lot of different types of actors who all have their own visions and different preferences. This means that there are a lot of different aspects that need to be taken into consideration. More specifically, it is crucial to prepare the path for a future which has the ability to connect rather than separate the different practices that are present in the networks which surround to-go coffee (Vikkelsø 2007, 303). Our data shows that all actors that we talked to are to some degree willing to adapt to more sustainable practices. That being said, they all have very different perspectives on how this should be done. One thing that most actors can agree on is the necessity to think in terms of convenience in order to enrol actors in a given network. The question is then how convenience can be ensured and integrated in a system, especially when the new circular system might differ a lot from the existing single-use cup system.

To explore the multiplicity of the practice, mapping all the approaches and understandings that co-exist, we ask the question in the words of Vikkelsø: *"How do these networks clash and interfere? Where are the tensions and the connections between them?"* (Vikkelsø 2007, 301). Through our analysis, we have described networks of coffee shops trying to introduce more sustainable options for their customers in terms of to-go coffee cups and how they differ. For some years now, the option of buying a branded thermo cup from a coffee shop has been known by many consumers, but the option of either borrowing or paying a deposit for a reusable cup is rather new. A few startups have been experimenting with testing different kinds of systems that are all inspired by the concept of circular economy, where the cups are kept within a loop of coffee cups as an opponent to the single-use coffee cups. Concurrently, some consumers already have the habit of bringing their own cup, when buying coffee in accordance with their climate awareness which is incorporated in their everyday practices, such as drinking coffee. These actors can be seen as having formed their own network in the sense that their practice of bringing their own cup is not affected by how the existing single-use cup system is functioning.

The interference between the networks happens in the moment that the coffee is purchased, as it is the time when the cup comes into play. How do the customers react if the barista reaches for the single-use cup as a default option without asking? How does the barista react to the customer handing them their own cup brought from home? Does the barista slow down the action of buying coffee, making it inconvenient, by offering the customer an alternative to the standard option of getting a single-use cup? There are plenty of questions and not all of them have a clear answer. Some of them might even have multiple answers. One could argue that in order for a change to happen, the coffee shops will need to train their baristas to be able to accomodate all options. When taking an order, the standard should be, as long as single-use cup is still an option, that the customer is asked which type of cup they prefer, to at least make them consider another option. If the customer

brings their own cup, it should be embraced. Or it could be inspired by Riccos' approach, creating an economic incentive both in the form of discount when bringing your own cup, or paying extra for the single-use cup, alongside with the act of planting trees to counteract the use of disposable cups.

10.1 Managing the environmental impacts of consumption

The tensions arise when moving from one system to another. Which actors should be the ones responsible for the evolution of phasing out single-use cups? Is it the users, the coffee shops, the initiators behind the circular systems, or should the change be based on policymaking from above? As mentioned in *7.0 Understanding consumption*, we subscribe to Shove's (2010) notion that sustainable change cannot be forced upon individuals only by expecting them to change their behavior. In the interviews with users, they express a wish to be more informed about the choice they are about to make, and that information should be more available both through the personnel at the coffee shops and visuals as posters (Appendix 2). As stated by Lymeus (2021), a common way of making customers adapt to a certain type of behavior is through nudging, which is a method that follows the framework of leading the users to make the "right" choice rather than changing the surrounding circumstances. His suggestion is to implement nudging strategies in the policy actions, which by Shove is argued to be putting the responsibility on the consumers in line with the framework of ABC (Shove 2010). In his work, different types of nudges are mentioned, among others the notion of refillability in relation to reusability as a term to create environmental, economic, and psychological impact. The argument is that the option to refill a branded cup creates a certain identity and status while an ongoing relationship between the coffee shop and customer is built (Lymeus 2021, 12). In contrast, we argue the need to move the responsibility away from the consumers in policy actions, and instead work towards making the ones providing unsustainable options such as single-use cups responsible for their environmental impact. Since Lymeus' study of nudging strategies is based on independent cup systems at specific coffee shops and he is focusing on brand loyalty, it also differs from the vision of a collective cup system across coffee shops and chains within a city that is the focus of our study.

Our fieldwork shows that initiators currently are providing circular systems which give the user the opportunity to make a more sustainable choice, but it is up to the consumer to decide which options to choose. Comparing this to the ABC framework, it is suggested that a consumer with a sustainable attitude, would behave accordingly, and thereby make the sustainable choice. Diving into our empirical work this does not seem to be the actual case. It is clear that convenience seems to be the main driving force for all users. Thus, performing the sustainable act is not necessarily invoked because of a sustainable mindset. Instead, we argue that it is essential to view the case as a heterogeneous network, where it is the interaction between actors, human as well as non-human, that is shaping the situation. The coffee shops and the circular systems will have to understand how the consumers

interact with the system in order to make adaptations that can contribute to the usage of the system. This leads back to the question about the placement of responsibility. On a general level, coffee shops have already been implementing sustainable actions on a smaller scale. For instance, coffee shops have been selling branded thermo cups, which can be considered as a step towards the reduction of single-use cups. However, the aim of it might have been to promote their brand. Looking at this matter from the perspective that Røpke (1999) offers about consumption of resources, the production of new objects, even though it might be branded as sustainable, is making the general situation less sustainable. The argument is that it leads to the consumption of even more resources. Assessing this with the waste management hierarchy in mind, it is preferred to reduce before even reusing objects. In line with this argument, one of the sustainable-oriented users states that the more we keep producing extra durable objects, it is difficult to keep the situation sustainable, because the more we start to produce more with the aim of implementing new systems, the sustainability will decrease (Appendix 4). Relating this to the case of personal thermo cups, the consumption needs to be considered. Given the fact that a consumer keeps buying new thermo cups and forgetting them at home, this might be an even less sustainable practice than buying a cup of coffee in a single-use cup. This exact point is just another example of how complex the case of shifting towards more sustainable practices is. Not only is it the material of the cup that needs to be evaluated in terms of sustainability, but the scale of production must be assessed as well.

10.2 The design of a circular system

This is leading to the possible designs of circular systems. Through our fieldwork we identify two main approaches to the structure of a circular system: a) a deposit system b) a borrowing system. Common for the two approaches is the need for finding a sufficient return system, in which the cups can be cleaned and redistributed. In the systems that are being used or/and tested at the moment, it is the partners of the system (e.g., partners of Kleen Hub) that need to have the facilities to handle this. Thereby, it is a question of capacity at the individual coffee shop, whether they can implement a circular system under the current circumstances. By circumstances, we refer to facilities to store the number of cups needed as well as washing equipment. A point stated in the analysis suggests that having to wait in line when returning the cup, can be perceived as an inconvenient experience, which might restrain customers from choosing the reusable cup again. Is it possible to overcome the resistance somehow? As presented in the literature review, Jiang et al (2020) proposes different collection modes. One collection mode is based on deliveries to collections centers, which can be compared to how the startups have thought of customers returning cups to coffee shops now. The other mode, which is rinsing the reusable container and delivering it back to a fixed location, is more similar to either having pick-up/return machines located all over the city. An example of a specific case could be how Dansk Retursystem is dealing with the logistics of picking up bottles from the supermarkets. If coffee shops should be able to

guarantee the customers not to wait in line when returning cups, this could be a solution that the circular systems should consider.

Another aspect of the design is the preferences of its users. The only circular system that officially is on the market is Kleen Hub, which is designed and developed in a quite specific way that might lead to the exclusion of some consumers because it is connected to a digital platform. The other option, which is newly launched on the market, is a return system such as the one New Loop (and BYKOP) is offering. This system is very similar to existing systems that most consumers are familiar with, such as Dansk Retursystem and the cup system in Tivoli. One of the disadvantages of this system is that the deposit of the cup is quite cheap, which potentially can lead to some of the same issues that Dansk Retursystem and the cup system in Tivoli is facing with the deposit collectors. In the case of a deposit system for reusable cups, we identify a risk of people collecting big amounts of cups in order to get the deposit. One informant mentions that he probably would bring the cup home every time, and when he had collected a lot, he would then exchange them for a new cup of coffee (Appendix 3). The concept of a circular system is to keep the cups within the loop to reduce the production of new cups. If the customers collect the cups, a lack of cups at the coffee shops will emerge. This can lead to additional production of cups, and thereby an increased consumption of resources, which in the end makes the system less sustainable. As mentioned above in *10.1 Managing the environmental impacts of consumption,* the level of sustainability decreases when additional cups need to be produced. Kleen Hub's approach to combat this problem is by lending out the cup through the app, and then requiring a fee if the cup is not returned, to enforce return. There is a risk that this approach might be faced with resistance towards it by customers. One user perceives this action as a scare campaign, because she imagines that she easily would forget to return the cup (Appendix 4).

10.3 Connections and tensions between actors

In our fieldwork we observed that the different initiators and coffee shops were testing different approaches. Some of them, such as Original Coffee, had experienced that their independent system of reusable cups did not work properly, and they had to shut down that system. According to the perspective of path creation, ideas are evaluated on a regular basis, identifying the non-efficient approaches. Even though these ideas might be discarded, they also play an important role in shaping ideas that survive over time (Garud and Karnøe 2001, 9). In the case of Original Coffee, the failure of their independent reusable cup system did not stop them from finding another path to implement a circular cup system. In the process of this, they have partnered up with New Loop, testing new cups. The case of Original Coffee and New Loop's collaboration is interesting, because their approach is quite different from Kleen Hub's approach. Kleen Hub has smoothened their path, gaining momentum in the network of to-go coffee in Copenhagen by creating alliances with a lot of actors. In contrast, we observe that New Loop has been creating alliances before launching their test of a circular system. From our observations, it seems like Kleen Hub and New Loop have had

two different strategies to create alliances in the network, and in relation to this, it is interesting to see which one will be the most successful approach.

The differences between the two initiators lies within how and when they have approached relevant actors. Kleen Hub's journey of implementing their circular cup system was launched in February where they in advance had created alliances with a few, but important, actors such as Coffee Collective and Plastic Change. Our understanding of their strategy is that they needed to enrol some of the most dominant actors in the network aiming for a sustainable and single-use free future, in order to be accepted by others in the network. What we have observed is that they were forming alliances on this path. In opposition to this, our observations of the path of New Loop have been slightly different. Their approach seems to be to strategically form alliances with different types of actors, both coffee shops and actors with relevant knowledge about the field with the aim of getting relevant insights and by that mobilizing themselves before starting the test phase of their system. As mentioned above, the test of New Loop is very new, and based on the way their system works, it seems like they have had the process of negotiation with other actors and identified potential resistance before launching the system. One example of this is shown by some of the choices that they have made about the design of the cup. New Loop provides two sizes of the cup which is one of the main resistances that other reusable cup systems have met both from the coffee shops and from the users (Appendix 9).

One path that the entrepreneurs behind Kleen Hub are trying to create is changing the current practice in multiple ways. First, the practice of buying a cup of coffee will in their system require the inclusion of the phone, in the sense that the rental of the cup would be managed by an app. According to the co-founder of Kleen Hub, they aim to gamificate the practice of buying coffee even further by making the users interact with the digital platform (Appendix 8). Kleen Hub has a very sustainable vision, and aims to nudge their users through the gamification features that they plan to develop for the app. This app functions as a kind of reward system. This feature is described by the Ellen MacArthur Foundation as a means for the business to build brand loyalty, which is also one of Lymeus' suggestions in relation to reusable cup systems (Ellen MacArthur Foundation 2019, 11; Lymeus 2021, 12). Another aspect is the design of the cup, which is made from stainless steel which is also a feature that differs from the single-use cup. Kleen Hub has made an active effort to create alliances with other actors in the field, especially the coffee shops which in particular are very important actors for Kleen Hub in order to ensure the future of their system. By creating these alliances with the coffee shops, Kleen Hub gets one step closer to their users, because they are dependent on the acceptance of the coffee shops. Thus, Kleen Hub is not able to reach the potential users of their system and digital platform without the collaboration with the coffee shops.

In relation to the future of Kleen Hub, it could be argued that they are very bound up on their own business model, where their mission of achieving success of the platform ranges higher than the vision of outphasing single-use packaging on a more universal level where the vision for the future is to move from a linear to a circular economy. What makes

Kleen Hub a strong actor in the network besides their alliances with relevant actors, is that they have had the financial resources to produce the cups of a high-quality material and had the competences to develop a digital platform. What is at risk for Kleen Hub in creating a path to their visioned future, is to miss out on mobilizing actors that deviate from their ideal partners, when they purposely leave out making alliances with these specific actors (Garud and Karnøe 2001, 11). There is also a chance that the spokespersons that Kleen Hub have negotiated with and reached agreements with, in terms of the owners of coffee shops, are not fully representative of the coffee shop they are speaking on behalf of. The translation process will potentially have to be repeated, considering other failed attempts to implement reusable coffee cups in the practice, creating a situation where the system is not adaptable to the practice of the coffee shop or that the customers are requesting something else, leading the owners to make different choices. Speaking in terms of resistance, there is a risk that such a strong actor as Kleen Hub, according to Vikkelsø might try to keep their key to their success and practices secret as a means to keep their power (Vikkelsø 2007, 308). Another actor that might start competing against Kleen Hub in their attempt to gain power, is New Loop as they have launched a test of their cups among a range of coffee shops. Additionally, they have applied for Innovationsfonden's Grand Solution programme for 11 million DKK, which can empower their role in the network if they are granted the funding (New Loop 2021).

One thing is how the initiators of the circular systems are handling the process of creating alliances and gaining momentum in the network, but the consumers play an important role in determining how the future of the to-go coffee cups are going to be. As the situation currently is, the consumers need to make an active choice in their to-go coffee practice, leaving the responsibility on the consumers, because it is up to them whether they choose the reusable cup. Thus, there is a need for an economic incentive or a feeling of accomplishment in order for the users to deselect the single-use cup. Thereby it depends on how the individual coffee shop is dealing with the case of introducing alternatives to the single-use cup.

10.4 Implementing a circular system

The future of the to-go coffee cups can go in many different directions, and through our interaction with the field we have mapped some of the opportunities. In relation to this, it is important to emphasize that the development is in a very early stage, where a lot of different actors are trying to influence the direction of the network. This exact situation can thereby lead to many possible paths, where some of them might co-exist. In this context, it is relevant to consider the alliances that the different actors are creating on their path to stabilize their position in the network and in relation to this, investigate the negotiations that they make.

In the months while we have been writing the thesis, we have observed the development of Kleen Hub and the expansion of their network. From each time we looked at their app new coffee shops appeared on their map in the app, which is indicating an

increasing number of allies. Talking to the coffee shops we also realized how much Kleen Hub was reaching out to potential partners, which has made them the prevalent option of offering reusable cup systems. As mentioned earlier, these potential partners have some quite specific requirements in common, which Kleen Hub also explained to us. Kleen Hub aims at getting partners with a very specific, discerning profile. They do not show interest in partnering up with coffee shops that are not placed within the network of this specific type of coffee shops. If they keep following this path, which seems to be the case, it will create a system that appeals to a very specific segment of users. In the case where they are the only ones offering a circular system, this would limit the possibilities of reaching a future of to-go coffee that has fully adapted to more sustainable practices, because it would leave out the coffee shops that are placed outside this specific network, such as Zaggis and Minas Kaffebar which have not implemented sustainable alternatives to the single-use coffee cup. Another factor that also has an influence on Kleen Hub being the dominating actor in the network is that because the consumers have not been introduced to other alternatives, it is leaving them with only one system available. Thus, the consumers have not had the opportunity to support another option, which potentially matched their preferences the most, until recently where New Loop started the test of their cups in different coffee shops.

We argue that a collective circular system for reusable coffee cups is needed, for two reasons: first, it would comply with the global aim of moving towards a circular economy, and secondly, because it could be a solution for coffee shops when dealing with the extended producer responsibility that takes effect from 2025. Most importantly, the circular system must be the default option in order to enrol the coffee shops, so it suits their practices of serving coffee to their customers, and through that, enrolling the users as well. But for this to happen, the institutional choices must be taken into consideration as well. As mentioned in the literature review, the Ellen MacArthur Foundation suggests that it is the businesses, such as the coffee shops (in this case), who hold the responsibility for the design and use of packaging, which is supporting the thought of a circular cup system. In continuation of this, they argue that governments need to take part in setting up the infrastructure for such a system (Ellen MacArthur Foundation "New Plastics Economy, Visions" 2021). This leads us to the role of the government in making regulations for single-use plastic. In *Beyond the ABC: climate change policy and theories of social change,* Shove warns about what she refers to as *the paradigm of 'ABC'* because according to her, it makes governments sustain the unsustainable economic institutions (Shove 2010, 1274). One theme that Shove draws on is the suggestion stating that:

"[…] radical innovations are those which redefine the rules of the game; which render previously important forms of competence redundant; and which reconfigure interpretations of value and significance. By implication, effective responses to climate change entail parallel processes of decay and the radical unmaking of unsustainability"
(Shove 2010, 1278)

This exact point about intervening the system of to-go cups in a radical manner rather than incremental is supporting the argument for why the change should happen in the form of a circular system of reusable cups instead of replacing the traditional single-use cups with biodegradable ones. A radical change in the practices leading to a more sustainable approach would potentially also have an influence on the transparency of it. One informant mentions that he is expecting a certain amount of transparency from the initiators behind the circular systems. By this, he expresses his doubts about whether the reusable cups are made from sustainable materials or not (Appendix 3). This also leads back to the choice of materials for the reusable cup, as certain requirements need to be met for the materials to be recycled for a food grade standard. If the material is not of such standard, the vision of converting to circular systems is not met, and eventually one could argue that the system has failed.

There are therefore certain expectations that both the coffee shops and systems will need to fulfill for the transition to succeed. The policymakers providing the extended producer responsibility could potentially help the coffee shops frame the adaptation of new systems or push them to consider other options than single-use packaging. In the Directive on packaging and packaging waste, The European Union mentions the importance of including the principles of a circular economy when dealing with packaging waste (European Union Law, 2018). However, it is not fully specified what role the circular economy should play in relation to the management of packaging waste. With this in mind, it must be acknowledged that the focus of the extended producer responsibility is not on reuse but recycling. This approach is in contrast to the principles of the waste management hierarchy presented in UNEP (2018)'s report: Instead of reducing waste by reusing existing products, the extended producer responsibility is suggesting creating a collective collection system for packaging with the purpose of recycling the materials into new products (Dansk Industri 2020b). This actor will potentially play a big role in defining the network, because of its strong relation to the governance of consumption and production. Nevertheless, this action promotes the idea of a collective effort of dealing with waste, which can be seen as a step towards a circular economy, and it might be up to the individual actor's interpretation of how to deal with the extended producer responsibility. Even though it is an important actor because of its shape as a legislation, its role in relation to the to-go coffee network has not been defined entirely yet. One case of this is how New Loop is promoting their system, suggesting that they can minimize coffee shops' expenses when the extended producer responsibility becomes effective in 2025 (New Loop, *n.d.*-a).

In practice, this law could be the all-important factor for whether a circular economy can be reached. If the extended producer responsibility manages to organize a network of collaborating actors around the case of establishing a circular system, it could lead to a sustainable to-go coffee practice that could help the weaker actors to become enrolled. On the other hand, if the extended producer responsibility fails to gain momentum in this network, it will leave a bigger pressure on the others to rise to the challenge. In the case that the extended producer responsibility fails, the practice of drinking coffee to-go will

potentially remain as it is: with a range of different actors, weak as strong ones, trying to make their way through by offering different types of reusable cup systems that co-exist. In such a case, it will be up to the individual coffee shop to choose what system they will subscribe to, but the risk is that less sustainability-oriented coffee shops will not be enrolled. Having that said, no matter what, the extended producer responsibility will, to some degree, hold all coffee shops accountable for their packaging waste. Regardless of the future of the extended producer responsibility, there are different paths to involving all actors in phasing out single-use cups.

However, it is still uncertain what the future brings. We have observed how the networks around the practice of drinking coffee to-go have evolved through the past months, but the vision of implementing a circular cup system is far from reached. All actors are still in a very early stage, experimenting with different options. The future will depend on how the networks will evolve, and which alliances that will persist. Even to the very end of this thesis, we have been observing how the network has been developing. This is leaving us with unanswered questions about how it will turn out. Will it be one dominant actor that rules the network or is it possible to combine different approaches in order to appeal to the most involved actors as possible? Will one system prevail and dominate the network or is it possible for the actors to co-evolve? How much influence does the preferences of the users have in deciding how the future of to-go cups are going to look?

11.0 Conclusion

Through our analysis we have identified a set of actors whose relations create overlapping and parallel networks around the to-go coffee practice in Copenhagen. The networks consist of users, coffee shops, cups, and systems for handling cups, both in the matter of reusables and single-use cups. The review of the field shows a network of NGOs, policy makers and other sustainable initiatives surrounding and constantly (re-)shaping and influencing the networks closely related to the practice of drinking coffee to-go.

Different theories try to embrace the problem of unsustainable consumption patterns, some of them suggesting that it is possible to nudge the consumer in the right direction, whereas others emphasize that the producers must be held responsible for the products they are selling. From our fieldwork, we can conclude that it is not possible to put the responsibility on the shoulders of the consumers. If a consumer can choose between two options, convenience will be the all-important factor determining the choice. Convenience will typically outweigh the matter of sustainability, if it is the choice between the familiar, single-use and a newly introduced, reusable cup. Even in cases where the consumer wishes to act more sustainable. Several of the informants expressed that they would accept the reusable cup if they did not have the other choice. Therefore, it is crucial to make the reusable cup the default option to reach the vision of involving all actors in phasing out single-use cups. A further aspect is designing a sufficient return system that accommodates the convenience of the consumers since many consumers are not willing to take an alternate route to return the cup.

Another important factor regarding the implementation of a reusable cup system, is the acceptance from coffee shops, because they can be considered users of the system, in line with the consumers. More specifically, the circular system has to meet the needs of the coffee shops, so the baristas' practice of serving coffee can continue. This implies that it must be a system that complies with their customers' wishes and the circular system has to fit the coffee shop's surroundings and facilities. Thus, it is important that the initiators of the circular systems are aware of these needs. They should think in terms of convenience for both the coffee shops they are trying to create alliances with as well as the consumers. Alliances are created through negotiations about size and design of the cup, whether the use of a reusable cup should involve a deposit or an app, and how the users should be introduced to new systems. We observe how the path is formed by these negotiations as temporal processes that are constituting the technological field of circular cup systems.

Moving from a linear to a circular economy requires great structural changes, which calls for involving all relevant actors. If moments of the translation process is not fulfilled, renegotiations will have to happen until mobilization is reached. Thus, the policymakers and succeeding with relevant policy actions play an essential role. We observe that one system is dominating the transition towards the visioned future right now, but simultaneously other actors are gaining momentum and slowly entering the market. One could call the

sustainability into question if several cup systems are developed, and some of them fail in being implemented. The case of failing cup systems will cause the waste of unused reusable cups. Thereby a decrease in the sustainability of the practice. Another threat to the sustainability of a circular system is the risk of consumers failing to return the cup. In this situation, the cups escape the loop, resulting in the demand for producing additional cups. Consequently, it must be considered how to avoid wasting resources on the path to a sustainable practice. When turning to circular systems of reusable cups, it is thereby important to think in terms of the waste management hierarchy, including the step of recycling when the reused product cannot be reused anymore to ensure the sustainability of the practice. The practice of drinking coffee to-go in Copenhagen and how different actors are trying to shape the network is a case that shows the complexity of shifting to new systems despite a common willingness and vision for a sustainable future.

12.0 Bibliography

Beliaikin, A. (2020, July 16). *red and white plastic cup on grey concrete floor* [Photograph]. Unsplash. https://unsplash.com/photos/JsB3j_d4Fnk (Frontpage picture)

BYKOP. *n.d*. Accessed April 30, 2021. https://www.bykop.dk/faq/

Callon, M. (1986). Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay. The Sociological Review, 32(1_suppl), 196–233. https://doi.org/10.1111/j.1467-954X.1984.tb00113.x

Danmarks Naturfredningsforening. (2021a). *Resultater for i år - Affaldsindsamlingen*. Affaldsindssamlingen. https://www.affaldsindsamlingen.dk/indtast-resultat/resultater-for-i-ar/

Danmarks Naturfredningsforening. (2021b, March). *Fra engangsemballage til genbrug Sådan bliver Danmark førende indenfor cirkulære forretningsmodeller*. Nordic Sustainability og PlanMiljø. https://www.dn.dk/media/82262/rapport_fra-engangsemballage-til-genbrug.pdf

Danmarks Naturfredningsforening. (2021c, April 14). *DN vil takeaway-svineri til livs*. https://www.dn.dk/nyheder/dn-vil-takeaway-svineri-til-livs/

Dansk Industri. *Ny handlingsplan for cirkulær økonomi sendt i høring*. (2020a, December 14). Ny handlingsplan for cirkulær økonomi sendt i høring - DI. https://www.danskindustri.dk/politik-og-analyser/di-mener/miljoenergi/nyheder-fra-miljo-og-klima/2020/12/ny-handlingsplan-for-cirkular-okonomi-sendt-i-horing/ Accessed April 8, 2021

Dansk Industri. *Er du klar til at tage ansvar for dit emballageaffald?*. (2020b, May 26). https://www.danskindustri.dk/politik-og-analyser/di-mener/miljoenergi/nyheder-fra-miljo-og-klima/2020/05/er-du-klar-til-at-tage-ansvar-for-dit-emballageaffald/ Accessed May 30, 2021

Dansk Kaffeinformation. (2021, March 11). *Corona har ændret danskernes kaffevaner* [Press release]. https://kaffeinfo.dk/wp-content/uploads/2021/03/corona-har-aendret-danskernes-kaffevaner.pdf

Dansk Kaffeinformation. (n.d.). *Kaffe i tal | Kaffeinfo*. Retrieved April 15, 2021, from https://kaffeinfo.dk/kaffeital/

Danske kaffevaner - Læs om vores vaner som danskere. (2020, November 16). Danmarksindekset.dk. https://danmarksindekset.dk/danske-kaffevaner/

Ellen MacArthur Foundation. (n.d.-a). *A circular economy for plastic in which it never becomes waste*. Retrieved May 30, 2021, from https://www.ellenmacarthurfoundation.org/our-work/activities/new-plastics-economy

Ellen MacArthur Foundation. (n.d.-b). *Plastics and the circular economy*. Retrieved May 3, 2021, from https://www.ellenmacarthurfoundation.org/explore/plastics-and-the-circular-economy

Ellen MacArthur Foundation. (2021). *A VISION OF A CIRCULAR ECONOMY FOR PLASTIC*. https://www.newplasticseconomy.org/assets/doc/npec-vision.pdf

Ellen MacArthur Foundation. (2019). *Reuse*. https://www.ellenmacarthurfoundation.org/assets/downloads/Reuse.pdf

Ellen MacArthur Foundation *The New Plastics Economy: Rethinking the future of plastics & catalysing action*. (2017). The Ellen MacArthur Foundation. https://www.ellenmacarthurfoundation.org/assets/downloads/publications/NPEC-Hybrid_English_22-11-17_Digital.pdf

Ellen MacArthur Foundation. (n.d). *What is a Circular Economy? | Ellen MacArthur Foundation*. Retrieved April 25, 2021, from https://www.ellenmacarthurfoundation.org/circular-economy/concept

European Commission. (n.d.). *First circular economy action plan*. Environment, European Commission. Retrieved April 8, 2021, from https://ec.europa.eu/environment/topics/circular-economy/first-circular-economy-action-plan_en

European Commission. (2019, July 2). *Single-use plastics*. Environment, European Commission. https://ec.europa.eu/environment/topics/plastics/single-use-plastics_en Accessed March 16, 2021

European Union. (2020, January 13). *Turning the tide on single-use plastics*. Publications Office of the EU. doi:10.2779/294711 https://op.europa.eu/en/publication-detail/-/publication/fbc6134e-367f-11ea-ba6e-01aa75ed71a1

European Union Law. (2018, May). *DIRECTIVE (EU) 2018/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste (Text with EEA relevance)*. European Union. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L0852&from=DA

European Union Law. (2019, June 12). *EUR-Lex - 32019L0904 - EN - EUR-Lex*. EUR-Lex. https://eur-lex.europa.eu/eli/dir/2019/904/oj

FreiburgCup - die umweltfreundliche Alternative zum Einwegbecher. (n.d.). FreiburgCup. Retrieved March 5, 2021, from https://freiburgcup.de

Garud, R., Kumaraswamy, A., & Karnøe, P. (2009). Path Dependence or Path Creation? *Journal of Management Studies, 47*(4), 760–774. https://doi.org/10.1111/j.1467-6486.2009.00914.x

Garud, R., & Karnøe, P. (2001). Path creation as a process of mindful deviation. *Path dependence and creation*, *138*.

Jespersen, A. P., Petersen, M. K., Ren, C., & Sandberg, M. (2012). Cultural analysis as intervention. *Science & Technology Studies*.

Jiang, X., Dong, M., He, Y., Shen, J., Jing, W., Yang, N., & Guo, X. (2020). *Research on the Design of and Preference for Collection Modes of Reusable Takeaway Containers to Promote Sustainable Consumption.* Int. J. Environ. Res. Public Health 2020, 17, 4764; doi:10.3390/ijerph17134764

Kleen Hub. *FAQ*. (n.d.). Retrieved March 14, 2021, from https://www.kleenhub.com/faq

Kleen Hub. (n.d.). *Return-system for coffee cups and food boxes.* Retrieved May 1, 2021, from https://www.kleenhub.com

Kvale, S. (2007). *Planning an interview study*. In Doing interviews (pp. 34-50). SAGE Publications, Ltd, doi:10.4135/9781849208963

Law, J. (1992). Notes on the theory of the actor-network: Ordering, strategy, and heterogeneity. *Systems Practice*, *5*(4), 379–393. https://doi.org/10.1007/bf01059830

Link, K. (2020, December 11). *The Massive Environmental Impact of Your Coffee Cup*. FoodPrint. https://foodprint.org/blog/environmental-impact-coffee-cup/

Lymeus, F. (2021) *NEXT STEPS: TACKLING PLASTIC LITTER. A Nudging Strategy for Reducing Consumption of Single-Use Disposable Cups.* PBM Sweden AB https://www.oneplanetnetwork.org/sites/default/files/seij8540-sle-nudging-report-210312.pdf

Mathison, S. (2011). "Document Analysis" in Encyclopedia of Evaluation. Sage Publications, Inc.

Minas Kaffebar. (n.d.-b). *Minas Kaffebar*. Retrieved May 14, 2021, from https://minaskaffebar.dk

Nielsen, H. F. (2021, February 23). *Coronapandemien skaber nye kaffevaner*. FØDEVAREFOKUS. https://www.fodevarefokus.dk/coronapandemien-skaber-nye-

kaffevaner/?fbclid=IwAR0Pmrm0rVrwT816DmcMoy6hSwU7XDrUMJLLbZyKYW3MFLwde
LKX288qpO0

New Loop. (n.d.). *Bliv andelshaver*. Retrieved May 22, 2021, from
https://www.thenewloop.com

New Loop (n.d.-a) *New loop - cirkulær emballage til takeaway*. (n.d.). Retrieved May 22, 2021,
from https://www.thenewloop.com

New Loop. (n.d.-b). *New Loops historie*. Retrieved May 18, 2021, from
https://www.thenewloop.com/new-loops-historie

New Loop. (2021). *Funding*. Retrieved June 1, 2021, from
https://www.thenewloop.com/funding

Niimi, M. & Lynch, T. (2017) *Sustainable Coffee Cup Drive – unpacking an initiative towards
eliminating Disposable Coffee Cups.* Scope: Learning & Teaching, 4, 2017

Original Coffee. (n.d.). *Original Coffee - Kaffebarer og webshop til hjemmebaristaen!* Retrieved
April 28, 2021, from https://originalcoffee.dk

Panter. *(n.d.). Panter - Et pantsystem for to-go kopper. Retrieved March 28, 2021, from
https://panter.dk*

Recycling. (n.d.). In *Britannica*. Britannica. Retrieved June 2, 2021, from
https://www.britannica.com/science/recycling

RECUP - das deutschlandweite Pfandsystem für Coffee-to-go. (2021, May 10). RECUP.
https://recup.de

Riccos. (n.d.). *KLIMA*. Retrieved April 22, 2021, from http://www.riccos.dk/new-page-1

Røpke, I. (1999). The dynamics of willingness to consume. *Ecological Economics*, *28*(3), 399–
420. https://doi.org/10.1016/s0921-8009(98)00107-4

Schroeder, P., Anggraeni, K., & Weber, U. (2018). The Relevance of Circular Economy
Practices to the Sustainable Development Goals. *Journal of Industrial Ecology*, *23*(1), 77–95.
https://doi.org/10.1111/jiec.12732

Shove, E. (2010). Beyond the ABC: Climate Change Policy and Theories of Social Change.
Environment and Planning A: Economy and Space, *42*(6), 1273–1285.
https://doi.org/10.1068/a42282

Spradley, J. P. (1980). Doing participant observation, *Participant Observation*, 53-62

Tucker, C. M. (2011). *Coffee Culture: Local Experiences, Global Connections*, 3-17. Taylor & Francis

UNEP (2018). SINGLE-USE PLASTICS: A Roadmap for Sustainability (Rev. ed., pp. vi; 6)

United Nations. (n.d.). *Home | Sustainable Development*. Retrieved May 30, 2021, from https://sdgs.un.org/#goal_section

Wermelin, L. (2020). *L 112 Forslag til lov om ændring af lov om miljøbeskyttelse. (Implementering af affaldsdirektivets minimumskrav til eksisterende udvidede producentansvarsordninger, indførelse af udvidet producentansvar for emballage og modernisering af indsamling og behandling af elektronikaffald).* Folketinget. https://www.ft.dk/samling/20191/lovforslag/l112/index.htm

Vikkelsø, S. (2007). Description as Intervention: Engagement and Resistance in Actor-Network Analyses. *Science as Culture*, *16*(3), 297–309. https://doi.org/10.1080/09505430701568701

13.0 Appendix list

Appendix 1: Interview with user
Appendix 2: Interview with user
Appendix 3: Interview with user
Appendix 4: Interview with user
Appendix 5: Interview with user
Appendix 6: Interview with initiator of a circular system
Appendix 7: Interview with initiator of a circular system
Appendix 8: Interview with initiator of a circular system
Appendix 9: Notes from observations in the field
Appendix 10: Illustration of reusable cups
Appendix 11: Interview guide for users
Appendix 12: Interview guide for initiators of circular systems