

On circular transitioning

An action repertoire for the BUCH



Master Thesis — Strategic Product Design

By Willem Adriaan Zwagers

de BUCH  TU Delft

“Knowledge is a treasure, but practice is the key to it.”

Lao Tzu



Colophon

Author

Willem Adriaan Zwagers — 4980034

willemzwagers@me.com

Master Thesis

MSc. Strategic Product Design

Faculty of Industrial Design Engineering

Delft University of Technology

Graduation Committee

Chair — Dr. **Ingrid J. Mulder**

Faculty of Industrial Design Engineering – Human-Centered Design – Design Conceptualization & Communication

Mentor — Prof. Dr. **Jo M.L. van Engelen**

Faculty of Industrial Design Engineering – Sustainable Design Engineering – Design for Sustainability

Organisation mentor — **Esther Keijser**

de BUCH – Senior Policy Officer Resources & Project leader Circular de BUCH

In collaboration with

de BUCH

Delft Design Lab – Participatory City Making

Delft University of Technology

july, 2020

Acknowledgements

In front of you is the thesis of my graduation project that was performed the past months. Without a single doubt, it is personally the hardest project I have ever finished. With the hard project also comes the rewarding end of having finalized such hard project. I could not have finished the graduation without the support of all my supervisors, friends, family and citizens in the BUCH. I would like to thank them within this chapter.

First of all, I would like to thank my supervisory team: Ingrid Mulder & Jo van Engelen. It has been a rollercoaster for all of us. I am very thankful for guiding me through the rough patches of that rollercoaster and teaching and supporting me. Ingrid, thank you so much for making me see that I am a designer, and that it is allowed for me to take the director role. Jo, thank you so much for the great mentorship in this rollercoaster. Thank you both for the advice and engagement in the final steps towards the finalisation of my graduation project.

Esther Keijser from the BUCH. Thank you for the inspirational and positive mindset that you continuously showed during our meetings. Also, the opportunistic mindset during the difficult process helped me to see those opportunities and chase them.

I would like to thank Fieke Thijssen (2020) for the collaboration during the first phase of this graduation project. It was very helpful in the beginning to collaborate and discuss our findings.

A special thank you to the people of the Participatory City Making Lab for initiating and running every two weeks meetings on participatory city making. It was very helpful to have discussions with a group of like-minded people on the topic of participatory city making.

Finally, I would like to thank my family and friends. Thank you for being there in the times I needed you the most. My parents a special thank you for the unconditional support and believing in my endeavours in this graduation project.

Thank you, Mike, for our discussions on the project and helping me out.

At last I would like to thank Anouk. Anouk you were there with and for me during the good and the less periods. It means a lot to me.

Willem

Executive Summary

Today our world is facing environmental challenges. The growth we have seen is not sustainable. Many resources are becoming depleted, and waste is a global issue. For accomplishing sustainable growth, the European Commission set the ambitious objective for achieving a circular economy in 2050. Rijkswaterstaat pushed this ambition even further. They have the ambition to become circular in 2030. The circular economy aims to achieve economic stability, social prosperity and environmental safeguarding by looping resources that were before regarded as waste, back into usage.

In the province Noord-Holland, the municipalities Bergen, Uitgeest, Castricum and Heiloo work together in the organization called 'de BUCH'. The BUCH has the ambition to be part of the leading municipalities in circular economy. For their transition, they questioned the 'Delft Design Lab Participatory City Making Lab' at the University of Technology Delft. The question asked was: how to change the norm behaviour of their citizens towards circular norm behaviour at a local level?

To answer this question, first the context was explored on the topics of waste, circular economy and behaviour change following secondary research methods. Operationalizing the circular ambitions at a local level is difficult. Within this thesis the ambitious question of the BUCH is researched by researching how the citizens in the BUCH can be facilitated to the transition towards a circular economy. This is researched by the use of an intervention on how citizens in the BUCH get rid of certain products, a competitor analysis on the competing opportunities for circular practices, a survey on the opportunities, capabilities and motivation of citizens in the BUCH, and multiple semi-structured in-depth interviews.

The key insight of the research is that a large proportion of the citizens in the BUCH is motivated to practice circular behavior. The opportunity to practice that behavior is however not yet in place, as the citizens experience not enough facilitations.

For behaviour change to be operationalized, various designs are made, evaluated, tested and further developed. While operationalizing these designs, there was a critical insight: a circular initiative network is missing that brings together the ambitious and motivated citizens in the BUCH. This resulted in the final design: De BUCH rond maken: Samen doen we het. This final design consists out of:

- A Circular Initiative Network administrator: This person is a dedicated employee from the municipality that functions and acts as the network administrator of circular initiatives in the BUCH. The person enables to establish novel relationships between people and groups of people, which catalyzes new value to emerge between those people.
- Initiative makers package: The package is a tool that any person in the BUCH can request or download. It contains the essential steps to easily explain a circular initiative idea from multiple important facets. The tool than helps to have conversations and discussions with other people, helping to operationalize the idea.
- Do together: Do together is a collaborating process that is critical to bring every person around the table. In order to catalyze this process it is key to follow certain principles and have a certain mindset. Also, the role that the Circular initiative network administrator takes in such collaborative effort is key.

The final design also contains a plan with the key actions to be implemented in order to facilitate the citizens in their transition towards a circular economy. A key action point in that plan is the communication towards the BUCH citizens, as having communication from multiple various sources will help in changing the norm behavior.

The design showed promising results in a creative session with initiative leaders and citizens from the BUCH municipalities. It is recommended that the final design is put further into a pilot for testing and development from the municipality. This to, while doing that together, operationalize the transition of the BUCH citizens towards a circular economy.

Table of contents

Acknowledgements	4
Executive Summary	5
1 Introduction	8
1.1 <i>Project context</i>	9
1.1.1 <i>Resource Depletion</i>	9
1.1.2 <i>Union in action</i>	10
1.1.3 <i>Local action</i>	10
1.2 <i>Project objective & approach</i>	12
1.2.1 <i>Project Goal</i>	12
1.2.2 <i>Project aim</i>	12
1.2.3 <i>Research Questions</i>	12
1.2.4 <i>Project Scope</i>	12
1.2.5 <i>Involved stakeholders</i>	13
1.2.6 <i>Project approach</i>	13
2 Context	14
2.1 <i>Waste</i>	15
2.2 <i>Circular Economy</i>	16
2.2.1 <i>From Linear to Circular Economy</i>	16
2.2.2 <i>Two core principle of Circular Economy</i>	17
2.2.3 <i>Operationalizing towards an circular economy</i>	20
2.2.4 <i>Circular Economy Literature gap</i>	20
2.3 <i>Behaviour change</i>	21
2.3.1 <i>COM-B framework</i>	22
2.4 <i>Most crucial insights</i>	23
3 Research & Design	24
3.1 <i>Problem statement</i>	25
3.1.1 <i>The BUCH geographical location</i>	25
3.1.2 <i>The BUCH as work organization</i>	26
3.1.3 <i>Participatory practices of the BUCH</i>	28

3.1.4	<i>The BUCH transition towards a Circular economy</i>	29
3.1.5	<i>Problem statement</i>	31
3.2	<i>Research on opportunities</i>	32
3.2.1	<i>Intervention 1.0</i>	32
3.2.2	<i>Competitor analysis – Current circular opportunities in the BUCH</i>	34
3.2.3	<i>Survey</i>	36
3.2.4	<i>Semi-structured in-depth interviews</i>	40
3.3	<i>Opportunities for Design</i>	41
3.3.1	<i>Insights</i>	41
3.3.2	<i>Central tension</i>	41
3.3.3	<i>Design principals</i>	42
3.3.4	<i>Conclusion for design opportunities</i>	42
3.4	<i>Designing</i>	43
3.4.1	<i>Development of 3 concepts</i>	43
3.4.2	<i>Development of most opportunistic design: de Schoorlse Ronde & refinements</i>	48
3.4.3	<i>Insights de Schoorlse ronde</i>	50
3.4.4	<i>Final insights</i>	50
3.5	<i>Final design: De BUCH rond maken: Samen doen we het.</i>	51
3.5.1	<i>De BUCH rond maken: Samen doen we het.</i>	51
3.5.2	<i>‘Actieplan’ – Plan of action (roadmap)</i>	61
3.5.3	<i>‘Laat zien’ – Communicate it</i>	63
4	Discussion & Recommendations	64
4.1	<i>Discussion</i>	65
4.2	<i>Recommendations</i>	66
5	Personal Reflection	68
	Bibliography	70
	Actie-repertoire: De BUCH rond maken: Samen doen we het	
	Appendices	

1 Introduction

This first chapter takes the reader along to the origin of the project. The context and relevant stakeholders are introduced. From there on it explains the research and design approach that is followed in this project.

1.1 Project context

“rien ne se perd, rien ne se crée, tout se transforme”
Antoine Lavoisier

The chemist Antoine Lavoisier encapsulated *the law of conservation of mass* in his quote very well: *nothing is lost, nothing is created, everything is transformed*". Following that law, it can be stated that all resources we use for our benefit, are transformed from one state to another. This happens in such a way that we can make use of that resource. Like mining coal from big to small pieces, turning it into gases so we can burn it for energy. Once used, it is transformed into another state like CO_2 , SO_2 , CH_4 and N_2O .

Humanity has discovered not only coal as a resource, but many more resources and their benefits. For instance uranium for nuclear power, oil as fuel for cars, trucks, boats and planes, coal for electricity and the steel production, natural gas for electricity and heat, minerals such as Iron ore and Lime for construction and industrial applications and phosphorus in the food sector, or commodities such as mercury for electrical products and streetlights, arsenic as doping agent in semiconductors, and antimony in alloys for batteries and cable sheathings. This increasing interest in resources also increased the interest to take out these resources from the earth.

1.1.1 Resource Depletion

These ‘taking resources out’ activities have pushed the global demands to a next stage. Global demands are increasing and expected to increase. To satisfy our current needs, a second earth is needed by 2030 (see Figure 1) (European Union, 2020). The once thought infinite resources before mentioned became finite. As a result these are becoming increasingly scarce, expensive and depleted (e.g. Dezeen, 2017; The Guardian, 2011) (Meadows et al., 1972). The resources Uranium, Coal, Natural gas, oil, minerals and commodities are among many others depleting at an alarming rate (Cooper et al., 2011; Delgado, 2013; Ghosh & Prelas, 2009).

On top of resource scarcity is the abundance of waste materials resulting from using these resources. The waste products CO_2 , SO_2 , CH_4 and N_2O for instance fill the air and trap heat from the sun into the earth’s atmosphere (EPA, 2020). This abundance has severe effects such as climate change and pollution on earth. These in turn harm humanity and the environment in which we live. The current model of only taking these resources out has been questioned and pushed forward the need for a new model.



Figure 1: We need a second earth by 2030 according to (European Union, 2020)

1.1.2 Union in action

In 2016 the European Union ratified the Paris-agreement. This agreement “sets out a global framework to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C.” (EU, 2016) To accomplish, the ministry of ‘economic affairs and climate’ of the Dutch government (Rijksoverheid), introduced the Klimaatwet. Among others, the Klimaatwet states that we have to be energy neutral in terms of emission by 2050 (Rijksoverheid, 2019). These institutionalized events have put pressure on, among others, local regions, municipalities and ministries in the Netherlands in the form of policies and laws (Rijksoverheid, 2019).

The green deal has pushed the union even further for sustainable growth (European Commission, 2019). One of the building blocks for doing is the new Circular economy action plan (European Commission, 2020). The European Commission has stated the long-term objective towards this circular economy. In such circular economy products and resources that were before regarded as waste, are pushed back into use. Materials should be recycled, reused, or prevented by adding loops to the existing system. This to achieve economic stability, social prosperity and environmental safeguarding (Dri et al., 2018; European Commission, 2014, 2015; Gancheva et al., 2018).

1.1.3 Local action

In alignment, the Dutch Rijkswaterstaat (RWS), part of the ministry of infrastructure and water management – Directorate-General for Public Works and Water Management – has pushed their agenda to work circular in 2030, instead of the proposed 2050 (Rijkswaterstaat, 2020). Their role is the practical execution of public works and watermanagement. In the summer of 2019, they opened a competition for municipalities on “Who can propose a good plan for developing a Circular Centrum in their municipality?” (Rijkswaterstaat, 2019). This opened possibilities for the 10 best plans of the most circular ambitious municipalities to be funded by RWS.

In the region Noord-Kennemerland in the province of Noord-Holland, the four municipalities Bergen, Uitgeest, Castricum & Heilo work together in the organization called ‘de BUCH’. Each municipality operates independently (having their own board of directors, way of working and college) but have one civil service organization, de BUCH. Within these municipalities, 101.000 people live in the towns: Schoorl, Bergen, Egmond, Heilo, Limmen, Akersloot, Castricum and Uitgeest (de BUCH, 2020; Gemeente Bergen, 2020). The BUCH presented their plan at the Rijkswaterstaat and won the competition, belonging to the 10 best plans for most circular ambitious municipalities.

The BUCH aims for accomplishing a circular economy by having the Circular Centrum project (CC) in combination with their collaborative municipal waste management system at its core. For the CC project a collaboration was set between the ‘Delft Design Lab Participatory City Making Lab’ at Industrial Design Engineering Faculty of the TU Delft (TU Delft) and the BUCH, see Figure 2 for an stakeholder overview. This collaboration was set to work on the role of participatory city making in the circular economy transition of the BUCH. The first phase, 2019 - 2020, of the CC project consisted of 16 Final Bachelor Projects. These projects were focussed on what products can be made out of the waste materials from the local recycle centres. In the second phase, beginning of 2020 to summer 2020, the main focus of the collaborative effort is to make this CC inclusive to its surrounding actors. This graduation project is one of the four proposed research directions. The central question that was put forward by the BUCH and the Delft Design Lab Participatory City Making Lab was:

“How can the BUCH change the norm-behaviour of their citizens towards circular norm-behaviour at a local level, and is this different in different neighbourhoods?”

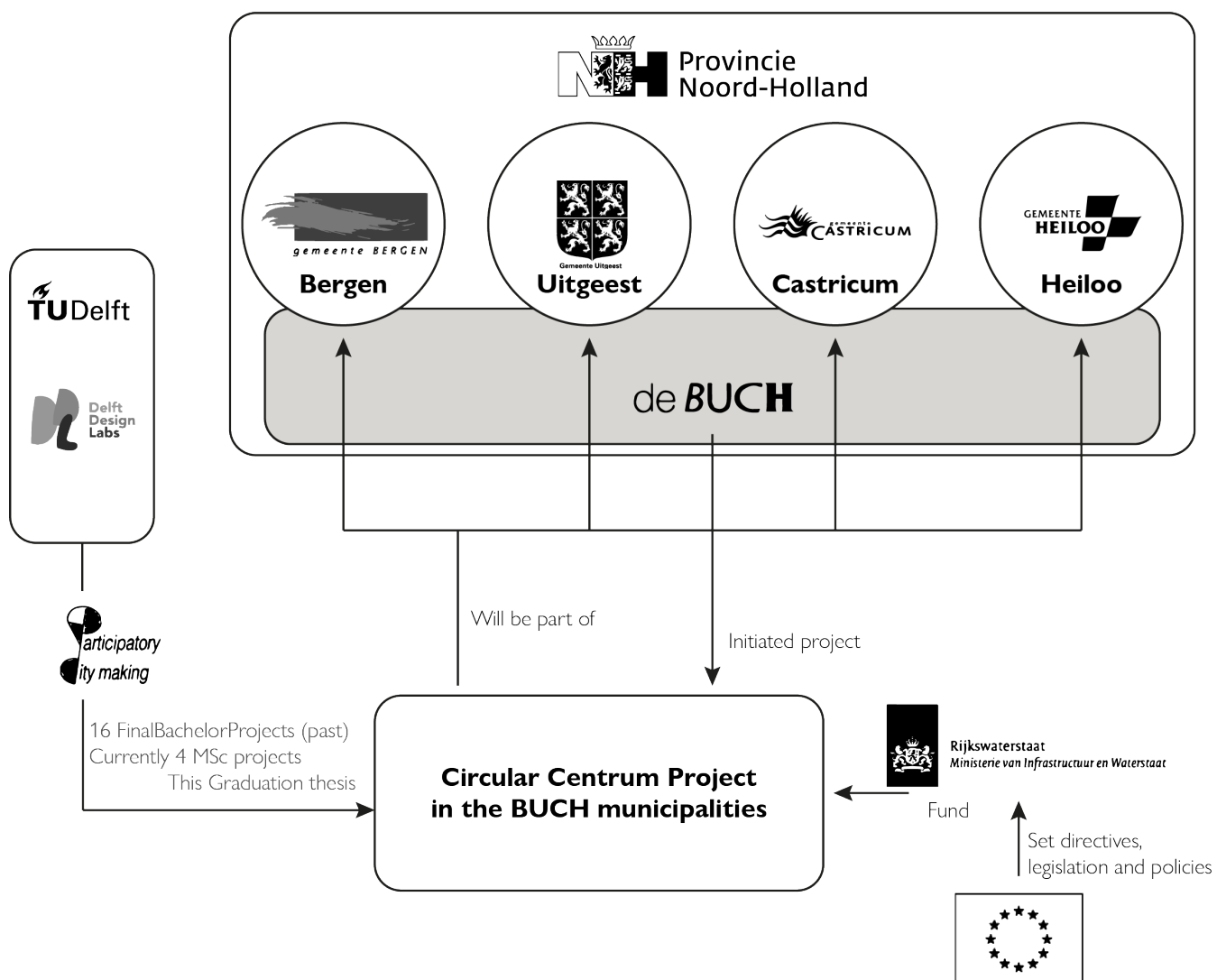


Figure 2: Stakeholder overview

1.2 Project objective & approach

1.2.1 Project Goal

The BUCH aims to transition their municipalities following a circular economy. The CC project and resource policy plans are their strategy to do so. However, to transition the regime – local citizens, businesses, municipalities or other actors – is a challenge. This due to the (required) change of cultural and social norms towards a circular and sustainable mindset or attitude of 101000 people. As they will need to practice circular behaviour for making a circular economy happening. This makes the scale of the graduation project rather large. Within a relatively short timeframe of 100 days this seems nearly impossible. This limitation of the graduation project makes ‘the transition’ an aim rather than a goal. Hence the goal of the project is to design for a strategy towards that aim. Through this approach it can be researched what the most strategical and fruitful pathway is towards changing the 101000 people in the BUCH. As both Rijkswaterstaat and the BUCH are eager to have impact (see for instance appendix A.1 & A.2), showing them how they can have impact on a large scale, brings a threefold opportunity: 1) having set the circular economy transition of the 101000 people in the BUCH in motion, 2) providing the BUCH with relevant knowledge and practices on how to strengthen their circular economy transition, 3) develop a practical design case for the design community, and 4) inspiring government, politicians and municipalities the impact design can have in addressing such complex phenomena.

1.2.2 Project aim

The question from the BUCH was:

How can the BUCH change the norm-behaviour of their citizens towards circular norm-behaviour at a local level, and is this different in different neighbourhoods?

This question resulted in the central aim of this thesis: **the exploration for, and development of, a thinking and doing frame for the BUCH municipalities to increase the circular behaviour of its citizens.** This to bridge the policy top-down and locally bottom-up approaches of the BUCH and the citizens, for a workable and coherent transition to happen. By the use of strategic design, capacity is built for seeing the relevance of participatory approach to policy making and policy doing. This is done by the use of a design through research approach, researching the possibilities for increasing circular behaviour.

1.2.3 Research Questions

The main gap that this thesis tries to bridge is how to go from **policy making towards actionable advice** for the BUCH. For that it is looked at what the role of the citizens and their practices inside the BUCH, are or can be for practicing a Circular Economy. For that the main research question and its sub questions are:

How can the citizens in the BUCH be facilitated to the transition towards a circular economy?

- a. *How is circular behaviour defined from a theoretical perspective?*
- b. *How could the current norm behaviour of citizens in the BUCH in the context of circular economy be defined?*
- c. *What norm behaviour could have potential for transitioning towards a circular one?*

Following these research questions, the design goal is:

How to support the BUCH in their enactment to its citizens for changing their behaviour for adopting circular economy?

1.2.4 Project Scope

Within this graduation project, various factors play a key role in determining the scope of this project. The BUCH is the collaborative partner to whom this thesis applies. For that the thesis' outcome, both design and research, are addressed for the BUCH. Whilst that is the central aim, the thesis is also written for further knowledge accumulation outside the BUCH. This for a wider knowledge dissemination on how to go from policy making towards action. This to provide municipalities with knowledge on how to accomplish their policies by the use of interventions in a more effective and efficient manner, in their transition towards a circular municipality.

Waste and circular economy can be researched on many various levels. As this thesis is mainly concerned with behaviour at waste streams, this area is most in depth researched. Other levels are less in-depth explored but slightly touched upon.

1.2.5 Involved stakeholders

The most prominent and direct stakeholders involved in this graduation are the work organisation de BUCH and the supervisory team by TU Delft. Other critical stakeholders are the citizens in the BUCH, local entrepreneurs & business owners, civil servants and community workers. The research is empirically grounded in semi-structured in-depth interviews with those critical stakeholders, multiple informal conversations and various visits.

1.2.6 Project approach

First the context was explored in the topics of Waste, Circular Economy and Behaviour change. This context was explored by the use of secondary research methods in which secondary information was obtained from various relevant and scientific sources. After the context exploration, 5 steps were followed to design for the design goal. The following steps were followed: Problem statement, Research on opportunities, Opportunities for design, Designing, and Final design. The steps are explained below.

Step 1: Problem statement

First the context of the BUCH was explored as the geographical location and as the organization, as it refers to four municipalities and a work organization. This was explored in relation to the posed research questions and made use of a secondary research method to find secondary information on the BUCH, both as a geographical location and organization. Also, in-depth interviews and meetings were conducted and attended to deepen the knowledge on the context of the BUCH.

Step 2: Research on opportunities

In order to gain grip on what the opportunities could be for the posed research question, the opportunities were researched. These opportunities were researched by the use of the following research methods:

Intervention 1.0: The first research method was an intervention. In the city centrum of Heiloo, 41 citizens were confronted on how they would get rid of three different products that were presented. During the confrontation an interview guide was used to probe structurally into the reasoning why they choose a certain way of doing that. This intervention was performed to gain insight into the norm experience and behavior of citizens in the BUCH and served as a first exploration of the project context.

Competitor analysis: A competitor analysis was performed on the competing opportunities for citizens in the BUCH for obtaining, using and getting rid of products. This to investigate the opportunities in the BUCH to practice circular behaviour.

Survey: A survey was designed to research the experienced opportunities, capabilities and motivation of and for citizens in the BUCH to practice circular behaviour. In that survey a questionnaire was constructed from relevant circular economy theory and behaviour change theory. A total of 43 respondents could be used in the descriptive analysis of the data from the questionnaire.

Semi-structured in-depth interviews: To explore and to deepen the research of the other research methods, a total of 15 in-depth interviews were conducted following the semi-structured interview approach as suggested by Patton (2002).

These interviews were performed to gain rich data on the experiences and knowledge of the relevant interviewees. This to serve as empirical evidence to conceptualize and design with.

Step 3: Opportunities for design

The results of the research were interpreted and synthesized. They were used in creative brainstorm sessions to explore the design space for opportunities for transitioning from no circular behaviour towards circular behaviour. These sessions resulted in multiple key insights, a central tension, design principles and the belonging opportunities for design. These served as empirical evidence to guide and support the conceptualization and designing for the design goal of this thesis.

Step 4: Designing

For the opportunities for design, 15 concepts were conceptualized by the use of an individual brainstorm session and were evaluated with the vALUe framework. This to materializing and making the opportunity spaces tangible.

To develop richness of the design space for the final design, three concepts situated in different contexts were further developed. This approach was taken to gain a rich volume of information that fosters the likelihood to capture the interdependencies and interconnections between the locally different contexts in the BUCH (Kersten, 2020). Resulting in an enhanced richness in the final design space. The concepts were developed by and with insights from semi-structured in-depth interviews with citizens in those different local contexts. This resulted in the three concepts: De BUCH dealt, De opknopworkshop, and De Schoorlse Ronde.

Multiple semi-structured interviews, context exploration and the competitor analysis indicated the De Schoorlse Ronde as the most promising design for further development. For that reason, De Schoorlse Ronde was chosen for further testing and development as means for further researching the design goal and enhancing the richness in the final design space. This resulted in critical insights that captured interdependencies and interconnections between the different contexts in the BUCH (Kersten, 2020). These were used in the further development of the final design.

Step 5: Final design

The final design serves as an adaptive architecture that is robust in the multiple different local contexts in the BUCH (Kersten, 2020, pp. 225-231). Based on the preliminary context review, an additional literature exploration, multiple semi-structured in-depth interviews and the research results, the final concept was designed: De BUCH rond maken: Samen doen we het. The design consists out of the three main components: 1) the circular initiative network administrator, 2) the Initiative makers package, 3) and do together. Included is a communication plan and plan of action. The concept was evaluated by the use of a creative session to assess its desirability by the citizens of the BUCH.

2 Context

This chapter contains a concise explanation of the topics waste, circular economy and behaviour change in relation to this thesis. It ends with a short overview of the most crucial insights.

Being acquainted with the thesis' project context and approach, the first phase will be explained in this chapter. The first phase was to become knowledgeable about and acquainted with the relating topics of Waste, Circular Economy and Behaviour. These topics are explored as the BUCH wants to transition towards a circular economy for reducing their Municipal Solid Waste by the use of a change in the norm behaviour. The collection of this information was done through a secondary research method. The secondary information obtained can be distinguished between secondary data (raw data obtained in various studies) and secondary sources (published summaries of these data) (Stewart & Kamins, 1993). Therefore, this context chapter contains secondary information that was obtained by the research of relevant peer-reviewed articles, official governmental documents, governmental reports, business reports, news, blog posts, internal presentations, internal reports, conference proceeding papers, (scientifically based) books, websites by the internet, organizational reports and online databases. The approach for finding secondary information was sequential and emergent driven (Patton, 2014; Vaca, 2018). For an in-depth exploration of the context review, see appendix B.

2.1 Waste

Translating the objectives as stated in the 7th Environmental Action Plan (see appendix B.1) (EAP) and applying them into practical municipal activities is not easy. Both EAP and Waste Framework Directive are top-down measures that ask for certain results, but the 'know-how' is lacking (Gancheva et al., 2018). This because it is acknowledged that the 'practical and real solutions' to achieve the objectives differ per neighbourhood, municipality, region or country (European Commission, 2017). Something that works for a community in the Pyrenees would not work in the City of Amsterdam, and vice versa. This makes it very hard or impossible to generalize a solution to a generic and global form. These solutions are rather context specific (see for instance: European Commission, 2017b; Gancheva et al., 2018). Various practical strategies were explained during the conference of the European Commission in 2017: **Municipal waste management and waste prevention** (European Commission, 2017). This to shed light on practices to inspire municipalities.

Martikainen (2017) explains various strategies by giving various examples such as: In Copenhagen by greening the public procurement, transforming all food in the canteen towards organic food. The development of a smartphone application in Aosta Valley informing on seasonal availability of food, how to store food, how to use leftovers, etc. Or the example of the Municipality of Jaraczewo from the Wielkopolska region in Poland. The inhabitants and the food bank worked together to have surplus food distributed. Schaar (2017), another speaker, presented on their strategies in the Brussels region. They went in 2015 from "waste prevention" to the "zero-waste lifestyle" and promoted this lifestyle. Making the zero-waste lifestyle 'trendy'. Also, they promoted various pilots that would be in compliance with this zero-waste lifestyle and organized zero-waste events. Or as Winter (2017) explains, providing guidelines and instructions on how to build local or individual household composting facilities.

The overarching trend that is central in these examples is the context-dependency of the intervention. One intervention integrates very well within a specific context, but not at all in another. To those contexts belong as primary actor, the citizens. They make the practices in that context, hence to them the intervention should fit (Hobson, 2019). Making the intervention actor depend. It are the citizens with their practices that make the municipal wished for EAP or WFD compliance come true. It can be argued that Intervening in their current practices is a better target for interventions for sustainability policies as opposed to behaviour change or technical innovation alone (Spurling et al., 2013). These practices are context and actor specific.

Closing the loop for a circular economy is the EU top-down objective (European Commission, 2015). Reusing and recycling must be practiced and become the norm. Though it is necessary for 'closing the loop', that the local waste management systems need to improve and go beyond current practices. Hence, going from the legislative EU-level to a local level is key in enabling such a transition.

As in alignment with Gancheva et al. (2018) (recommendations for 8th EAP), this clearly shows us the importance of proceeding to be in line with the EU directives to do that locally. No region and or municipality is the same, and thus ask for various strategies (for more in-depth information and overviews on best practices see appendix B1.2 – B1.7). As stated in the European Commission's report: *Best Environmental Management Practice for the Waste Management Sector*:

"The management of waste at local level plays a key role in the ability of communities to use resources efficiently and make progress towards achieving a more circular economy." – (Dri et al., 2018)

2.2 Circular Economy

2.2.1 From Linear to Circular Economy

Linear economy is the traditional way for economies, following a take-make-waste plan. The key issue of the linear economy model is that it has a focus and is reliant only on extracting natural resources and producing it for usage. As explained before, one world does not have enough natural resources to continue this trajectory of only 'taking', and not 'paying'. This trajectory surpasses the planetary boundaries (Cooper et al., 2011; Delgado, 2013; Dezeen, 2017; Estes et al., 2011; European Union, 2020; Ghosh & Prelas, 2009; Meadows et al., 1972; The Guardian, 2011). Besides not being sustainable for our environment, it is also devastating for our economy (Gordon, 1954; Lampert, 2019). Such as the GDP dependency by the fish industry that accounts for around 5% in coastal areas (NOEP, 2016) that likely will decrease due to over-fishing. *No fish, no fishing, no economy.*

The results of such LE are soil degradation, water pollution, air pollution, global warming, climate change, coal sector pressures, petroleum sector pressures, to name a few. These results and pressures lead to fatal injuries and disease to humans, both individual as society, wars, social injustice, economic crises, famine, extinction of wildlife, environmental disasters, death, crime, loss of education, to name a few... (Carson, 1962; Estes et al., 2011;

Gotanda et al., 2017; Lampert, 2019; NOEP, 2016; PSF, 2019; Sillanpää & Ncibi, 2019b).

Circular Economy (CE) is an emergent reliable alternative economic concept from various schools of thought that got momentum around 1970 (for an elaborated version on the origins see appendix B2.1) (Ellen MacArthur Foundation, 2017a; Sillanpää & Ncibi, 2019a). CE looks beyond our current Linear Economy (LE) take-make-waste model (Ellen MacArthur Foundation, 2017a; Sillanpää & Ncibi, 2019a). It aims to "redefine growth, focusing on positive society-wide benefits" promoting clean growth (Ellen MacArthur Foundation, 2017b; McKinsey, 2016). According to the Ellen MacArthur Foundation (2017b) it is based on three principles: 1) Design out waste and pollution, 2) Keep products and materials in use, and 3) Regenerate natural systems. Within the Linear economy there is no looping back of used products/services into the value chain. The output of the usage is into waste, which is not seen as valuable. When we go towards a circular economy we loop the waste made by usage back into the system of value creation (Sillanpää & Ncibi, 2019a). This to retain value of the used natural resource over its lifetime. To make these concepts and their distinction clearly, see Figure 3 for an illustration of Linear Economy towards Circular Economy.

LINEAR ECONOMY

CIRCULAR ECONOMY

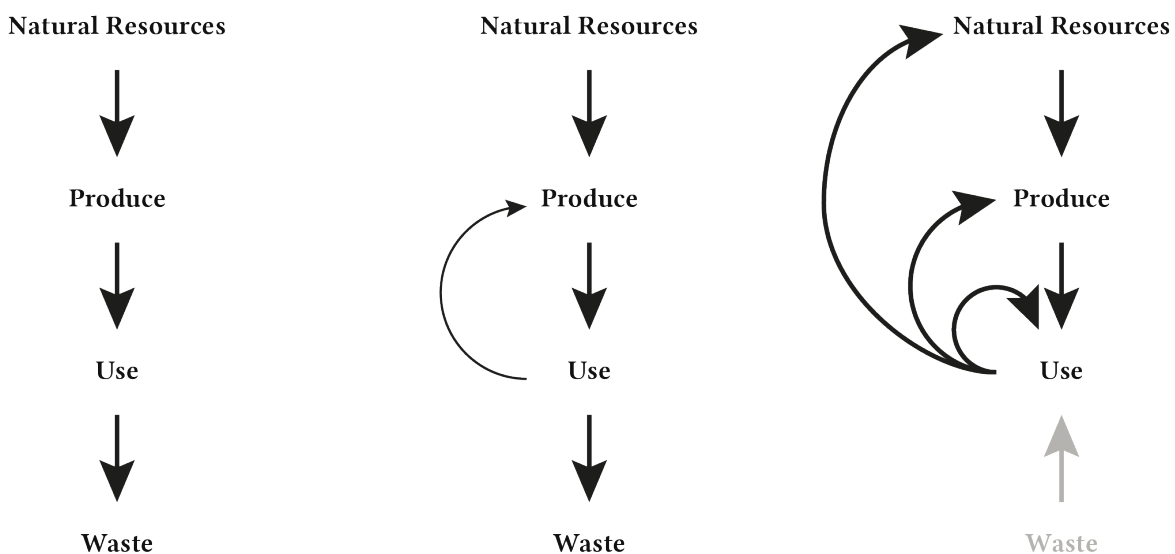


Figure 3: From Linear economy to Circular economy, adopted from (Raadbergen, 2018; Rijksoverheid, 2016)

2.2.2 Two core principles of Circular Economy

Circular economy is hard to define in a single setting due to its transdisciplinary origin and nature. Making it hard to constitute a widespread agreement on what CE holds (Sillanpää & Ncibi, 2019a) (for an overview of various definitions and approaches to CE see appendix B2.2). Defining CE is however critical as policies, legislations and development strategies will be based upon that definition (Sillanpää & Ncibi, 2019a). The definition of Kirchherr et al. (2017) was followed due to its breadth and clarity in analysis **and** on top due to its purpose to serve as an agreed basis for further knowledge accumulation. Two core principles lay within the definition of CE, these are the 1) R-framework and 2) Systems perspective. First the definition is given, then the two core principles are explained in the following pages.

The definition of circular economy is:

“An economic system that replaces the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations. It is enabled by novel business models and responsible consumers.”
(Kirchherr et al., 2017)

R-frameworks are related to the “how-to” of CE. These range from a 3R to a 9R-framework. The 4R is at the core of the Waste Framework Directive (WFD) of the European Union (European Commission, 2008). The 4R that are at the core of the WFD stand for: Prevention, preparing for Reuse, Recycling, and Recovery. Only after those comes the disposal of waste (European Commission, 2008). To extension of this 4R framework, Potting, Hekkert, Worrell, & Hanemaaijer (2017) made the 9R framework. These stand for, in order of most circular to linear, : Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, and Recover. As mentioned by Kirchherr et al. (2017) it is important to introduce a waste-hierarchy. This because businesses are otherwise inclined to make rather small steps towards CE only to say that they are part of it (Kirchherr et al., 2017). As depicted in Figure 4, adopted from Potting et al. (2017), this clearly illustrates that the higher you go up the R-framework, RO (refuse/rethink/reduce), the more circular you become, and so reach a CE.

For higher solutions, that is to say higher in the R-framework, more innovation in product design is needed. This means that the products designed for Re-use require more innovation than products designed for recycling.

Another aspect is that when higher solutions are required the more socio-institutional change is required. Socio-institutional has its focus in institutions, agency, power analysis of networks, social innovation and governance (Loorbach et al., 2017). Being situated in the disciplines of sociology, governance, policy, economics, geography and political science (Loorbach et al., 2017). The 9R framework shows us the strength of compliance with CE for each R. The higher up, the higher the compliance, and vice versa. CE questions our widely used written and unwritten rules, customs and beliefs (Potting et al., 2017). Our current socio-institutional system. This results that the higher we go up in the 9R ladder, the more circular, the more radical socio-institutional change is needed. It asks for a more radical and profound change in our normative frameworks, cognitive structures, schemas, scripts or mental models (Potting et al., 2017; Snow & lii, 1993).

The last aspect for higher solutions is the need for innovations in revenue models. As such one can think of selling a service as opposed to a product, like shared e-scooters (see for instance: Felyx, 2020). In these revenue models the user only pays for the time they drive a scooter. When they park the scooter, payments are stopped. In this way the revenue model is innovated. In relation to the ordinary sense of one buying a scooter, the user now buys ‘drive time’.

Systems perspective has its roots already early in the writings of CE (Kirchherr et al., 2017). Hence the 3 stages earlier described explained the influence of Silent Spring, which is written from an ecological perspective (Carson, 1962). Such ecological perspective can be defined as a system (Buchanan, 2019, p. 98). For CE to happen it is opted to need a fundamental shift in its system as opposed to merely incremental steps of the current system (Kirchherr et al., 2017). Therefore a systems perspective is needed to provide ideas for the macroeconomic levels as well (Geisendorf & Pietrulla, 2018). The three levels that can be interpreted are: Macro, Meso, and Micro. The macro level highlights the composition and structure of the entire economy. The meso level is also called the regional level. It has the focus on eco-industrial parks as systems in which resources can flow through multiple value chains (loops in loops, loops for other loops etc). The micro level highlights the product, individual enterprises, material sourcing, end of life and consumers. (see for an overview and details: Geisendorf & Pietrulla, 2018; Ghisellini, Cialani, & Ulgiati, 2016; Kirchherr et al., 2017).

In an interview with Ellen MacArthur she describes CE as being a complex systemic phenomenon, referring back to her experience when sailing:

“I saw that I was a part of this big system. Everything in that big system is interconnected. Did you know that when the water temperature changes by two degrees, the wind speed changes, and the wind direction will change? It takes years to understand how the water temperature change affects the wind speed. That understanding of interrelated elements is very useful for the circular economy. Because it’s the same — it’s incredibly complex, but everything is interconnected.” (Gong & Whelton, 2019)

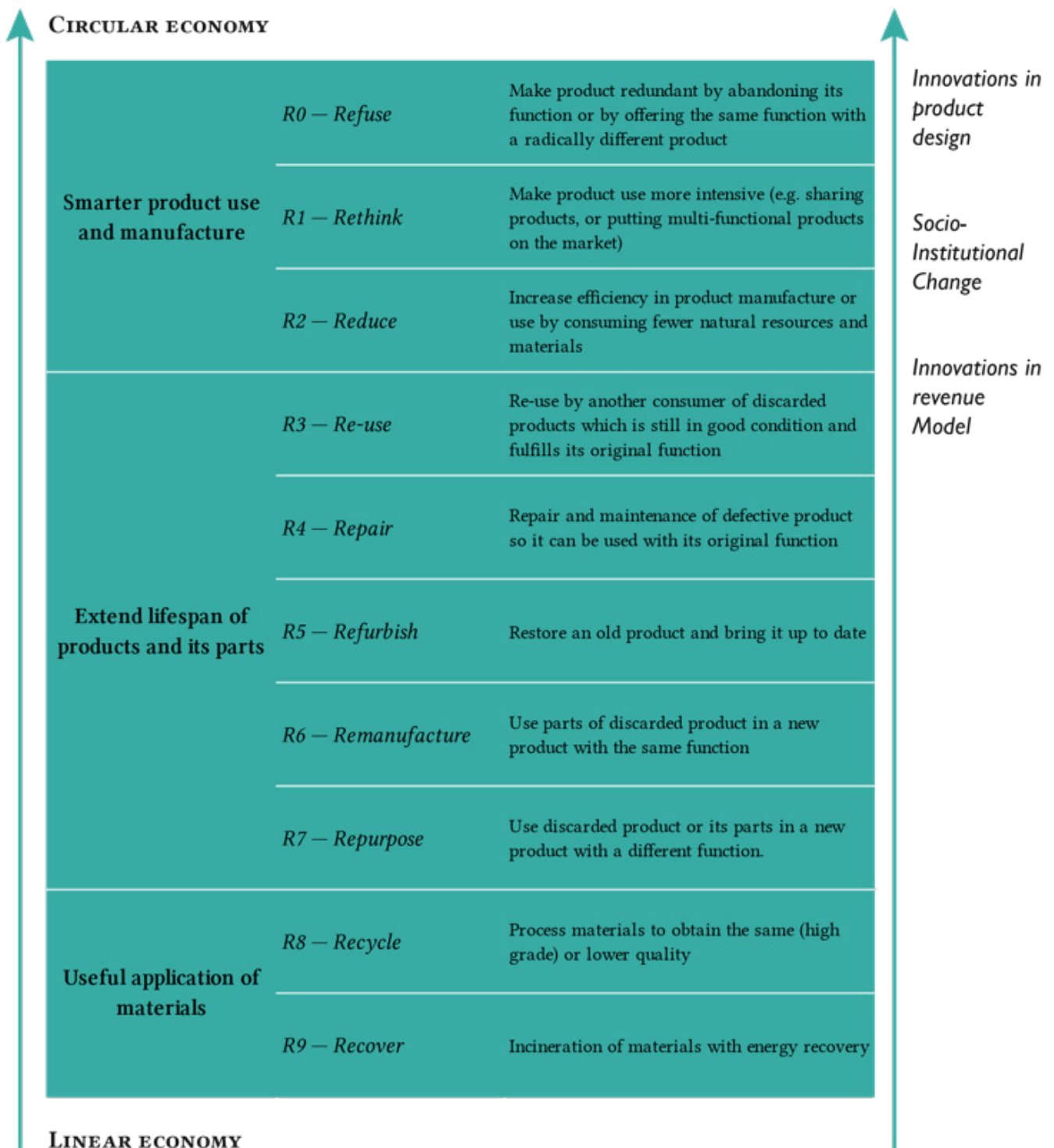


Figure 4: The 9R framework Adapted from Pointing et al. (2017)

2.2.3 Operationalizing towards an circular economy

Despite the impact circular economy can have (see appendix B2.3), due to no widespread agreements of what CE is and holds, developing, adopting or practicing it, is rather difficult. For cities this is even more difficult (Ouillon et al., 2017). Two perspectives are key in understanding how a city can approach CE adoption. Either by top down policies, government and management or bottom up innovative grass roots, individuals and groups citizen-driven innovation (Steiner et al., 2015). The first requires the embracement of the socio-institutional system and might lead to backlashes or negative attitudes (Hobson, 2019; Spurling et al., 2013). The bottom up approach requires an entrepreneurial spirit in the civic stakeholders, self-responsibility and comprehensive problem solving competences (Steiner et al., 2015). For this approach it is required to know your citizens very well.

It is key for these bottom up, community-level initiatives to succeed to have and find a unifying community vision, as most fail due to the lack of that (Guillen-Royo (2010) in Temesgen, Storsletten, & Jakobsen, 2019). Temesgen et al. (2019) argue that this has to do with the ontological basis of values and norms that define their communities.

Another important factor is to facilitate community-led initiatives to explore and understand the foundations of their values (Temesgen et al., 2019). Dialogues or workshops are ways to do so. Consequently, for a city to operationalize towards a circular economy it is key to facilitate community-led initiatives in finding their unified visions and exploring their shared values. Not only the community needs to be addressed, but all relevant stakeholders involved. Because achieving a complex value proposition, relies on all actors of the innovation ecosystem (Talmir et al., 2018).

2.2.4 Circular Economy Literature gap

The research, literature and activities around CE are active in the political, governmental, academic and economic domain (Sillanpää & Ncibi, 2019c). Though it is not often being questioned how the CE concept interacts with everyday habits, norms and meanings (Hobson, 2019), which exactly fits the cultural and market dimension that form the most prominent barrier for adopting circular economy (Kirchherr et al., 2017). Hobson argues that the CE debates are too much *“underscored by an impoverished view of our relationships with complex material cultures, which in turn is creating barriers to transformation”* (Hobson, 2019). From eco-philosophers arguing for changes in epistemology, cosmology ethics, metaphysics

to economists arguing for a radical change in financial structures and business logics (Hobson, 2019; Temesgen et al., 2019). Though where is the practicality or lifestyle in that? How does Christian, Majid, Johan, Elise or any other ordinary person fit in? Imagine your neighbours, in laws, grand-parents, and question how do they fit in? Small scale circular spaces can be a more hopeful alternative in embedding CE (Hobson, 2019). An example of that is De Ceuvel in Amsterdam – a breeding spot for creatives and social innovators for making practical how a sustainable world looks like — (Bekhuis, 2018; de Ceuvel, 2020). Within that area they make tangible, practical or visible the CE concept (Hobson, 2019). As interviewee 6 explains:

“We have this traditional snack called Bitterballen... normally it's kind of a crispy ball filled with Ragu and traditionally the Ragu is made from veal. Well veal is not really sustainable product, so there's this company, GRO, that makes these mushroom, that makes Bitterballen from mushrooms. I tell this to people that are coming here to eat about all these small stories, about how we're closing loops. Then it gets really more visual for people and they can also taste it, so that a circular economy and sustainability isn't something from the elite or a higher class of people...it's really actually there and that there's people working on it and if you just make an effort to do something about it then there's so many possibilities.” — (Hobson, 2019).

In the CE literature, 55% of the articles include recommendations. Of that 55%, only 20% is aimed at businesses, and 28% to policy makers. As cited by Kirchherr & van Santen in their critique on the current CE literature, “scholarly work fails to provide actionable advice to practitioners, which is exactly what many of the practitioners we interviewed were seeking.” (Kirchherr & van Santen, 2019) This lack of empirical work on how to implement CE in real life is crucial to pursuit CE (Kirchherr & van Santen, 2019). CE practitioners are not interested in theoretical advances, their priority lies in understanding how they can implement a CE in real life and what the societal and practical aspects are (Kirchherr & van Santen, 2019; Ouillon et al., 2017). It is not taken into account what roles citizens play in everyday life to CE, but CE could benefit by taking into account such a bottom-up approach (Ouillon et al., 2017; Winans et al., 2017). To build on these insights the graduation project is concerned with an Action Repertoire for the BUCH to implement CE in real life, serving as empirical work for CE practitioners.

2.3 Behaviour change

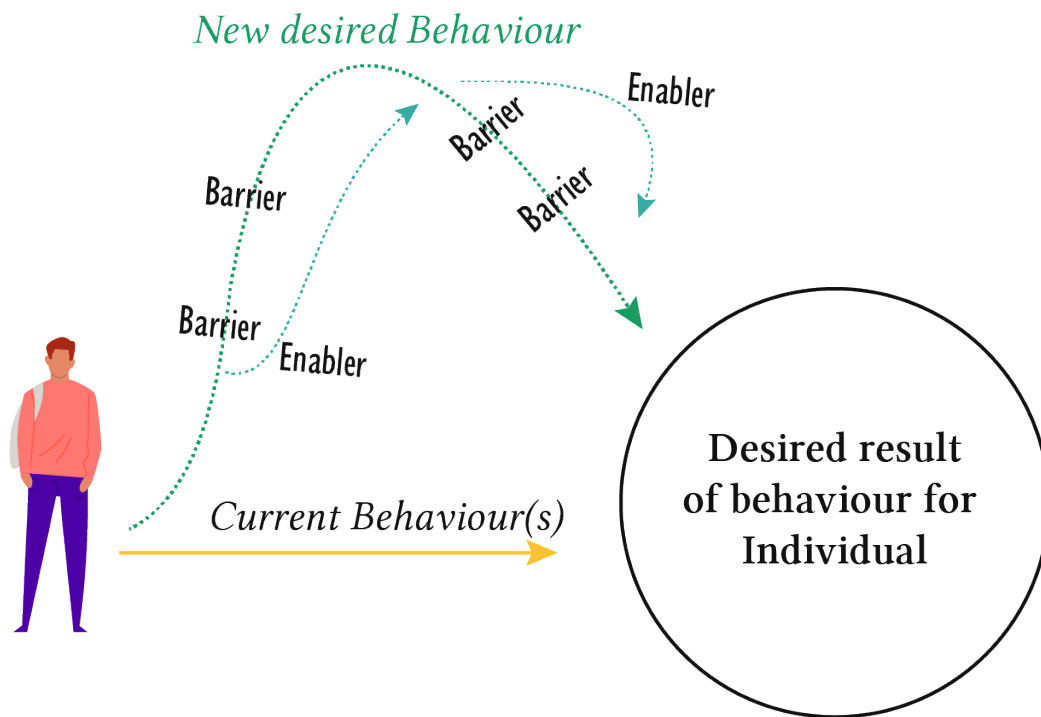


Figure 5: Behaviour change perspective, see appendix B3.4

A simplified version of the behaviour change approach that has been taken in this thesis is depicted in Figure 5, for an elaborated explanation of the approach see appendix B3. It shows that behaviour results in a desired result. This current behaviour can be changed to a new desired behaviour. These two behaviours are competing with each other to get to the desired result. The new desired behaviour potentially has barriers for people to follow that behaviour. It is key to understand those barriers and find the enabling factors to foster that desired behaviour. The new desired behaviour should then be designed and facilitated in such a way that it fits the person that should change its behaviour. This by placing thoughtfully interventions inside the practices of people inside the socio-ecological system in which they live (see appendix B3.4).

2.3.1 COM-B framework

It is key to understand the people that need to practice the new behaviour, for the intervention to have the right fit. For that the behaviour change has to be characterized and designed specifically to those people.

The behaviour change wheel is a method for characterising and designing behaviour change through thoughtfully and structurally placing interventions and policies. It was designed to overcome the limitations of the “*plethora of frameworks*” on behaviour change interventions used by designers and policy makers (Michie et al., 2011). It builds on understanding behaviour by looking at the specifics of the Capabilities, Opportunities and Motivations in the behaviour system (COM-B), see Figure 6. The view is not particular to an individual, group or context (environment), but views it as a whole and thus is a holistic systems-based approach, behaviour change (Niedderer et al., 2014). Both the individual and contextual factors are taken into consideration, which (as explained before) yield more success in designing for behaviour changes (Niedderer et al., 2014, p. 10, p. 52 & pp. 33-35). The interaction happens between these COM-B specifics, and so incorporates a bidirectional flow between behaviour and capability, opportunity and motivation, see Figure 6. Capability and Opportunity might change the motivation or directly the behaviour. In turn Motivation can change the behaviour, and so indirectly the opportunity and capability. To understand these components, a table with corresponding definitions is shown in Table 1. These definitions are based on Michie et al. (2011). (for a more elaborated in-depth explanation of the COM-B framework see appendix B3.6)

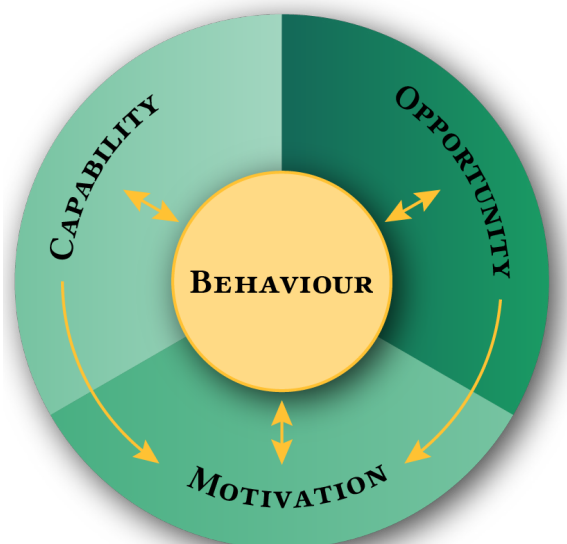


Figure 6: COM-B specifics framework, adopted from (Michie et al., 2011)

Table 1: Definitions COM-B components, adopted from (Michie et al., 2011), *italic text is cited*.

Component	Definition	Subcomponent	Definition
Capability	<i>“the individual’s psychological and physical capacity to engage in the activity concerned. Including to have the necessary knowledge and skills”</i>	Psychological	<i>“the capacity to engage in the necessary thought processes - comprehension, reasoning et al.”</i>
		Physical	Physical capacity such as sight, strength (muscles), body state (fit or not fit), etc
Opportunity	<i>“all the factors that lie outside the individual that make the behaviour possible or prompt it.”</i>	Social	<i>“afforded by the cultural milieu that dictates the way that we think about things (e.g., the words and concepts that make up our language)”</i>
		Physical	<i>“afforded by the physical environment”</i>
Motivation	<i>“all those brain processes that energize and direct behaviour, not just goals and conscious decision-making. It includes habitual processes, emotional responding, as well as analytical decision-making.”</i>	Reflective	<i>“involving evaluations and plans”</i>
		Automatic	<i>“emotions and impulses that arise from associative learning and/or innate dispositions”</i>

2.4 Most crucial insights

Waste

It is difficult for municipalities to translate the ambitious objectives of the European Union's 7th EAP and the Waste Framework Directive into practical activities. It is mentioned that it is key for operationalizing and making the 8th EAP practical, that the variety of local communities and their specific needs are taken into account. In turn this results that for waste management practices by the municipalities it is key to become knowledgeable on the practices and needs of the local communities in order to operationalize these top-down objectives.

Circular economy

In essence the circular economy is “an economic system that replaces the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes” (Kirchherr et al., 2017). The practical implications of the circular economy can be made explicit by the use of the 9R-framework. This translates the concept towards aimed for practices in a circular economy at the top of the 9R-framework. The systemic implications can be made explicit by the systemic principle of circular economy. It is key to take into account the building of a systemic solution, that enables and fosters more circular economic activities to emerge. Despite the extensive literature on circular economy, there is an acknowledged gap. The gap is on what circular economy holds for practitioners and how they can operationalize circular economy in real life.

Community level initiatives is a strategy for adopting circular economy in a municipality. Though most of these initiatives fail due to the lack of a common vision as another collaborative mindset is needed. This collaboration should be facilitated by a municipality in order to catalyse initiatives in their growth. This collaboration is needed because achieving the complex value proposition of circular economy, relies on all the relevant stakeholders in the system.

Behaviour change

Following the COM-B framework, behaviour happens through the interactions between behaviour, motivation, opportunity and capability. These aspects are key in understanding how a person behaves, how motivated a person is, if there is the opportunity both socially and practically to do the behaviour, and whether the person is psychological and physical capable in doing that person. These aspects are specific for any person (e.g. one might experience less or more opportunities as another person).

3 Research & Design

Within this chapter the Research & Design phase is explained through the five steps: Problem statement, Research on opportunities, Opportunities for design, Designing, and Final design.

3.1 Problem statement

3.1.1 The BUCH geographical location

As explained in the beginning of this thesis, the four municipalities Bergen, Uitgeest, Castricum & Heiloo work together in the civil service organization: **‘Werkorganisatie de BUCH’** (de BUCH, 2020). Within these municipalities, 101.000 people live in the towns of: Schoorl, Bergen, Egmond, Heiloo, Limmen, Akersloot, Castricum and Uitgeest (de BUCH, 2020; Gemeente Bergen, 2020). These municipalities, with its corresponding towns, are located in the region Noord-Kennemerland in the Province of Noord-Holland (Figure 7).

The area is famous for its dunes, and consequently popular for tourists as holiday destination. The citizens in the municipalities are relatively rich and are on average dominated by an older age. For a more elaborated overview of the BUCH on the topics of history, politics, tourism, income and age see appendix C. And for an overview on the core values appendix D and a summary of multiple SWOT analysis in appendix E.

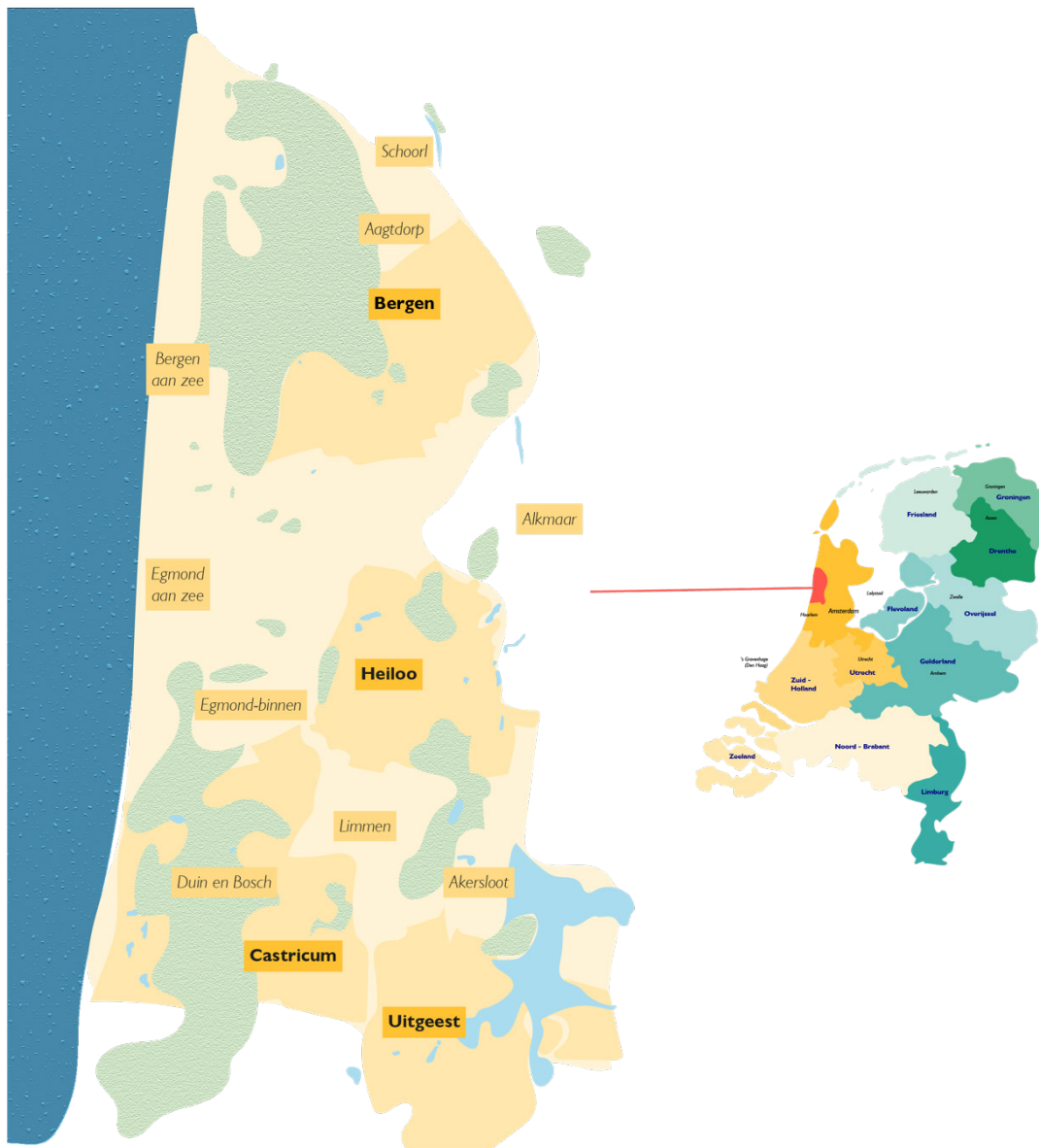


Figure 7: BUCH municipalities in the Netherlands

3.1.2 The BUCH as work organization

The BUCH municipalities, decided in 2015 to fuse their officials into the *Werkorganisatie de BUCH*. Legally this happened in the beginning of 2017. From that moment on various important structural changes happened. Each municipality still has its own *gemeenteraad*, *college van B&W*, *gemeentesecretaris* and *griffie* (eerste juridische beleidsadviseur van de raad). These organisational structures and its dynamics per municipality is depicted in Figure 8. De BUCH forms an organisational architecture underneath and between these municipalities, this is depicted in Figure 9. This unifies the employment conditions and makes the employees of each municipality officially co-workers. Making the total fte of the organisation 705.

Alongside the organisational structural benefits and structural economic savings (expected 5.2 million) (de BUCH, 2018), the citizens of the BUCH are on average more pleased by the municipal services (Uitkijkpost Castricum, 2019). The BUCH made it possible to be 24/7 accessible and closer to its citizens. By being flexible, dynamic and innovative they put central the citizens, entrepreneurs and municipal officials. Making their *raison d'être*: 'from, for and by the four municipalities' (de BUCH, 2018). For that their local service to its citizens is essential. This happens by staying close to the citizens and local municipal council. They work at the local municipal buildings and by the development of smart ICT-solutions they are capable of working more flexible on all these various locations.

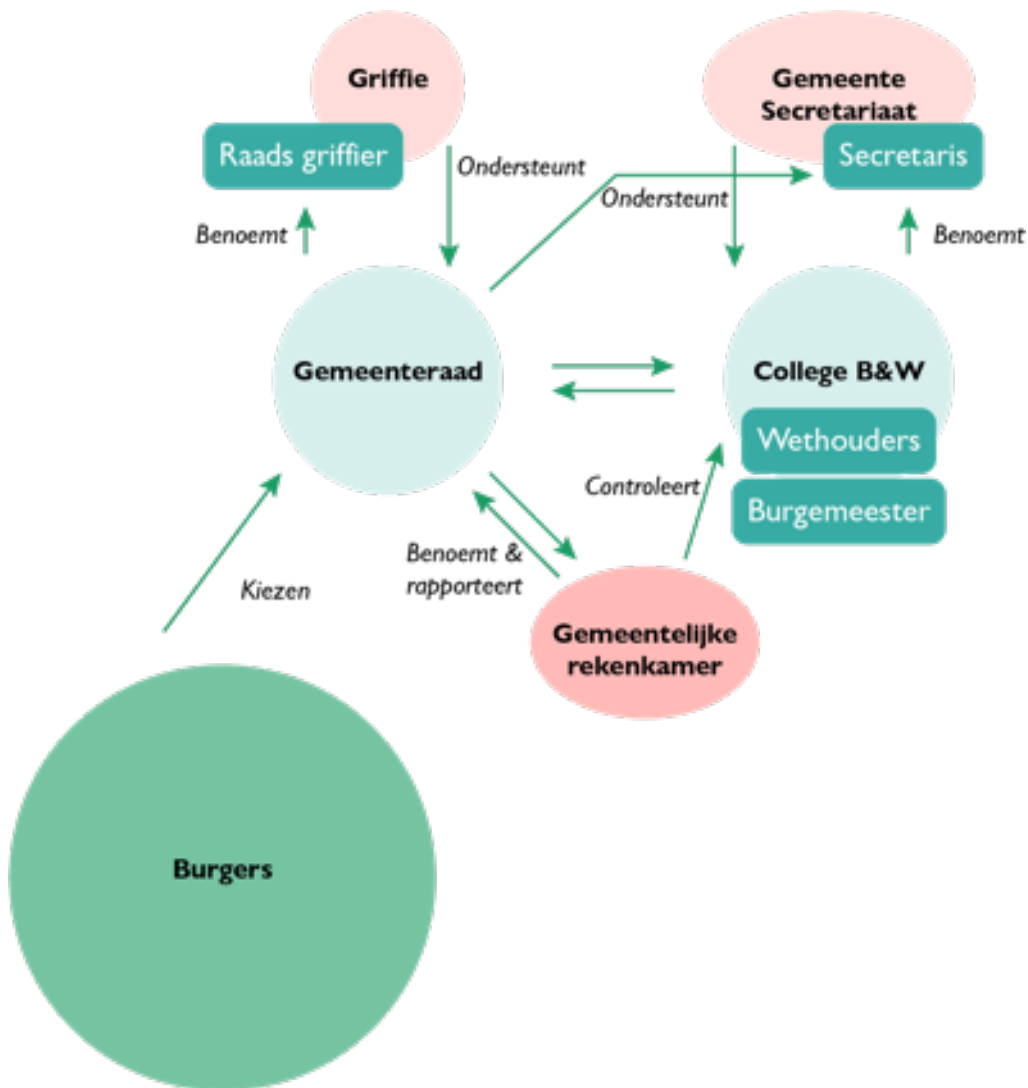


Figure 8: Municipal organisational structure & dynamics

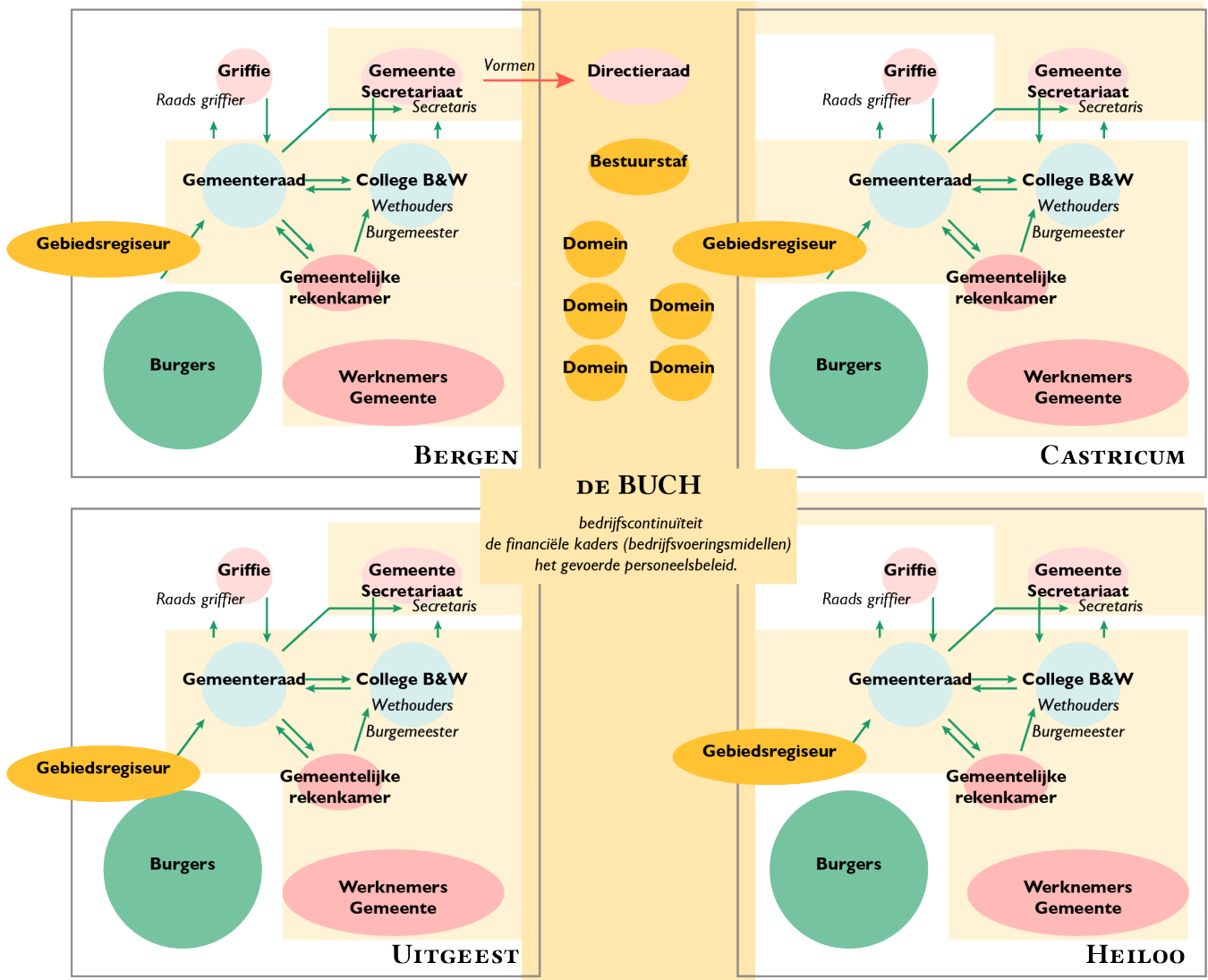


Figure 9: De BUCH organisation and its relation to each municipality, Yellow background indicates whom belongs to the official organisation 'Werkorganisatie de BUCH', constructed from (de BUCH, 2018)

3.1.3 Participatory practices of the BUCH

The practices of the BUCH are to collaborate and centralize communication and have the vision to aim for an optimal service (Kelders et al., 2018). To do that there has been a shift to better listen and collaborate with citizens and local entrepreneurs. To 'bring' the citizen into the discussion room of the municipality, the BUCH centralizes the concept of participation. For that two 'gebiedsregisseurs' (area directors) are assigned per municipality. They observe, plan, communicate, discuss, work together on projects, or other contact with the citizens or local entrepreneurs. In that sense they become the 'walking' knowledge centre of 'everyone' in that municipality. They know what communities there are, what is 'playing' in town, whom does what, whom knows what, etc. These area directors are an implementation of their participation policy and increase the participation of citizens by playing an active role (Kelders et al., 2018). They bring the people together from various neighbourhoods, areas, local entrepreneurs and the *college van burgemeester en wethouders*.

The participation policy of the BUCH is defined as "the involvement of inhabitants with the policy-shaping and policy-implementation, with the goal to better fit the policy and implementation in the practicality and wishes of inhabitants" (Kelders et al., 2018). The BUCH uses the Participation triangle depicted in Figure 10 to get an overview and place their practices in the various forms that participation can have.

2018)

The participation triangle shows at the bottom the lowest form of participation. In this form, only information is provided to the citizens. A step higher brings involvement or input from citizens into the decision-making process. A step higher increases the quality of that input and making it more a dialogue as opposed to a monologue. In the co-produce level, citizens and municipality (and entrepreneurs), work together on projects as team, and co-produce the project. A step higher brings delegation, in this step the tasks or projects are delegated by the municipality towards the citizens. In that sense the citizens obtain the responsibility and authorizations for that project or task. The highest level is self-governance, in this level citizens, local entrepreneurs plan, initiate and govern projects or initiatives themselves. The higher in the triangle, the higher the level of participation. On the other side, the higher in the triangle, the lower the active involvement of citizens. The aim of the BUCH is to 'be a participatory governmental body that facilitates and or stimulates self-governance and a self-creating society' (Kelders et al., 2018). Kelders et al. (2018) argue in their end-report *Burgerparticipatie in Bergen, Uitgeest, Castricum en Heiloo*, the need to develop more concrete frameworks and guidelines that bring explicit the roles, frames and guidelines for each actor involved (bestuurders, raadsleden, ambtenaren en burgers). The expert role that the officials play is important to construct as this will determine the tension that might play between the citizen and officials. For an overview of participatory practices see appendix C.5.

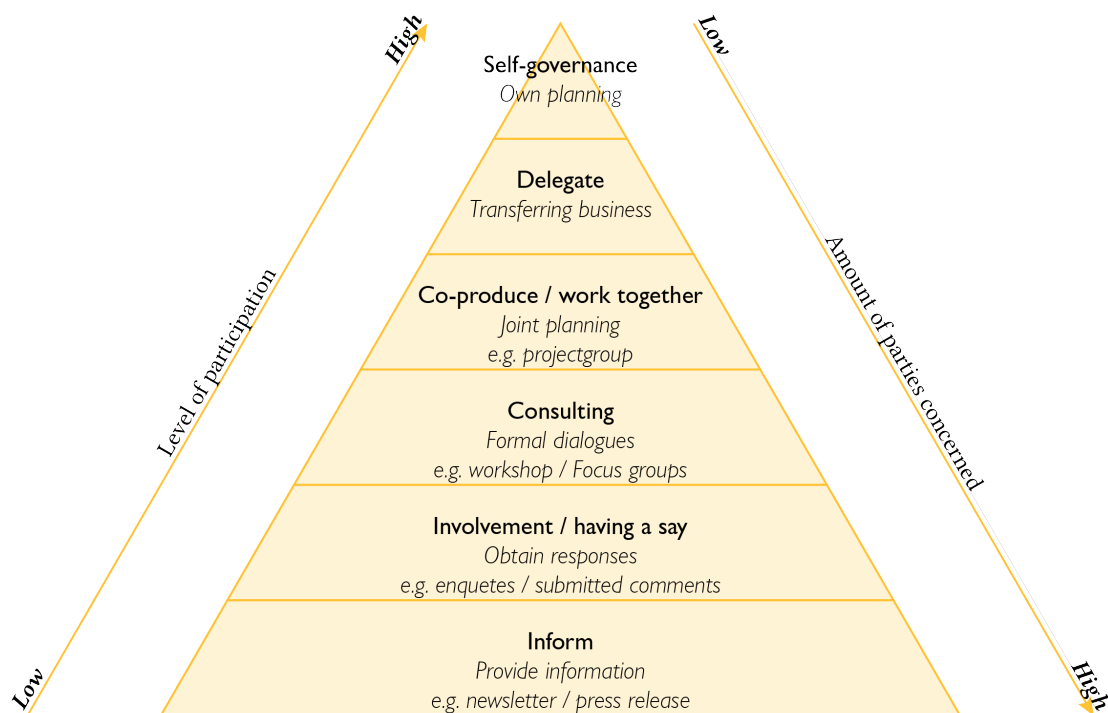


Figure 10: Participation triangle, adopted from (Kelders et al.,

3.1.4 The BUCH transition towards a Circular economy

VANG-HHA Ambition

The European Commission pushed forward and made official the circular economy policies in 2015 in their EU action plan 'closing the loop' (European Commission, 2015). Pushed by those policies, the Dutch government put in action the Nationwide program for Circular Economy: '*Nederland circulair in 2050*' (Rijksoverheid, 2016). One instrument to translate the ambitions and results of that program into determining policies, practices and obligations is the Landelijk afvalbeheer programma (LAP₃) (nationwide waste management program) (Ministerie van IenW, 2019). LAP₃ is the 3th policy framework for waste management (nationwide) that uniformes the enactment of municipalities in their waste policies for the '*Nederland circulair in 2050*' program. In plain English the LAP can be explained as the national plan of *how the Netherlands handles waste*.

As earlier described, going from these policies towards actionable advice is difficult. For that, the program VANG-HHA was created by the Ministerie van infrastructuur en waterstaat, Rijkswaterstaat, Vereniging Nederlandse Gemeente, and Koninklijke Vereniging voor Afval- en Reinigingsmanagement (VANG-HHA, 2018). In essence the program is concerned with the emphasis on more waste prevention, waste recycling, and less residual waste. VANG-HHA set out for the ambition to go from 250 kg towards 100 kg residual waste per citizen per year and 75% recycling of household waste. It is the implementation program to push LAP and Nederland circulair in 2050.

Whilst 100kg (residual waste per citizen per year) was the ambition for 2020, a maximum of 30kg is the set ambition for 2025 (Rijksoverheid, 2016). It is aimed for citizens and businesses to behave with products in such a way that it can be reused through thrift shops and that no litter is in place anymore (Rijksoverheid, 2016). This shift to prevent waste and incentivise 'circular' behaviour is seen in the general aim of the Rijksoverheid; *The waste producer pays* (see for instance appendix C.6 on the raising waste tax) (Rijksoverheid, 2016; VANG-HHA, 2014).



Figure 11: Beeldmerk for recycling, from VANG-HHA

Current situation in the BUCH

From the Dutch central bureau of statistics (CBS), it becomes evident that all four municipalities of de BUCH are over the average of Total municipal household waste in the Netherlands and its region Noord Holland (CBS, 2019). They do not belong to the least waste making municipalities but also not to the most waste making municipalities, see Figure 13. For a more elaborated version see appendix C.9. Within the BUCH, Bergen shows the most difference with more than 100 kg per citizen per year! Whilst the total household waste is larger, the bulky waste is 5-10 kg lower than the average of the Netherlands, and 15-20 kg of Noord Holland. These numbers indicate the ambitions set by VANG.

The numbers in Figure 12 & Figure 13 shed some light on the waste of each municipality in respect to the average of the Netherlands. However, one should note that the statistics are an indication and might not be the actual or real numbers. Tourists or day-trips might or might not be taken into account and so give a miss indication of the actual numbers. Or the measurements or fractional analysis of waste is not properly done. In this way the European Environment Agency (EEA) found that the defining and quantifying of waste happens in different ways across countries (EEA, 2013). Making it perhaps not credible to compare the BUCH with the Netherlands. Though it still serves as an overall indication of BUCH's waste numbers and their ambition.

	NL	NH	B	U	C	H
Totaal huishoudelijk afval	493,00	473,00	600,3	498,9	530,8	538,0
Huishoudelijk restafval	171,00	212,00	208,5	193,4	199,0	180,3
Grof huishoudelijk restafval	31,00	41,00	20,8	19,5	20,3	25,5

Figure 12: Average waste kg/citizen/year in 2018, adopted from CBS (2019)

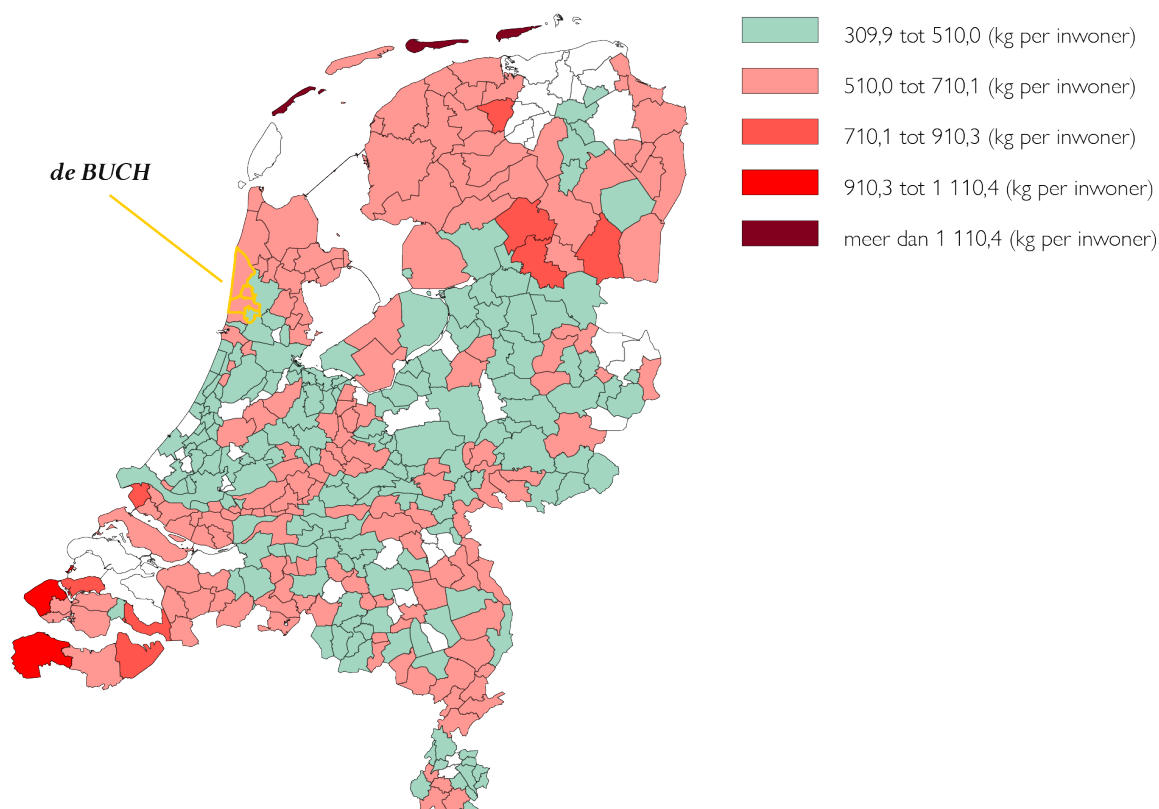


Figure 13: Total Municipal waste per municipality in the Netherlands (2018) in kg / citizen / year, adopted from (CBS, 2019)

BUCH Ambitions

As can be seen in Figure 14 & Figure 15, going in 2025 towards 30kg Residual waste and 5kg Bulky waste, requires effort and different ways of doing. Following the VANG-HHA program and these ambitions, 90% of the municipalities in the Netherlands constructed a **waste and resources policy plan** (VANG-HHA, 2018). Uitgeest, Castricum and Heiloo (UCH) likewise published their **Waste and resources policy plan 2019-2025 (grondstoffenplan 2019-2025)**. The plans for the UCH are made in harmonisation and thus are rather similar. Bergen however did not yet publish a Waste and resources policy plan. This is planned for the end of 2020 (Bergen, 2020). For an overview of both the waste management plans for the BUCH municipalities see appendix C.7.

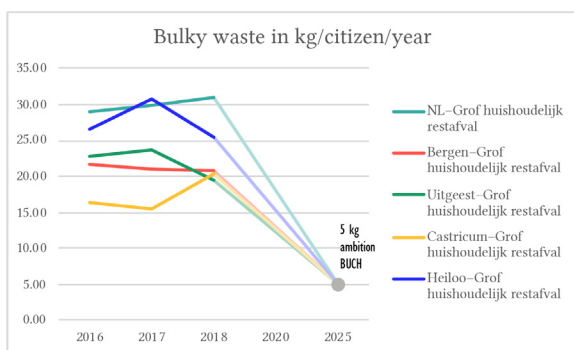


Figure 14: Bulky waste numbers and ambitions, based on (CBS, 2019; Raadbergen, 2018; Rijksoverheid, 2016; VANG-HHA, 2014)

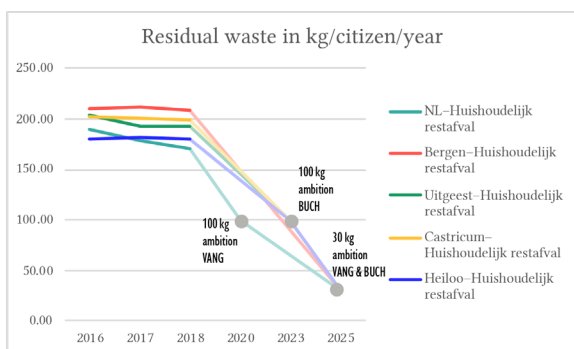


Figure 15: Residual waste numbers and ambition, based on (Castricum, 2019; CBS, 2019; Heiloo, 2019; Raadbergen, 2018; Rijksoverheid, 2016; Uitgeest, 2019; VANG-HHA, 2014)

The aforementioned waste resources policy plan is part of a larger ambition to achieve the VANG ambitions. The overarching strategy of the BUCH is to transition towards a Circular Economy. For that transition, the BUCH currently practices a sustainable energy policy, policy for circular procurements by Maatschappelijk Verantwoord Inkopen actionplan, and the waste resources policy plan 2019-2025 (Castricum, 2019; Heiloo, 2019; Uitgeest, 2019).

Another project that is still in the development phase for the Circular Economy transition is the circular centrum. This is one of the first concrete steps for the BUCH municipalities towards that circular economy. According to Rijksoverheid in 2030 a nationwide network should be in place of *Circular Ambachtscentra* (Circular Centurms) (Rijksoverheid, 2019, p. 49). These are centres that combine civic amenity sites (recycle centres), thrift shops, opportunity shops, adoption shops, workshop space, repair café, Building thrift shops, etc. (e.g. La Poubelle in Tilburg and 3D-makerszone in Amsterdam) (Rijksoverheid, 2019). The circular centrum project for the BUCH is a best practice for reducing their bulky residual waste (Uitgeest, 2019).

3.1.5 Problem statement

To strengthen the ambition of transitioning towards a circular economy, the BUCH approached the Delft Design Lab Participatory City Making Lab' at Industrial Design Engineering Faculty of the TU Delft (TU Delft). This to set the directions that are at its core of this graduation thesis. That is to transition towards a circular economy in the BUCH. For that the behaviour of the citizens in the BUCH have to change towards circular behaviour. For that reason, in this thesis the research question is:

How can the citizens in the BUCH municipalities be facilitated to the transition towards a circular economy?

3.2 Research on opportunities

Within this section it is described how the opportunities are researched with the use of various research methods. The research methods used were an intervention, a competitor analysis, a survey and multiple semi-structured in-depth interviews. The intervention was used to research and explore the situation in the BUCH from a citizen perspective, whereas the competitor analysis was performed to research the situation from the actual official opportunity perspective to practice circular behavior in the BUCH. The survey was designed to further research the by the citizen perceived opportunities, capabilities and motivation to practice circular behavior. By the use of multiple semi-structured in-depth interviews, these research methods were deepened and there were also used to explore the project context.

3.2.1 Intervention 1.0

The first research method was an intervention in the city-centrum of Heiloo. The intervention was chosen as low-key explorative research method to explore by the use of a representative group of citizens and their view on the topic. This was used to explore the context of the BUCH citizens and to become familiar with the norm experience in regarding to throwing away products. The goal of the intervention was to map out what different people there are with different attitudes and different behaviour on how to handle old products (for the reasoning see appendix F.1).

To research the described goal, three questions were made that had to be answered by various people using a mixed interview methodology, as suggested by (Patton, 2002). Question 1 was based on the closed, fixed-responsive interview instrumentation and question 2 and 3 were based on the interview guide approach as described by (Patton, 2002). In this way the responses from question 1 can be directly compared and easily aggregated, and question 2 & 3 made the data collection somewhat systematic for each respondent (Patton, 2002). This was used to gain first rather quantitative data on chosen ways to dispose, and on top of that qualitative data what the reasoning was for those types of doing (on how the citizens were approached see appendix F.2).

How do you get rid of old stuff?

1. What facility do you use to do that?

Selling
Giving away
Thrift shop
Recycle center / municipality
Repair it
Different

2. How does that happen?

E.g. collecting all stuff and that dump it at once
E.g. using it with another function

3. What are the reasons for using that facility?

Why not another?
Why this facility?
What makes this facility attractive?
What makes the product need to go there?

To get grip on this from a broad spectrum of citizens, an intervention was held at the local shopping mall in Heiloo called 't loo. Three products, a microwave, an old lamp, and a small plastic laundry bucket, were stilled on a table, as depicted in Figure 16 (for a photograph see appendix F.2). People in the mall were asked if they would like to take part of a graduation project for the TU Delft about how people would take care of the exhibited products. They were asked what facility they would use for each of the products and how that happened. For each product was then further probed on the reasons for choosing that facility. 41 people with different ethnicity and age were asked these same questions (see for the questionnaire used appendix F.4).



Figure 16: Intervention setup

Results

For each person, notes were taken from the conversations in which the questions were asked. The results of these conversations were coded and clustered in an analogue matter, resulting in 5 clusters. These clusters were solely based on the reasoning for getting rid of the stuff, not in what form. Thijssen (Thijssen, 2020) clustered these conversations from another perspective. She focused on what the motivations were for people to have a certain preference of disposing. Her preliminary clusters were 1) Easy yet sustainable, 2) Easy, 3) Being economical / preservative, 4) I don't really know, and 5) Not easy but conscious.

Insight

These 41 citizens can be categorized into 5 typologies of people based on the topic of their first response on how they would handle waste (see Figure 19 & appendix F.3).

The central conclusion of this intervention is the insight that, if a product was experienced as 'broken' it could end up at the municipal waste facility instead of being repaired. This because experiencing a product as broken also meant that it was experienced as unusable for others, and therefore waste.



Figure 17: Results intervention 1; Facility decision



Figure 18: Results intervention 1; Facility mentioned

The BUCH citizens behaviour typologies



Figure 19: 5 typologies

3.2.2 Competitor analysis – Current circular opportunities in the BUCH

Two perspectives that can be taken upon the interaction between products and people in circular terms. These are either by the product perspective or the people perspective (Selvfors et al., 2019). The product perspective looks at the lifetime and circularity of a product. This is concerned with the stages of the product life-cycle, and improving the production process, business models (leasing, renting) to increase circularity. For the recycle centres in the BUCH municipalities this means to look at what processes can be in place for enabling better ways for recycling / reusing of materials that are disposed. The people perspective on the other hand is solely concerned with the people obtaining a product, using it, and getting rid of it. This is also termed as the consumption point of view (Selvfors et al., 2019). The people perspective is chosen in this thesis as the question is concerned with the behaviour of citizens in the BUCH (for an elaborated overview of the people perspective see appendix G.1).

Competitor analysis

A competitor analysis for both the obtainment and riddance possibilities was performed within the context of the BUCH municipalities. This analysis was performed to obtain a comprehensive overview of what possibilities there are for a citizen in the BUCH to either obtain or get rid of products that frequently end up in bulky waste: a couch, bed, matras, furniture, closets, etc. This analysis was performed by desktop research online. Google maps was used to search for the following keywords: Meubelzaak, Meubelwinkel, Kringloop, Repair, Interieur winkel, tweedehands, restyling, repareer, woonwinkel, meubel maker, and afvalbrenngstation. The results were assessed for relevance to actual obtain, riddance or 'extending use' possibilities by the author. On top of that the assessment was made whether the facility would belong to Circular or Non-circular practice. The difference between that is made between whether new resources are needed to obtain the product or not. For getting rid of products the difference is between whether the product is brought to the local 'waste management facility' or if another facility is sought after to dispose the products. In the difference the waste management facility is seen as non-circular as the citizen brings it to that place as 'waste' and the other options are seen as circular as the product will remain within usage in the BUCH without the need to recycle the product. On top of that the behaviour of bringing usable products to the recycle centre is not preferred by the municipality, (e.g. interview in appendix I2.1 & I2.3). An overview of the facilities can be found in appendix G.2.

The found facilities were first individually plotted on a two-dimensional axis to visually represent them. On the vertical axis the 'level' of circularity was assessed. For this reason, the R-framework was used as frame of reference to assess its circularity. On the horizontal axis it was looked at whether the products were factory made or hand crafted, and whether the facility was relatively big or small. In this way on the left side facilities are shown that mainly involve factory build products and on the right-side handcrafted products.

Results

The competitor analysis made visually clear how much, where and what the circular practices were for obtainment, use and riddance from a user perspective (see appendix G.2 for an overview). There is a total of 8 local entrepreneurs that have a business in restyling and reusing of furniture shops that differ from the broader secondhand shops. More specifically of those 8 entrepreneurs there are two that only specialize in the restyling of furniture pieces, such as painting old wooden closets. Three others of those 8 are specialized in mainly selling imported quality vintage furniture. The remaining other 3 are in between and do both, but also include the possibility to deposit old furniture at their shop.

A total of 16 secondhand shops are within the area of the BUCH. These are well spread over the BUCH.

Most of the facilities in the BUCH to obtain, use, or riddance products are within the non-circular side. They require new resources to build products. Despite the large amount of retail chain interior shops, there are plenty alternative shops that make custom interior products. In between those two groups are the local interior shops that sell factory build products.

Interestingly is the evenly spread of the second hand shops and 8 circular entrepreneurs in the BUCH. This means that the possibilities are available in the BUCH to obtain secondhand products, restyle old products to remain them in use, and get rid of products so they can be reused a second time (either through restyling or reselling). Opportunities to behave circular are available in the BUCH.

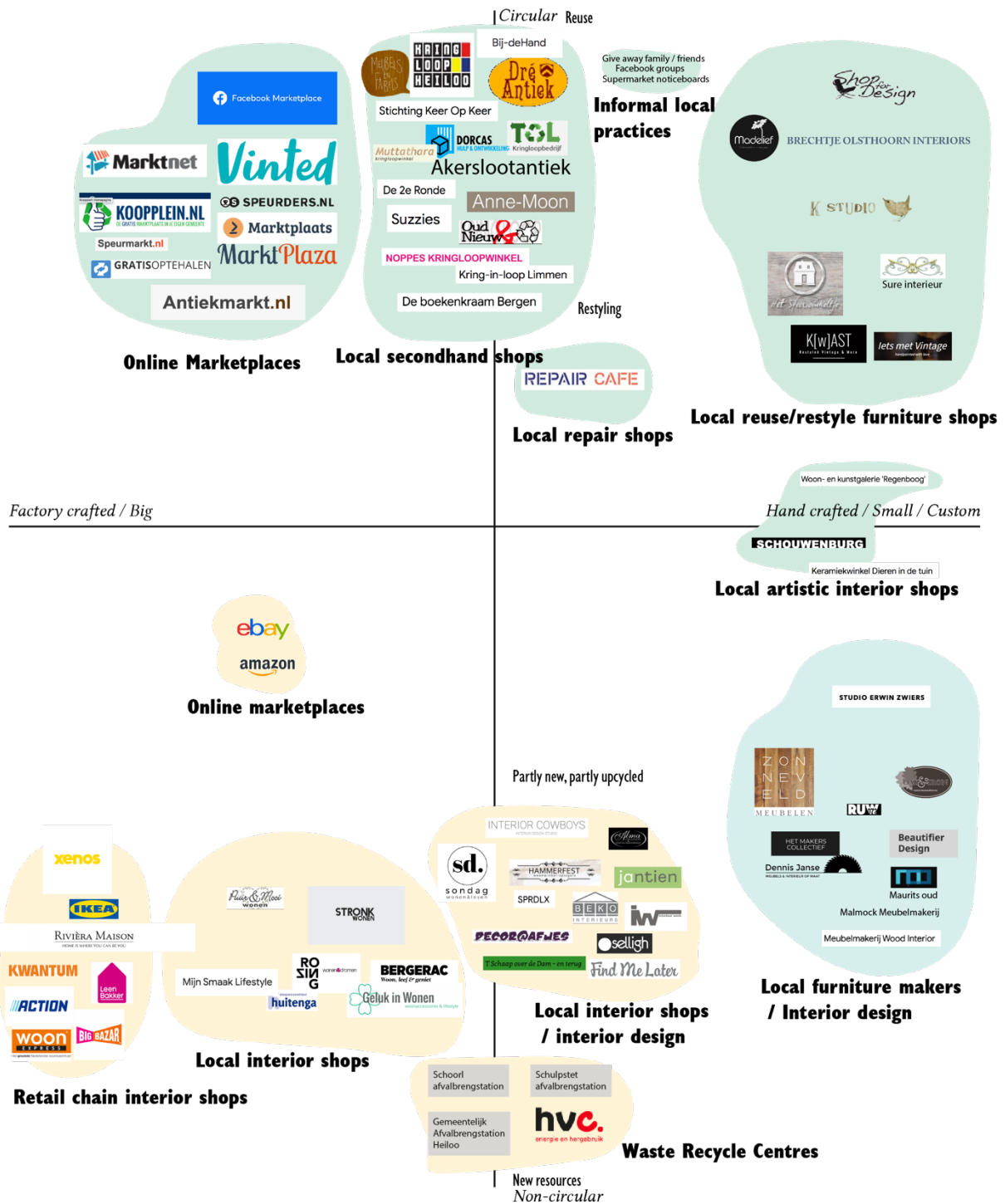


Figure 20: Competitor analysis

3.2.3 Survey

A survey was conducted to research the prevalence of, and opportunities for practicing circular behaviour of the citizens in the BUCH municipalities. The survey design and its findings are very concisely explained in this section. For an elaborated version of the survey design and its underlying reasoning, see appendix H.

The questionnaire in the survey was based upon the COM-behaviour model. For each of those aspects, Capability, Opportunity, Motivation and actual behaviour, a set of questions were developed. The questionnaire was sent through the use of the authors personal Facebook spread over 8 Facebook groups in the municipality Bergen (as suggested by the BUCH).

A total of 43 filled in the questionnaire completely. The raw data was prepared, processed and normalised by the use of Excel before importing it into SPSS. Within SPSS various descriptive analysis methods and chart builds were used to analyse the data set.

Results

The results and analysis are, as mentioned before, more elaborately explained in appendix H.2 & H.3. Within this section the relevant findings are concisely explained through the overarching COM-B aspects and their relationships. The y-axis values in these tables refer to the in Table 2 explained values.

Table 2: COM-B translation from semantic to numerical scale

COM Aspect	Question #	Question					
B-zult	2.3	zult	Nooit	Zelden	Soms	Vaak	Bijna altijd
C	3.1	hoe vaak vaardigheden	Nooit	Zelden	Soms	Meestal	Altijd
C	3.2	hoe zijn vaardigheden	Onvoldoende	Matig	Voldoende	Ruim voldoende	Goed
C	3.3	weten hoe	Nooit	Zelden	Soms	Meestal	Altijd
O	3.4	gebruikelijk	Heel ongebruikelijk	Ongebruikelijk	Neutraal	Gebruikelijk	Heel gebruikelijk
O	3.5	sociaal keuring	Sterk afgekeurd	Afgekeurd	Neutraal	Goedgekeurd	Sterk goedgekeurd
O	3.6	mogelijkheid	Onvoldoende	Matig	Voldoende	Ruim voldoende	Goed
M	3.7	bereid	Nooit	Zelden	Soms	Meestal	Altijd
M	3.8	zougraag	Nooit	Zelden	Soms	Meestal	Altijd
	Score		1	2	3	4	5

Capability

The capability aspect shows an even distribution of the answers (see Figure 21). There is one question that scores a bit lower than average. This is concerned with the question how the skills are for repairing products. This question scored lower than average.

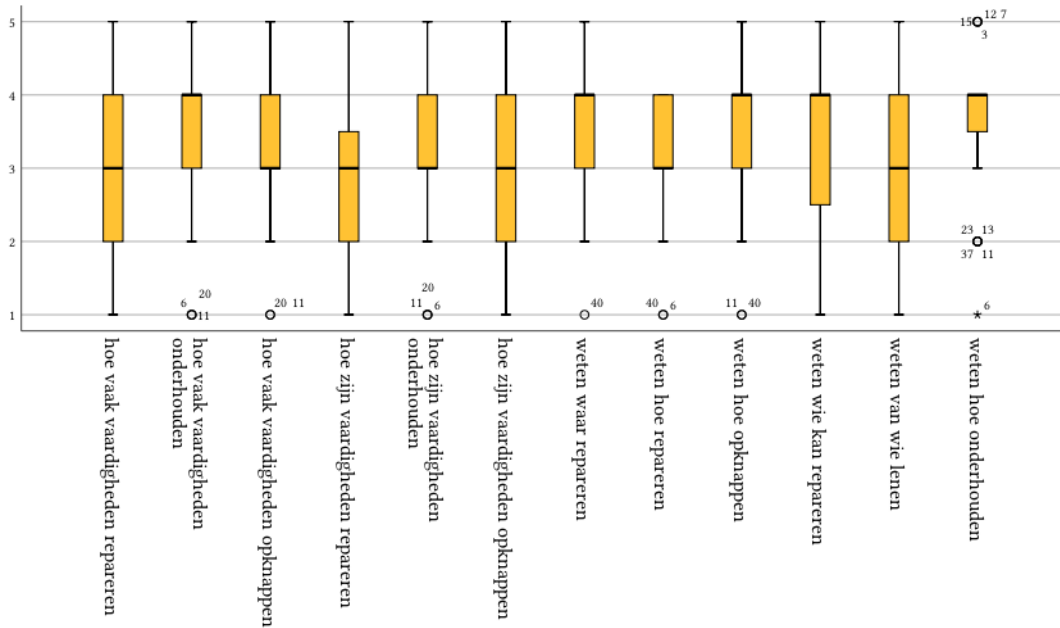


Figure 21: Capability, individual questions

Opportunity

The opportunity aspect shows an interesting result (see Figure 22). The Sharing and Exchanging opportunities score lower than the other questions. This opportunity is thus experienced as lower than the other opportunities. Also, it is mentioned that it is not very usual to exchange products.

The opportunity aspect also shows that the actual opportunity of any circular practice is experienced lower as the social norm of that practice. This means for instance that it is socially normal to give products a second life, but the opportunity to do so is less.

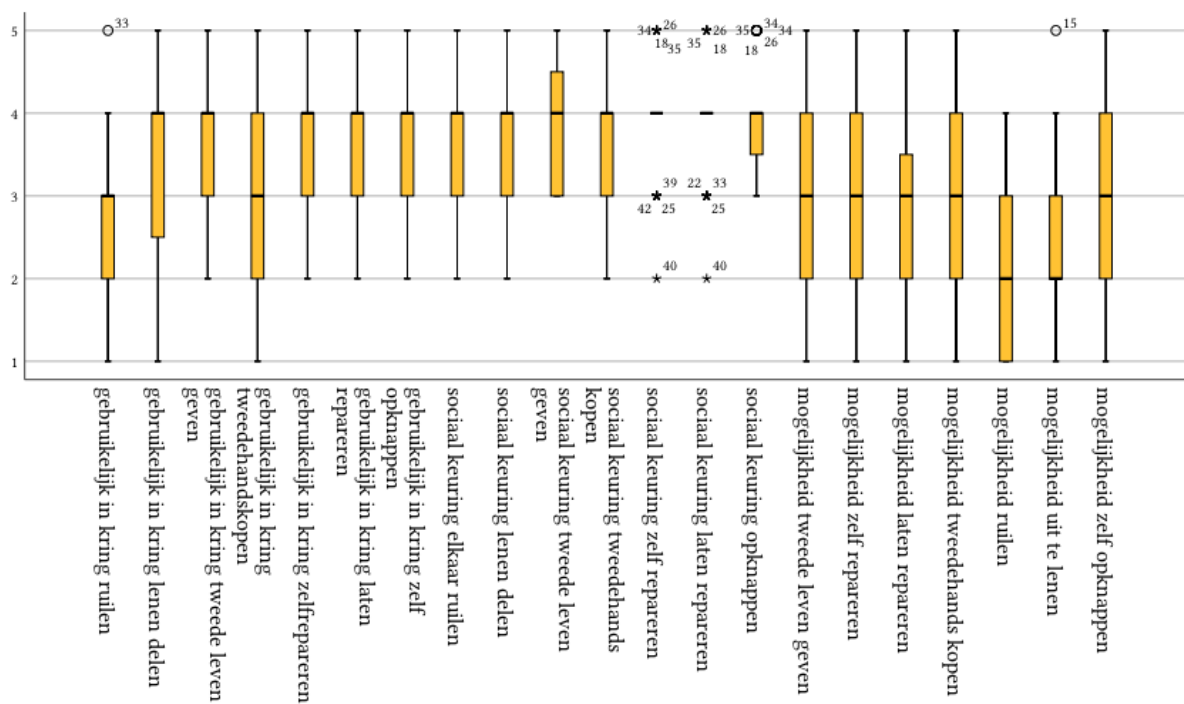


Figure 22: Opportunity, individual questions

Motivation

Almost all people indicated that they would like and are willing to give products a second life (see Figure 23). The overall motivation aspect scores relatively high, in exception to 1 to 3 individuals who score low.

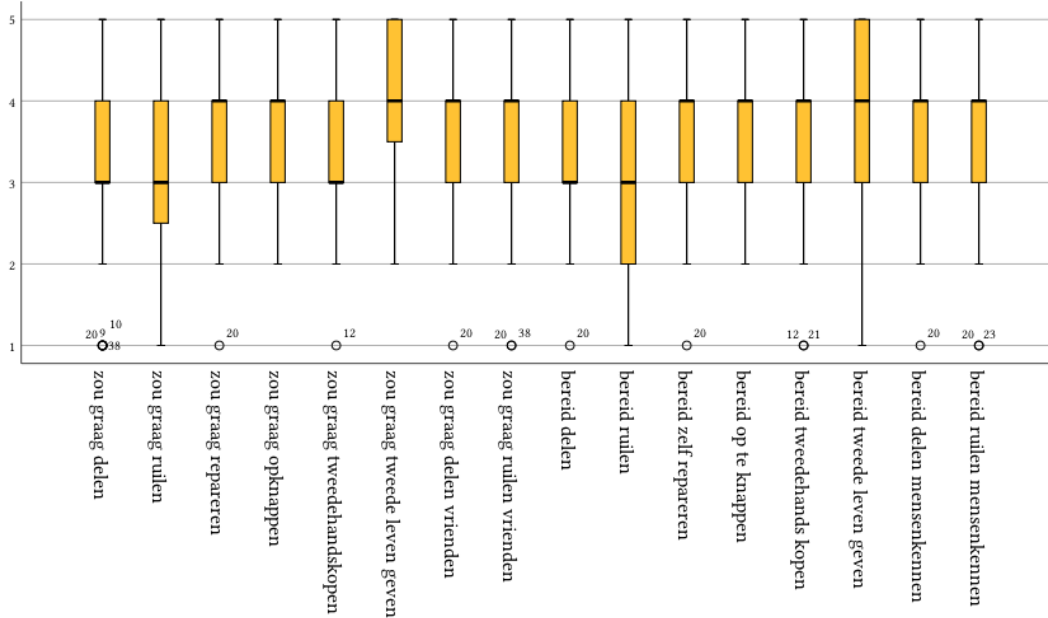


Figure 23: Motivation, individual questions

Behaviour

The behaviour aspect shows that exchanging is not a normal behaviour (see Figure 24). This also appeared in the other aspects. The sharing and borrowing of products and buying second hand, are both in the middle side but more spread than the other questions.

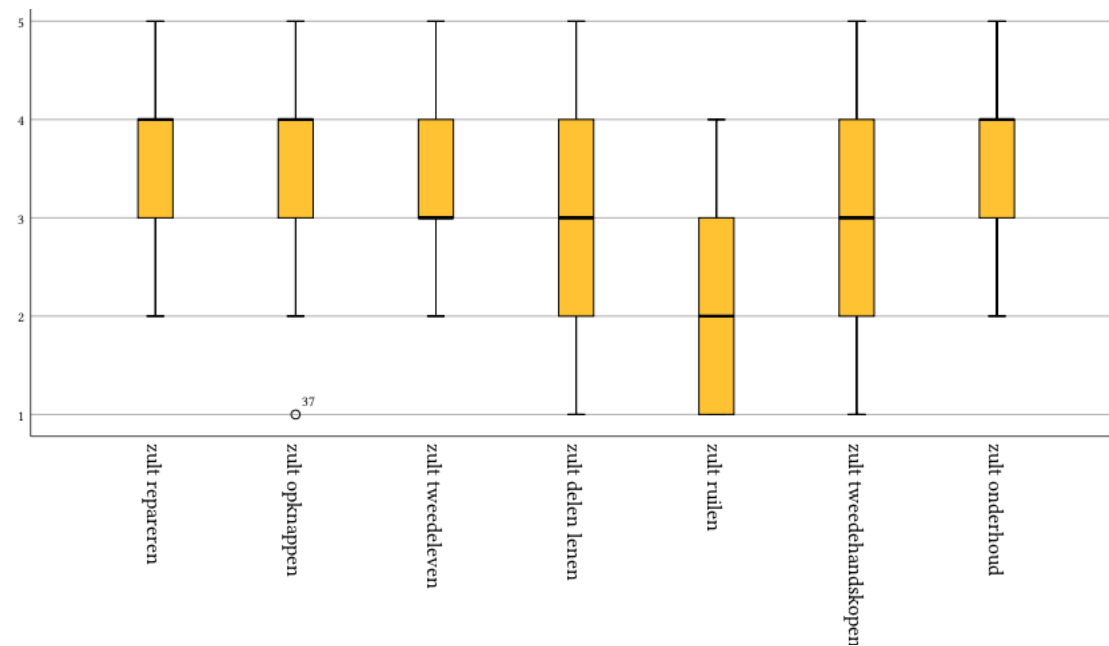


Figure 24: Behaviour, individual questions

COM aspects

The most interesting finding happens when the COM aspects are plotted together on a scatter plot. This results in Figure 25 & Figure 26. In these scatter plots the regression line describes the correlation between the opportunity and motivation in Figure 25, and the capability and motivation in Figure 26.

In Figure 25 a cluster can be observed that experienced opportunities low but are still high (above 50) in their motivation. This cluster is positioned under the regression

line. This indicates that motivated people are not experiencing enough opportunity to practice circular behaviour.

In Figure 26 the regression line is flatter compared to Figure 25. Besides the motivated (above 50) replies experienced relatively a high capability (above 50) to practice circular behaviour.

Also can be observed that above 50% of the respondents scored more than 60% on their motivation to practice circular behaviour.

Figure 25: Opportunity & Motivation (normalised)

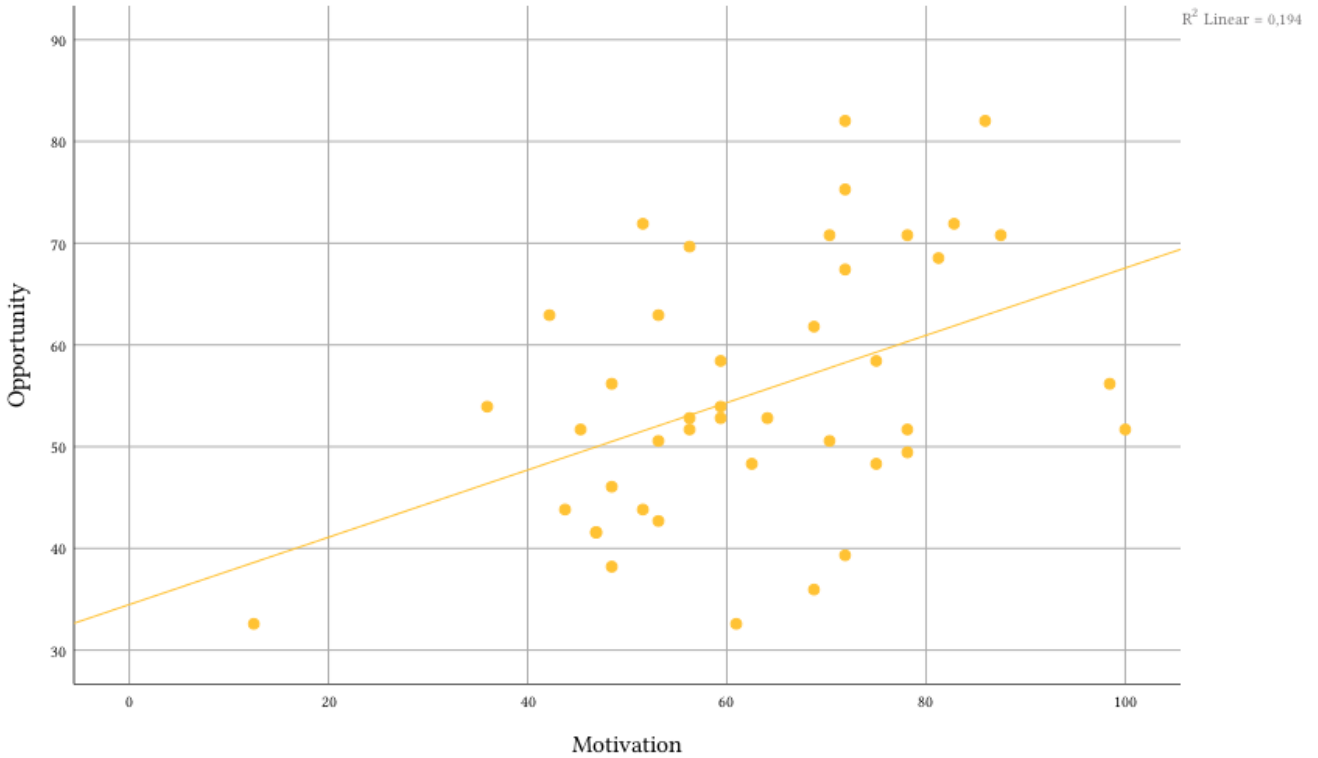
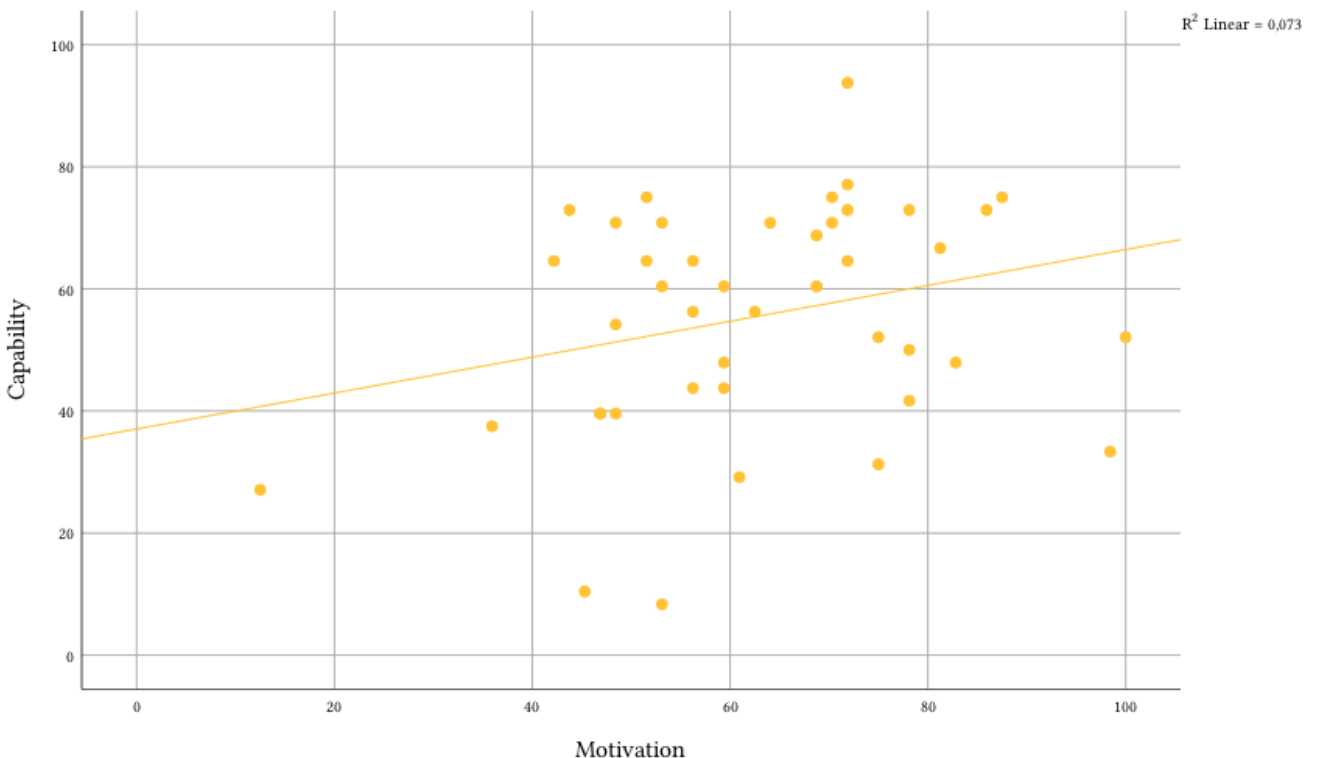


Figure 26: Capability & Motivation (normalised)



3.2.4 Semi-structured in-depth interviews

To gain more in-depth knowledge on the situation. A total of 15 people in the BUCH municipalities were interviewed following a semi-structured approach by (Patton, 2002). The respondents were sampled following a key informants sampling strategy (Patton, 2002; Vaca, 2018). The respondents varied from the foreman of a recycle center, two thrift shop owners, Senior policy and resources & circular centrum project leader, and citizens. For an overview of the key summaries of each semi-structured in-depth interview, see appendix I.

The results from the interviews indicated that circular entrepreneurs experienced not enough guidance from the municipality in setting up and maintaining their circular initiatives. The foreman and citizens at the local recycle center, explained that many still usable products end up at the recycle center, this because the local thriftshop in Heiloo would not accept all types of products anymore. The thriftshop indicated that these products do not have the quality or style to be sold so these products do not offer any value. As people know this, they do not 'hop by' the local thrift shop anymore for donating their products, as they assume that the thriftshop will not accept the products anymore.

The thriftshop (kringloop Tol) indicated that there was the ambition to grow the thriftshop. However, that was not possible due to missing guidance from the municipality. Likewise, the initiative leader of the Repair café in Schoorl, the thriftshop owners in Heiloo (both Kringloop Heiloo & Dorcas), the community manager of Schoorl, the Duurzaam Heiloo initiative leaders, experienced all the same missing guidance in the pursuit of their circular initiatives.

3.3 Opportunities for Design

3.3.1 Insights

The intervention suggested 5 typologies. Typology 3,4 and 5 show that people frequently dispose products at the recycle center. This because a product is perceived as broken/unusable (3), this is perceived as the only option (4), or is the easiest way to dispose (5). These typologies also indicated that people who experience a product as 'broken' or if they do not want it anymore, they dispose their products at the local municipal recycle centre. Resulting in still usable products at the local recycle centre. This was confirmed by the semi-structured in-depth interviews with the foreman of the recycle centre and an observation on the recycle centre. It is however possible to practice circular behavior in the BUCH as shown in the competitor analysis.

On top of the existing opportunities, a large proportion of the citizens in the BUCH score high on their motivation to practice circular behavior and also indicated the importance for improved sorting and reusing of resources (see appendix C.8). However, the opportunities to practice circular behavior are experienced by the citizens as low. This is a critical insight, as it indicates that a large proportion of the citizens is motivated to practice circular behavior, which in turn fosters the transition of the norm behaviour. As there are not enough opportunities to practice circular behavior, a lot of products end at the local municipal recycle center that can still be reused.

A critical insight of the survey is that a large proportion of citizens are motivated for practicing circular economy (approx. 50%, see section 3.2.3). This shows that the innovative concept of circular economy has diffused amongst a large proportion of the citizens in the BUCH (Rogers, 1983). From the transition literature it can be said that the tipping point for taking off into the transition towards a circular economy has been reached (Foliente et al., 2007; Rogers, 1983; Rotmans et al., 2000). This means that the majority of the citizens in the BUCH is motivated to practice circular behaviour.

Amongst these highly motivated citizens are initiative leaders. These are eager to transition towards a circular economy. However, the initiative leaders of the Repair café in Schoorl, the thriftshop owners in Heiloo (both Kringloop Heiloo & Dorcas), the community manager of Schoorl, the Duurzaam Heiloo initiative leaders, experienced all the same missing guidance in the pursuit of their circular initiatives to bring the opportunity for circular behavior.

The key insights used for the further conceptualization for the design opportunities are that the BUCH citizens need support and the opportunity to practice circular behavior. A facilitated initiative leader, a shift 'from they towards we' and 'from wanting to doing' are crucial elements in enabling the transition.

3.3.2 Central tension

During a creative problem mapping brainstorm session (see appendix J) one central tension was found. From the municipality point of view, the problem is resolved when the citizens are behaving in a more circular way, and so produce less to no waste. Looking from the citizen perspective it is asked and assumed, that the municipality treats their waste in a most efficient and circular manner. Both parties are arguing that the other needs to take responsibility in the enactment on behaviour that reduces the waste. In this tension there is the tendency for both parties to view the waste problem as not their own problem but the problem of the behaviour of somebody else. It is by both parties acknowledged to be a central problem, but none take ownership of that problem. The problem belongs to the other party, not to both parties. Within this realization there is only **they**, and not **we**. This phenomenon is however not new. This has been earlier described as the Not In My Backyard (NIMB) phenomenon and the BUCH tries to tackle that by participation, see for instance (Kelders et al., 2018) and the SWOT analysis BUCH municipalities in appendix E.

3.3.3 Design principals

Next to the central tension that was found various design principals were defined as concluding insights. These form as basis for the followed ideation phase as a set of central principals that the design should have to satisfy the common needs found during the brainstorm session. They are described below.

Following the central tension, a feeling of **coherence** is central in the first principal. This principal specifically asks for the design to elicit a feeling of belonging. Going from point at each other with fingers towards shaking each other's hands. Going from **they** to **we**.

The second design principal is that the **message** from the BUCH should become **central**. This means that the aim for a Circular BUCH should become central in their identity, as well as their practices. This will enable better the citizen to 'hear' or 'see' a coherent message coming from the BUCH, which is the first principal explained.

Thirdly the design should facilitate the development and spreading of **circular behaviour and mindset**. As that will result in less waste at the recycle centres. This means that either less products are obtained, or that the products that are obtained are from a 'circular practice'. Also does this mean that products that go to a recycle centre should go to a circular practice that obtains those products.

The fourth principal helps to remind that in the end **the citizen enacts** and makes the behaviour happening in what is being **facilitated by the citizens, entrepreneurs and municipality**. To that can be concluded that three factors that need to be in place for certain behaviour to be possible to happen. The citizens need to be motivated and capable of practicing circle behaviour, and next to that it should be possible to practice that circle behaviour by having the opportunity. These three factors stem from the COM-B behaviour model as explained in section 2.3.

3.3.4 Conclusion for design opportunities

The before explained insights, central tension and design principals, were used to fuel a creative brainstorm session (see appendix K). The brainstorm consisted of mapping out the pathway from 'No circular behaviour' towards 'circular behaviour' (along the COM aspects) and the reasons given by citizens for practicing or not practicing such behaviour. For an overview see appendix K.

Iteratively while setting and filling the framework the design spaces were clustered. The final design opportunity spaces were:

Design for repair opportunity

Design for 'refresh' opportunity

Design for share opportunity

Design for products between Thrift shop and Recycle center opportunity

3.4 Designing

An individual creative brainstorm session was held on the ideation for the aforementioned design opportunities for materializing and making the opportunities tangible. In that session 15 ideas emerged that were evaluated on the vALUe framework (van Boeijen et al., 2013). For a complete overview of the session see appendix L.

3.4.1 Development of 3 concepts

From the research and design opportunity brainstorm, various concepts that could promote change towards circular behaviour in the BUCH municipalities were further developed. To make these concepts explicit, various potential design interventions were designed. The designed interventions were developed by the insights gathered from the, in parallel conducted, in-depth semi structured interviews (the follow-up on the survey), see appendix I.4.

The three concepts that were developed were 'de BUCH deelt', 'de Opknappworkshop', and 'de Schoorlse Ronde'. These concepts were chosen on their high potential for enabling the circular transition from a citizen perspective. The concepts are briefly explained below.

Concept 1: BUCH deelt

A sharing platform is seen as a good circular alternative to merely individually buying products (Tukker, 2004). Probing in the interviews gave the insight that people in Egmond and Bergen aan Zee would like to have a facility that would enable them to share their products with others and borrow products from others. For this reason the 'BUCH deelt' was designed.

In this platform it becomes possible for people of the street to share their products. Many initiatives have been around to do that. Nextdoor, Buurtapp, the local Kopjesuiker, BUURbook (LPB, 2018) are various platforms that enable such digital participation of neighbours. KopjeSuiker specifically has been an local initiative in Bergen municipality by Nurit Konijnendijk (KopjeSuiker, 2019). Though the initiatives could not hold and had to be stopped due to a lack of time by the initiative leader. Also, the professionalism of the platform was not as expected by the citizens (see interview in appendix I.4.4). The application was not built in a professional manner in respect to the safety of private data such as home addresses. For this and time pressure reasons the platform was, unfortunately, shut down.

Whilst the platform was a good foundation, the professionalism was missing. To elaborate on that, a Kopjesuiker (see interview in appendix I.4.4) user interviewed

explained that the unique point from the platform was the focus on the locality. This means that the it brings people from the street together. As opposed to towns with each other. The importance of bringing people together instead of towns is important, as this facilitates the easy everyday communication between neighbours. The interviewee explained: 'If I need something quickly I can ask a neighbor through that platform, without having to bike 10km in the next village.' Currently Nextdoor or Buurtapp offer these kinds of services. Though those are commercial applications which is not wished for, especially not by the people in Egmond aan zee and Bergen aan Zee. What is important for such Sharing service is that it remains a sharing service and not a 'do it all' platform. Having a dedicated 'sharing' platform that is local is critical that is also non-commercial and provided by the municipality (e.g. interview in appendix I.4.4). The concept is visualized in Figure 27 & Figure 28 from both the perspective of lending and borrowing.

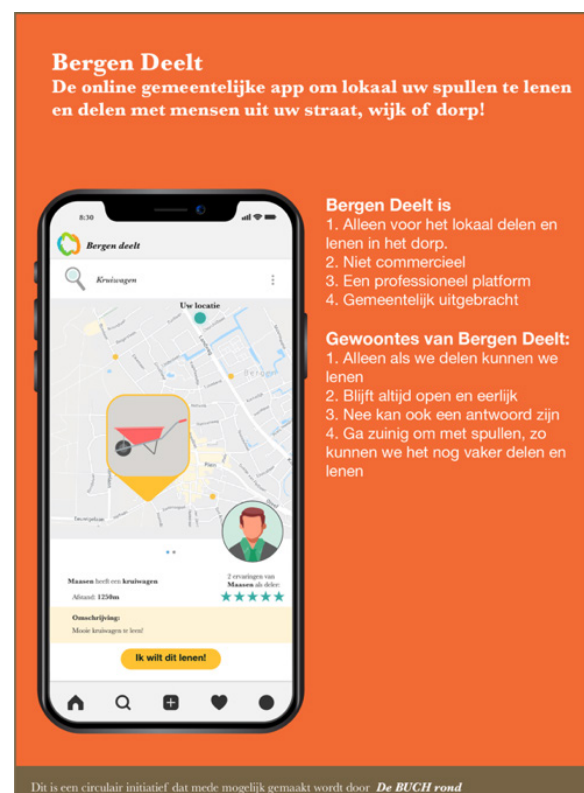
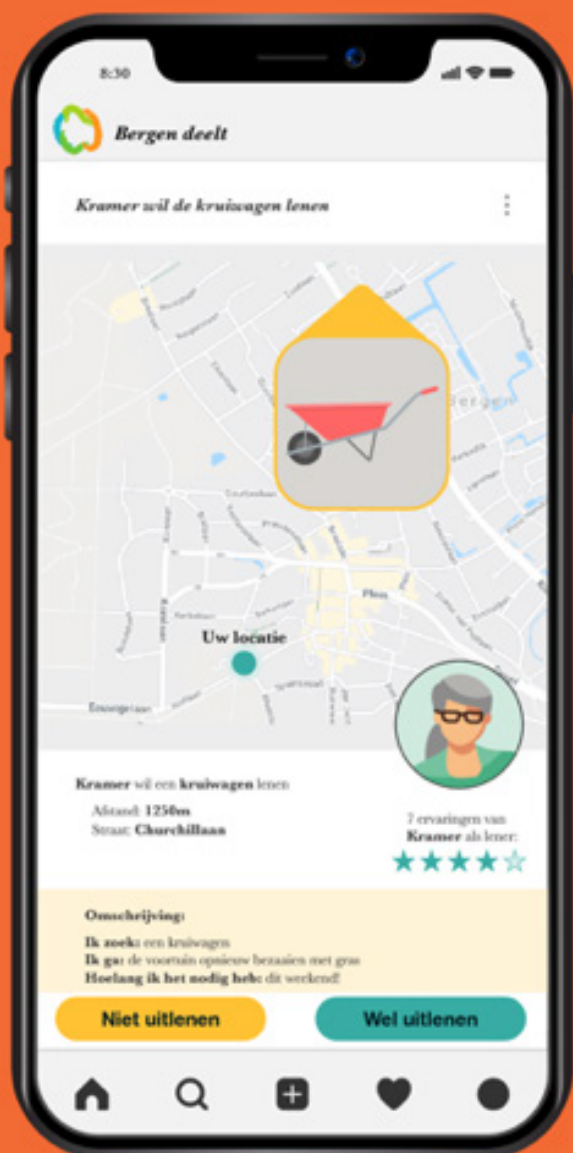


Figure 27: Concept BUCH Deelt: Bergen Deelt: Ik wil lenen

Bergen Deelt

De online gemeentelijke app om lokaal uw spullen te lenen en delen met mensen uit uw straat, wijk of dorp!



Bergen Deelt is

1. Alleen voor het lokaal delen en lenen in het dorp.
2. Niet commercieel
3. Een professioneel platform
4. Gemeentelijk uitgebracht

Gewoontes van Bergen Deelt:

1. Alleen als we delen kunnen we lenen
2. Blijft altijd open en eerlijk
3. Nee kan ook een antwoord zijn
4. Ga zuinig om met spullen, zo kunnen we het nog vaker delen en lenen

Dit is een circulair initiatief dat mede mogelijk gemaakt wordt door *De BUCH rond*

Figure 28: Concept BUCH Deelt: Bergen Deelt: Ik wil delen

Concept 2: De opknopworkshop

Various restyling companies are present in the BUCH municipalities. This resulted from the competitor analysis on the circular behaviour options (see section 3.2.2 and appendix G). All of these companies were contacted, however none replied (within a time period of 1 month). Despite these efforts, a concept was made for making restyling more attractive. As some interviewees indicated, they did not require the patience, tools and skills to restyle products. Those interviewees however were motivated to be or become more circular. Though they indicated they would not want to restyle an old table. For those that are motivated but do not have the patience, tools and or skills the 'Opknopworkshop' was designed.

The 'Opknopworkshop' exists to increase the facilitation of restyling towards the citizen, see Figure 29. It is a local restyle workshop in collaboration with the local restyling entrepreneurs. This should have been verified with the local entrepreneurs, however due to no reply and time constraints of this graduation project this was not done.

For the local entrepreneur this could mean an increase in brand equity – the assets or value of a firm that harm of benefit the firm's offerings and valuation, e.g. brand awareness, brand loyalty, brand associations, brand experience (Beverland, 2018, pp. 65-92) –. This because the local entrepreneur could establish new relationships with potential unaware customers, have a new business model, use it as communication/publicity.

Besides the potential positive effects for local entrepreneurs, citizens or even tourists, this could serve as an alternative path for throwing away products at the local recycle centers. Products that are thrown away, that are potential products for that workshop, could be selected by the local entrepreneurs. This extra 'loop' would serve as a 'closing loop' pathway for various types of torn/ broken furniture product at the recycle center. The involvement of the municipality means that it can be used as potential publicity or communication to the public by the municipality on how the municipality is 'closing loops'. See for instance Figure 30 for a potential poster than can be shown at the local recycle center.



Figure 30: De opknopworkshop potential publicity for and by municipality



Oude meubels opknappen?

Meld je nu aan voor de **opknapworkshop** en leer de fijne kneepjes van een ervaren meubel restyler.

- 

1. Neem zelf een versleten meubelstuk mee of kies er een uit bij ons een.
- 

2. Leer de 'ins en outs' van het opknappen van uw producten tijdens de workshop.
- 

3. Neem uw zelf opgeknapte meubelstuk mee naar huis! Of doneer deze voor de lokale rommelmarkt

Dit is een circulair initiatief dat mede mogelijk gemaakt wordt door **De BUCH rond**

For image see School vector created by pch.vector on Freepik.com

Figure 29: De opknapworkshop

Concept 3: De Schoorlse Ronde

A thrifts shop (Secondhand store, Opportunity shop, hospice, opshop, vintage shop, resale or in Dutch Tweedehands winkel, Kringloop) is a shop that sells products that are donated by people. The shop either supports a charitable cause or the organization is run as a non-profit. In the municipality of Bergen only 1 large thrift shop is present (also 1 small antique shop, see the competitor analysis in section 3.2.2 and appendix G). Interviewing the owner of the thrift shop it became evident that a second thrift shop in the municipality of Bergen offers quite some growth potential. The shop has grown in the last years to an thrift shop of at least 2000m², which is large for a thrift shop (Bedrijfspan, 2020).

The indicated potential for having a thrift shop in the municipality of Bergen was confirmed by a social network representative person (see the interview in appendix I.4.2). The interview showed that the argument for that, is that a lot of rich and older people are living in the area. Also as seen from the competitor analysis (see section 3.2.2), there are no widespread normalized close by alternatives to get rid of products in a circular way.

For the area of Schoorl a thriftshop could potentially be a good circular practice. Consequently, and by pragmatic reasons, the concept 'De Schoorlse Ronde' was further developed. The concept was developed in relationship with the local community founder & current manager of 'Schoorl Community'. To develop the concept a lot of resources, and efforts were offered. There was a full dedication of various people that were interested into making a thriftshop in Schoorl. The concept is depicted in Figure 31.



Figure 31: De Schoorlse Ronde

3.4.2 Development of most opportunistic design: de Schoorlse Ronde & refinements

Many concepts could foster and enable citizens to practice circular behaviour. But why does it not happen? Why does a concept like 'De Schoorlse Ronde' not happen, and how could that be catalyst? Many of these initiatives somehow strand. For exploring that 'De Schoorlse Ronde' was pushed through as a conceptual idea to learn from. Practicing the method of research through design (Stapper & Giaccardi, 2013). The question became: how can we make an initiative like 'De Schoorlse Ronde' come alive?

To test the concept another poster was designed and put on the Facebook group of Schoorl Community by Schoorl Community, see Figure 32. The poster showed the concept and a request. The request was whether people were willing to donate a product for kickstarting the concept. It was explained that they could take a picture and send that to an email address.

The image shows a screenshot of a Facebook post from the 'Schoorl Community' page. The post is titled 'Kringloop in Duindorp Schoorl, help mee!' and is dated '5 minuten · 6'. The text of the post reads: 'Sociaal en lokaal initiatief kringloop "De Schoorlse Ronde", heeft hulp nodig om te kunnen starten! Voordat de winkel echt open kan hebben ze producten nodig. Woont u in of rondom Schoorl en heeft u een product wat u wilt doneren aan dit initiatief? Maak een foto van uw product, en stuur deze door met een korte omschrijving naar "DeSchoorlseRonde@gmail.com". #schoorl doet'. Below the text is a colorful illustration of a shop named 'De Schoorlse Ronde' with people interacting with it. Underneath the illustration is a numbered list of instructions: 1. 'Maak een foto van het product dat u wilt doneren', 2. 'Stuur deze foto door naar DeSchoorlseRonde@gmail.com', and 3. 'Help mee aan de realisatie van de kringloop "De Schoorlse Ronde"'. The post has 2 likes and a 'Chatbericht sturen' button. The right sidebar shows the community page information, including 1,668 likes and 1,794 followers.

Figure 32: De Schoorlse Ronde Online

The post was relatively popular, see Figure 33 (this was also confirmed by the Schoorl Community manager who manages the Facebook). It belonged to the most popular posts on the Facebook. The message was posted before the weekend on a Thursday. The Monday after that weekend the received photos were collected, see Figure 34. About 13 products could be collected for initiating the thrift shop. That means that around 25% of the people who liked the post, actually donated a product!



Figure 33: De Schoorlse Ronde, Online for a couple of days



Figure 34: De Schoorlse Ronde Donaties

3.4.3 Insights de Schoorlse ronde

Besides the positive amount of donations received, people contacted School Community for getting in touch with De Schoorlse Ronde for further developments. A buzz was created around the concept. Despite the buzz, no further action could be observed. Within this case, the author acted as an initiative leader, though once stopped, the initiative stopped as well. Interestingly once the author contacted the people of School Community and other interested people back again, they were very eager to proceed together with the initiative. Though, none would take the 'leading or facilitating' role. Like the earlier described initiatives (e.g. Kopje Suiker and De kofferbakmarkt),

If there is no circular initiative leader, the circular initiative vanishes. On the other hand, if there is an circular initiative leader, a lot of people are willing to invest their resources, skills and time in realizing and operationalizing the circular initiative.

This insight was even further explored by designing and setting up a creative session. Together with 4 citizens/initiative takers, the possibilities for De Schoorlse Ronde were further explored. The session was used as an evaluation on what such facilitating process could bring. For the setup of the creative session see appendix N.

3.4.4 Final insights

Many solutions can be found to facilitate in the BUCH the behaviour of citizens to become circular. On top of that people are motivated to do so, which is a critical for the transition to happen. The solutions however are provided by local initiatives, businesses or organisations. However, the initiative leaders or the facilitating or enabling process for becoming an initiative leader are missing. As elicited from the interviews and the designed intervention De Schoorlse Ronde, initiative leaders need a facilitating process between municipality and initiative leader.

Initiative leaders experience no guidance and facilitation by the municipality. If they stop, the circular initiative stops (e.g. Kofferbakkenmarkt, Rommelmarkt School, De Schoorlse Ronde, Kringloop TOL). This has also happened in the past, for instance with Kopje Suiker (KopjeSuiker, 2019). Likewise Duurzaam Heiloo, thrift-shops, local entrepreneurs are pushing for the circular economy. For that it becomes key to facilitate and guide initiative takers and leaders in their pursuit to operationalize circular initiatives, enabling circular behavior for citizens in the BUCH.

It is key in making this happen, that the municipality is equipped with the needed know-how to elevate, facilitate and maintain local circular initiatives. For this reason the product service system 'De BUCH rond maken: Samen doen we het' was designed. The design is explained in the following section.

3.5 Final design: De BUCH rond maken: Samen doen we het.

The final concept consists out of 3 main components that are explained in this chapter (these are depicted in Figure 35, also an action-repertoire aimed for the BUCH is available). The 4 main components are 1) an initiative network administrator, 2) a circular initiative makers package, and 3) and do together. These components are resembled within the title and subtitle as a leading principle. First the leading principle is explained, then each of the components separately, then the components are put together into a plan of action. At last the communication plan is addressed.

It is important to mention that whilst the components are explained separately, they are designed in an iterative manner. For that reason, it is possible that some components refer to other sections further on.



Figure 35: De BUCH rond maken: Samen doen we het

3.5.1 De BUCH rond maken: Samen doen we het.

To condense “everything that is strategically important packaged in a tiny expression” a leading principle was made (Bakker-wu et al., 2017). This leading principle contains the final concept for transitioning towards an circular norm within the different areas within the BUCH. The leading principle that was designed is ‘De BUCH rond maken: Samen doen we het’.

The meaning behind the expression is multi-folded. De BUCH stands for the municipalities and the whole area. In its broadest and narrowest sense; for instance, the people, the dunes, the municipality and the entrepreneurs. Better put, everything in the area. ‘rond maken’ means to make ‘de BUCH’ circular. This means to strive towards circular practices and behaviours such as repairing, restyling, giving second life to products, seeing waste as resources, and so on. Besides this circular perspec-

tive, it is derived from sitting together around the table (see for instance: RoundTable The Netherlands, 2020). This means to be able to better ask questions, establish shared knowledge, increase networking and create meaningful conversations (Medium, 2018; PECB, 2019). To its most practical sense the complete sentence of ‘De BUCH rond maken’ means to make it happen, operationalizing the transition.

The second subtitle reveals how to do that: ‘Samen doen we het’ (we do it together). This reveals how sitting together around the table will make, the making of the BUCH circular, real. On top of that it fits to the request by citizens in the BUCH municipalities: **“Zet samen de volgende stappen”** (NH Nieuws, 2019) (see also: appendix I.4 for the interviews).

1. 'De circulair initiatief netwerkbeheerder' – Circular Initiative network administrator

'De circulair initiatief netwerkbeheerder' (CIN) is the person from the municipality side that acts as the network manager of circular initiatives spread over the whole BUCH area. This to connect the motivated people and initiative leaders situated in the BUCH. This serves to enable the emergence of novel social relationships, which is one of the critical aspects of the design approach of Imagineering the Butterfly Effect (Nijs, 2014).

The person is the enactment body of the municipality and functions as the active person to facilitate initiatives to pursuit their goals in realizing circular initiatives. This is done by asking to the initiatives how they are doing, what they are doing or what do they need to learn. It is aimed for to learn what is going on and know what we need to know and be changing for the initiatives to go further (Dolan, 2016). Establishing a collaborative network of listening, learning, engaging and accountability (Dolan, 2016).

The actor of the municipality functions as the link towards these initiative links in action but also activates upon what needs to happen from the municipality side. This is both the informing link for acting initiatives, inspiring initiatives and learning from the initiatives. This because the initiative network that is being established will function as a knowledge structure for and from the initiatives in the network.

In Figure 36 the position is shown of the CIN inside the current practices of the BUCH. By the positioning of such person the interactive link can be made between citizens and the municipality. In this way the person functions as the initiative network administrator between multiple relevant actors/parties (such as: citizens, municipality, local entrepreneurs, local initiatives, local businesses). Within that role the CIN acts as the person that enables to reframe from 'they should do' towards 'we do', see Figure 37. This reframing is essential to establish a sense of cohesion between municipality and citizen/entrepreneurs, which was one of the design principles (see section 3.3.3).

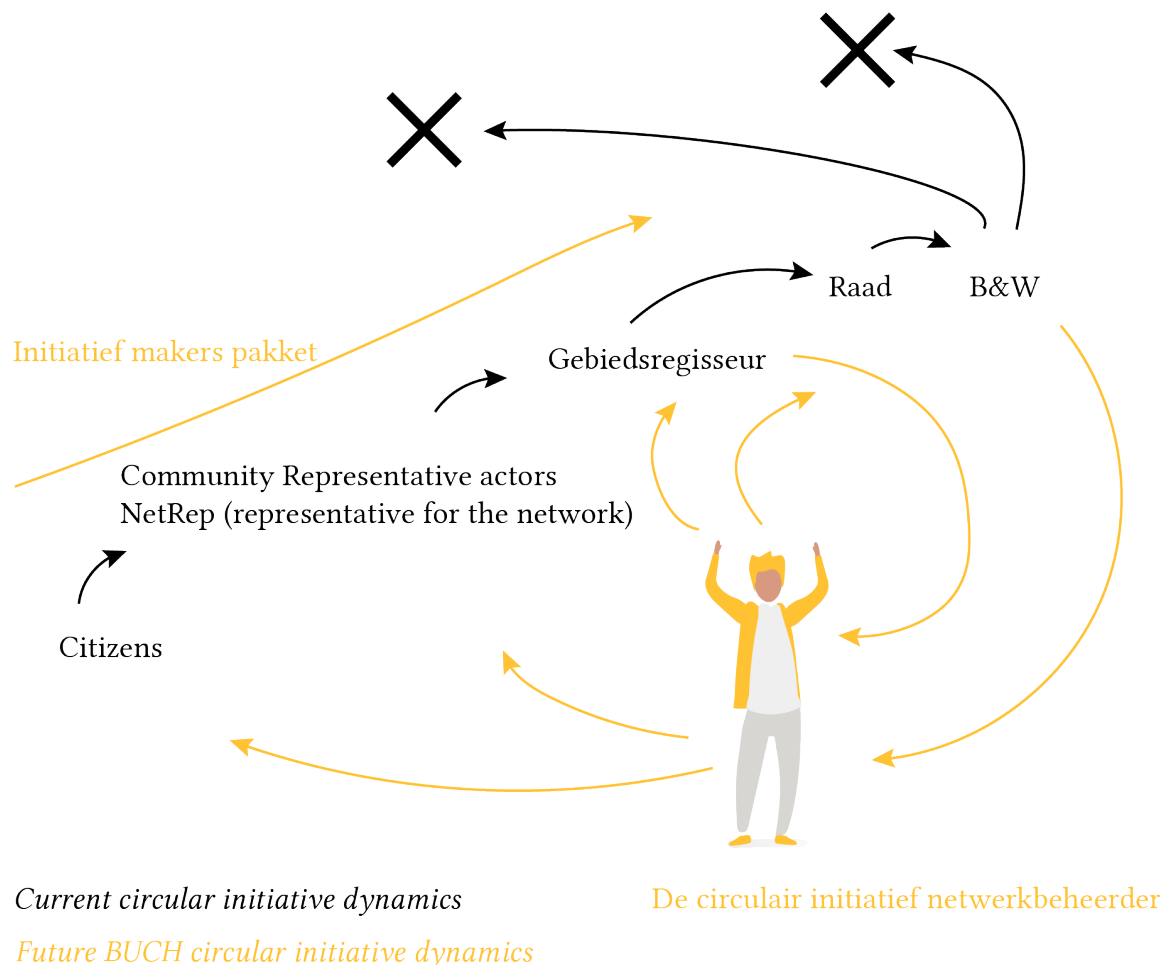


Figure 36: De circulair initiatief netwerkbeheerder

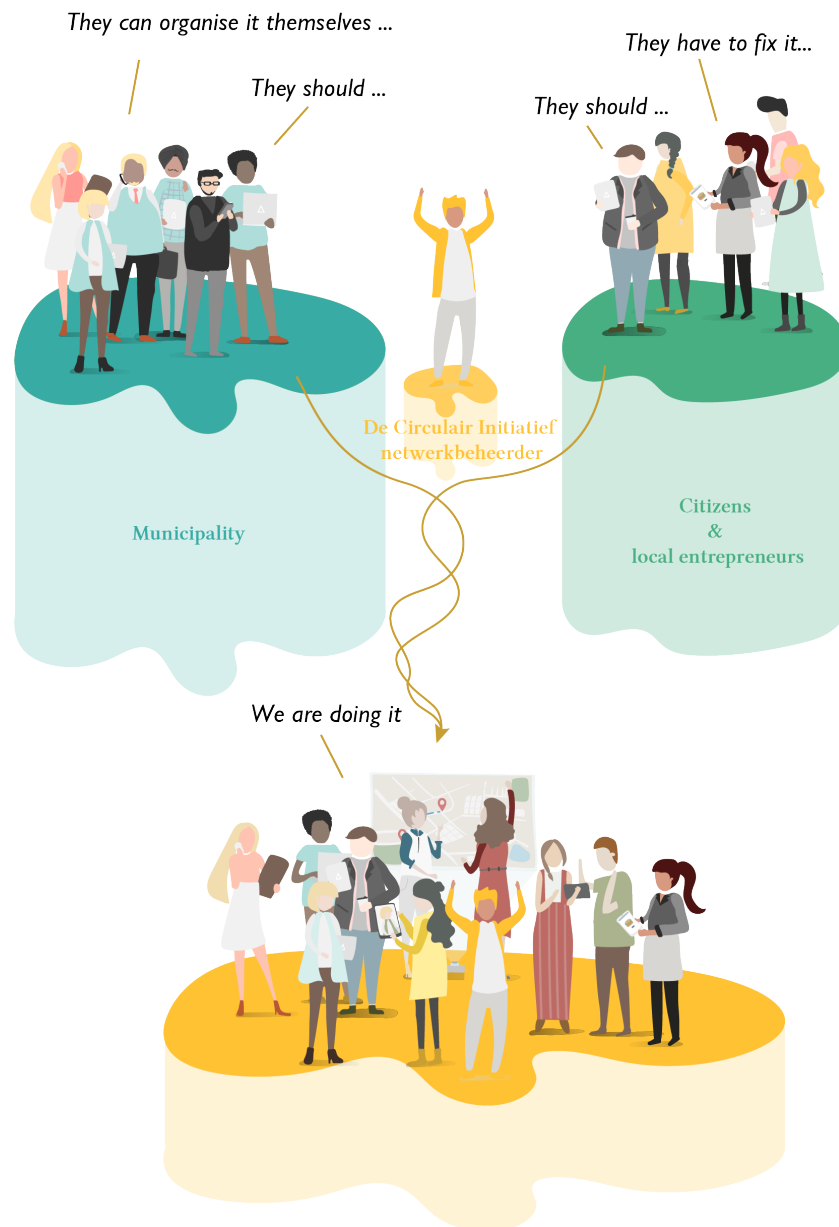


Figure 37: Connecting role of the circulair initiatief netwerkbeheerder, reframing 'they should do' towards 'we do'

The key practices of the CIN is to think actively in the pursuit of realizing and operationalizing circular initiatives and facilitate those processes. To do so, the person should be able to think along with the initiative takers and leaders. On top of that the person should think in opportunities and actively seek for possibilities and opportunities to operationalize the circular initiatives. For that capacity is needed for that person from the municipal side. What that capacity is will be explained later on.

It is very important to note that the CIN does not play the executive part of operationalizing circular initiatives. The part that the CIN plays is the governing of the network and navigating and facilitating of the circular initiatives in that network.

Profile

The CIN will be the 'living' common ground of the circular initiative network, see Figure 38. Having the right person in such role is critical for optimizing the network effect of connecting various people, broadening and deepening the knowledge or emerging windows of opportunity, as will be explained in the collaborating. Job performance is the combination of the aspects: abilities, skills, effort and role perception (Porter & Lawler, 1968) as cited in (Furnham, 2005). The role that a person perceives to have, is said to be critical for the enactment of that person by (Porter & Lawler, 1968). To build evidence for that, (Parker, 2007) explored how employees' role orientation effect their performance. They suggest that the construct of what the role of an individual is within the team to be of powerful influence on the enacted behaviour of that person. This can in turn enhance the job performance of that individual (Parker, 2007). For that reason, a clear profile sketch is designed based on relevant literature (depicted in Figure 39). This serves as the profile description of a potential CIN person that can be used in both internal and external communication.

Competences that fit the later explained collaborative process are Open minded, Patience, Self-confident and risk oriented, proactive, big picture thinking and enabling the facilitation and negotiation between parties for collaborative problems solving, active listening, and people aimed (O'Leary et al., 2012). The most important competence is to be able to 'recognize the benefits of synergy and the ideas it produces' of the collaboration as a whole (O'Leary et al., 2012). Surpassing the individual interest in search for the collective interest by facilitating the emergence of the network produced value that the collaboration could bring (Nijs, 2014).

For that search, it is important that the CIN is able to frame in consideration of all stakeholders and (co)-construct a future that is opportunistic (Goldman & Kahnweiler, 2000). This bonding of knowledge and experiences of each of the present individuals, and facilitating the emergence of the network produced value, can be seen as facilitating creativity (Heilman et al., 2003; Nijs, 2014; Tassoul, 2009).

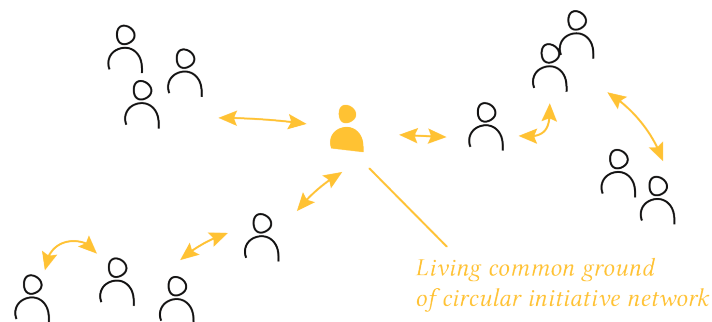


Figure 38: Circulair Initiatief Netwerkbeheerder as common ground of circular initiative network

De circulair initiatief netwerkbeheerder

Ambitieuus — Ondernemend — Netwerker — Organisatorisch



Hoofdtaken

Vergaderingen leiden en organiseren tussen de gemeente en initiatiefnemers om actiepunten te zetten om initiatieven verder te helpen. Hiermee wordt het initiatief voortgezet binnen de kaders van andere ontwikkelingen binnen de BUCH gemeentes en daarmee dus ook de bestemmingsplannen. Daarnaast fungeert de persoon als denetwerk opbouwende rol voor circulaire initiatieven binnen de BUCH gemeentes. Hierdoor wordt het opkomen van (nieuwe) kennis en relaties tussen mensen in het netwerk mogelijk, wat bevorderend kan werken voor het opzetten, realiseren en versnellen van initiatieven.

Competenties

Systeem denkend, Problemen herkaderen, Samenwerkend, Innoverend, Meetings leiden, Mediator tussen partijen, Plannen, Netwerken, Creatief denken, Ondernemend

Figure 39: Profile sketch Circulair Initiatief Netwerkbeheerder

2. 'Initiatief makers pakket' – Initiative makers package

The 'Initiatief Makers Pakket' (IMP) is a package that enables citizens, entrepreneurs, initiative leaders or anyone to kickstart a circular initiative (see appendix M.1). It is a step by step plan that enables to bring structure into the thoughts for both the initiative maker and the CIN, see Figure 40. This results in an understandable and coherent form to interpret an initiative from its various facets. By doing a multiple faceted conversation can be held between the initiative taker and the relevant stakeholders.

The IMP consists out of the 5 steps: 1) What is the initiative? 2) Who are the stakeholders? 3) Where will it be? 4) What are the 3 central aspects? 5) What is needed to proceed? These steps are subdivided in smaller sub questions, helping to fill in the steps. These steps stem from various required steps in starting an foundation (e.g. Business gov, 2020; Rabobank, 2019), the five transdisciplinary steps from the backcasting framework and the corresponding backcasting analysis (Quist, 2013; Quist et al., 2011, 2013), practical initiative taking booklets (Hieropgewekt, 2019; Natuurenmilieuoverijssel, 2019; Onderaf, 2019; Postmus & Zwerver, 2016), serving as a prerequisite for being able to fill in the adapted Business Model Canvas which serves as the common ground tool during the collaborative session (Osterwalder & Pigneur, 2010), and finally various important civic approaches and required information for the municipality and government (e.g. 'Statute of an foundation' 'omgevingsvisie',

'omgevingsplan', 'structuurvisie') (Business gov, 2020; Civicservicedesign, 2017; Concilio & Tosoni, 2019; De Koning et al., 2017; Rabobank, 2019).

As described in section 3.5.1, 'De BUCH rond: Samen doen we het' is used as leading principle in the graphical design. This to find consistency in the designed touch points of the complete concept (Bakker-wu et al., 2017). This is further touched upon in section 3.5.3, in which the communication plan is explained.

The most important aspect in designing the steps for the IMP was the (relative) easiness in use. This to encompass a wider audience. It also functions as an inspirational and guidance tool to develop the initiative beyond one's own ideas. This to better fit the relevant stakeholders involved. The first 3 steps trigger to think about the idea in a broader or divergent sense. This is needed to grasp the idea, find out where it is located and making the initiative tangible. This converges in step 4 in which 3 central points need to be formulate. This step pushes to synergize to the essence of the initiative and finding out what the three most important aspects are. The last step, step 5, is the step to operationalize the initiative by triggering to think about what is needed to proceed. This step is quiet often overlooked but is the trigger to grasp the pathway for operationalizing the initiative (see for instance the backcasting framework compared to practical initiative taking booklets).



Figure 40: Initiatief Makers Pakket

The steps towards 'Samen doen'

Before being able to participate in the collaborative process ('Samen doen'), a boundary object should be created by the initiative taker that can be used in the collaborative process. A boundary object will help to maintain identity throughout the various viewpoints and perspectives on that boundary object, bringing consistency and facilitating the creation of a common understanding of the initiative (Osterwalder & Pigneur, 2010; Star & Griesemer, 1989). This is important as it brings interpretative flexibility to the concept of the initiative, and thus can be a very important mean to achieve collaboration between diverse actors (Sapsed & Salter, 2004).

The Business Model Canvas serves as a good visual tool for such boundary object, catalysing the collaboration between various actors (Osterwalder & Pigneur, 2010). The visual tool enables getting a shared understanding on how a business might work without getting into the operational details is the Business Model Canvas (BMC) (Osterwalder & Pigneur, 2010). It aims to facilitate in finding how a potential concept of an organisation creates, delivers and keeps value (Osterwalder & Pigneur, 2010). The BMC consists out of 9 elements put in a canvas together. These are:

1. Customer segments – To whom the value is created or the customer (segment)
2. Value proposition – The value that is created for the customer problems and/or needs
3. Channels – Through which channels that value is communicated, distributed and sold
4. Customer relationships – How the relationship between organisation and customer is maintained
5. Revenue streams – These result from the successful delivery of value to the customers
6. Key resources – These are the required assets to deliver and or offer the value
7. Key activities – These are the activities that are performed to accomplish it
8. Key partnerships – The relevant partners that serve an important role in acquiring resources and activities
9. Cost structure – the business model elements will result in how the cost structure is

The BMC is used as a communication tool of the initiative in the collaborative process. It is filled in by the information gathered and written down of the IMP. In Figure 41 the Initiatief Makers Canvas (IMC) is shown (as adopted from: Osterwalder & Pigneur, 2010). The IMC is an adopted version that better fits the 'Samen doen' process and IMP.

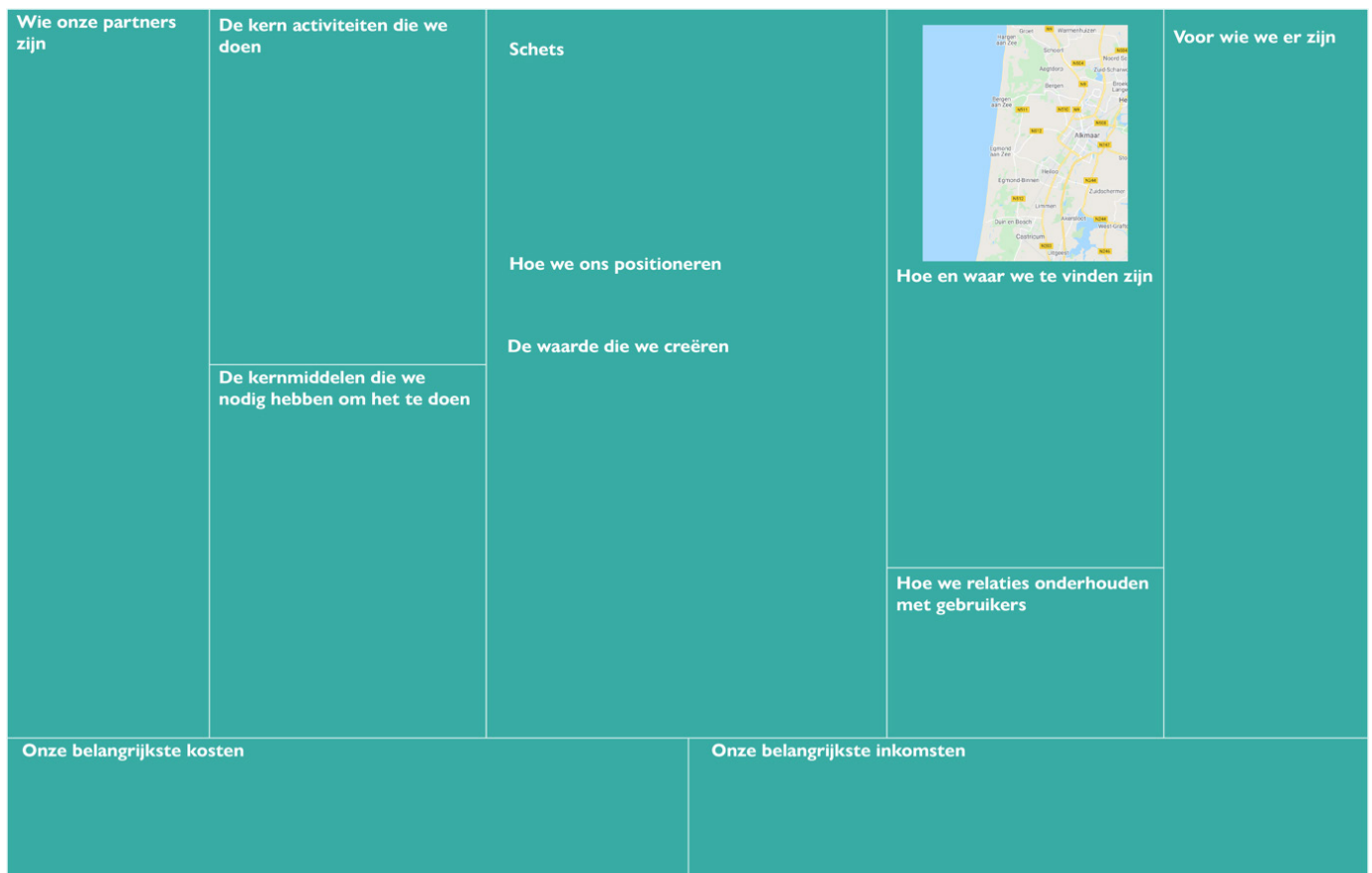


Figure 41: Initiatief Makers Canvas, adopted from (Osterwalder & Pigneur, 2010)

Action steps towards doing

After the IMC is filled in, key action steps should be developed in order for the initiative to know how to proceed. The 'Actiepunten maken' (AM) framework, as depicted in Figure 42, facilitates that (both individually as collectively). The framework makes use of the (collectively) filled in IMC.

After filling in the IMC, it is questioned by use of yellow post-its on top of the IMC:

“Wat moet er gebeuren voor elke box, om het te realiseren?” — “What needs to happen in every box, to realize it?”

As these post-its are posted on top of the filled in IMC, the result is an IMC with multiple yellow post-its, or 'Actions'. These Actions are put on the blue line in middle of the other framework: 'Actiepunten maken' (Figure 42).

Within the AM framework, it is questioned whether the Action can be done by the individual/team (Left) OR that something or someone is needed (Right). While positioning the Actions, it is questioned with blue post-its:

“Hoe kunnen we dat realiseren of daaraan komen?” — “How can we realise that or acquire/obtain that?”

To probe upon the blue post-it, an extra green post-it can be used to operationalize the Action points even further by asking:

“Nog iets extra's voor nodig?” — “Do we still need something extra?”

This results in a coherent set of 'Acties' with their respective 'Actiepunten' that can help in enforcing the team to take operational steps for getting the initiative further in its developments.



Figure 42: Actiepunten maken

3. ‘Samen doen’– do together

The process is very closely related to the CIN. It is the process in which the CIN enacts. In this section the process is more concerned with the various roles that the CIN can take and the various key principles in the process.

Citizen initiatives can be facilitated by municipalities by ‘structuring the relevant networks or by various forms of process management’ (Bakker et al., 2012) (Based preliminary on (Ostrom, 1990, 2005; Ostrom et al., 1994) and (Ansell & Gash, 2007)). Both should be used by local facilitators to have a successful implementation of citizen initiatives. On top of that the involvement of citizens in citizen initiatives is determined by adequate responses of local authorities. One critical adequate response for doing that is removing the formal language, bureaucratic procedures and excessive formalism (Bakker et al., 2012). The collaborative effort should be centred on the enactment of the effort, not its formality.

Such collaboration process for establishing strategic alliances is argued to happen through 4 stages (Gajda, 2004). These 4 stages are used in the in at the base for the developed process guidelines in the ‘Samen doen’ as depicted in Figure 43 (the guidelines are based on: Bailey & Koney, 2000; Gajda, 2004; Lucidchart Blog, 2019; Talmar, Walrave, Podoyntsyna, Holmström, & Romme, 2018; Temesgen, Storsletten, & Jakobsen, 2019; Tuckman, 1965; Tuckman & Jensen, 1977) For an overview of the 4 stages see appendix M.2.

The 4 guidelines serve as a basis on which any ‘Samen doen’ can be made. They serve as guidance tool in the development of such process, as opposed to literally being that process. This to remain the flexibility for developing these processes. The guidelines are briefly explained.

1) ‘Rond de tafel’ – Gathering around the table

The first guideline is to gather people around the table. This is needed to get people comfortable and accustomed to the group they are working with. On top of that it is key to figure out what the reason of getting together is. — Does a thrift shop mean the same for every person? Why does it need to be there in the first place? — Within this first phase of a collaboration, the role of a person and the envisioned part within the collective is formed, for that person. This means that the perceived role and part-whole relationship is established for each individual, this is key in performance and the management of the process (e.g. perceived role on performance by Parker, 2007 and Porter & Lawler, 1968, and e.g. managing part-whole relationship by Van De Ven, 1986).

2) ‘De tafel rond’ – Going around each individual at the table

Once everyone is known to each other the individual roles can be explored further upon. This stage requires a good facilitator. This because tensions are sought through a ‘storm and order’ process (Ansell & Gash, 2007). These tensions can foster the team dynamics in the conceptualization phase to be in such state to promote the establishment of novel orderly relationships between those people (for more information see for instance: Chakravarty, 2010; Heilman et al., 2003; Kratzer, Leenders, & van Engelen, 2006; Tassoul, 2009).

3) ‘De ronde tafel’ – The establishment of a round table

Once the round table is accomplished it is time to enact. For those moments it is very critical to not forget or lose sight about the collective goal. This to remain to the ‘raison d’être’ of the collaborative effort. This is guided by facilitating and or navigating the journey towards that collective goal. For that various questions can be asked in order to proceed. The main question that can be asked is the question: How do we proceed, what our next steps? These reflective questions are simple but are the triggers for proceeding towards the collective goal.

Everyone has its place within the collaborative effort. One essential component in achieving a good and long-term collaborative effort is to have trust across all actors around the table. This component will be further explained later on the section of key principles.

4) ‘Rond blijven’ – Keeping the table round

Getting ‘the table round’ is part one. Once it is round it should be kept round. For maintaining the table to be round, it is important to create the opportunity for reflection and develop this as a systematically returning element. There are two relevant levels of reflection and learning, inspired from the single & double loop learning model by Argyris & Schön (Anderson, 1992; Smith, 2001). The first learning model is on the process of the initiative, the second is the meta version of that process, the so-called ‘governing variables’ of the process (Anderson, 1992).

Obtaining relevant data and being able to evaluate and assess the progress is a constructive way for reflecting upon the dynamics of the project itself, and so the first level. For this it clarifies content wise how to navigate and direct the process of the initiative. By the use of data and validation techniques the following steps are guided.

The second level is concerned with the underlying variables that govern the process. These are for instance the dynamics between the people involved in the team. Are those dynamics still good? Is someone missing that could catalyse the team? Also, the collective goal should be related to in this level. This to learn from the practices, and reflect on the collective goal, is it still desirable/desirable/viable? Is the team still in alignment with what they value and envision?

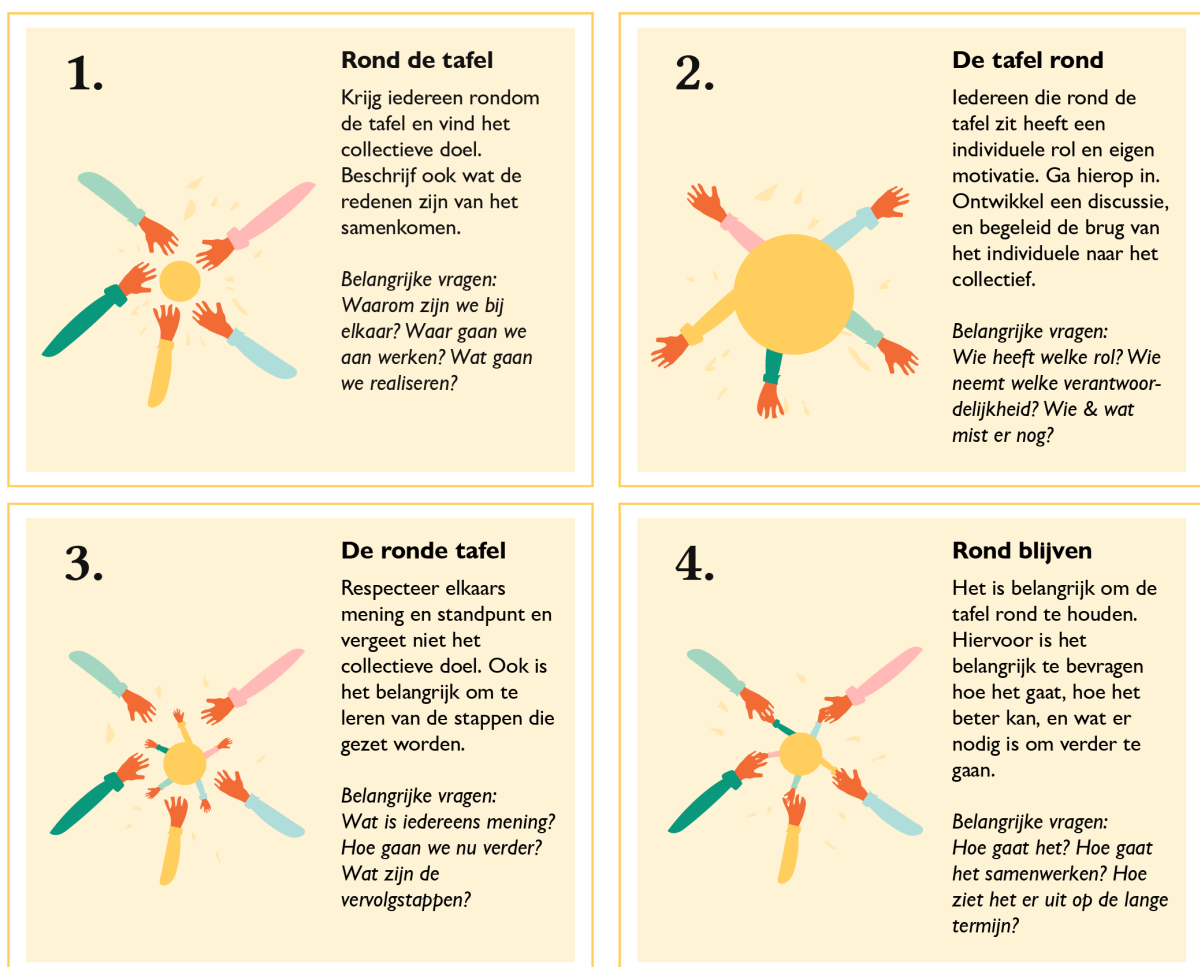


Figure 43: 'Samen doen we het', collaborative efforts by 4 stages, based upon (Bailey & Koney, 2000; Gajda, 2004; Lucidchart Blog, 2019; Tuckman, 1965; Tuckman & Jensen, 1977)

Key principles

Wei-Skillern & Silver (2013) distinguished four network principles for non-profit leaders to have impact from collaborative success. These four network principles are used throughout the design of the concept 'De BUCH rond maken'. These key principles are:

manage through trust, not control;
build constellations, not stars;
promote others, not yourself;
focus on mission before organization;

To citizen initiatives there are two main bodies: the local government and the citizens. For an initiative to start, a citizen has to take action and connect to the CIN. Trust is a very important component for doing. Setting up key principles for the collaborative efforts, function as a spark and guideline to develop trust between local government and citizens.

The importance of trust is a strong predictor of proactive implementation of citizen participation and operationalizing circular initiatives (Circular Economy Lab, 2019; Yang, 2005). For that reason the "trust, unless otherwise proved", "should become an ethical imperative for both initiative takers and administrators and an institutional principle" (Yang, 2005, p. 282) for the collaborative process (Wei-Skillern & Silver, 2013).

The aim is to build a constellation of circular initiatives as opposed to just multiple single ones. By building a collaborative circular initiative network, a network is built that can reinforce itself by its produced network value. The initiative network administrator for that is the CIN. That person knows the network and is able to connect people to each other. In such way there is the opportunity for the circular initiatives to acquire the required and missed needs for taking action (e.g. connecting a non-technology affluent team with a technology expert). In this sense the collaborative effort spreads through the whole network of people pushing for circular initiatives. Consequently, it becomes important that one is promoting others in the network as opposed to themselves.

The initiatives are important. Though it should be reminded that the collective mission is; 'De BUCH rond maken: Samen doen we het'. Keep this in mind.

The CIN is going to work its way throughout the existing networks and creates novel relationships between citizens, entrepreneurs and businesses in the network. For leading such network for the collaborative effort through the aforementioned key principles, it is required to shift towards a certain mindset (Wei-Skillern & Silver, 2013). These mindset shifts are depicted in Figure 44.

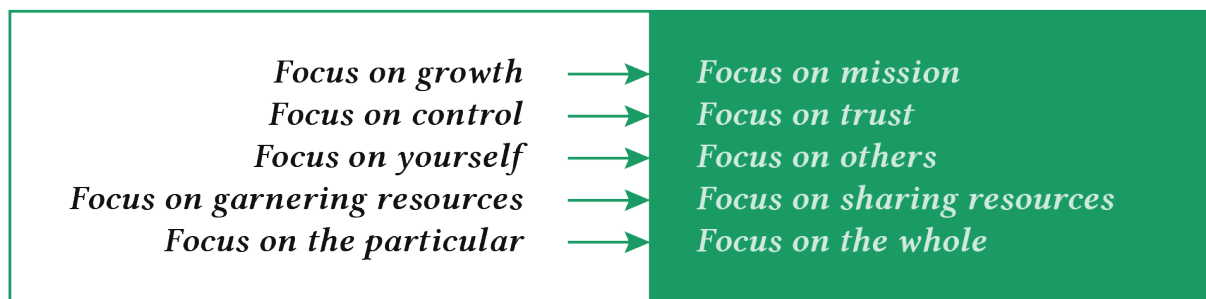


Figure 44: Mindset for 'Samen doen', adopted from (Wei-Skillern & Silver, 2013)

Roles of the ‘Circular initiatief netwerkbeheerder’ in ‘Samen doen’

Three roles can be distinguished that the CIN can take in the collaborative process for navigating the initiative group towards enacting the initiative. These roles play a very important factor for building and maintaining trust between all relevant stakeholders. Building on Ansell & Gash (2012), these roles are: the mediator, the steward and the catalyst. These are different roles but can and should be taken by the same CIN and also during the same period of time in the project.

The Mediator

The mediating role helps to facilitate and nurture the relationships between the stakeholders involved, and thus manages conflict. It is the central and neutral player that has the aim to mediate the stakeholders in their pursuit for taking action on their initiative. For that it is required to navigate and mediate in construction of the collective and shared meaning of the conversation.

A very critical aspect to this role is to be trusted by the stakeholders. For that the CIN should remember to achieve the goal of the whole, as opposed to an individual goal.

The Steward

Integrity is one of the key skills in a collaborative process (O’Leary et al., 2012). The steward role protects and establishes that. This happens bringing in inclusiveness, transparency and neutrality. Ground rules and ways of working are important facilitating skills to do that. These can range from ‘raising hands for questions’ towards ‘having a reflection round at the end of each session’.

The Catalyst

The catalyst has the role to catalyse the dynamics of value creation, identify those and mobilize the stakeholders into action into pursuit of that value. Such role requires the CIN to be able to frame and reframing perspectives and problems, be able to think in systems and facilitate the bonding of knowledge and experiences of the stakeholders for the network value to emerge.

3.5.2 ‘Actieplan’ – Plan of action (roadmap)

The ‘Actieplan’ visualizes the elementary steps and effects of the concept: ‘De BUCH rond maken’ (see Figure 45).

As explained before, trust should become a key principle within the collaborative efforts. Ansell & Gash (2007) explain:

“A prehistory of conflict is likely to express itself in low levels of trust, which in turn will produce low levels of commitment, strategies of manipulation, and dishonest communications. In other words, a prehistory of conflict creates a vicious circle of suspicion, distrust, and stereotyping.” (Ansell & Gash, 2007).

It is key to escape this vicious circle by developing various exemplary projects that are driven by collaborative efforts and shows a valuable outcome for all parties involved. This to reframe ‘they should’ towards ‘we are doing’, resulting in building trust. It is advised to proceed in the development of the three designed concepts as described in section 3.4.1 as first exemplary projects. In parallel the communication plan, as described in one section later, should be further developed. This to jointly communicate the collaborative practices and the opportunity for potential initiative takers to reach out for supporting and joining the network.

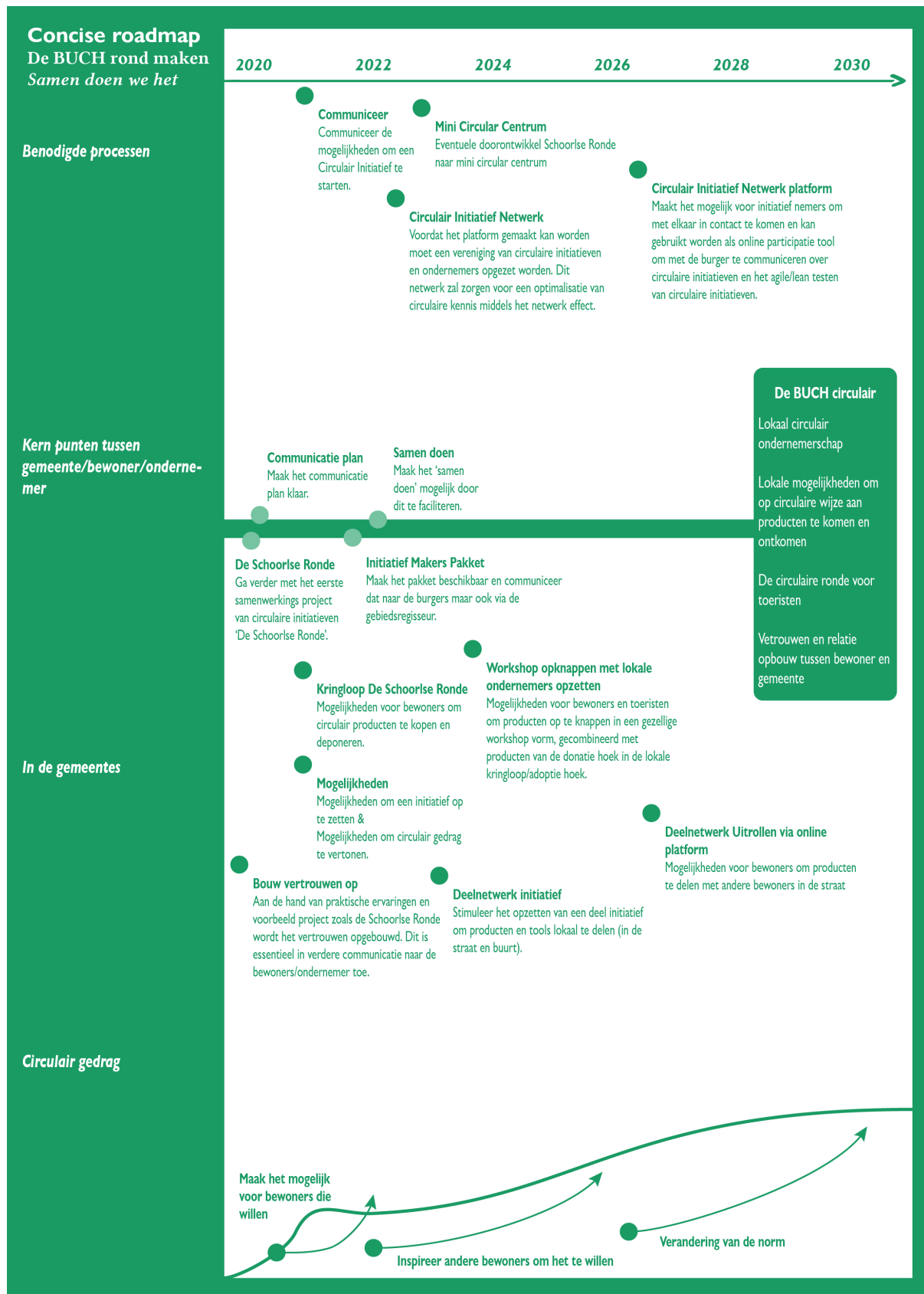


Figure 45: 'Actieplan', Concise roadmap for 'De BUCH rond maken'

3.5.3 ‘Laat zien’ – Communicate it

A product/market fit is as good as the communication/message fit (Medium, 2016). Not communicating ‘de BUCH rond maken’ will result in missed value. By communicating ‘de BUCH rond maken’ and the activities following from that, positive feedback on both the collaborative process and circular practices is communicated to the citizens in the BUCH. This positive feedback is a key element in enabling the emergence, according to the stairway to heaven framework by Nijs (2014, pp. 205-206) of circular behaviour amongst citizens in the BUCH. It is essential for maximizing the value from ‘de BUCH rond maken’ to develop a coherent communication style to the citizens of the BUCH. For that the leading principle, ‘De BUCH rond maken: Samen doen we het’ can be used.

Besides having a coherent style and identity it is important to increase and inspire trust among the citizens in the BUCH. This can be done by communicating the collaborative efforts from all actors’ communication channels (such as communities, local entrepreneurs, etc). Spreading the sources from which the communication comes from could be a strategy to communicate the practices as the new norm. This because successful collaboration between Municipality and Circular initiatives is communicated multiple sorts of social groups (entrepreneurs and municipality) (see for instance: Lapinski & Rimal, 2005). This in turn increases trust in the collaborative practices and efforts, resulting in a positive feedback loop in sparking interest to initiate circular initiatives.

Despite the addressed need for a communication plan, this is not further developed in this thesis. This due to time constraints. Whilst the communication plan is not elaborated, the leading principle is designed. Which contains everything that is strategically important and can be given to a creative design team for designing a communication plan that is coherent and consistent (Bakker-wu et al., 2017).

4 Discussion & Recommendations

In this chapter the project is discussed in respect to the initially posed question, research question and design goal. Also, recommendations are given for a pilot, testing and future action steps needed for the BUCH in their enactment to transition the citizens in the BUCH to practice circular behaviour.

The question that initiated this graduation was put forward by the BUCH and the Delft Design Lab Participatory City Making Lab. The question was:

How can the BUCH change the norm-behaviour of their citizens towards circular norm-behaviour at a local level, and is this different in different neighbourhoods?

This question resulted for this thesis in the research question with its sub-questions:

How can the citizens in the BUCH be facilitated to the transition towards a circular economy?

- a. *How is circular behaviour defined from a theoretical perspective?*
- b. *How could the current norm behaviour of citizens in the BUCH in the context of circular economy be defined?*
- c. *What norm behaviour could have potential for transitioning towards a circular one?*

For the design component of this thesis, this research question resulted in the following design goal:

How to support the BUCH in their enactment to its citizens for changing their behaviour for adopting circular economy?

4.1 Discussion

In the context exploration, the literature indicated the need for practical research and advice on what circular economy means in the daily habits, norms and behaviours of people (Hobson, 2019; Kirchherr et al., 2017; Kirchherr & van Santen, 2019; Ouillon et al., 2017; Sillanpää & Ncibi, 2019a, 2019b, 2019c). Circular economy can be viewed from a theoretical perspective along the two core principles of the 9R framework and the system perspective in order to loop resources back into usage (Kirchherr et al., 2017). Circular behaviour can be defined as behaviour that results in less or no waste by using these two core principles.

Within the research, the research methods followed to answer the sub-research questions b & c were the intervention 1.0, semi-structured in-depth interviews, the competitor analysis (Current circular opportunities in the BUCH), and the survey. The research findings show that the motivation of citizens in the BUCH to practice circular behaviour is relatively high, but the opportunity to practice circular behaviour is experienced as low. Grounded in these empirical results and the theoretical context, resulted in three designs that could bring that opportunity. The three designs were further explored by semi-structured in-depth interviews which resulted in the testing of the most promising design: De Schoorlse Ronde. These concepts serve as potential opportunities that could facilitate the citizens in the BUCH to practice circular behaviour. Testing De Schoorlse Ronde, various semi-structured in-depth interviews and desktop research resulted in the insight that an initiative leader is needed for the success of such circular behaviour enabling initiatives. For that 'de BUCH rond maken' was designed and evolved by a creative session, to serve as a complete package for the BUCH, as support in their enactment for transitioning towards changing the norm behaviour of their citizens for adopting circular economy.

4.2 Recommendations

The conclusion of the research is that a large proportion of the citizens in the BUCH is motivated to transition towards practicing circular behavior. This is key in enabling transitions (Foliente et al., 2007; Rotmans et al., 2000). However, the opportunities to practice circular behavior is low. Therefore, this thesis concludes with the need for a circular initiative network administrator, a collaborative process and an initiative starters package. These are together constructed in the final concept 'de BUCH rond maken: samen doen we het'. It is recommended that the concept is tested by the municipality by the commissioning of a dedicated circular initiative network administrator within a pilot. This in answering to the initially posed question by the BUCH:

How can the BUCH change the norm-behaviour of their citizens towards circular norm-behaviour at a local level, and is this different in different neighbourhoods?

The pilot for 'de BUCH rond maken' would be the way in which the BUCH changes the norm-behaviour of their citizens towards circular norm-behaviour. The local differences emerge from that pilot and may need further research on how to operationalize for those differences differently. It is recommended to follow the concise roadmap 'Actieplan' as depicted in Figure 46. As earlier indicated and shown in the 'Actieplan', it is also critical to develop a coherent communication plan towards the citizens of the BUCH, because of its essential role in succeeding the transition (Nijs, 2014). See also the separate action-repertoire specially constructed for the BUCH.

The research indicates that for a practical circular economy transitions for citizens representative to the BUCH municipalities, a critical factor is the need for a dedicated circular initiatives network. This to flourish the network value by establishing relationships between motivated people. Which results in the emergence of circular initiatives that fit locally in the habits, norms and behaviour of citizens. The significance of the change in behaviour towards circular norm behaviour in turn accelerates the transition towards a circular economy.

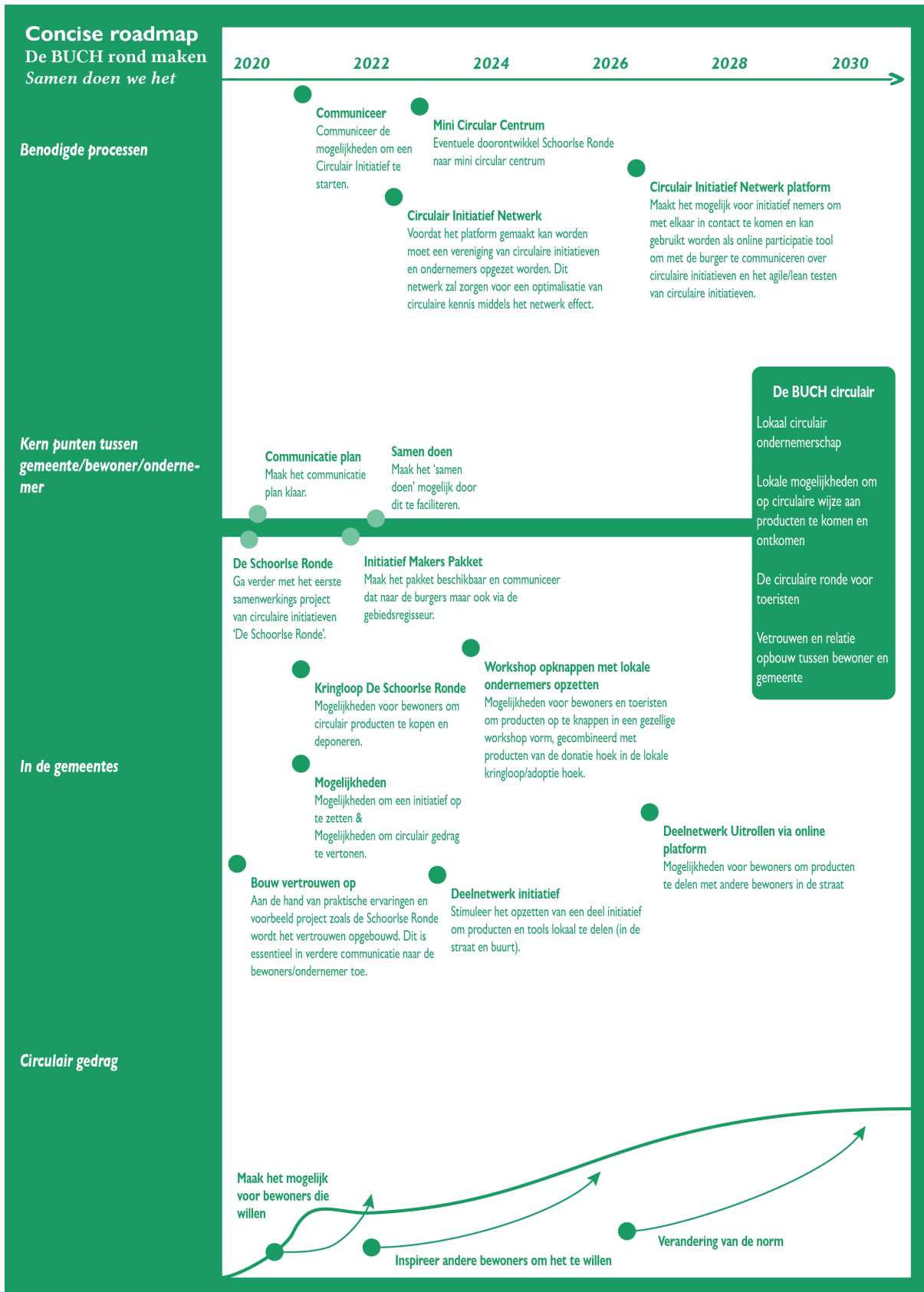


Figure 46: 'Actieplan', Concise roadmap for 'De BUCH rond maken'

5 Personal Reflection

This final section contains the author' personal reflection on this thesis.

At last I would like to end this thesis with a personal reflection on the graduation project. The project flourished my stronger and weaker characteristics as a designer but also brought me a lot of new knowledge. In that way I have certainly gained theoretical and practical knowledge on what circular economy is and what it means to actual people. Also, I have constructed a survey grounded in relevant behavioral theory and used SPSS learned in my masters for a descriptive analysis. A very educational experience was the research by design of de Schoorlse Ronde. The actual designing and researching by that design elicited very valuable insights.

I have enjoyed the collaboration with my supervisors from the TU Delft and the BUCH. Diving into the possibilities and opportunities to have impact for enabling a circular economy transition.

It cannot be excluded that this graduation was performed during the pandemic COVID-19. The pandemic had various practical effects on for instance the possibilities to conduct interviews, getting in contact with citizens in the BUCH or the increased pressure on the municipalities. I am grateful to the helpful engagement of the supervisors in these circumstances surpassing these difficulties. Whilst this graduation project is not concerned with that, its influences were unavoidable. Approaches had to be shifted, research interviews could not any longer be conducted in a face-to-face sense, etc. Despite the effects, a pragmatic work around was found by working with the effects in a positive as opposed to a negative way. To readers of the thesis, the externality of COVID-19 in relation to the graduation project can be read in the appendix Q.

Coming back to the initial research question and referring back to the design goal was key in the closure of this graduation project. The research surfaced the potential for circular behavior change and I truly believe that the design of 'De BUCH rond maken' is the strategic step for tapping into that potential, catalyzing the circular transition in the BUCH. Designing such consistent design strategy was very satisfying.

Naturally I am a divergent team player. I stepped outside of my comfort zone into doing; setting up a creative session, designing multiple concepts and being the director of this graduation project. Acting as such leading figure was very hard. The hardest phase within the graduation project would be the last converging phase. In specifically the writing concisely and rigorously down the research and design in this thesis. In this moment everything comes together and has to be written down in a concise and scientific manner. Being able to see the structure for writing that was key in finishing this thesis.

Bibliography

- Anderson, L. (1992). *Espoused theories and theories-in-use: Bridging the gap (breaking through defensive routines with organisation development consultants)* Chapter 1: Introduction: Argyris and Schön: Theoretical underpinnings Single and double-loop learning Model I and II. In L. Anderson (Ed.), *Espoused theories and theories-in-use: Bridging the gap (breaking through defensive routines with organisation development consultants)*. University of Queensland.
- Ansell, C., & Gash, A. (2007). Collaborative Governance in Theory and Practice Downloaded from. *Journal of Public Administration Research and Theory*. <https://doi.org/10.1093/jopart/mum032>
- Ansell, C., & Gash, A. (2012). Stewards, Mediators, and Catalysts: Toward a Model of Collaborative Leadership. *The Innovation Journal: The Public Sector Innovation Journal*, 17(1). <http://www.doleta.gov/usworkforce/documents/misc/wpaper3.cfm>.
- Bailey, D., & Koney, K. M. (2000). *Strategic alliances among health and human services organizations : from affiliations to consolidations*. SAGE Publications.
- Bakker-wu, S., Calabretta, G., & Hultink, E.-J. (2017). *How is brand experience designed in practice ? Results of a multiple-case study*.
- Bakker, J., Denters, B., & Klok, P.-J. (2012). Citizens' Initiatives: How Local Governments Fill their Facilitative Role. *Local Government Studies*, 38(4), 395–414. <https://doi.org/10.1080/03003930.2012.698240>
- Bedrijfspan. (2020). *Pandfuncties – Kringloopwinkel*. <https://www.bedrijfspan.com/pandfunctie/kringloopwinkel/>
- Bekhuis, K. (2018). *The transition towards a sustainable way of living: an evaluation of the energy system at De Ceutel*. University of Utrecht.
- Bergen. (2020). *Maatregelen nodig om ambitie 30 kilo restafval te halen | Gemeente Bergen*. <https://www.bergen-nh.nl/nieuwsoverzicht/maatregelen-nodig-om-ambitie-30-kilo-restafval-te-halen>
- Beverland, M. (2018). *Brand management : co-creating meaningful brands*. SAGE.
- Buchanan, R. (2019). Systems Thinking and Design Thinking: The Search for Principles in the World We Are Making. *She Ji: The Journal of Design, Economics, and Innovation*, 5(2), 85–104. <https://doi.org/10.1016/j.sheji.2019.04.001>
- Business gov. (2020). *Setting up a foundation in the Netherlands*. <https://business.gov.nl/starting-your-business/choosing-a-business-structure/foundation/>
- Carson, R. (1962). *Silent spring* (L. Darling & L. Darling (eds.); The Rivers). Houghton Mifflin Company.
- Castricum. (2019). *Grondstoffenplan Gemeente Castricum 2019 - 2025: Van Afval naar Grondstof Op weg naar duurzaam afvalbeheer*.
- CBS. (2019). *StatLine - Gemeentelijke afvalstoffen; hoeveelheden*. <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83558NED/line?dl=4E70&ts=1582014487589>
- Chakravarty, A. (2010). The creative brain - Revisiting concepts. *Medical Hypotheses*, 74(3), 606–612. <https://doi.org/10.1016/j.mehy.2009.10.014>
- Circular Economy Lab. (2019). *Verslag van het Circular Economy Lab 20: Van initiatief naar impact*.
- Civicservicedesign. (2017). *The Launch of the Nation's First-Ever Municipal Service Design Studio Dedicated to Improving Services for Low-Income Residents*. <https://civicservicedesign.com/the-launch-of-the-nations-first-ever-municipal-service-design-studio-dedicated-to-improving-c9b23502f1d4>
- Concilio, G., & Tosoni, I. (2019). *Innovation capacity and the city : the enabling role of design* (Grazia Concilio & Ilaria Tosoni (eds.); 1st ed.). Springer International Publishing.
- Cooper, J., Lombardi, R., Boardman, D., & Carliell-Marquet, C. (2011). The future distribution and production of global phosphate rock reserves. *Resources, Conservation and Recycling*, 57, 78–86. <https://doi.org/10.1016/j.resconrec.2011.09.009>
- de BUCH. (2018). *Besluit bestuur Werkorganisatie BUCH Verbeterplan "Samen naar beter."* <https://webcache.googleusercontent.com/search?q=cache:i4vjzvlbGEJ:https://api1.ibabs.eu/publicdownload.aspx%3Fsite%3Dheiloo%26id%3D100031601+%cd=1&hl=nl&ct=clnk&gl=nl>
- de BUCH. (2020). *Vier gemeenten, één werkorganisatie*. <http://werkenbij.debuch.nl/>
- de Ceutel. (2020). *Algemene Informatie*. <https://deceutel.nl/nl/about/general-information/>
- De Koning, J., Puerari, E. ; Mulder, I. ; & Loorbach, D. ; (2017). Ten types of emerging city makers. In B. Sevaldson (Ed.), *Proceedings of Relating Systems Thinking and Design (RSD6)* (p. 11). www.systemic-design.net
- Delgado, A. V. (2013). Mineral resource depletion assessment. In *Eco-Efficient Construction and Building Materials: Life Cycle Assessment (LCA), Eco-Labeling and Case Studies* (pp. 13–37). Elsevier Inc. <https://doi.org/10.1533/9780857097729.1.13>
- Dezeen. (2017). *Sand becomes "increasingly scarce and expensive", threatening glassmaking and construction*. <https://www.dezeen.com/2017/10/11/sand-crisis-scarce-expensive-threatening-glassmaking-construction-atelier-nl-dutch-design-week/>
- Dolan, P. (2016). *Building Collaborative Structures: A Systems Approach*. Youtube. <https://www.turnweb.org/videos/building-collaborative-structures-a-systems-approach/>
- Dri, M., Canfora, P., Antonopoulos, I. S., & Gaudillat, P. (2018). *Best Environmental Management Practice for the Waste Management Sector*. <https://doi.org/10.2760/50247>
- EEA. (2013). *Managing municipal solid waste - a review of achievements in 32 European countries*. <https://www.eea.europa.eu/publications/managing-municipal-solid-waste>

- Ellen MacArthur Foundation. (2017a). *Circular Economy Schools Of Thought*. <https://www.ellenmacarthurfoundation.org/circular-economy/concept/schools-of-thought>
- Ellen MacArthur Foundation. (2017b). *What is a Circular Economy?* <https://www.ellenmacarthurfoundation.org/circular-economy/concept>
- EPA. (2020). *Overview of Greenhouse Gases*.
- Estes, J. A., Terborgh, J., Brashares, J. S., Power, M. E., Berger, J., Bond, W. J., Carpenter, S. R., Essington, T. E., Holt, R. D., Jackson, J. B. C., Marquis, R. J., Oksanen, L., Oksanen, T., Paine, R. T., Pickett, E. K., Ripple, W. J., Sandin, S. A., Scheffer, M., Schoener, T. W., ... Wardle, D. A. (2011). Trophic downgrading of planet earth. In *Science* (Vol. 333, Issue 6040, pp. 301–306). American Association for the Advancement of Science. <https://doi.org/10.1126/science.1205106>
- EU. (2016). *Paris Agreement*. European Commission. https://ec.europa.eu/clima/policies/international/negotiations/paris_en
- European Commission. (2008). *Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and Repealing Certain Directives*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>
- European Commission. (2014). *General Union environment action programme to 2020 - EU Law and Publications*. <https://doi.org/10.2779/68165>
- European Commission. (2015). *Closing the loop - An EU action plan for the Circular Economy*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614>
- European Commission. (2017). Presentations by the speakers. *Municipal Waste Management and Waste Prevention*. <https://ec.europa.eu/environment/waste/framework/conference.htm>
- European Commission. (2019). *The European Green Deal - EUR-Lex - 52019DC0640 - EN - EUR-Lex*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1588580774040&uri=CELEX:52019DC0640>
- European Commission. (2020). *Circular Economy Action Plan: For a cleaner and more competitive Europe*.
- European Union. (2020). *Knowledge for policy: Global demand for resources*. https://ec.europa.eu/knowledge4policy/foresight/topic/aggravating-resource-scarcity/global-demand-resources-materials_en
- Felyx. (2020). *Travel fast & affordable by felix scooter through the city*. <https://felyx.com/>
- Foliente, G., Rodgers, A., Blutstein, H., & Wang, X. (2007). Urban Sustainability Transition-A “Tipping Point” Approach CSIRO Sustainable Ecosystems 2. *Australian Cities Research Network*.
- Furnham, A. (2005). Work motivation and satisfaction. In *The Psychology of Behaviour at Work: The Individual in the Organization* (pp. 277–254). Psychology Press.
- Gajda, R. (2004). Utilizing Collaboration Theory to Evaluate Strategic Alliances. *American Journal of Evaluation*, 25(1), 65–77. <https://doi.org/10.1177/109821400402500105>
- Gancheva, M., O'Brien, S., Monteiro, C., & Valentino, A. (2018). Towards an 8 th Environment Action Programme - Local and regional dimension. *Commission for the Environment, Climate Change and Energy*. <https://doi.org/10.2863/70733>
- Geisendorf, S., & Pietrulla, F. (2018). The circular economy and circular economic concepts-a literature analysis and redefinition. *Thunderbird International Business Review*, 60(5), 771–782. <https://doi.org/10.1002/tie.21924>
- Gemeente Bergen. (2020). *Over de gemeente – Organisatie*. <https://www.bergen-nh.nl>
- Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114, 11–32. <https://doi.org/10.1016/j.jclepro.2015.09.007>
- Ghosh, T. K., & Prelas, M. A. (2009). *Energy Resources and Systems: Volume 1: Fundamentals and Non-Renewable Resources* (Vol. 1). Springer.
- Goldman, S., & Kahnweiler, W. M. (2000). A Collaborator Profile for Executives of Nonprofit Organizations. *Nonprofit Management and Leadership*, 10(4), 435–450. <https://doi.org/10.1002/nml.10406>
- Gong, Y., & Whelton, J. (2019). In Conversation: Ellen MacArthur: From Linear to Circular. *She Ji*, 5(3), 247–256. <https://doi.org/10.1016/j.sheji.2019.08.001>
- Gordon, H. S. (1954). The Economic Theory of a Common-Property Resource: The Fishery Author(s). In *Source: The Journal of Political Economy* (Vol. 62, Issue 2).
- Gotanda, K. M., Hendry, A. P., & Svensson, E. I. (2017). Human influences on evolution, and the ecological and societal consequences. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 372(1712), 1–13. <https://doi.org/10.1098/rstb.2016.0028>
- Heilman, K. M., Nadeau, S. E., & Beversdorf, D. O. (2003). Creative Innovation: Possible Brain Mechanisms. *Neurocase*, 9(5), 369–379. <https://doi.org/10.1076/neur.9.5.369.16553>
- Heiloo. (2019). *Grondstoffenplan Gemeente Heiloo 2019 - 2025: Van Afval naar Grondstof Op weg naar duurzaam afvalbeheer*.
- Hieropgewekt. (2019). *Een lokaal energie-initiatief starten: zeven facetten voor succes*. <https://www.hieropgewekt.nl/kennisdossiers/een-lokaal-energie-initiatief-starten-zeven-facetten-voor-succes>
- Hobson, K. (2019). ‘Small stories of closing loops’: social circularity and the everyday circular economy. *Climatic Change*, 1–18. <https://doi.org/10.1007/s10584-019-02480-z>
- Kelders, Y., Kriek, F., & Timmerman, J. (2018). *Burgerparticipatie in Bergen, Uitgeest, Castricum en Heiloo*.
- Kersten, W. C. (2020). What Leonardo could mean to us now: Systematic variation 21st century style, applied to large-scale societal issues [Delft University of Technology]. <https://doi.org/10.4233/UJUID:2B5626CA-1A12-44E9-88DA-6D898B06B751>
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>
- Kirchherr, J., & van Santen, R. (2019). Research on the circular economy: A critique of the field. *Resources, Conservation and Recycling*, 151, 104480.

- <https://doi.org/10.1016/j.resconrec.2019.104480>
- KopjeSuiker. (2019). *Homepage*. <https://www.kopjesuiker.org/index.php>
- Kratzer, J., Leenders, R. T. A. J., & van Engelen, J. M. L. (2006). Team Polarity and Creative Performance in Innovation Teams. *Creativity and Innovation Management*, 15(1), 96–104. <https://doi.org/10.1111/j.1467-8691.2006.00372.x>
- Lampert, A. (2019). Over-exploitation of natural resources is followed by inevitable declines in economic growth and discount rate. *Nature Communications*, 10(1), 1–10. <https://doi.org/10.1038/s41467-019-09246-2>
- Lapinski, M. K., & Rimal, R. N. (2005). An Explication of Social Norms. *Communication Theory*, 15(2), 127–147. <https://doi.org/10.1111/j.1468-2885.2005.tb00329.x>
- Loorbach, D., Frantzeskaki, N., & Avelino, F. (2017). Sustainability Transitions Research: Transforming Science and Practice for Societal Change. *Annual Review of Environment and Resources*, 42(1), 599–626. <https://doi.org/10.1146/annurev-environ-102014-021340>
- LPB. (2018). *9 digitale buurtplatforms vergeleken*. https://lpb.nl/nieuws/nieuws-bericht/9-digitale-buurtplatforms-vergeleken/?fbclid=IwAR1BES__Qfh-gwfooHPRxQWMqAP4d7Nhx2jfvCMk23dVhXq0jADW9sqvCDGs
- Lucidchart Blog. (2019). *Mastering the Key Stages of Group Development*. <https://www.lucidchart.com/blog/stages-of-group-development>
- Martikainen, O. (2017). Food waste. *Municipal and Regional Waste Management & Prevention*. <https://ec.europa.eu/environment/waste/framework/conference.htm>
- McKinsey. (2016). *The circular economy: Moving from theory to practice*. McKinsey Center for Business and Environment Special Edition.
- Meadows, D. H., Meadows, D. L., Rgen, J., William, R., & Behrens III, W. (1972). *The limits to growth*. Universe Books.
- Medium. (2016). *Strategic Communication: How to Develop Strategic Messaging and Positioning*. <https://medium.com/the-marketing-playbook/strategic-communication-how-to-develop-strategic-messaging-and-positioning-3cc59689ca28#fzjnuqsa9>
- Medium. (2018). *How to Facilitate Roundtable Discussions: 5 Tips to Create Meaningful Conversations*. https://medium.com/@shannonkelly_80469/how-to-facilitate-roundtable-discussions-5-tips-to-create-meaningful-conversations-e7ea181e9fe2
- Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*, 6(42), 1–11. <https://doi.org/10.1186/1748-5908-6-42>
- Ministerie van IenW. (2019). *Landelijk afvalbeheerplan 2017-2029: Slimmer omgaan met grondstoffen (lap3)*. <https://lap3.nl/beleidskader/beleidskader-geheel/>
- Natuurenmilieuoverijssel. (2019). *Handleiding stappenplan*. www.natuurenmilieuoverijssel.nl
- NH Nieuws. (2019). *Bewoners Bergen zijn politiek zat: "We zijn nog geen stap verder."* <https://www.nhnieuws.nl/nieuws/254311/bewoners-bergen-zijn-politiek-zat-we-zijn-nog-geen-stap-verder>
- Niederer, K., Mackrill, J., Clune, S., Lockton, D., Ludden, G., Morris, A., Cain, R., Gardiner, E., Gutteridge, R., Evans, M., & Hekkert, P. (2014). *Creating Sustainable Innovation through Design for Behaviour Change: Full Project Report*. University of Wolverhampton, CADRE.
- Nijs, D. E. L. W. (2014). *Imagineering the Butterfly Effect: Complexity and Collective Creativity in Business and Policy*. Eleven International Publishing.
- NOEP. (2016). *State of the U.S. Ocean and Coastal Economies Coastal States Summaries - 2016 Update*. <https://www.oceaneconomics.org/download/>
- O'Leary, R., Choi, Y., & Gerard, C. M. (2012). The Skill Set of the Successful Collaborator. *Public Administration Review*, 72(s1), S70–S83. <https://doi.org/10.1111/j.1540-6210.2012.02667.x>
- Onderaf. (2019). *Ondersteunende organisaties*. <https://www.onderaf.nl/ondersteunende-organisaties/>
- Osterwalder, A., & Pigneur, Y. (2010). *Business Model Generation*. John Wiley & Sons, Inc. <https://doi.org/10.1523/JNEUROSCI.0307-10.2010>
- Ostrom, E. (1990). *Governing the commons: the evolution of institutions for collective action*. Cambridge University Press. https://wtf.tw/ref/ostrom_1990.pdf
- Ostrom, E. (2005). *Understanding institutional diversity*. Princeton University Press.
- Ostrom, E., Gardner, R., & Walker, J. (1994). *Rules, games and common-pool resources*. The University of Michigan Press.
- Ouillon, S., Dibb, S., & Peck, D. (2017). Understanding the societal, entrepreneurship and economic aspects of developing a circular economy in cities: a case study of coventry in the UK. In Bakker, C and Mugge, R (Ed.), *PRODUCT LIFETIMES AND THE ENVIRONMENT (PLATE)* (pp. 329–333). IOS PRESS. <https://doi.org/10.3233/978-1-61499-820-4-329>
- Parker, S. K. (2007). 'That is my job': How employees' role orientation affects their job performance. *Human Relations*, 60(3), 403–434. <https://doi.org/10.1177/0018726707076684>
- Patton, M. Q. (2002). Qualitative interviewing. In *Qualitative research & evaluation methods* (3rd ed., pp. 339–418). SAGE Publications. <https://uq.r.talis.com/items/3C6D0D64-6971-91B6-9A55-63E7865BF969.html>
- Patton, M. Q. (2014). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice* (M. Q. Patton (ed.); 4th ed.). Sage Publications, Inc.
- PECB. (2019). *4 advantages of round-table discussions*. <https://pecb.com/conferences/advantages-of-round-table-discussions/>
- PHE. (2019). *Achieving behaviour change A guide for local government and partners*. www.facebook.com/PublicHealthEngland
- Porter, L. W., & Lawler, E. E. (1968). *Managerial attitudes and performance*. R.D. Irwin.
- Postmus, A., & Zwerver, I. (2016). *Dorpen zijn duurzaam*. www.lvkk.nl
- Potting, J., Hekkert, M., Worrell, E., & Hanemaaijer, A. (2017). *Circular Economy: Measuring innovation in product chains*. <https://www.pbl.nl/en/publications/circular-economy-measuring-innovation-in-product-chains>

- PSF. (2019). *Het Probleem Van De Plasticsoep*. Plastic Soup Foundation. <https://www.plasticsoupfoundation.org/plastic-probleem/plasticsoep/>
- Quist, J. (2013). Backcasting and scenarios for sustainable technology development. In *Handbook of Sustainable Engineering* (pp. 749–771). Springer Netherlands. https://doi.org/10.1007/978-1-4020-8939-8_52
- Quist, J., Thissen, W., & Vergragt, P. J. (2011). The impact and spin-off of participatory backcasting: From vision to niche. *Technological Forecasting and Social Change*, 78(5), 883–897. <https://doi.org/10.1016/j.techfore.2011.01.011>
- Quist, J., Wittmayer, J., Umpfenbach, K., Bauler, T., & Bach, M. (2013). Sustainable Consumption Transitions Series Issue 3 Pathways , Transitions and Backcasting for Low-Carbon and Sustainable Lifestyles SCORAI Europe Workshop Proceedings SCORAI Europe & InContext Workshop 7-8 October 2013 , Rotterdam , The Netherlands. *Proceedings of SCORAI Europe & InContext Workshop, Rotterdam, The Netherlands, 7-8 October 2013; Sustainable Consumption Transitions Series, Issue 3*, 3. <https://repository.tudelft.nl/islandora/object/uuid%3A7857a603-f9a0-4aab-bdd7-d640ee648e1b>
- Raadbergen. (2018). *Startnotitie Afvalstoffenplan wordt Grondstoffenplan Bergen*.
- Rabobank. (2019). *Ambitie op een bierviltje*. <https://www.ikgastarten.nl/bedrijf-starten/bedrijfsplan/ambitie-op-een-bierviltje>
- Rijksoverheid. (2016). *Circulaire economie: Nederland circulair in 2050*. Het Ministerie van Infrastructuur En Milieu En Het Ministerie van Economische Zaken, Mede Namens Het Ministerie van Buitenlandse Zaken En Het Ministerie van Binnenlandse Zaken En Koninkrijksrelaties. Rijksoverheid.nl
- Rijksoverheid. (2019). *Uitvoeringsprogramma Circulaire Economie 2019 - 2023*. <https://www.rijksoverheid.nl/documenten/rapporten/2019/02/08/uitvoeringsprogramma-2019-2023>
- Rijkswaterstaat. (2019). *Inspiratiegids Circulaire Ambachtscentra*. <https://www.vang-hha.nl/@219949/inspiratiegids-circulaire-ambachtscentra/>
- Rijkswaterstaat. (2020). *Circulaire economie*. Ministerie van Infrastructuur En Waterstaat. <https://www.rijkswaterstaat.nl/zakelijk/innovatie-en-duurzame-leefomgeving/duurzame-leefomgeving/circulaire-economie/index.aspx>
- Rogers, E. M. (1983). *Diffusion of innovation* (3rd ed.). The Free Press.
- Rotmans, K., Kemp, R., van Asselt, M., Geels, F., Verbong, G., & Molendijk, K. (2000). *Transities & Transitie management: De casus van een emissiearme energievoorziening Oktober 2000*.
- RoundTable The Netherlands. (2020). *Welkom*. <https://roundtable.nl/>
- Sapsed, J., & Salter, A. (2004). Postcards from the Edge: Local Communities, Global Programs and Boundary Objects. *Organization Studies*, 25(9), 1515–1534. <https://doi.org/10.1177/0170840604047998>
- Schaar, C. (2017). Waste prevention in the Brussels Capital region. *Municipal Waste Management and Waste Prevention*. <https://ec.europa.eu/environment/waste/framework/conference.htm>
- Selvefors, A., Rexfelt, O., Renström, S., & Strömberg, H. (2019). Use to use – A user perspective on product circularity. *Journal of Cleaner Production*, 223, 1014–1028. <https://doi.org/10.1016/j.jclepro.2019.03.117>
- Sillanpää, M., & Ncibi, C. (2019a). Getting hold of the circular economy concept. In M. Sillanpää & C. Ncibi (Eds.), *The Circular Economy* (pp. 1–35). Elsevier. <https://doi.org/10.1016/b978-0-12-815267-6.00001-3>
- Sillanpää, M., & Ncibi, C. (2019b). Circular economy : here and now. In M. Sillanpää & C. Ncibi (Eds.), *The Circular Economy* (pp. 37–68). Elsevier. <https://doi.org/10.1016/B978-0-12-815267-6.00002-5>
- Sillanpää, M., & Ncibi, C. (2019c). Circular economy and sustainable development. In M. Sillanpää & C. Ncibi (Eds.), *The Circular Economy* (pp. 281–311). Elsevier. <https://doi.org/10.1016/b978-0-12-815267-6.00006-2>
- Smith, M. K. (2001). *Chris Argyris: theories of action, double-loop learning and organizational learning*. The Encyclopedia of Pedagogy and Informal Education. <https://infed.org/mobi/chris-argyris-theories-of-action-double-loop-learning-and-organizational-learning/>
- Snow, R. E., & Iii, D. N. J. (1993). *Assessment of Conative Constructs for Educational Research and Evaluation: A Catalogue (CSE Technical Report 354)*.
- Spurling, N., Mcmeekin, A., Shove, E., Southerton, D., & Welch, D. (2013). *Interventions in practice: re-framing policy approaches to consumer behaviour*.
- Stapper, P. J., & Giaccardi, E. (2013). Research through Design. In M. Soegaard & R. F. Dam (Eds.), *The Encyclopedia of Human-Computer Interaction* (2nd ed.). The interaction design foundation. <https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/research-through-design>
- Star, S. L., & Griesemer, J. R. (1989). Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology. *Social Studies of Science*, 19, 387–420.
- Steiner, G., Risopoulos, F., & Mulej, M. (2015). Social Responsibility and Citizen-Driven Innovation in Sustainably Mastering Global Socio-Economic Crises. *Systems Research and Behavioral Science*, 32(2), 160–167. <https://doi.org/10.1002/sres.2255>
- Stewart, D. W., & Kamins, M. A. (1993). Secondary Research: Information Sources and Methods - - Google Boeken. In *Applied Social Research Methods* (2nd ed., Vol. 4). SAGE. <https://books.google.nl/books?id=Oe3MrNsOjkkC&printsec=frontcover&dq=secondary+research&hl=nl&sa=X&ved=0ahUKewinqfDTpaHoAhVJjqQKHem5ACoQ6AEIKDAA#v=onepage&q=secondary+research&f=false>
- Talmar, M., Walrave, B., Podoyntsyna, K. S., Holmström, J., & Romme, A. G. L. (2018). Mapping, analyzing and designing innovation ecosystems: The Ecosystem Pie Model. *Long Range Planning*, 101850. <https://doi.org/10.1016/j.lrp.2018.09.002>
- Tassoul, M. (2009). *Creative Facilitation* (Vol. 3). Vssd. <https://www.bol.com/nl/f/creative-facilitation-http-www-vssd-nl-hlf-b005-htm/30508427/>
- Temesgen, A., Storsletten, V., & Jakobsen, O. (2019). Circular Economy – Reducing Symptoms or Radical Change? *Philosophy of Management*, 1–20. <https://doi.org/10.1007/s40926-019-00112-1>
- The Guardian. (2011). *The six natural resources most drained by our 7 billion people*. <https://www.theguardian.com/environment/blog/2011/oct/31/six-natural-resources-population>

- Thijssen, F. M. W. (2020). *Design for participation: a circular centre in the BUCH*. University of Technology Delft.
- Tuckman, B. W. (1965). Developmental sequence in small groups. *Psychological Bulletin*, 63(6), 384–399. <https://doi.org/10.1037/h0022100>
- Tuckman, B. W., & Jensen, M. A. C. (1977). Stages of Small-Group Development Revisited. *Group and Organization Management*, 2(4), 419–427. www.jaf-world.org/j4a/pages/index.cfm?pageid=3498.
- Tukker, A. (2004). Eight types of product-service system: Eight ways to sustainability? Experiences from suspronet. *Business Strategy and the Environment*, 13(4), 246–260. <https://doi.org/10.1002/bse.414>
- Uitgeest. (2019). *Grondstoffenplan Gemeente Uitgeest 2019 - 2025: Van Afval naar Grondstof Op weg naar duurzaam afvalbeheer*. <https://www.uitgeest.nl/index.php?id=4256&MP=1686-1685>
- Uitkijkpost Castricum. (2019). *Tevredenheid in Bergen, Uitgeest, Castricum en Heiloo stijgt licht | Castricum*. <https://castricum.uitkijkpost.nl/nieuws/algemeen/34130/tevredeheid-in-bergen-uitgeest-castricum-en-heiloo-stijgt-licht>
- Vaca, S. (2018). *Patton's 40 Purposeful Sampling Strategies*. Blog Post. <http://www.saravaca.com/project/pattons-40-purposeful-sampling-strategies/>
- van Boeijen, A., Daalhuizen, Zijlstra, J., & van der Schoor, R. (2013). *Delft Design Guide* (4th ed.). BIS Publishers.
- Van De Ven, A. H. (1986). Central Problems in the Management of Innovation. *Management Science*, 32(5), 590–607. <https://doi.org/10.1287/mnsc.32.5.590>
- VANG-HHA. (2014). *Publiek Kader Huishoudelijk afval 2025*. <https://www.vang-hha.nl/algemene-onderdelen/programma/>
- VANG-HHA. (2018). *Meer preventie en afval scheiden, minder restafval - VANG Huishoudelijk afval*. <https://www.vang-hha.nl/@190172/preventie-afval/>
- Wei-Skillern, J., & Silver, N. (2013). Four Network Principles for Collaboration Success. *THE FoundationReview*, 5(1), 121–129. <https://doi.org/10.4087/FOUNDATIONREVIEW-D-12-00018.1>
- Winans, K., Kendall, A., & Deng, H. (2017). The history and current applications of the circular economy concept. *Renewable and Sustainable Energy Reviews*, 68, 825–833. <https://doi.org/10.1016/j.rser.2016.09.123>
- Winter, I. (2017). Separate Collection and Management of Biowaste. *Municipal and Regional Waste Management & Prevention*. <https://ec.europa.eu/environment/waste/framework/conference.htm>
- Yang, K. (2005). Public Administrators' Trust in Citizens: A Missing Link in Citizen Involvement Efforts. *Public Administration Review*, 65(3), 273–285. <https://doi.org/10.1111/j.1540-6210.2005.00453.x>



