

# Appendices

## On circular transitioning

*An action repertoire for the BUCH*



**Appendices of Master Thesis — Strategic Product Design**

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“The menu is not the meal”  
Alan Watts

# Colophon

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# Appendix A | Meetings

## A.1 Kick-off with Esther Keijser

**Date: 13-02-2020**

Attendees

Esther Keijser

Willem Zwagers

Fieke Thijssen

### Summary

Esther Keijser leads the policy making for the new municipality waste collection facility. From this waste project, the striving towards a CE emerged. Due to the financial construction of Rijkswaterstaat financing the circulair centrum, with an initial focus on waste reduction and an improved sorting of waste. Keijser has to justify any action she makes, in relation to either waste reduction or improved sorting.

The waste tax residents pay differ per municipality, but come together in one fund managed by de BUCH. With that money they invest in the various mechanisms for either waste reduction, improved waste sorting, waste facilities, and more.

Fine household waste

**Bulky household waste** This needs to go from  $\pm 30$  kg to 5kg by 2025.

Heiloo has a district called Ypenburg, with a set of lobbyists that deny climate change.

De raad represents the citizens. These are however sometimes rigid.

The councilors are okay, and some are also very visionary to CE.

The policy is stated, this is about household waste. They have a resource plan for that. 2019-2025 for all BUCH municipalities.

What is open and has room for a redesign is the new waste disposal facility. That is apart from the rigid household waste policy.

They want to go to 5kg a year a person of bulky waste (from 30). This is envisioned to be accomplished by an improved sorting facility, thriftshop, build thriftshop,

Every municipality has a repair café, however no contact. Stichting repair café wants to redesign their image.

There is a project about waste facility and if you sort it properly you get a discount at sustainable businesses.

## A.2 Meeting Rijkswaterstaat, TU Delft, BUCH municipality, Bouwkringloop

**Date:** 20-02-2020

### Attendees

TU Delft - Fieke Thijssen

- Ingrid Mulder
- Willem Zwagers

Rijkswaterstaat - Quirine Kramer (Projectleider Circulair Ambachtscentrum)  
- Jennifer van Dijk (Adviseur Programma van Afval naar Grondstof)

Bouwkringloop - Gijsbert Janssen (Initiatiefnemer en onderzoeker circulaire innovatie en ontwikkelprojecten)  
BUCH - Esther Keijser (Beleidsmedewerker Grondstoffen)  
- Tessa Meijer (Team manager Grondstoffen & Manager Afvalstations)  
- Leon (Designer)

### Summary

#### Phase 1 of project

The first phase of Circular Centrum project started with collaborations between 3 education centres, TU Delft, Bonhoeffer(technasium) and PCC (Petrus Canisius College Heiloo). During a period of 2-4 months 15, 80, 250 (respectively) pupils all worked on a similar assignment: Creating new products out of materials disposed at the bulk waste facility.

Bonhoeffer — Whilst doing this process the key learning points where that the value of the activity was not in the end-product that was being made. The value was in the process and activity. During the activity the mindset slowly 'changed' as people became aware of for instance that certain furniture is glued, and this makes it less possible to use parts of that furniture. Also the teachers learned to look beyond their current teaching methods.

*Key point — The activity brings something; socially, learning, relations, mindsets, The means is more important than the end.*

Two big workshop places are REACT & GGZ. These are used for daily usage, social integration of certain people

### Others

It is said that the 'wethouders' are frequently positive about it.

### BUCH

The project is led by Esther.

From the 4 municipalities UCH have their own facilities for managing waste. Bergen has the company HVC that does that for them. There is the idea to bring this together, and make one responsible system for that. However for that, wethouders and de raad, need to be aligned.

A solution could be in a place at the 'millieustraat' to deconstruct the products. However, this is very expensive, as many people are needed, and this cost too much for what it brings.

### Rijkswaterstaat

From the department Waste & Circular (afval en circulair) came the competition of Circular Centruns. They also have

an interest for matching this to schools, for both education the children to spread the circular mind, and to have a 'social' purpose. Their reasoning is that just pushing blueprints to municipalities won't work, and their question is how can we make this work locally? And how can we build a learning network environment?

## **Bouwkringloop**

The name of this successful pilot is KLUS in Amersfoort. The project leader has many requests by other project developers. However, placing such 'bouwkringloop' entails a systemic solution. As in Amersfoort, the bouwkringloop is integrated with the specifics and dynamics of a local kringloop. In this way they use their pick-up facilities for large furniture.

The assortment of the bouwkringloop varies by the day. But having a physical location, with a bigger assortment than just one square meter they are able to run.

## **What happened at KLUS.**

They have build on a current system(kringloop), another system (bouwkringloop). What happens is that all AANNEMERS and others have left-over building materials. Though they do not want to throw it away, as they think it is a pity to do so (zoned om te doen). Now they have a area that they can dump it. The thing is that the public people buy these materials, local DIY's and more. By that, the demand exponentially goes up, and it asks for more and more materials. Then the AANemers also go take a look, and it al works positive feedback loop

*Key point — Through building a public system, the aannemers system was made possible*

*Key point — Through faciliating on another area, another thing/activity/problem making activity/ etc is made possible*

*Key pint — Acitivites or systems that currently work, to make impact or even make possible the living of another system*

## **Challenge**

The challenge posed is that for every municipality or area this would work differently, as its dynamics and specifics are differently.

## **Opportunity**

Kringloop —> associations

Bouwkringloop —> different associations, diff people, diff sector, different vibe! WORKS

It can be very valuable to have a practical inspirational book for interventions on how to approach the locals to accomplish their goals. Likewise the participation process is such one.

## **BUCH brigade – Leon**

This project is a side project to make the Circular centrum project concrete and tangible. At Egmond Aan Zee, they have hired an old firemans house to place youth that are inbetween studying and working (any level). The youth is going to design for and with the local community striving for CE. This is in collaboration with MDT & Starters4 communities.

### A.3 Kringloopdag Duurzaam Heiloo

The organization Duurzaam Heiloo (DH) is an organization in Heiloo about sustainability (JMA, 2018a, 2018c, 2018b). Through DH citizens, municipality and entrepreneurs can work together on projects to make Heiloo contribute to a greener planet (DH, 2020). Projects that are currently under progress are among others the research for a neighborhood battery for energy storage, research for a solar panel area, making houses more sustainable, and recently research to a circular economy.

On the 10th of March a meeting was held by DH. It was proposed to plan a Kringloopdag (thriftshop day) on the 9th of May. From the script or scenario for that day – this script contained whom are involved, what the plan was for the 9th, how to do that, what the reasons were for doing that. This all to support the meeting on the 10th of March, which the author and Fieke Thijssen participated in by a group call – it became evident that the focus was on how people themselves can produce less waste or even prevent waste. The idea was to design an environment in which people can experience the differences between waste producing and waste reducing behaviours such as: buying potatoes in a plastic bag VS at the local grocery shops or buying them in pots VS in prepackaged sacks. Introducing circular thinking, ways to do that at home and multiple mobile phone applications such as Afvalwijzer.

Despite this is more circular or waste prevention behavior, it is solely addressing people whom will participate in that event and does not reach another audience. The audience reached are the people that will participate during that day. That is to say, someone that sees the poster or flyer either offline or online which states: Thrift shop day by Duurzaam Heiloo (Sustainable Heiloo): how to prevent waste. This will attract people that are interested in sustainability, know that they want to prevent waste and this day could inform them, and are interested or have a positive association in/ with thrift shops. All the others are likely to be excluded as they will not feel associated to that, which is key for a good brand proposition (DH, 2020).

DH are currently doing these events for 5 years. Previous year the event was driven by companies in the sustainability sector to inform the local inhabitants. Though negative news was produced from these events, such as the fact that waste that is sorted or 'recycled' still ends up in an incineration facility (Beverland, 2018; Vorst, 2017). The interest in DH seems to diminish by the year. In their last event, almost nobody showed interest. It seems that their product-market fit is not fitting: "Being in a good market with a product that can satisfy that market" (Andreessen, 2017). The value of their event is not acknowledged, known or recognized (Andreessen, 2017) by the local inhabitants of Heiloo. This might also have to do with a 'wrong' justification of why they are holding the event and asking people to participate. Even when a team is great or has a great product, with a lousy market, the market wins. Only when you have a great team and a great market, something special happens (Jorgenson, 2015). Differently put, something special happens when both are in a dynamic balance.

**Dorcas is one of the local thrift shops in Heiloo. It was explained that 90 ton kg of products and stuff is received yearly at Dorcas. 60 ton kg of that goes away as waste. In the sense, 30 ton kg is saved. It is explained that by participating with DH, they want to increase this number of 30 ton kg. It is explained that this would be possible if people buy higher quality products, as those are quite often the products within that 60 ton kg a year.**

## Appendix B | Context review

In this section in the appendices the context review on waste, circular economy and behaviour is explained. The relation of the topics with the graduation project is explained. After that follows an in-depth explanation of each of those topics. The topic review ends with a concise summary of the key take-aways of each of the topic.

### Interlude

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. 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 topic review 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 sampling approach to choose the topics for this secondary information was done by an emergent sketch from the secondary research of the phenomenon studied. The phenomenon studied is encapsulated best in the title of this thesis: **On Circular Transitioning: An action repertoire for the BUCH**. From that title, the preliminary topics that become evident are: **Circular economy, Behaviour change, Interventions** (Action repertoire), & **the BUCH**. The graduation project was aimed at a project done by the BUCH: developing a Circular Centrum that should (r)evolutionize the current recycle centre system for waste 'management'. Due to that, the preliminary topics are within the central topic of **waste**.

The approach for finding secondary information was sequential and emergent driven (Patton, 2014; Vaca, 2018). The 7 topics were distinguished and researched individually. Although individually researched, each topic was researched purposefully and elaborated by findings in the other topics. Enabling the emergence of sampling strategies for each topic during the research of the other topics.

To illustrate the secondary research method, the specific topic elements were constructed in a conceptual map to show the dynamics and relationships in a comprehensive manner. An accompanied narrative was written to explain and argue for that conceptual map. On top the conceptual map shows the sequence in which these intertwined topics are explained in the following sub chapters.

### Narrative conceptual map

The graduation project emerged from the circular centrum project by the BUCH. This project is concerned with reducing, preventing or managing **waste** flows at the **BUCH** municipalities in a more **circular** manner. As the BUCH wishes to transition from one state to another state, it is opportunistic to review **behaviour** – in terms of Practices, Norms, Values, Change etc. – and the **waste** system – in terms of dynamics, specifics, numbers etc. – at the **BUCH**. Studying **behaviour** is opportunistic as it is opted to catalyse the permeation of sustainable transitions, and circular transitions (Irwin, 2018; Spurling, Mcmeekin, Shove, Southerton, & Welch, 2013). **Interventions** are looked at as these are placed in the system to both understand and transition the system, finding levers and practices that might enable systemic change (Michie, van Stralen, & West, 2011; Spurling et al., 2013).

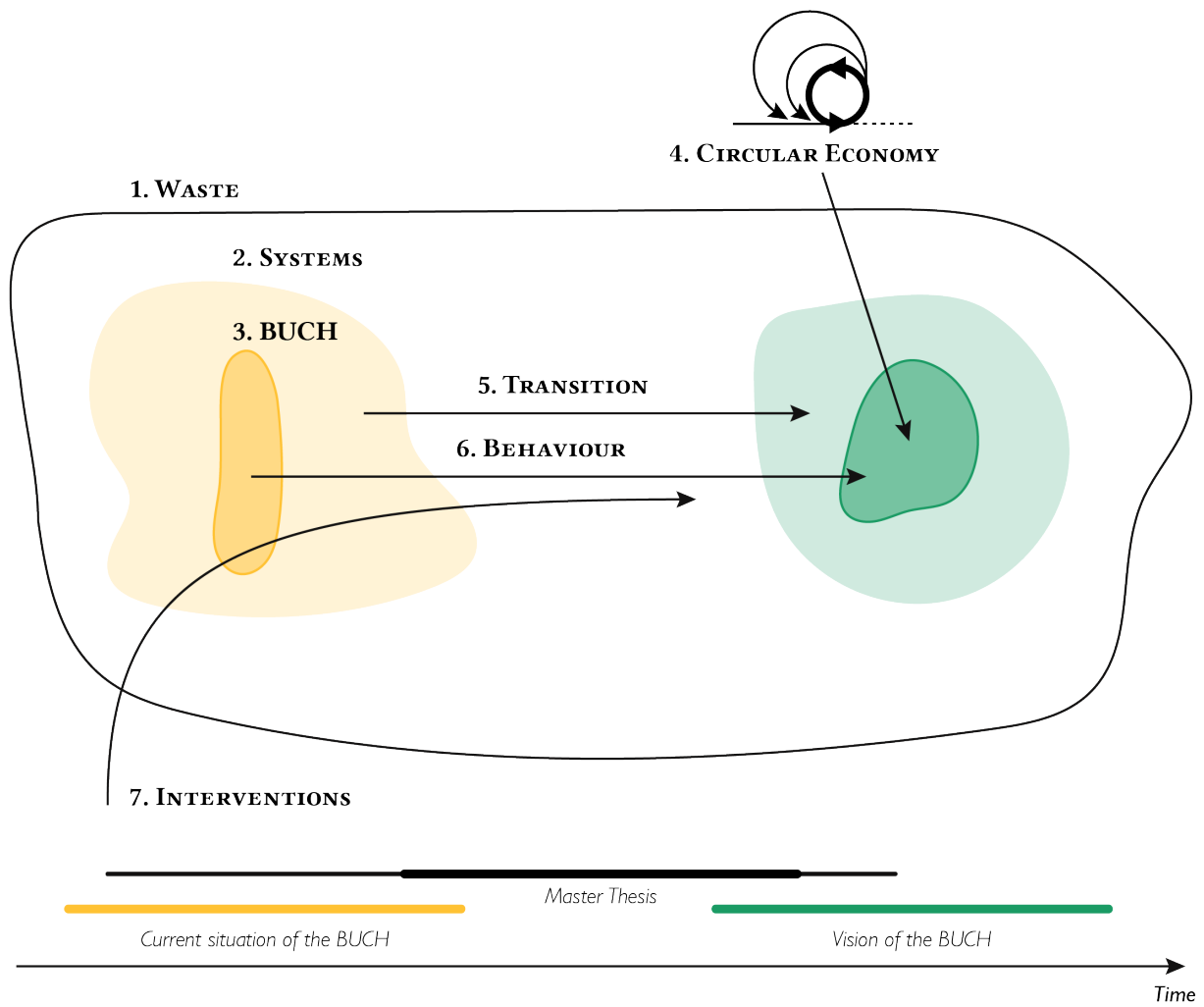


Figure 1: Conceptual map of topic review

## B.1 Waste

If it doesn't add value, it's waste — Henry Ford

Following the cyclical logic of cellular life as constructed by Capra & Luisi (2016), waste is an inherent product of life (see Figure 2). Any living organism utilizes energy and nutrition's from its environment, and by internal processes of that living organism converts those to waste products (Capra & Luisi, 2016). In the most understandable form; *one eats breakfast for energy during the morning, like a banana. The 'waste products' from that banana inside the intestines are flushed away next morning in the toilet.*

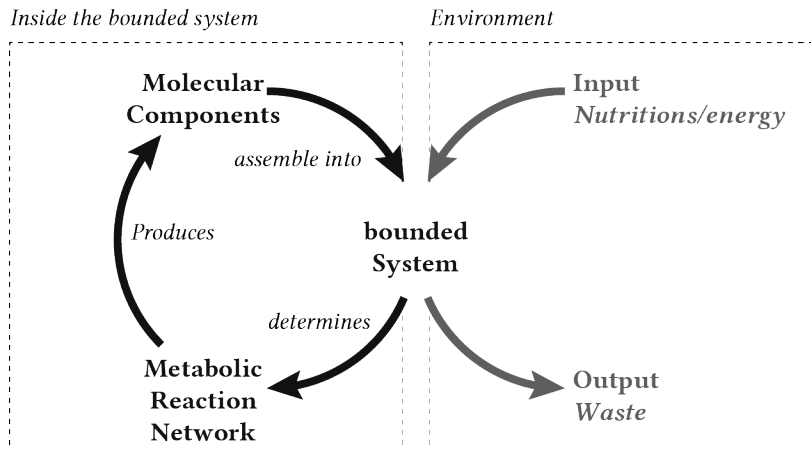


Figure 2: Cyclical logic of cellular life, adopted from Capra & Luisi (2016) p. 134

Another product of waste from that breakfast might be the banana peel that was left over. This makes clear that waste is that what we perceive with no added value. This can be in various forms and has application to various 'things'. Using it as verb: "You are wasting my time". Or in the sense of a drunk person: "He is wasted". Though in this thesis the word waste is used as a noun, and refers to rubbish, refuse or debris (Collins English Dictionary, 2020). As quoted from the Collins dictionary: "**Waste** is material which has been used and is no longer wanted, for example because the valuable or useful part of it has been taken out.". Such as the banana peel or the digested banana.

### B1.1 Environmental Action Plan

Pollution is a specific type of waste. Pollution are contaminants that flow into the natural environment causing adverse changes to that environment. In the early days of civilization, companies would dispose their waste – such as hazardous materials, chemicals, noise, heat, light – in rivers, forests, the air and other places. Its severe effects on the environment made name for it being called pollution. To prevent such practices and other environmental protective reasons, the EU put in place a broad range of environmental legislations. This started since the early 1970s under the premise of the interdependency of economic prosperity and environmental protection (EPRS, 2018). The 7<sup>th</sup> Environmental Action Plan (EAP) entered force in 2014. This EAP has been pushing policies towards a new level by zooming out to a more overarching plan for the period between 2014 and 2020, aiming at 2050. The three key objectives is to 1) protect, conserve and enhance the EU natural capital, 2) turn into a resource-efficient, green and competitive low-carbon economy, 3) safeguard the citizens from environmental-related pressures and risks to health and wellbeing (European Commission, 2014).



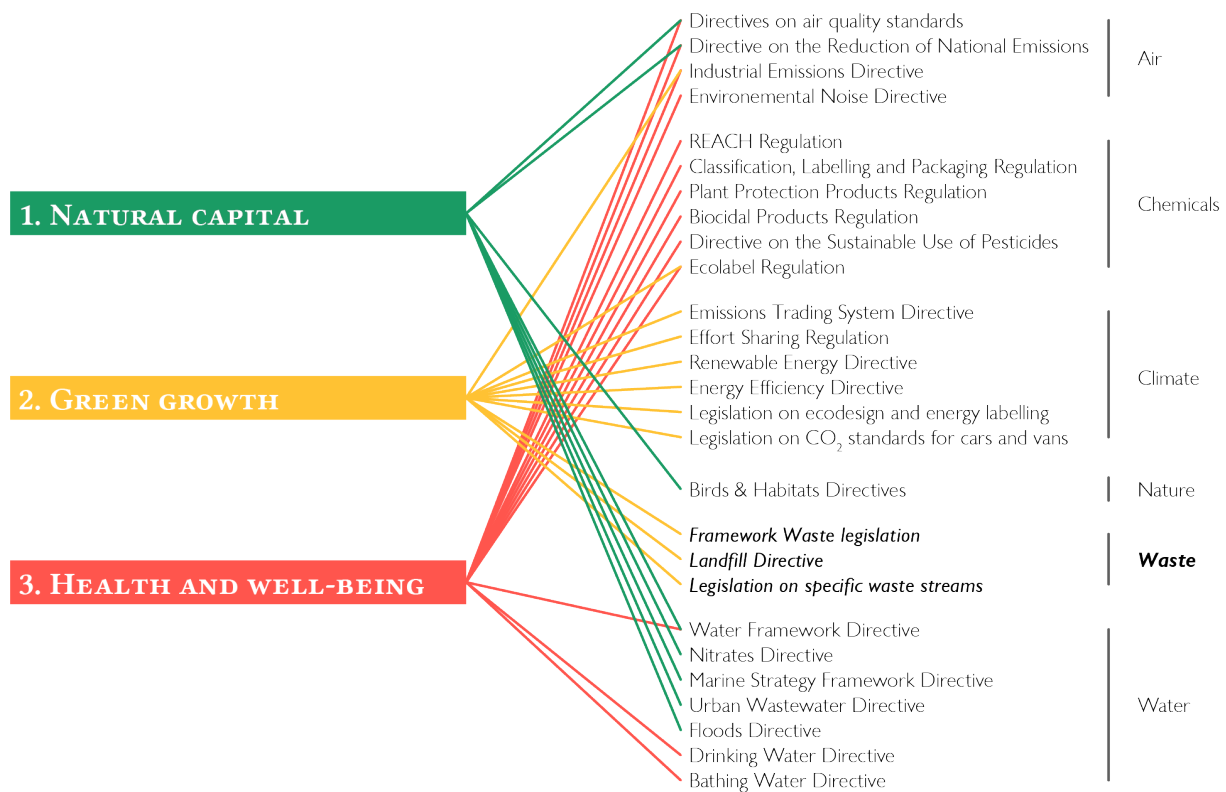


Figure 3: 7<sup>th</sup> EAP, Thematic objectives in relation to selected EU legislatives acts, adopted from Bourguignon (2018)

To enable Europe to deliver on these objectives' various enablers were discerned. These are a better implementation of legislation, improving the knowledge base for better having better information, more and wiser investment for climate and environmental policies, and integrate these considerations and requirements into other policies (European Commission, 2014). Going towards a new agenda, a study to inform the Committee of the Regions for the 8<sup>th</sup> EAP for 2021-2030 was already written (Gancheva, O'Brien, Monteiro, & Valentino, 2018). From the study they suggest that local communities should be more involved in the EAP process and the EAP should cover a variety of local communities and their specific needs. Meaning that the EAP should be tailored and specific to regional and local communities (Gancheva et al., 2018).

The 7<sup>th</sup> EAP set directives for various domains (see Figure 3). To that belongs the domain **waste**. For that domain to be in compliance with, the 7<sup>th</sup> EAP various measures were taken such as the WFD. In more general terms, the EU waste policy had 5 main objectives (as cited from European Commission (2020))

1. Reducing amount of waste generated
2. Maximise recycling and re-use
3. Limit incineration to non-recyclable materials
4. Phase out landfill to non-recyclable and non-recoverable waste
5. Ensure a full implementation of waste policy targets in all Member States

The waste framework directive (WFD) (2008/98/EC) is part of this larger 7<sup>th</sup> EAP, see Figure 3 for a clarification on how these are related. It sets the definitions, basic concepts, principles and directions in relation to waste management in the form of waste legislation and policies to the EU member states. Among others, the directive legislated the re-use and recycling target to be 50% by 2020 (EPC, 2008). The Netherlands has been in compliance to that already since 2009 (EEA, 2013). Meaning that the Netherlands has re-directed its waste flows more towards recycling and re-using, as opposed to incineration and landfill. In general, the EU member states are increasing their recycling & re-using rate. Though, it is still not all that could be re-used and recycled (European Commission, 2020). Therefore, it has been put high on the agenda in the 7th Environmental Action Plans.

## B1.2 Sought after strategies

The most sought-after strategy in waste reduction is in the consumption behaviour (see for other strategies appendix B1.3) (Dri, Canfora, Antonopoulos, & Gaudillat, 2018; European Commission, 2014, 2017b). The strategy is waste prevention. Though a barrier to that is “social norms don't favour waste prevention” (Cox et al., 2010), and is not (yet) mainstream behaviour. For that the social norms have to be transitioned towards mainstream behaviour. Other relevant strategies for waste reduction are found in the report *Best Environmental Management Practice for the waste management sector*. This report contains a comprehensive guide based on ‘front runners’ in the waste management sector (for the report see: Dri et al., 2018). As suggested in the report, the most successful strategy for waste management is based, among others, on 3 pillars; 1) knowledge of current and future trends of the composition and size of waste flows, 2) knowledge on residents, and 3) comprehensive and ‘right’ monitoring of data. The strategy goes along a specified R-framework as (e.g. Refuse, Reduce, Reuse, Recycle....). The time span of such strategy should be on both the short and long-term (1–5 years & 10–20 years respectively). Existing practices and strategies within the report are summarized below.

### B1.3 Waste reduction strategies as cited from (Dri et al., 2018)

Measure	Short description
<i>For individuals and families (consumers)</i>	
Little packaging	To buy things that are produced with as little packaging as possible
Bags	To use own bags when going shopping, rather than disposable ones provided by the shop
Reusable packaging	To look for packaging that can be easily reused Reference
Reusable product	To buy products that can be reused rather than disposable items
Repair	To try to repair things before buying new items
Paper use reduction	To reuse paper for writing notes, to avoid printing or print double-sided, to ask for digital billing and invoicing services; in addition, to discourage unwanted mail, especially advertising, for instance by a "no junk mail" sticker on the mailbox
Container reuse	To reuse containers
Reusable dishcloth	To use dishcloths rather than paper kitchen towels
Refillable products	To try to buy refillable products (e.g. printing cartridges, hand soap, powdered cocoa drinks)
Donation	To donate old items to other possible users
Returnable bottles	To buy returnable bottles instead of single-use bottles
Own cup	To bring own cup, e.g. to school or office
Needless packaging avoidance	To refuse needless packaging
Needless product avoidance	To try not to buy needless products
Reuse shop/centre	To bring reusable products to shops for reselling
Bottled water avoidance	To try not to buy bottled drinking water
Reduction of food waste	To try to buy only the quantity of food that one can consume, correctly store purchased food, cook adequate portions and use leftovers
Reusable nappies	To use reusable nappies (supported by the county or city)
Mobile dishwasher for festivals	To use a mobile dishwasher (provided by the county or city) for festivals to avoid single-use dishes and cutlery
<i>For municipalities, cities and counties or private organisations</i>	
Mobile dishwasher for festivals	To provide dishes and cutlery along with mobile dishwashers for public festivals for free
Reduction of canteen waste	To provide reusable dishes, cutlery, napkins and tablecloths as well as tap water and draught beverages in canteens
Reusable nappies	To financially support the use of reusable nappies
Lunchboxes	To provide schoolchildren with reusable lunchboxes
Repair shops	To support the setup of repair shops
Reduction of office paper waste	To promote/adopt reduction of paper consumption in offices (e.g. avoid printing of documents readable on screen, default double-sided printing and copying, use of electronic archives, reuse of envelopes)
Reduction of food waste	To support activities for the reduction of food waste produced in canteens and restaurants (e.g. staff training, promote customer behaviour change). To promote/support the collection of still edible but no longer sellable food from supermarkets for delivery to social canteens or similar. In addition, to continuously raise awareness so that citizens shall try to buy only the quantity of food they can consume
Pay-as-you-throw (PAYT) system	To introduce pay-as-you-throw systems

## B1.4 Best environmental management practices

### B1.4.1 Strategies for Waste management

**Pay-as-you-throw (PAYT)** is a successful economic instrument once implemented with a complementary user-friendly and effective waste collection infrastructure. PAYT is aimed at paying a price for mixed waste, therefore economically incentivizing citizens to sort out what is actually mixed waste and what can be recycled/reused/repurposed (or any other in the R-framework). The pricing is based on the number of sacks, weight, volume, or frequency of putting containers out. Of course, mixed strategies are possible or introducing a base rate. Whilst doing, it is necessary to know per household what their waste habits are. Through that, a better data-set can be built than can be used for analysis to increase the waste management system later on. The information of the container is measured through a sensor and send to a platform into a database.

**Awareness raising** is seen as a strategy to realize the potential of the other waste management strategies. Frontrunners in the field consider this as very important. That what is encouraged by or aimed for in the waste management strategy (prevention, recycling, reusing) has to be well-defined and tailor made for the targeted actors/sectors/people. Investing 5 to 10 euros per resident is not a strange number. To do so, one can think of generic campaigns covering the whole municipality, but also having a network of 'waste advisors'. One waste adviser per 20.000 residents is practiced by front-runners (Dri et al., 2018).

Awareness raising goes beyond getting awareness. It aims to go from awareness, informing, knowing, providing to doing. The channels for communicating are for instance: Advertising, public relations, direct marketing, community engagement, online engagement, social media, product labelling, internal communication (Dri et al., 2018). In practice this can go through: Radio, TV, billboards, cinema, posters, schools, leaflets, exhibitions, events, projects with communities, seminars, door-to-door, online tools, online indicators, applications, YouTube, Instagram, influencers, cafes and local shops promoting by labelling their products, intranet, and information folders (Dri et al., 2018).

### B1.4.2 Strategies for prevention and reuse

To this strategy there are two main pillars. Having systemic knowledge on waste generation streams and patterns that have most impact on the waste management later on in the process. Second, the involvement of actors is crucial, from residents, businesses to social organizations. It is accomplished by having a regional **and** local waste prevention plan. Prevention is however difficult to assess, as the total amount of waste produced is decreasing, so a measure about something that is not there is difficult.

Practices of waste prevention and (enabling) reuse are:

**Repair shops** can be a practice to enable the capability for citizens to repair broken products.

**Thrift shops** is another practice that is already well established. These shops collect products from the public for free and sell them for a reasonable price in their shops. This can be in the form of a more authentic local thrift shop (e.g. Kringloop Heiloo), or a more professional one (e.g. Dorcas or Het Goed).

**Charging undesired behaviour** can be a strategy to discourage certain behaviour in the daily lives of residents. A good illustrative example of this strategy is the charging of plastic bags in local businesses. However, when implementing such practice, one needs to consider the 'other side' of the coin. What other behaviour is promoted? People still need to carry their bought groceries or products. Who or what, facilitates that service of carrying? The Canvas or Tote bags are an alternative solution to that, facilitating re-use behaviour.

**Home and community composting** can help to manage GFT or Biowaste. However, the citizens need to be motivated and their behaviour has to change. This strategy is less in control, as it does not enforce specific behaviour, but rather opens the possibility for that specific behaviour. The people need to know the specifics and dynamics on how to sort their waste, what is biowaste and what not? Also, the process of composting requires knowledge. The process needs to happen in an correct way, otherwise it might have a negative environmental effect (Tremier, 2012). The effect of making compost is that a reduction of fertilizers is needed, and also transport costs for that are reduced.

**Reusing products** has impact on global warming potential and/or fossil resource depletion (Dri et al., 2018). For that

to happen a reuse network has to be developed. This to develop relationships between Demand, Supply, Infrastructure and Processes. It will need the capacity to up-lift the organisations, to get a balance of supply and demand. If there is not enough supply of reused products, there is not enough choice, then the demand decreases. If there is however too much supply, but no demand, the business is not working. Examples of reusing products are thrift shops, public mini libraries for books, and secondhand markets.

**Collection systems** for waste at the civic amenity site can be upgraded to sort still reusable products out before they are becoming waste. This intervention point at the civic amenity site can be in the form of a 'collection' or 'reuse' point for products that can go to the local thrift shop or repair café.

#### ***B1.4.3 Waste collection strategy***

The most effective strategy is to have a complementary infrastructure that support local waste collection by door-to-door or waste islands, offering civic amenity sites and mobile collection points for separate waste collection. For municipalities also having an inter-municipal cooperation is fruitful by the economy of scale that it can bring. Such synergetic model improves resource efficiency, turns down administrative tasks of repetitive things. This will enhance productivity by coordinated planning and offers smoother work operations.

Another way to increase the waste collection performance is to optimize routing schemes, timing of collection, bin sizes etc. Or by optimizing the efficiency of the vehicles collecting waste.

#### ***B1.4.4 Waste treatment practice***

Zero-waste is not around the corner. Waste will flow. Treating that flow of waste is critical to increase recycling levels. The treatment operations should be able to sort co-mingled packaging and separate other materials. This to increase the possibilities to use the sorted resources in recycling practices.

#### ***B1.4.5 Construction and Demolition Waste strategies***

Ambitious plans have to be made to manage Construction and Demolition Waste (CDW). In which one or more of the R-framework strategies are central (preventing, stating a minimum or sorting requirements). Going beyond what is nationally obligated and pushing the agenda. Another way to go is to foster progress of certain activities; processing plasterboard, CDW recycling, avoid PCB contamination, manage asbestos removal by citizens.

#### ***B1.4.6 Understand the waste system***

It is critical to have a good understanding of the waste system and its dynamics. This to identify the most promising areas of improvement and strategies to do so. It can be achieved by knowing the impurity and capture rates of the differently collected waste fractions (Dri et al., 2018). Having grip of what waste flows are, how they develop over time, and what makes them happen in the first place, is crucial to understand the dynamics of that flow, and so being able to work with that flow. Another is the fractional or detailed grip. By having such insight, you can generate insight in what fractions need improvements. More interestingly, is that when a tactic or action is taken, one can observe and measure whether change is happening or not, and whether there is a significant change. From this the tactics can be adjusted or distributed to other areas. Whilst testing and measuring one can have a more iterative/lean approach to waste management.

## B1.5 Bulky waste practices

A rather untouched area within the literature is the ‘best practices’ for bulky waste management for a Circular Economy. The Waste and Resources Action Programme (WRAP) offers most inspiration and overview. Found literature and projects are summarized in table Table 1.

*Table 1: Successful and interesting strategies for Circular Bulky waste Practices*

Project name	Description	Source
Banbridge Onsite Shop	A shop at the local household waste recycle centre. This is set up and run in-house by the local council of Banbridge	(WRAP, 2020a)
Farthinghoe Zero Waste Site	Household waste recycling centre in Northamptonshire has shifted the focus away from disposal. No waste for disposal is accepted. Adding 3% overall recycling and composting rate.	(WRAP, 2020a)
Norfolk Reuse Shops	5/18 civic amenity sites have reuse shops at the recycle centres. Diverting more items for reuse and recycling.	(WRAP, 2020a)
Somerset Waste Partnership (a formal referral system)	Third sector groups collect items for reuse. They are between the bulky waste collectors and receive the calls made by citizens. Following a script, they find out whether the product can be picked up for reuse or disposal.	(WRAP, 2020a)
Liverpool City Council Bulky Waste Collection service	Procurement of a new bulky waste collection service by the council that was not a ‘all in one’ procurement but separate ones (Bulky waste, composting, recycling glass, reuse etc). Including waste collection services and social enterprises during the tendering process.	(WRAP, 2020a)
Doncaster Council Bulky Waste Collection Service	Another Procurement case study that has one main contractor, delivering most of the waste service, but has subcontracts for other segments (such as bulky waste, glass recycling, recycling plastics, reuse etc).	(WRAP, 2020a)
Partnerships local organization & Business	Using bulky waste as furnishment or scenic design elements	(Bel et al., 2019)
Flat buildings	Managing the planning and building of flats can have impact on the management of bulky waste. Offering space to store bulky items can enhance safety in the building, improve quality of products (increasing possibility for reuse). For managing bulky waste in current flats, it is critical to establish a correct collection service that fit the socio-demographics of flats (car ownership? Disabilities? Age? etc) and is good in its communication.	(WRAP, 2020b)
Prisca	On scale project on the reuse of bulky waste stream funded by the EU. 2 reuse centres had been established. Goods and waste going normally to landfill have been separated in a reuse facility that spread these products through thrift shops. A reuse rate of 60% has been achieved in this project	(PRISCA, 2015; Urbanwins, 2015)

## B1.6 Municipal Solid Waste

According to the 2008 directive of the European Parliament, “‘waste’ means any substance or object which the holder discards or intends or is required to discard” (EPC, 2008). Within this definition waste is more concerned with the disposal of a substance or object as opposed to the perceived value of that substance or object. From this official definition by the European Parliament waste can be further classified as Municipal Solid Waste (MSW). MSW includes: Household waste and similar waste, bulky waste, yard waste, leaves, grass clippings, street sweeps, litter container content, commerce and trade, small businesses, office buildings and institutions, waste from municipal services and door-to-door waste collection (European Commission, 2017a). For a more detailed & specific overview of a MSW classification see code 20 in the LoW table (European Commission, 2018).

Whilst municipal waste only accounts for 10% of total waste generated, it is a critical stream of waste due to its high political profile (Eurostat, 2019a p. 133). This is due to its composition, distribution among many sources of waste and its relation to consumption pattern (Eurostat, 2019a p. 133). Household waste has its largest share and accounts

for 60-90% of the municipal waste generated (on a EU-28 level) (Dri et al., 2018). For most European countries, the generation of municipal waste grew between 1995 – 2009 (kg/capita) (Blumenthal, 2011; Eurostat, 2019a).

The way to handle municipal waste varies per municipality. According to the European Commission, municipal waste can (should) end in 4 destinations, namely: Incineration, Landfill, recycling and Composting/digestion. The collected waste is either going through a pre-treatment by Mechanical-Biological treatment (MBT), a sorting facility or directly flows to these 4 end points (see Figure 4). Secondary waste is made during this process. This secondary waste is then looping back into the stream of the initial waste until it finds its final destination (European Commission, 2017a). From the four main types of utilizing waste, a decline is shown in landfill (-61%), and an increase in incineration (+103%) and an even bigger increase in recycling and composting & digestion (183% & 186% respectively) – at an EU-28 level, kg/capita (1995-2018) – (Eurostat, 2019b).

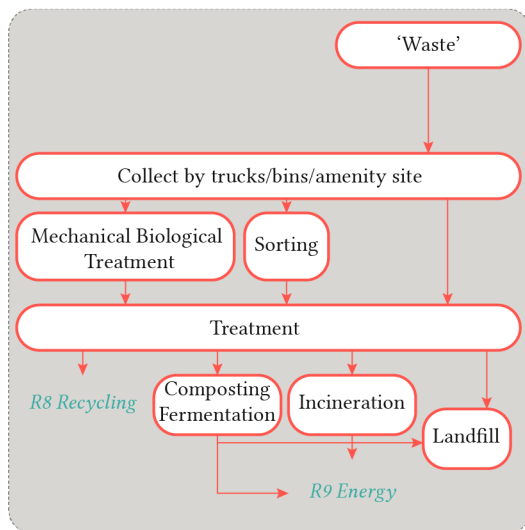


Figure 4: Waste flow

## B1.7 From municipality to people

The earlier described perspective is from the 'official' or 'formal' European Parliament perspective. As municipal solid waste stems from the citizens, it is important to view it from that perspective as well. As only when the beholder of a substance or object regards it as waste, it is referred to that person as waste. A person throwing away a still usable product is regarded by the European parliament as waste, but for other people (even that same person), this might not be seen as waste. Therefore, it is critically to perceive waste as that what the beholder perceives as waste, as only when it becomes waste to the beholder, and in turn to the municipality, see Table 2 for a comparison and Figure 5 for the flow of a product becoming 'waste' in both definitions. From this perspective we see that the beholder of waste first needs to occur, for it to become waste at a municipal level.

Table 2: Waste definition comparison, definitions adopted from (Collins English Dictionary, 2020; EPC, 2008)

	Collins Dictionary	European Parliament
Definition	<b>Waste</b> is material which has been used and is no longer wanted, for example because the valuable or useful part of it has been taken out	<b>Waste</b> means any substance or object which the holder discards or intends or is required to discard
about	Material	Substance or Object
Reason	No longer wanted	Discarded
Relate to	Determining when something is regarded as waste	Activity of discarding

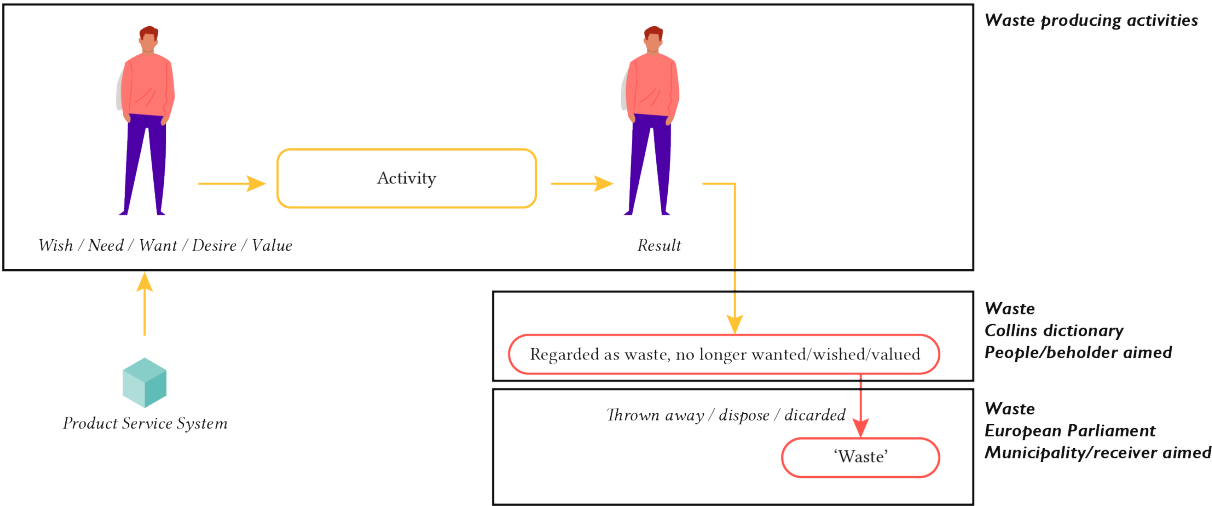


Figure 5: Waste definitions during the ‘waste’ flow

When a product is not anymore wanted, we can see it as waste. Another definition frequently used for the lifetime of a product is in the terms of its obsolescence. This can be seen as the stage before it is regarded as waste, in the waste producing activities box in Figure 5. When a product is no longer considered to be useful or significant by its user it becomes obsolete (Burns, 2016). The reasons for that to happen, vary widely. Obsolescence might occur due to: out dated or diminished aesthetics, social obsolescence in the sense that it is outlawed, out dated technological factors, economic obsolescence, functional obsolescence, logistical obsolescence, etc (Burns, 2016; den Hollander, Bakker, & Hultink, 2017). What is key in this definition is the loss of perceived value or socio-psychological reasons (e.g. affinity or desire) and its useful or functionality part (Box, 1983; den Hollander et al., 2017). This definition is closely related to that of waste, the only difference is that for an obsolete product to become waste, the beholder should not want it anymore.

To even further discern obsolescence in relation to waste a distinction can be made from a design for product integrity perspective. Product integrity is “the extent to which a product remains identical to its original (e.g., as manufactured) state, over time” (den Hollander et al., 2017). This ‘state’ should provide the possibility of a product to be re-used for the same activity (by whom does not apply). Three design approaches for product integrity can be discerned; long use, extended use and recovery (den Hollander et al., 2017) (see Table 3).

Table 3: Design approaches for product integrity, adopted from (den Hollander et al., 2017)

Long use	Extended use	Recovery
<b>Resisting Obsolescence</b>	<b>Postponing Obsolescence</b>	<b>Reversing Obsolescence</b>
<b>Long use approach</b>	<b>Extended use approach</b>	<b>Recovery approach</b>
<b>achieved by Design for:</b>	<b>Achieved by Design for:</b>	<b>Achieved by Design for:</b>
Physical durability	Maintenance	Recontextualizing (repurpose)
Emotional durability	Upgrading	Repair
		Refurbishment
		Remanufacture



## B.2 Circular economy

### B2.1 The origins of Circular Economy

Three major influential stages can be discerned that led to the emergence of the CE concept (Prieto-Sandoval, Jaca, & Ormazabal, 2018). Its existence began in the 60's in stage 1, the following stage 2 was during the 70's and the last stage was in the 90's. These stages are explained in more detail in the following sections.

#### Stage 1

It began in the Linear economy stage in which the industrial revolution and overexploitation of resources started. Followed by an interruptive stage of cyclical ecological system thinking in the 60's. The once held belief of limited resources became unlimited resources. A major influence to this, *change in belief*, that is worth mentioning, came from the field of environmental issues and is Carson's book *Silent Spring* (Carson, 1962; Prieto-Sandoval et al., 2018; Sillanpää & Ncibi, 2019b). In her book she describes the systemic effects and events of using chemically produced insecticides, such as DDT, in the agricultural sector. She explains the tremendous effects it has on the ecology of insects, soils, plants, waters, fishes, forests, birds and humans as a whole. Rather than the proclaimed effectiveness that it only kills unwanted insects and diseases on crops and has no harmful side effects, by the developers, government and certain research bodies (Carson, 1962). Another pressure came by the book *The limits to Growth* by D.H. Meadows, D.L. Meadows, J. Randers and W.W. Behrens (1972) (as cited in Sillanpää & Ncibi, 2019b). The book describes and models the consequences of 5 major trends of that are of global concern. Natural resource depletion, Population growth, Pollution and deteriorating environment growth, Industrial population per capita growth, and Decrease of food per capita (Meadows et al., 1972, p. 124).

#### Stage 2

The second stage emerged through the first theoretical and practical initiatives initiated. One such was the foundation of the emergent field of Industrial Ecology (IE) by Ayres and Kneese (as cited in Prieto-Sandoval et al., 2018). Ayres and Kneese argued that industrial activities can work like metabolism. In such system the wastes and resources are circulating continuously by integrating different actors (Prieto-Sandoval et al., 2018). This can be seen as a first stage that tried to 'close the loop'. A green economy was introduced within this stage. A green economy is "*one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities*" (UNEP, 2011). Whilst it played a key role in the strategies of the institutions and government, it had a weak association with sustainability action (Prieto-Sandoval et al., 2018).

During this period in the beginning of the 70's, a small group of leading businesses, thought leaders and academics independently started to emerge, but not quite yet, the concept of CE (Ellen MacArthur Foundation, 2017a). The most prominent schools of thought that brought momentum for the CE during this period are briefly explained below. Hence, no particular order is given to this explanation, as many of the schools of thoughts evolved in parallel, and are all important to the development of CE.

**Cradle to Cradle** design philosophy by W. McDonough & M. Braungart. Within their philosophy waste is not waste. Waste becomes food or another value. This is done through technical and biological metabolisms (e.g. recycling and decomposition). They speak of natural and human systems or metabolisms that work together through metabolism.

**Performance economy** (functional service economy) by W. Stahel. Has brought to life in a research report that envisioned that looping the economy could foster the creation of jobs, economic competitiveness, saving resources, and prevent waste. The goal of a looping economy would be to extend product-life, having long-life goods, reconditioning activities and also prevent waste. Businesses should rather sell services, instead of the products that deliver that service. Its work has been settled in Geneva in The Product-Life Institute since 1983 (The Product-Life Institute, 2017).

**Biomimicry** by Janine Benyus. To its essence, Biomimicry is to innovate being inspired by nature. Nature is studied and used as knowledge base to design and innovate with to solve human problems. The beak of the king of fishers – the Kingfisher – has been used as inspiration for the design of the Shinkansen 500 (Crandell, Howe, & Falkingham, 2019; Foo, Omar, & Taib, 2017). This due to its marvelous design by 'nature'. Whilst this is used within the design, also is looked at how nature can serve as a measure for our innovations. On top it can be used as a mentor to teaches us not what value we can extract but what we can learn from it.

**Industrial Ecology** by R. Lifset & T. Graedel. It studies the flow of materials and energy through a system taking an systemic perspective. This means that closed loops have to be made to make it a system, forcing to look at the by-products and waste material/flows. With a focus on social wellbeing and natural capital.

**Natural Capitalism** by A. Lovins, H. Lovins & P. Hawken. Soil, air, water and all living things are seen as the natural assets of our world. This is referred to as the 'natural capital'. It is on the intertwinement and interdependencies of human-made capital and the natural capital. The resources that we use have to last much longer. The loop principle of waste or output of any process as input for other natural processes or industrial processes is also at its midst in this concept. Once humanity takes out a resource from the natural capital, it should be restored or regenerated.

**Blue Economy** systems approach by G. Pauli. It is an open-source movement that brings concrete case studies together to the Club of Rome. There are 21 principles at the basis and has in essence the philosophy that the waste of one product becomes the input for another. It is believed that through the blue economy society will shift from scarcity to abundance. This by solutions that are developed by the local environment and its physical & ecological characteristics in which that solution will be placed (The Blue Economy, 2020).

**Regenerative Design** by J.T. Lyle.. The ideas around this topic are systemic solutions that take into account the regeneration, revitalization or renewal in their design. Or more broadly, looking more holistic or systematic to both a healthy socio-ecological system and the coexisting practices (Cole, 2012). In the agricultural sector this is done by having a high emphasis on minimal soil pressure and increasing the natural practice or metabolism of composting. It has a co-evolutionary approach to have a partnered relationship between human and natural systems by co-evolution (Cole, 2012).

**Circular Bioeconomy** by H. Gordon. The idea of circular bioeconomy has its roots in a paper by H. Gordon in which he explains that T.I. Baranoff referred to "Bionomics" or "Bio-economics" (Gordon, 1954). T.I. Baranoff researched the dynamics of fisheries and questioned the biological basis of those fisheries (Gordon, 1954). This meant to find the equilibrium of the sustainable fish extraction from a sustaining fish population for maximum profits (ibid.) (not for minimizing fish population depletion!). Bioeconomy is a type of economy that can meet many requirements of the sustainable environment, social and economic perspectives (McCormick & Kautto, 2013). This would be possible as the input for our products, designs or energy would come from renewable biological resources (McCormick & Kautto, 2013). Circular bioeconomy has emerged due to the overlap and complementary characteristics of both the Circular economy and bioeconomy concepts (Carus & Dammer, 2018). Though these two share the same target, they are not fully part of each other; they should work together to accomplish that target (Carus & Dammer, 2018). On the other hand, whether the implications of the concept are realistic are being criticized (see: Giampietro, 2019). As the solution to accomplish a circular bioeconomy would hold to decouple global economic development from the finite resource consumption (Giampietro, 2019).

It must be noted that many others whom have not been mentioned here, have significantly contributed positively to the emergent concept of Circular Economy (for more, see: Ellen MacArthur Foundation, 2017a; Sillanpää & Ncibi, 2019a).

### Stage 3

In the 90's the emergent concept of Circular Economy was coined by Pearce and Turner (Pearce & Turner, 1990; Prieto-Sandoval et al., 2018). It was coined "to explain the feasibility of taking into account the environmental awareness in economic flows by closing industrial loops" (Prieto-Sandoval et al., 2018).

## B2.2 Definitions

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, 2019b). Defining CE is however critical as policies, legislations and development strategies will be based upon that definition (Sillanpää & Ncibi, 2019b). Kirchherr, Reike, & Hekkert (2017) analysed 114 definitions of CE to conceptualize on a shared definition of the CE concept. This to reduce the interpretations and usage of the CE concept and for a better knowledge accumulation of scholars working in the field. Another attempt for consensus on the CE concept was made by Prieto-Sandoval et al. (2018). Both proposed definitions stem from peer-reviewed academical literature. Other sources that define CE are Organisations such as the well-known Ellen MacArthur Foundation and the European Commission, see Table 4 for an overview. Before choosing a definition to follow, the concept of CE is first explained in a more tangible form.

Table 4: Circular Economy Definitions

Source type & Source	Definition
Academic  (Prieto-Sandoval et al., 2018)	"An economic system that represents a change of paradigm in the way that human society is interrelated with nature and aims to prevent the depletion of resources, close energy and materials loops, and facilitate sustainable development through its implementation at the micro (enterprises and consumers), meso (economic agents integrated in symbiosis) and macro (city, regions and governments) levels. Attaining this circular model requires cyclical and re-generative environmental innovations in the way society legislates, produces and consumes."
Academic  (Kirchherr et al., 2017)	"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."
Organisation  (Ellen MacArthur Foundation, 2017b)	"a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles: 1) Design out waste and pollution, 2) Keep products and materials in use, and 3) Regenerate natural systems"
Government  (EC, 2020)	"In a circular economy, the value of products and materials is maintained for as long as possible. Waste and resource use are minimised, and when a product reaches the end of its life, it is used again to create further value. This can bring major economic benefits, contributing to innovation, growth and job creation."

### Tangible model for understanding the Circular Economy concept

To escape the rather intangible and abstract definitions of CE, it is worth mentioning to view CE through a model made by Heideveld, Kerkhof, & Fischer (2016). The model is called: The Value Hill. Depicted in figure Figure 6. The simplified version centres the 'user' using a product at its midst in the value hill. This model helps businesses to put their proposition on the value hill to see where they are and identify the gaps and opportunities for becoming circular in a relatively easy way. On the left side of the hill we see processes that add value for the 'user' from resources, parts or used products. On the right side we see when value drops and what can be done to retain that value. For instance, a (broken) product can be repaired and maintained (maintaining a bike chain by oiling it once in a while), a used product can be reused or redistributed (clothes you don't use anymore are given away to friends). A partly broken product can be refurbished (Like the refurbishing company Leap), Remanufacture can happen with products that are partly broken and can be used in the assembly of new ones (like repairing the turbo in a heavy airplane engine), or recycle the materials from a product for (other) manufacturing processes (like glass is recycled to make other glass).

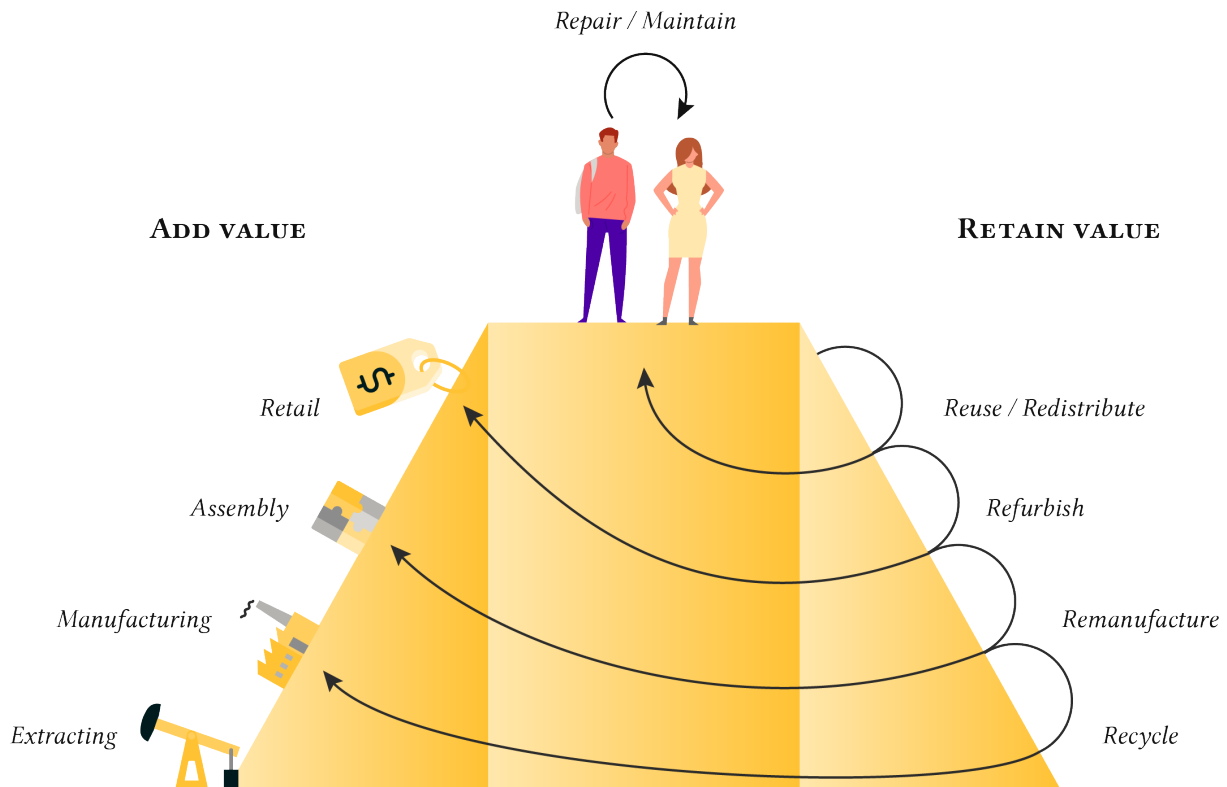


Figure 6: The Value Hill, adopted from Heideveld, Kerkhof, & Fischer (2016)

## B2.3 Impact of circular economy

It is argued by many that the envisioned and promised impact of CE only will be reached if we adopt high circularity strategies and surpass the easy steps of only recycling and recovering (Ellen MacArthur Foundation, 2017a; Kirchherr et al., 2017; Potting, Hekkert, Worrell, & Hanemaaijer, 2017; Prieto-Sandoval et al., 2018; Sillanpää & Ncibi, 2019b, 2019a). The lower scaled R's in the r-framework, such as recycling and recovering, are merely the 'easy' steps or short-cuts from a Linear economy towards a CE. Making them still within the realm of the CE intent, but not the foundation of the promised CE. They are the destabilizing bandages of the current linear economy and not the building blocks of a circular economy. The high circularity strategies go beyond the realm of conventional updated and added processes such as recycling. They are at the heart of a changed socio-institutional system that changes our normative framework and cognitive structures, scripts, schemas or mental models (Kirchherr et al., 2017; Potting et al., 2017; Snow & Iii, 1993). It asks for "a new relationship with our goods and materials" (Stahel, 2016) and needs systemic change to release its promise (Kirchherr et al., 2017).

*Example of a potential promise of circular economy: A study by the Club of Rome illustrates what impact CE could have on the Netherlands in terms of emission and job possibilities (Wijkman, Skånberg, & Berglund, 2016). If the Netherlands would be 25% more energy efficient, it would reduce 30% of its carbon emissions and bring 100.000 jobs. Cutting fossil fuel in half and substitute it with renewable energy would decrease the carbon emissions by 50%. Increasing the Netherlands' material efficiency by 25%, replace 50% of its virgin materials by secondary ones, and doubling the product life of long-lived consumer products, would cut 3-10 % carbon emissions and will bring more than 100.000 new jobs.*

We see that businesses, governments and citizens are adopting CE practices. According to the Circular Economy report, our world is currently 9% circular (Circle Economy, 2019).

## B3 Behaviour

### B3.1 Definition of behaviour

According to the Cambridge dictionary, behaviour is “the way a person, animal, substance, system or other ‘thing’ behaves in a particular situation or under particular conditions” (Cambridge Dictionary, 2020). It is the ‘doing’ through time of any particular thing. It is common knowledge and intuition that explains to us what behaviour is. Though what constitutes behaviour is not common knowledge and agreed upon (Levitis, Lidicker, & Freund, 2009). (Levitis et al., 2009) defined behaviour as:

*“Behaviour is the internally coordinated responses (actions or inactions) of whole living organisms (individuals or groups) to internal and/or external stimuli, excluding responses more easily understood as developmental changes”.*

Whilst these definitions explain what ‘behaviour’ might be, it does not explain the specifics of how behaviour is triggered. Understanding the ‘mechanism’ behind behaviour could open the possibilities to change behaviour. Both in the negative and positive sense: How can we change behaviour, so people stop smoking, driving fast or stealing? Or how can we change behaviour, so people buy more of our products? Hence, understanding the mechanisms that constitute behaviour, brings a lot of opportunities.

### B3.2 What constitutes behaviour?

#### Beliefs constituting behaviour

The theory of planned behaviour was proposed in 1988 by Ajzen and is a widely-accepted theory (as cited in: Armitage & Christian, 2003). His theory linked the beliefs of a person with the behaviour of that person. To its essence the behaviour of humans is believed to be guided by three levels; Behavioural beliefs, normative beliefs and control beliefs. Behavioural beliefs stimulate the attitude towards the behaviour. The normative beliefs result in a subjective norm. The control beliefs give rise to perceived behaviour control. The theory can be explained in way more depth. However, it is critical to acknowledge the origin of how the knowledge of that theory was obtained. The theory comes from cognitive sciences (Ajzen, 1991). Coming from the cognitive sciences, it is being criticized to miss the emotional, contextual and physical factors that influence our behaviours (Michie et al., 2011).

#### Context constituting behaviour

In his recent book, (Jasanoff, 2018) debunks the commonly held belief that our brain works independently from our bodies and environment. He describes our brain as a complex biological organ that interacts with our physical bodies and our environment. Just like the cyclical logic explained in appendix B.1. Our mind is the product from these interactions. This means that, among others, your thoughts, feelings or intentional actions are impacted by the outside world. That the brain is the sole cause of human behaviour (neuroessentialism), or that the outside world is the sole cause of human behaviour (behaviourism), are both reductive views on the complex reality that is. The self and its behaviour is “the result of a complex interaction between our brains, bodies and the world around us” (Jasanoff, 2018).

#### Socio-ecological levels constituting behaviour

From a socio-ecological perspective, behaviours of individuals are ecologically shaped by various levels in its contextual environment. From that perspective, the domains that shape behaviour are, among others, Intrapersonal(individual), interpersonal, institution, community, societal and public policy factors. This shaping of the behaviour happens in both ways. In that sense, the individual also shapes the environment, and its environment shapes the individual. (Bronfenbrenner, 1994) made this explicit in his Ecological model. The levels in that model are: Micro, Meso, Exo, Macro and Chrono. An updated version of bronfenbrenner’s ecological theory was published by Stranger (2011) (see Table 5 & Figure 7). This socio-ecological perspective enables to systematically observe behaviour in a specific context. The interactions happening between the individual and interpersonal, community and social are key in understanding the reasons for the behaviour that is enacted. This is often referred to as the norm.

Table 5: Levels of an socio-ecological system of a person, constructed from (Bronfenbrenner, 1994; Schmied, 2017; Stranger, 2011)

Bronfenbrenner’s ecological theory levels	Explanation
Person	The individual: The person in question
Microsystem	The interpersonal: Close nearby system such as family, school, peers, religious affiliation, workplace
Mesosystem	The community: More distanced system such as family, school, peers, religious affiliation, workplace, neighbourhood
Exosystem	The societal system: Distanced system such as food system, Economic system, political system, educational system, governmental system, religious system
Macrosystem	The macrosystem: Overarching values and believes and global ecological systems
Chronosystem	The chronosystem: Time dimensions, evolution of time

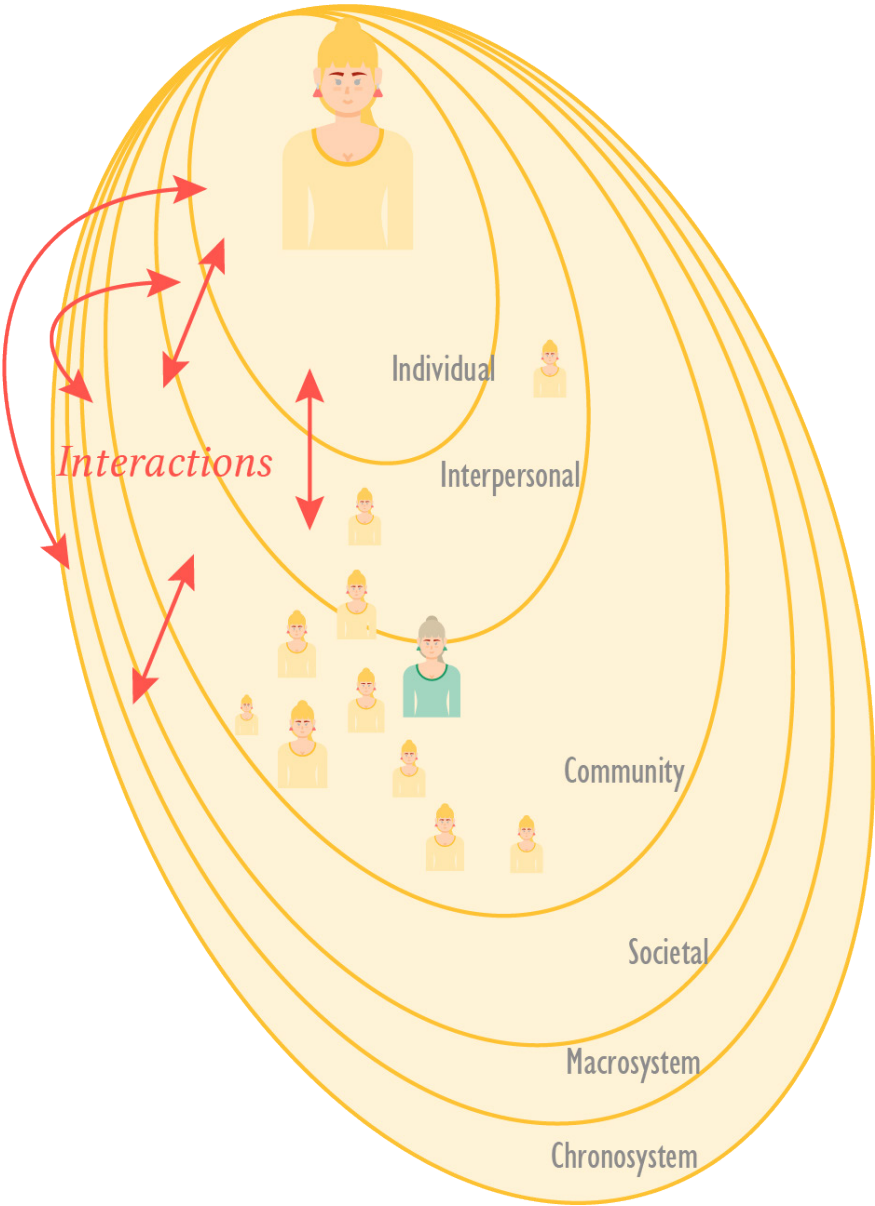


Figure 7: Visual construct of socio-ecological system

## Norms constituting behaviour

The term 'norm' has more than one meaning in both academic and everyday language (Cialdini, Kallgren, & Reno, 1991). In simple words it refers to what behaviour is; done commonly, normal, commonly approved by others, or is socially sanctioned (Cialdini et al., 1991). In the simple sense, it can refer to the 'normal' way of behaving.

Social norms can be viewed from two perspectives, the person or the social group. Cialdini et al. distinguish between two types of norms: Descriptive and Injunctive Norms. Doing so there can be made a difference between people's judgements about "the prevalence of a behaviour and the social sanctions incurred for enacting the behaviour" (Lapinski & Rimal, 2005).

**Descriptive norms** are that what people perceive as what most people do, or what is typical or normal in their social group (Chung & Rimal, 2016; Cialdini, 2003; Cialdini et al., 1991; Lapinski & Rimal, 2005). This refers to what 'is' or the 'status quo'. These are informal customs that people expect to be followed but when not in compliance are not offensive enough for punishment or social sanctions, such as dressing in-appropriately or not being quite during a serious meeting (Chung & Rimal, 2016; Lapinski & Rimal, 2005). When one is in compliance with descriptive norm, he or she fits 'good' into society (Chung & Rimal, 2016).

**Injunctive norms** are what people perceive as what one either ought or not ought to do. Meaning what beliefs or rules morally are approved or disapproved (Cialdini et al., 1991). This refers to what 'ought' to be done. Not being in compliance with injunctive norms have in relation to descriptive norms, severe social consequences.

Both injunctive and descriptive norms are often in congruency, but this is not always the case. Conflict might happen between the two. This happens when people may perceive that others do a certain behaviour but have no or little pressure to conform to that. For a person that knows that recycling is desired by the town council, when there is no clear obligation to comply in place, there is a modest influence on the likelihood that that person will recycle (Cialdini et al., 1991). This is due to the fact that 'the others' will not know if that person is in compliance.

These two types of norms can be used to look at both the collective and individual level. At an individual level it looks at a individuals perception of the behaviour at hand in two ways, descriptive on its prevalence and injunctive on its perceived pressure to conform (Ewing, 2001). At a collective level the descriptive norm can be looked at as the trends surrounding a particular issue. This can be viewed by for instance studying media, newspaper or trend reports. The injunctive norm can be found by enactments by communities or groups that promote or proscribe a certain behaviour (Lapinski & Rimal, 2005).

Misperceptions of the prevalence of a behaviour is very common and thus also used as point for intervention (Lapinski & Rimal, 2005). The intervention placed should than correct such misperception. This phenomenon has a relationships with the communication between individuals and their position in society (Berkowitz, 2004; Chung & Rimal, 2016; Lapinski & Rimal, 2005), like the red interaction lines of Figure 7. People that have a wider variety of relationships within society with social groups are more likely to be equipped with a wider variety of possibilities of descriptive norms. Whereas individuals that do not have communication with other social groups are likely to be equipped with only the descriptive norm of that social group.

It can be argued that changing a norm can influence behaviour, and vice versa. Though knowing what norm promotes what behaviour and what behaviour comes from what norms is questionable. Building a science of norms is therefore problematic (Lapinski & Rimal, 2005). To work empirical with the dynamics between norms and behaviour it is crucial to "ask what it looks like when a norm is influencing people's behaviour" (Anderson & Dunning, 2014). These empirical inquires on norms and the belonging questions are shown in table Table 6. These serve as basis to develop the questions in the Survey design later explained in this thesis.



Table 6: Empirical signatures of various norm types, adopted from (Anderson &amp; Dunning, 2014)

Norm type	Empirical signature
Descriptive	People believe the behaviour is a common behaviour  Informing people that the behaviour is common prompts them to conform
Injunctive social	People think <i>others</i> believe the behaviour is correct or appropriate  People think <i>others</i> believe the behaviour is what they should do  People conform to the norm if their behaviour is public  Others enforce the norm verbally or via sanctions  Others respond to violations of the norm with negative emotions
Injunctive moral	People believe the behaviour is what they <i>should</i> do (vs personally <i>want</i> to do)  People feel tense and guilty about violating the norm

### B3.3 Behaviour change essentials

Before constructing a visual representative overview on approaching behaviour change, first three key ingredients are addressed. After that the overview is explained.

#### Individual at a local level

The socio-ecological perspective and norms help to gain a perspective on behaviour. When changing behaviour, we speak of changing from one type of behaviour to another type of behaviour. This is a more dynamical view. When aiming to change behaviour or social norm, one should first be concerned with a change in their own behaviour. In the sense that one needs to empathize with the people that should change their behaviour(s) and/or norm(s). Opening up and be willing to understand and empathize with their perspectives. This learning culture needs to be central if you are changing the behaviour of others (Anderson & Dunning, 2014). As explained *Local worldviews, norms and attitudes intertwine to sustain cultural practices in ways that may be difficult for practitioners to fully decipher in culturally unfamiliar contexts* (Schmied, 2017). The right and smart thing to do that in a local setting that is people or grassroots led (Cislaghi & Heise, 2018). By doing one can better integrate within the current practices and behaviours of the people whom need to change (Cislaghi & Heise, 2018). Instead of enforcing new behaviour from the outside in, the new behaviour grows from the inside out. Making use of the social networks that already exist and bringing ownership to the change.

#### Exchange theory

Exchange theory explains to us that when people need to change towards a new behaviour, they need to pay to practice that new behaviour (Cislaghi & Heise, 2018, 2019; Quist, 2013; Quist, Thissen, & Vergragt, 2011; Quist, Wittmayer, Umpfenbach, Bauler, & Bach, 2013). From this new behaviour they will receive, in exchange, benefits. Changing their behaviour happens when the perceived benefits are higher than the perceived cost. From this perspective we can choose to increase the perceived benefits or reduce the perceived cost (Schmied, 2017).

#### Pragmatic principles

Cross (Schmied, 2017) argues in her TEDx presentation that there are three common myths to behaviour change. 1) Education will change behaviour, 2) you need to change attitudes to change behaviour, and 3) People know their motivations.



1) Just giving people information to change their behaviours is not enough. It matters how you present that information. To that she mentions that the information should be tangible, personal and interactive (social interaction). Frame the loss as opposed to the gain, this due to the biological aversion of loss. If people hear what they are losing they get motivated to change. The message needs to be adjusted to the audience you are presenting towards, it needs to fit to them specifically, not in general. This to make it resonate or link-in with the audience. The most effective agent of change are emotions and not facts. The see-feel-change pathway has been distinguished by Kotter and Cohen as fruitful pathway when the future is ambiguous, a lot of assumptions are in place and parameters are not really known (Kotter & Cohen, 2002). This is in paradox to the widely assumed belief that people change by the analyse-think-change pathway. Recent neurological research has also shown that the brain uses these two types of thinking, defined by (Kotter & Cohen, 2002), in his recent book *Elastic*, as Elastic thinking & Logical analytical thinking. Elastic thinking is a more driven by ambiguous and complex brain mechanisms using emotions. It stretches the mind and makes order from chaos through a creative process.

2) "How can we get people to believe in climate change?" As that is needed for a change in their behaviour. However, "You don't have to change attitudes to change behaviour." (Cross, 2013). Likewise (Cross, 2013) showed for energy conservation transition the normative beliefs predict more powerful behaviour as opposed to personal beliefs (Nature, 2018). The attitudes that people have, follow the behaviour they have (Nature, 2018), they do not predict it. Instead one should address the expected behaviour and communicate that. Setting the behavioural expectations. Understanding what the underlying values are for the audience, knowing what they really care about, or what really matters to them. Frugality can be something that a business values. But that same business might not be concerned with climate change. In such case the frugality might be the connection between a pro-climate change, and a non-climate change, person. Both wanting to conserve.

3) People know what motivates them to take action is another myth. People mostly don't know what motivates them. What does influences us are social norms. When the norm is showing a certain behaviour, we are more likely to follow that same behaviour. This has been demonstrated in various research studies such as the classic Asch experiment (Jhangiani, Tarry, & Stangor, 2014). In addressing for changing behaviours, utilizing a person that models the wished-for norm, helps to communicate that norm to other people in a more promising way than showing the negative effects of their current behaviour.

### B3.4 Behaviour change an overview

The aforementioned dynamics and specifics of behaviour change are used to construct Figure 8. In the figure we see that a current behaviour is done to reach to a desired result. New desired behaviour competes with the current behaviour and has certain barriers and enablers. Not only does this happen within the person but as well the interactions with the external environment such as their community.

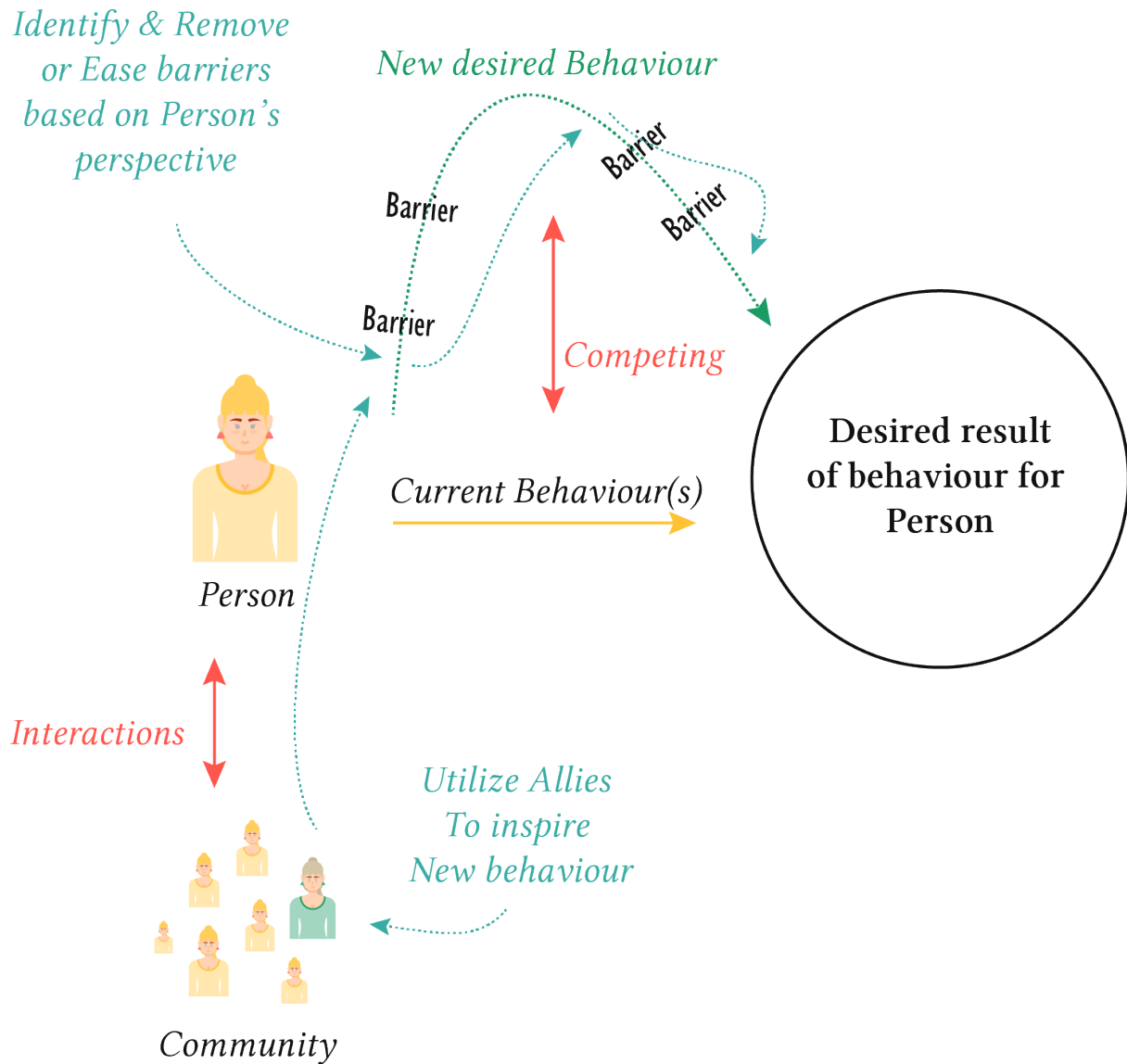


Figure 8: Behaviour change model

### Socio-ecological behaviour change perspective

When we layer the behaviour change model into the socio-ecological system perspective we get Figure 9. This shows the broader systemic perspective in which the behaviour change is situated.

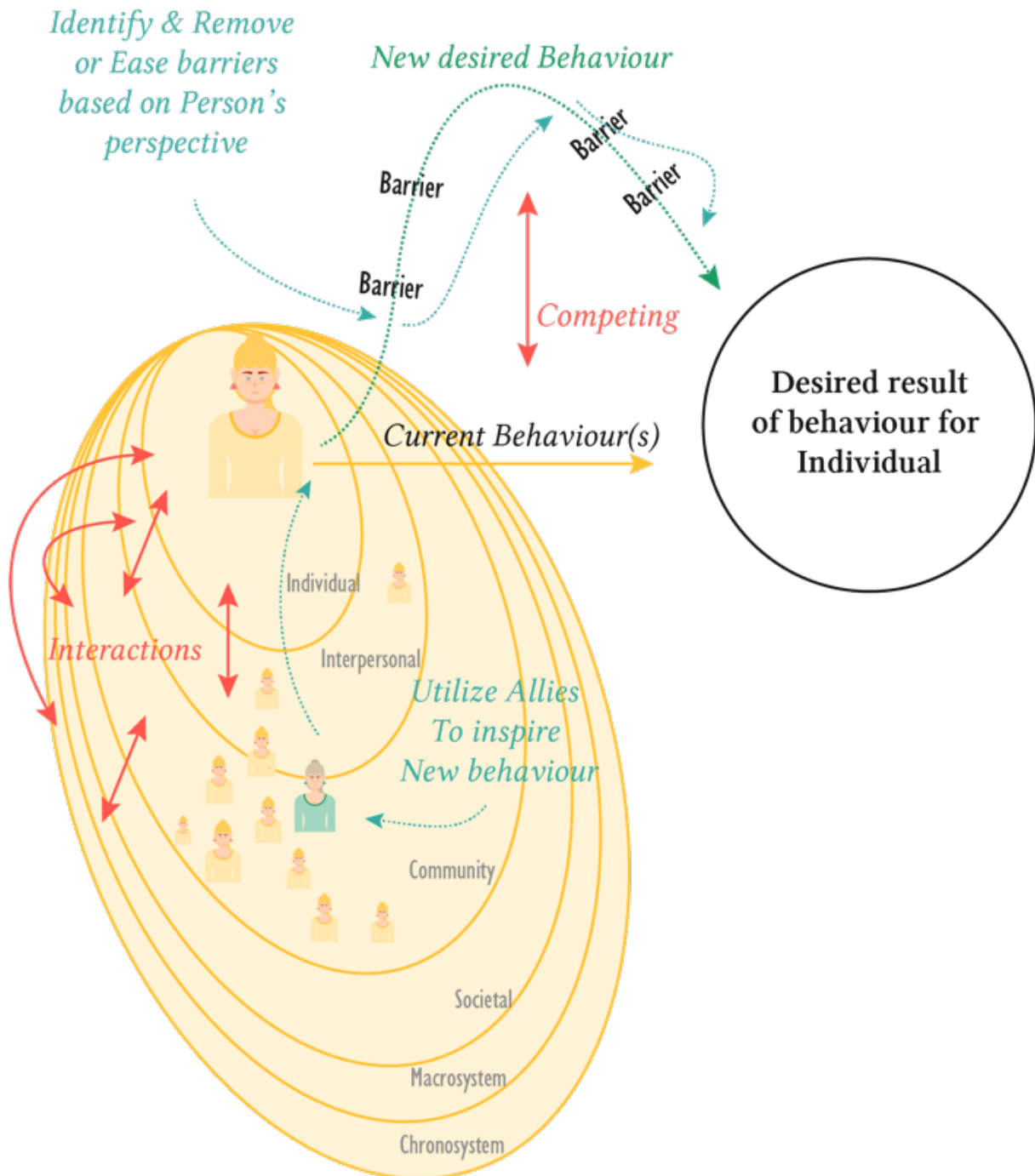


Figure 9: Socio-ecological behaviour change perspective

Now the socio-ecological behaviour change perspective is explained, we can dive into what we can do to change behaviour. The Designing for Behaviour Change framework by TOPS (2017) is an potential approach in fostering CE behavioural change in consumers (Piscicelli, Dina, & Ludden, 2016). (Piscicelli, Dina, & Ludden, 2016) developed a pragmatic approach upon this model to design for behaviour change by 7 steps. When we layer this approach on top of the aforementioned Socio-ecological behaviour change perspective we gain a visual understanding on how to approach socio-ecological behaviour change in an understandable 7 step process. This approach will be called Design for Behaviour Change from a Socio-ecological Perspective Approach (DBCSP) See Figure 10 & Table 7: 7 steps of designing for behaviour change, adopted from (Schmied, 2017).

Table 7: 7 steps of designing for behaviour change, adopted from (Schmied, 2017)

Step	Explanation
1 Behaviour	What is the behaviour we want to promote? What is the ideal behaviour?
2 Priority & Influencing Groups	Who needs to practice the behaviour and who is influencing the behaviour? What is the socio-ecological system for them?
3 Determinants	What are the main barriers and motivators to adopt the promoted behaviour?
4 Bridges to activities	What do our behaviour change activities need to achieve to address the identified barriers? And leverage the motivations?
5 Activities	Which activities will your team implement to motivate people and reduce the barriers?
6 Measure changes in Behaviours	Distinct between behaviour before and after, how do you measure a change? To see whether it is effective or not, and why, to learn from. (Reflexive governance)
7 Document & share results	Documenting and sharing helps others to utilize on the valuable work done

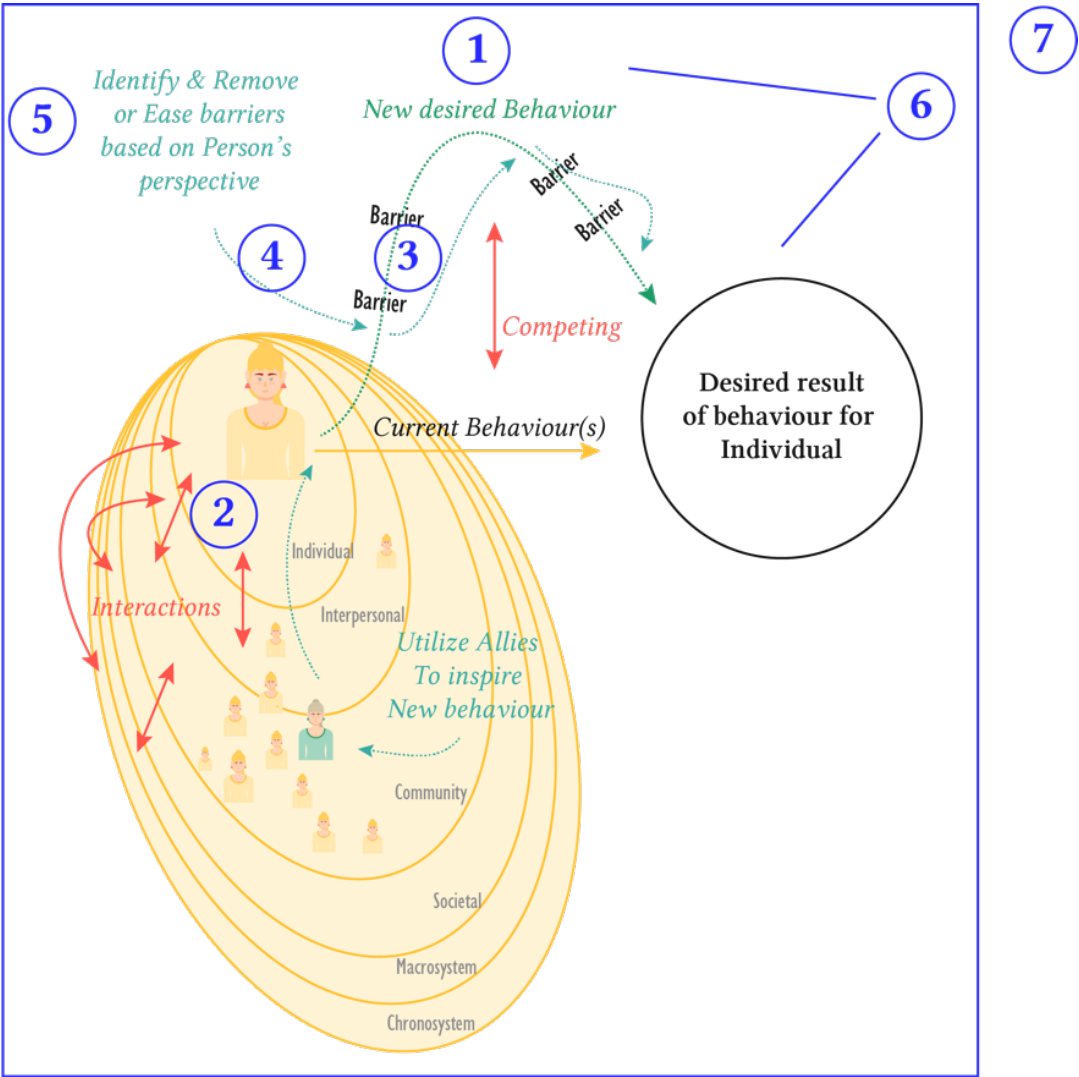


Figure 10: The Design for Behaviour Change from a Socio-ecological Perspective (DBCSP) Approach

### B3.5 Interventions to trigger behaviour change

The approach for changing behaviour has been explained and is called DBCSP. Step 5 of that process is concerned with what activities have to be done by the team for changing behaviour. This is the practice of placing thoughtfully interventions inside the practices of people inside the socio-ecological system. These interventions for behaviour change are required to be encapsulated inside the dynamics of the socio-ecological system of the individual to which the behaviour change is addressed (Schmied, 2017). The specific intervention placed in one context, might not work in another. For one person it might work, and for another it might not. Some context has practices, that others do not have. Knowing the community in which the individual is in, is key in designing the intervention. The intervention should fit that community and its beliefs to have a powerful effectiveness (Nature, 2018).

Only if people practice a new behaviour, the goal of the intervention can be achieved, awareness is not enough (Jachimowicz et al., 2018). The failure of those new behaviours come from incorrect assumptions on why people are not practicing the promoted new behaviours (Schmied, 2017). For a new behaviour to flourish, understanding the competing motivations and barriers to practice that new behaviour is key (Schmied, 2017). It is important to understand the real reasons why people behave the way they do (Reeve, 2015; Schmied, 2017). Gradually getting grip on the barriers to practice the new behaviour and removing them is key in making people practice that new behaviour.

### B3.6 Behaviour Change Wheel

The COM-B framework shows us the behaviour system we are working with. This behaviour system is at the centre of the Behaviour Change Wheel. The behaviour change wheel is built up out of three individually spinning wheels, see figure Figure 11. The COM-B framework is represented by the green wheel. The red wheel represents the intervention functions and the third yellow wheel represents the policy category. Central to the model is the notion that “policies can only influence behaviour through the interventions that enable or support” those policies (Michie et al., 2011). For that reason, the interventions enabling or supporting the policies is placed between the behaviour wheel (green) and the policy wheel (yellow). This is visualized in figure Figure 11.

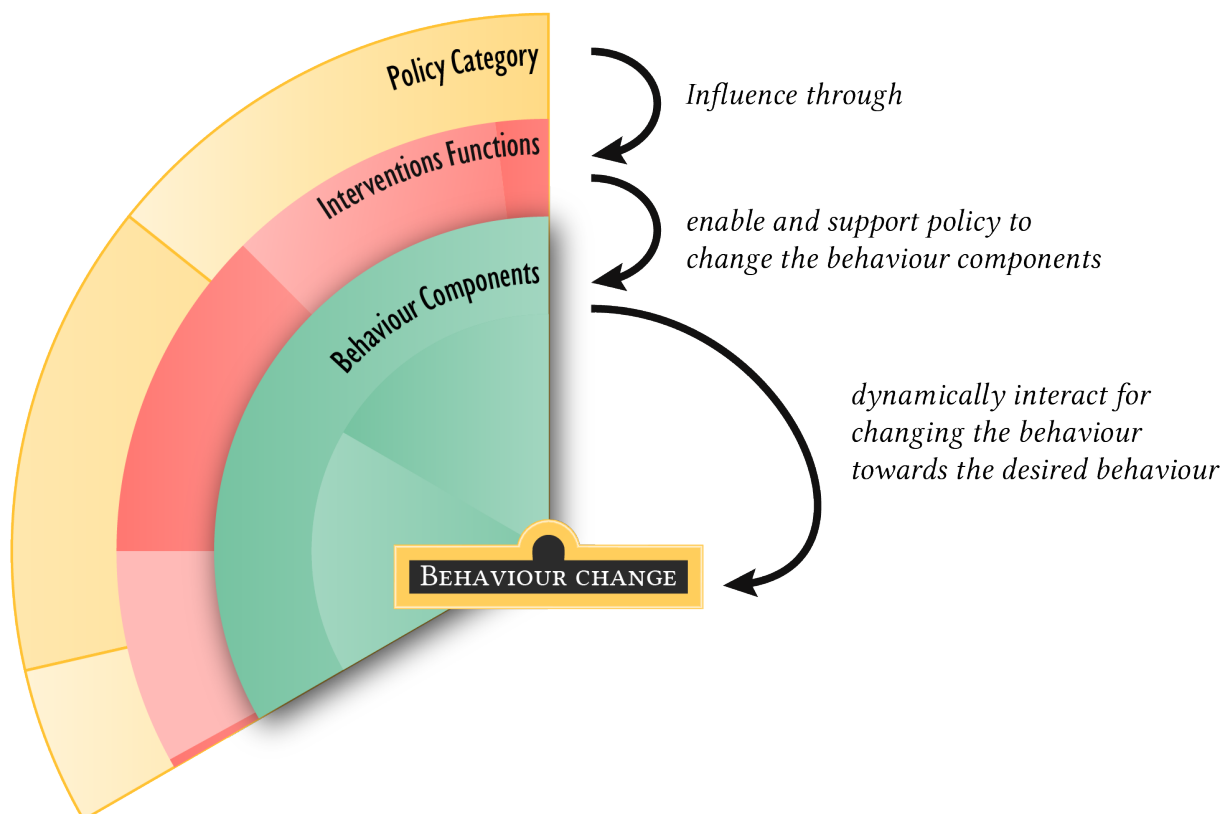


Figure 11: Behaviour Change Wheel dynamic interplay, based on Behaviour Change wheel by (Michie et al., 2011)

The policy category is concerned with the policy making by policy makers. A total of seven policy categories were discerned. These policies set out for behaviour change. For that to happen interventions are needed. A total of nine intervention categories were discerned. This makes the bases of the Behaviour Change Wheel (BCW), as depicted in Figure 12.

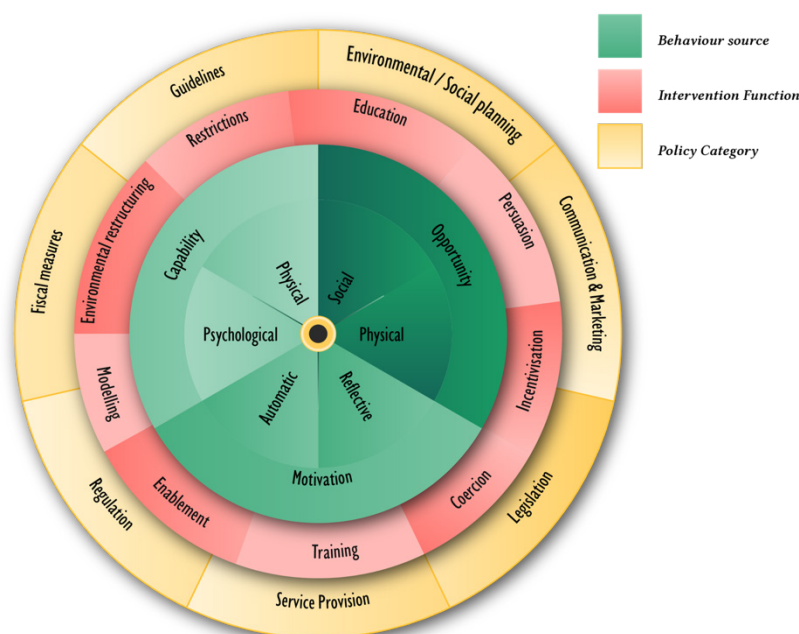


Figure 12: Behaviour Change Wheel, adopted from (Michie et al., 2011)

In particular the categorization of the interventions is in this graduation project interesting and useful. For the explanation and examples of each intervention function and policy category see Table 8 & Table 9. From these intervention functions we have a systemic approach and robust starting point to design interventions (Michie et al., 2011) for circular behaviour change.

Table 8: BCW Intervention Functions according to Michie et al. (2011).

Intervention	Definition	Examples
Education	Increase the knowledge or understanding	Campaigns to provide information that promotes healthy eating
Persuasion	Use communication to induce positive or negative feelings OR stimulate action	Using imagery to motivate increases physical activity
Incentivisation	Create (positive) expectation of reward	Use prize draw to induce attempts to stop smoking
Coercion	Create (negative) expectation of punishment or cost	Raising financial cost to reduce excessive alcohol consumption
Training	Imparting skills	Advanced driver trainer to increase safe driving
Restriction	Use rules to reduce the opportunity to engage in the target behaviour (or to increase the target behaviour by reducing the opportunity to engage in competing behaviours)	Prohibiting sales of solvents to people under 18 to reduce use for intoxication
Environmental Restructuring	Change the physical or social context	Providing on-screen prompts for GPs to ask about smoking behaviour
Modelling	Provide an example for people to aspire to or imitate	Using TV drama scenes involving safe-sex practices to increase condom use
Enablement	Increase means or reduce barriers to increase capability or opportunity (beyond education & environmental restructuring, respectively)	Behavioural support for smoking cessation, medication for cognitive deficits, surgery to reduce obesity, prostheses to promote physical activity

Table 9: BCW Policy categories according to Michie et al. (2011).

Policy	Definition	Examples
Communication / Marketing	Use print, electronic, telephonic or broadcast media	Mass media campaigns over the local news channels
Guidelines	Creating documents that recommend or mandate practice, including all changes to service provision	Producing and disseminating treatment protocols
Fiscal	Use a tax system for reducing or increasing the financial costs	Increase duty or anti-smuggling activities
Regulation	Establish rules and or principles of behaviour or practice	Establishing voluntary agreements on advertising
Legislation	The making and changing of laws	Prohibit sale or use of something
Environment / social planning	Design and or control the physical or social environment	<b>Use the town / city planning</b>
Service Provision	Deliver a service (PSS)	The establishment of supporting services in workplaces or communities

When placing an intervention in the socio-ecological system for a policy, one or more of the specifics in the behavioural system might change (Michie et al., 2011). Which might result in the targeted behaviour change. The aim of the BCW is to change behaviour and is argued to work for “every intervention that has been or could be developed” (Michie et al., 2011). However it has its roots in changing behaviour towards healthier lifestyles (Michie et al., 2011). This does not necessarily mean that it is proven to work for Circular Economic behaviour. An attempt was made by (Michie et al., 2011) to see whether its application for energy efficiency interventions is useful. Their conclusion suggests that BCW does offer “a useful aid for the systemic design and development of behaviour change around end-use energy efficiency”. Within the realm of circular economy behaviour change, various scholars suggest that the use of the BCW is beneficial and a good systemic approach to design for interventions (Within the circular economy realm are examples such as sustainable innovation, recycling behaviour, sharing economy) (Deleris & Mac Aonghusa, 2020; Gainforth, Sheals, Atkins, Jackson, & Michie, 2016; Niedderer et al., 2014; Staatsen et al., 2017; Wastling, Charnley, & Moreno, 2018).

Some of the explained intervention functions are better suited for addressing some of the COM-B components for behaviour change (Michie et al., 2011; PHE, 2019). The advised ‘links’ between intervention functions and COM-B components are summarized in Table 10. Such overview brings guidance in designing for interventions.

Table 10: Link intervention function and COM-B components, adopted from Michie et al., 2011 (by ✓) AND PHE, 2019 (by ✓)

Intervention functions	COM-B components and their best suited intervention relations					
	Capability		Opportunity		Motivation	
	Physical	Psychological	Social	Physical	Reflective	Automatic
Education	✓	✓			✓	✓
Persuasion					✓	✓
Incentivisation					✓	✓
Coercion					✓	✓
Training	✓	✓	✓	✓		✓
Restriction			✓	✓		
Environmental Restructuring			✓	✓		✓
Modelling			✓	✓		✓
Enablement	✓	✓	✓	✓		✓

## Appendix C | De BUCH

### C.1 History of the BUCH

Noord-Holland (NH) is located in the west of the Netherlands. Between the North Sea (west), Markermeer(east) and the IJsselmeer(east). It has a rich history in battling water challenges. The historical flood of 1916 is a famous one. During this flood, the Zuyder Sea flooded the area around. It led to the start of the Zuyder Sea project in 1918. This made way for engineering and building the Afsluitdijk in 1932 to split the Zuyder Sea making the current Markermeer, IJsselmeer and Waddenzee. Another key historical event was during the 19<sup>th</sup> century in which a polder – land reclaimed from water – was made out of the Haarlemmermeer (ONH, 2011; Vergouwe & Sarink, 2016). During the Surge Storm in 1953 the thinking of Dutch was challenged and prompted for a revolution in their thinking. Now *“the costs of reinforcements are weighed against the reduction in flood risk”* (Vergouwe & Sarink, 2016). So, flood prevention is in its history, but also reclaiming land from water.

Another influential event was the Russian-English invasion during 1799 (entoen, n.d.). The Dutch battled together with the French against the Russian-English invasion. The battle happened in the dunes of Noord-Kennemerland for about one and a half month. During that period, among others, Castricum shifted multiple times military occupation. Meaning that the occupation was shifting from Russian/English to Dutch back and forwards. These historical events are still touching our current generation when somebody once again finds a historical button, coin or bullet in the dunes.

After the 1799 invasion another influential battle happened. During the Second World War (1940 and 1945). The dunes were once again the battlefield. Despite some efforts to retain this historical event, many of the old bunkers were demolished, and buried under the sand. This in an effort to escape the war, and look forward for a brighter future (Roos, 2009).

As seen above, the dunes played an important field in its relative short life. The dunes exist only for about 1000 years. They were formed around the 9<sup>th</sup> century (ONH, 2011). Currently these young dunes are still growing. They are formed and grown by sand swept by the wind. First it is swept around a larger object such as a rock or a log of tree. Then the sand forms around that object a pile of sand. A special type of vegetation grows in that pile, and acts as a filter for the wind to even catch more of the sand on top of that pile. Throughout the years, that pile grows into a bigger pile, and finally into dunes (Wesselingh, n.d.).



## C.2 Tourism in the BUCH

The dunes today still play as an important field. It is the field between the frequently visited beaches and the municipalities of Noord-Kennemerland offering facilities for these visitors. According to CBS, Noord-Holland is by far out, one of the most visited region in the Netherlands (CBS, 2020a). The growth in tourism has been growing and is still growing mainly due to a growth in guests from outside of the Netherlands. 80% Of these foreign guests come from neighbouring countries, of which Germany has its largest share, followed by the Belgium and the UK (CBS, 2018). These three countries make up 64% of the total foreign guests (CBS, 2018). Followed by that are macro-economic trends of growth (CBS, 2018). The Noord-Holland beach is the third most visited area.

### Guests in hotels per night

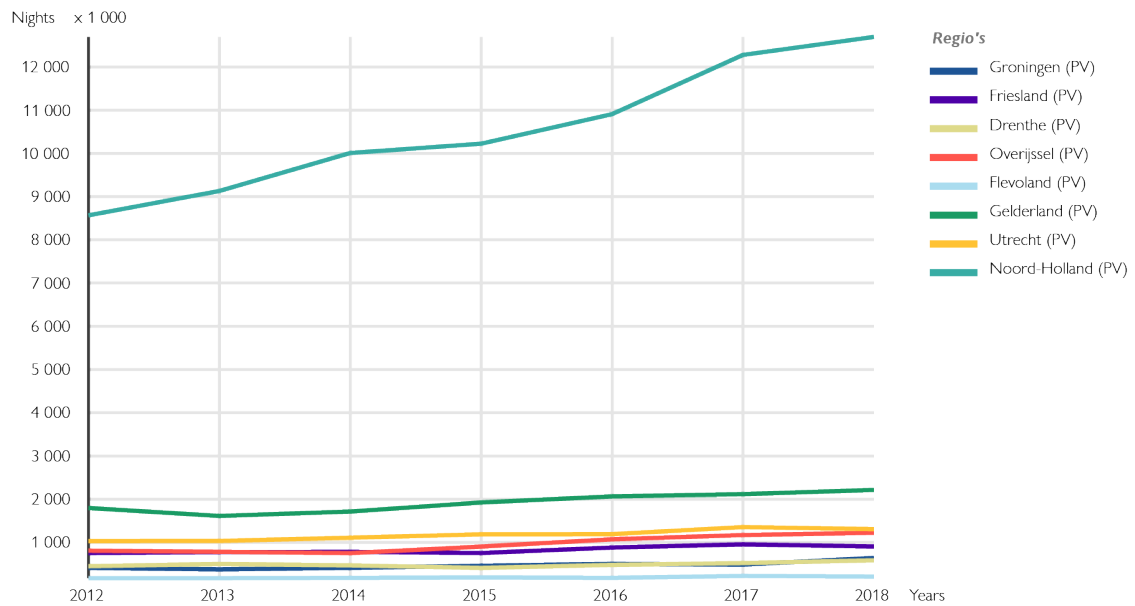


Figure 13: Tourism in the Netherlands in Guests in hotels per night (CBS, 2018)

## C.3 Economic and Demographic trends in the BUCH

### C3.1 Income

The average income of each BUCH municipality belongs in the top 100 highest average income per citizens in the Netherlands. Bergen on 31 with 28800, Uitgeest on 69 with 26800, Castricum on 39 with 28400 and Heiloo on 26 with 29100 euros a year. On this list Velsen is on 100 with 25600 and Wassenaar on 1 with 43500 a year (allecijfers, 2020). Comparing the average income of the BUCH with the Netherlands, shows that they are on average having a higher income (CBS, 2020b).

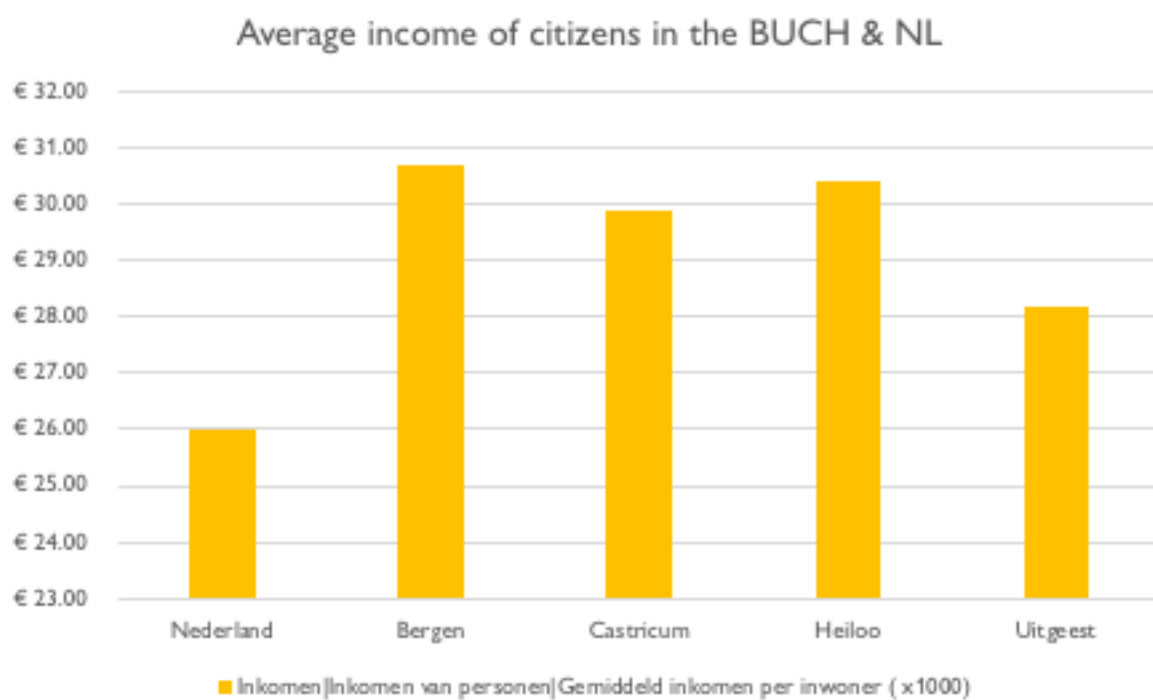
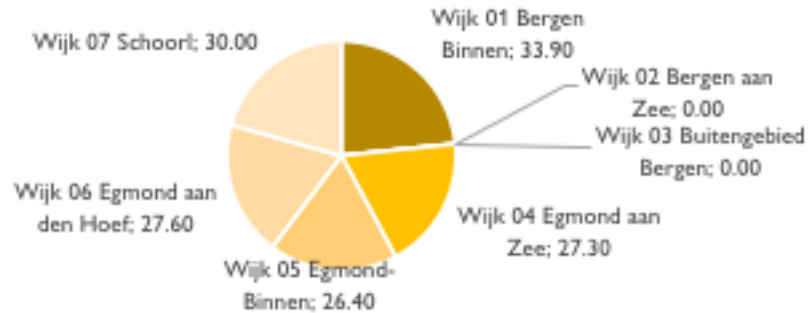


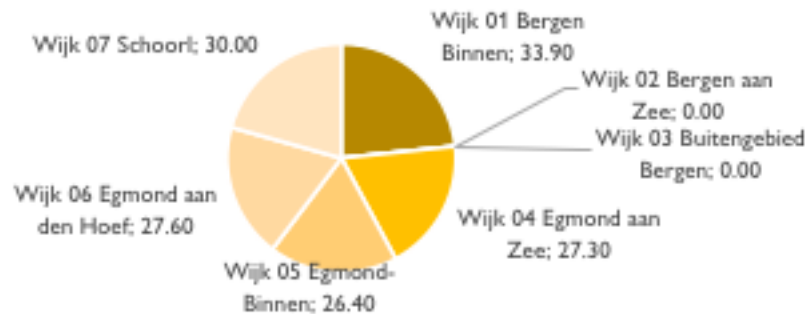
Figure 14: Average income citizens in the BUCH & NL

When looking at the average income per area of each municipality, most difference in average income can be observed in the municipality Heiloo, followed by Bergen, 8600,- & 7500,- respectively . Castricum shows a 5600,- difference between highest and lowest average income per person a year. Uitgeest does not offer enough data to make an observation. Despite the large differences in Bergen and Heiloo, the lowest average income per area in each municipality, is still higher than the average of the Netherlands, which is 26000,- a year.

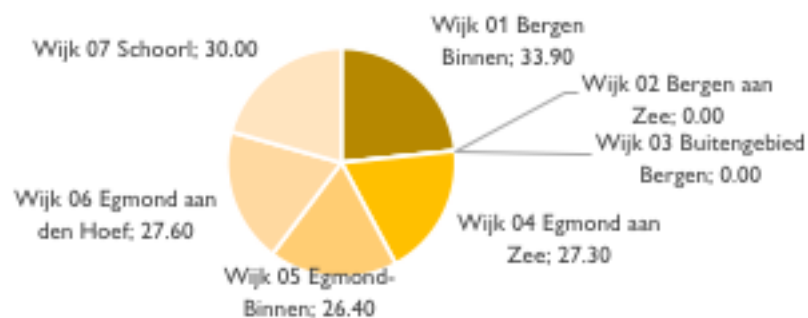
Inkomen|Inkomen van personen|Gemiddeld inkomen per inwoner ( x1000 euro)



Inkomen|Inkomen van personen|Gemiddeld inkomen per inwoner ( x1000 euro)



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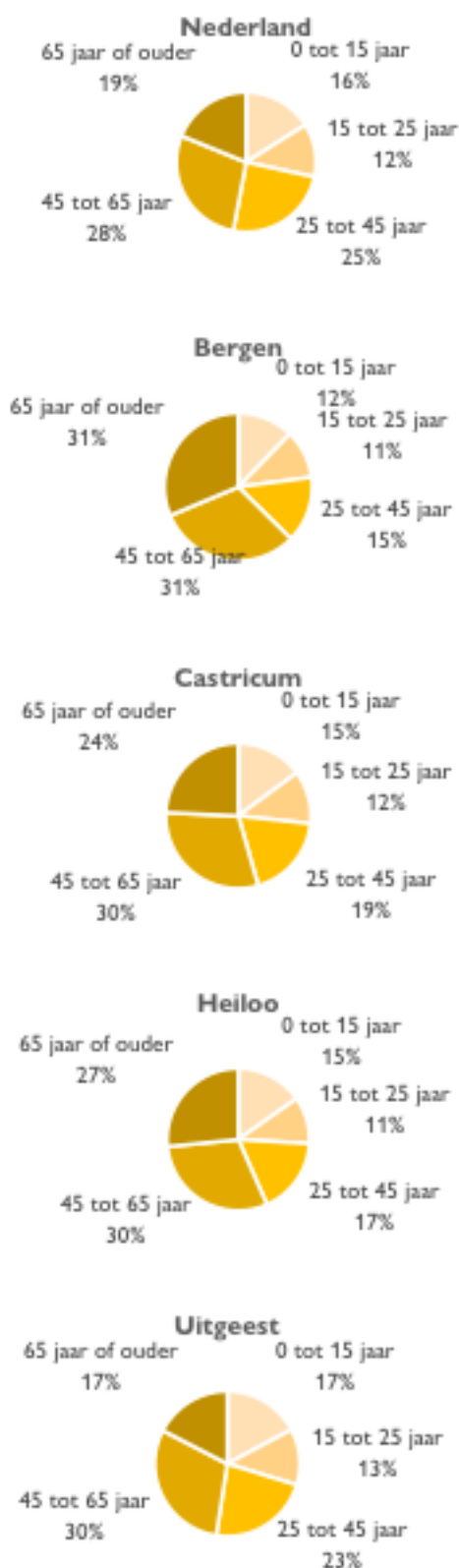


Inkomen|Inkomen van personen|Gemiddeld inkomen per inwoner ( x1000 euro)



### C.3.2 Age

Most of the population in the Netherlands is between the age of 45 and 65 years (28%). In the BUCH municipalities this percentage is even higher, 31% and 30%. Whilst in the Netherlands 19% are 65 and older, in Bergen, Castricum and Heiloo, more than 24% is above that age. Looking at the age of 45 and older, we can observe that Bergen, Castricum and Heiloo are relatively dominated by an older age (see figures). It can be observed that Uitgeest is not that different from the average Netherlands. These are all again based on (CBS, 2020b)



## C.4 Politics

Table 11: Provinciale Staten Verkiezingen 20 maart, adopted from (Verkiezingsuitslagen, 2019)

	Nederland	Bergen	Castricum	Heiloo	Uitgeest
Kiesgerechtigden	13032532	24370	28469	18582	10427
Geldige stemmen	7277068	15762	18775	12393	6659
Forum voor Democratie	1057030 (14,53%)	2665 (16,91%)	2756 (14,68%)	1698 (13,7%)	1163 (17,47%)
VVD	1017937 (13,99%)	2880 (18,27%)	3074 (16,37%)	2360 (19,04%)	1026 (15,41%)
CDA	805862 (11,07%)	1321 (8,38%)	1933 (10,3%)	1075 (8,67%)	682 (10,24%)
GROENLINKS	783006 (10,76%)	2171 (13,77%)	2959 (15,76%)	1751 (14,13%)	857 (12,87%)
Partij van de Arbeid (PvdA)	619906 (8,52%)	1386 (8,79%)	1679 (8,94%)	1291 (10,42%)	630 (9,46%)
Democraten 66 (D66)	567363 (7,8%)	1323 (8,39%)	2007 (10,69%)	1322 (10,67%)	649 (9,75%)
PVV (Partij voor de Vrijheid)	504948 (6,94%)	858 (5,44%)	801 (4,27%)	511 (4,12%)	404 (6,07%)
SP (Socialistische Partij)	430096 (5,91%)	594 (3,77%)	945 (5,03%)	472 (3,81%)	368 (5,53%)
ChristenUnie	353443 (4,86%)	341 (2,16%)	458 (2,44%)	412 (3,32%)	129 (1,94%)
Partij voor de Dieren	317104 (4,36%)	1178 (7,47%)	1011 (5,38%)	771 (6,22%)	301 (4,52%)
50PLUS	233025 (3,2%)				
Staatkundig Gereformeerde Partij (SGP)	179899 (2,47%)				
DENK	121753 (1,67%)	13 (0,08%)	32 (0,17%)	23 (0,19%)	12 (0,18%)
50PLUS/PARTIJ VAN DE OUDEREN	32190 (0,44%)	377 (2,39%)	481 (2,56%)	312 (2,52%)	165 (2,48%)
Lokaal Brabant	25485 (0,35%)				
Code Oranje	24047 (0,33%)	356 (2,26%)	277 (1,48%)	167 (1,35%)	130 (1,95%)
Fryske Nasjonale Partij (FNP)	23662 (0,33%)				
ChristenUnie/SGP	19466 (0,27%)				
Ouderenpartij Noord-Holland	18307 (0,25%)	279 (1,77%)	328 (1,75%)	215 (1,73%)	132 (1,98%)
Groninger Belang	18556 (0,25%)				
LOKAAL-LIMBURG	18474 (0,25%)				
Lokale Partijen Zuid Holland (LPZH)	11648 (0,16%)				
NIDA	11347 (0,16%)	20 (0,13%)	34 (0,18%)	13 (0,1%)	11 (0,17%)
Lokale Partijen Gelderland-Code Oranje	11053 (0,15%)				
Partij voor Zeeland (PVZ)	10619 (0,15%)				
Partij voor het Noorden	10527 (0,14%)				
Senioren Brabant	9687 (0,13%)				
Sterk Lokaal	9344 (0,13%)				
Ouderen Appèl - Hart voor Brabant	6719 (0,09%)				
U26 GEMEENTEN	6530 (0,09%)				
Provinciaal Belang Fryslân	5345 (0,07%)				
Onafhankelijke Partij Drenthe	3777 (0,05%)				
Natuurlijk Fryslân	2917 (0,04%)				
JEZUS LEEFT	2323 (0,03%)				
Senioren Belang	1414 (0,02%)				
Ouderen Politiek Actief (OPA)	1283 (0,02%)				
Respect!	976 (0,01%)				

## C.5 Participatory practices in the BUCH

Various participatory practices are happening in the BUCH municipalities, (see Table 12). Also, each municipality has its own framework and guideline in place for practicing participation. Though BUCH-wide or overarching policy is in place for guiding those practices. The municipalities individually develop their own participation framework and guidelines, (Table 13). This non-overarching policy plan for practicing participation, might form a barrier for the spreading of knowledge, experience and other relevancies of participatory initiatives across the municipalities.

*Table 12: Participation practices in the BUCH, adopted from (Kelders, Kriek, & Timmerman, 2018)*

Participation triangle level	Bergen	Uitgeest	Castricum	Heiloo
Self-governance	Wijkverenigingen Dorpsraad Egmond-Binnen	Openluchtzwembad LeesLokaal	Mijnbuurtje.nl	-
Delegate	-	Vissteigers Waldijk	Dorpsraden Hangplek Akersloot Groen spoor	Groen spoor
Co-produce	Mooi Bergen (herinrichting centrum)  Werkgroep faciliterende overheid  Huiskamer Egmond-Binnen  Post aan Zee	Centrumplan (deels)	Werkgroep dualisme en bestuurlijke vernieuwing  Burgerinitiatieven  Referendumcommissie  Zwemvoorziening	Gebiedsregisseur  Inrichten bedrijventerreinen (Zuiderloo, de Zandstroom)  Stichting voor zelfstandig wonen en kampeerterreinen  Toekomstvisie  Westerweg/Kerkelaan
Consult	Dorpsgesprekken  Sociale teams  Voorzieningenbeleid  Enquête wijkverenigingen	Herinrichting Centrumgebied (4 interactieve sessies)  Omgevingsvisie (interactieve workshops)  Park Oudgeest	Platform Cultuur  Overleggroep strandgebied  Overleggroep buitengebied  Platform Sport  Platform Gehandicaptenbeleid  Adviesraad Sociaal Domein  De Zanderij  Digitaal platform  Limmen Zandzoom	Verkeersplan  Toekomstvisie  VMO adviesraad
Involve	Inspreken centrumplan (beeldkwaliteitsplan Mooi Bergen)  Inspreken omgevingsvisie	Herinrichting sportcomplex	Inspraak raadssprekuren	Raadbijeenkomsten
Inform	Nieuwsbrieven  Jaarverslagen  Posters Thuiskamer Egmond-Binnen  Sociale media	Sociale media  Huis-aan-huis brieven centrumplan en omgevingsvisie	Nieuwsbrieven  Sociale media	Sociale media

Table 13: *Participation policy BUCH municipalities, adopted form* (Kelders et al., 2018)

Part	Bergen	Uitgeest	Castricum	Heiloo
<i>Vision</i>	Bergen faciliteert shows that Bergen goes from citizen participation towards government participation. Meaning to fit the municipality to the signals of the citizens. This is a more facilitating role for initiatives and ideas stemming from citizens.	Importance for Uitgeest is within the implementation of participation, and not formulating a vision.	Handreiking interactieve beleidsvorming is the citizen participation policy of Castricum. The participation is seen as a tool to encapture and use knowledge, experience and creativity of the citizens for the policy of the municipality.	'Samenspel' is the term used by Heiloo. Participation is used as an instrument to govern the municipality. For that to happen it is essential that all parties want to participate, trust each other and are conscious of all the possibilities.
<i>Frameworks</i>	Burgers betrokken is a framework that is SMART formulated. It shows target audience, financial and official support, envisioned level of participation, topics etc. Forms for council proposals and college consults do contain a section for citizen participation.	No SMART policy or framework is formulated. There is also no explicit involvement of the city council to the citizen participation policy. Forms for council proposals and college consults do contain a section for citizen participation. No formal policy here is in place.	The participation triangle is used as guidance. Also the council proposals and college consults forms have a place for participation. Their policy is argued to be SMART formulated in the citizen participation policy gemeente Castricum.	Policy is argued to be SMART. It is explained what role can be taken; facilitating, director, facilitator. Critical Success factors for participation are also mentioned. Forms for council proposals and college consults do contain a section for citizen participation.

## C.6 Raising waste tax

Raising waste tax. It more than doubled in 2019, see tableTable 14.

*Table 14: Dutch waste tax throughout the years, from* (Belastingdienst, 2020)

Year	Rate (for a 1000 kg)
2014	€ 17,00
2015	€ 13,00
2016	€ 13,07
2017	€ 13,11
2018	€ 13,21
2019	€ 32,12
2020	€ 32,63



## C.7 BUCH municipalities waste management

### C7.1 Bergen Waste management

Bergen has a different situation than the other municipalities. Whereas Uitgeest, Castricum and Heiloo manage their own waste collection facilities, Bergen outsourced that to the local HVC Groep for the past 10 years. This agreement ends at the end of 2021. After that a new plan starts in the beginning of 2022. In this new plan the idea is to manage waste collection facilities BUCH-wide managed by the BUCH. The municipality hopes by doing this to be quicker and increase their capacity (Bergen, 2020).

### C7.2 Uitgeest, Castricum & Heiloo (UCH) Waste management

To improve waste recycling and reduce residual waste, three key measures for the UCH are planned to be implemented (Castricum, 2019; Heiloo, 2019; Uitgeest, 2019a). These measures are based on the measures taken by other municipalities that are proven to work. To see what measures would work in the UCH municipalities, research was done on the dynamics of waste the UCH. The three key measures for the UCH municipalities are:

- Increase the service of resources
- Variable waste charges
- Improve recycle centre in Uitgeest and Optimize it in Castricum and Heiloo

The waste triangle depicted in Figure 15 is used by UCH to clarify the ambitions and performance of the (new) waste and resources policy plan (Heiloo, 2019). Direction is set by the municipality on the three aspects Environment, Cost and Service. For the environment the ambition is to work towards 30 kg residual waste per citizen per year in 2025. This with a minimal increase in cost. This is done by services that provided resources to be better collected (PMD, GFT, Paper, Glass, etc) and less for residual waste.

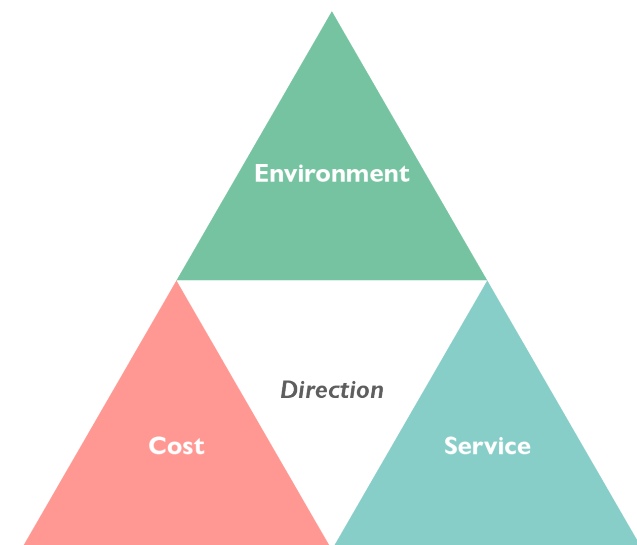


Figure 15: Waste triangle, adopted from (Castricum, 2019; Heiloo, 2019; Uitgeest, 2019a)

In appendix C.8 the results of a current benchmark analysis is shown for the UCH municipalities. The conclusion of that benchmark study is that too much service is offered that enables citizens to dispose unsorted or unseparated waste fractions (residual waste). This increases the treatment and collection costs for the municipalities.

*Diftar (dedifferentiated tariffs) is a waste collection principle that relates the waste citizens offer with the waste taxes payed. More waste, more tax payed. This is also frequently called Variable charges. The most cost effective and impactful solution is Diftar in combination with 'reversed collection' (omgekeerd inzamelen). Reversed collection means to collect recyclable 'waste' (PMD, Glass OPK, Textile) and the residual waste is disposed in underground containers. To work towards such system, first the amount of residual waste and attitude towards waste collection facilities by the citizens needs to change. Otherwise the citizens might react negatively and too much waste is collected in the underground containers.*

The new waste management strategy by the UCH municipalities is to implement Diftar in combination with 'less frequent residual waste collection'. For the waste stream PMD, it is chosen to recycle at the source (at the citizen) instead of doing that mechanically. This to reduce cost, reduce residual waste, increase quality of recycled materials and promote behaviour change for the permeation of recycling in other fractions such as GFT, textile and OPK. For high-rise buildings the PMD waste stream is however sorted after it is being collected. For PMD a third container will be provided to collect resources at homes. The little waste collection parks (milieuparkjes) and civic amenity site are planned to improve. For disposing bulky residual waste, two possibilities are provided by the UCH municipalities. Either collected by appointment for 14 euros or for free at any in the BUCH located civic amenity sites (recycle centres). See Figure 16 for an graphic representation of the new strategy for waste collection by the UCH.

**The strategy in short: Service resources increase, service residual waste decrease and implement variable waste tax.**

	Residual Waste	GFT	PMD	OPK	Bulky Household	Other(Textile, glass)
<b>Low-rise buildings</b>						
Collection facility	Minicontainer 180l or 240l	Minicontainer 180l or 240l	Minicontainer 240l On request 180l	At home / Underground container	Pick up / Recycle centre (milieustraat)	Underground containers / at home
Collection Frequency	1x in 3 weeks	1x in 3 weeks	1x in 3 weeks	1x month / unlimited	by appointment / unlimited	Unlimited / 4x a year
Tariff	Pay per offer	Unlimited 'free'	Unlimited 'free'	Unlimited 'free'	14 euros / 'free'	'Free'
<b>High-rise buildings</b>						
Collection facility	Underground container	GFT cocon	1x in 3 weeks bags	At home / Underground container	Pick up / Recycle centre (milieustraat) by appointment / unlimited	Underground containers / at home
Tariff	per use	Unlimited 'free'	Unlimited 'free'	1x month / unlimited 'free'	'free'	Unlimited / 4x a year 'free'

Figure 16: Waste Collection system 2019-2025 UCH municipalities, adopted from (Castricum, 2019; Heiloo, 2019; Uitgeest, 2019a)

## C.8 Analysis citizen research by JMA 2018

The citizens of the Uitgeest, Castricum & Heiloo municipalities were researched by de Jonge Milieu Advies (JMA) in 2018. This served as a participative form to obtain valuable information from the citizens and was used as a basis for the Waste and resource policy plans 2019-2025 (JMA, 2018c, 2018a, 2018b)

Question 5 states: *By improving waste recycling, less waste is incinerated, and more resources are reused. This contributes to a better environment because less new resources are needed. I believe this is:*

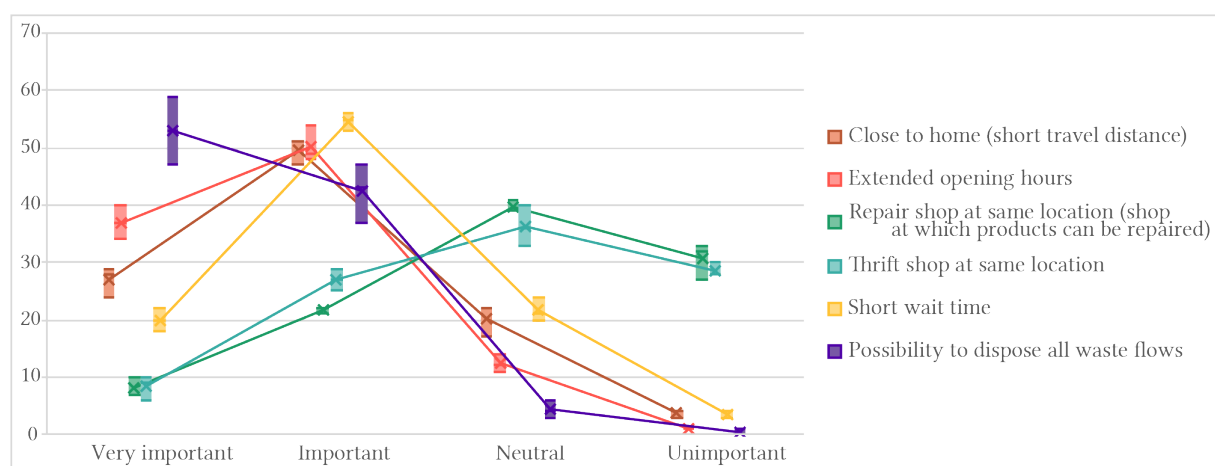
**Table 15: Improved recycling for a better environment (in percentage %), adopted from (JMA, 2018c, 2018a, 2018b)**

Municipality	Unimportant	Somewhat important	Important	Very important
Uitgeest	1	8	39	52
Castricum	1	10	41	48
Heiloo	1	8	41	50

The results show that approximately 90% regards improved sorting of waste and more reuse of resources as important or very important! The other 10% regards it as unimportant or somewhat important (question 5 in: JMA, 2018c, 2018a, 2018b). For every fraction of waste (GFT, PMD, Glass, Textile, Garden) the facility that would help citizens most in improving their sorting behaviour is an extra collection container or collection point in the neighbourhood.

Approximately 87% of the citizens value *more effort for improving their sorting behaviour for a better environment* over the approximately 13% that value *less effort as possible for their waste behaviour, knowing that it than might be less qualified for reuse* important (question 20 in: JMA, 2018c, 2018a, 2018b). Thus, the norm for the UCH municipalities is on the side of the favoured better environment. Though its norm behaviour are, as explained before, not like that.

The most important service factor of a recycle centre for UCH citizens is the possibility to dispose all waste flows (approximately 56% find this very important) (JMA, 2018c, 2018a, 2018b). Also depicted in figure Figure 17 are other questioned factors. From this comparison it can be observed that both a repair shop and thrift shop are not seen as very important (< 10%). The repair and thrift shop factor are on average by 71% and 65% seen as a neutral to unimportant factor. Though these factors are seen as ways for practicing a circular economy (Dri et al., 2018; Hobson, 2019; Milios, 2018). Important to note in this graph is that this perspective of the importance of having a thrift or repair shop at the recycle centre does NOT imply the overall importance of that facility. Though when the norm should be circular, a circular facility should be important at the recycle centre.



**Figure 17: Graph of service factors of a recycle centre and their importance for UCH municipalities, constructed from (JMA, 2018c, 2018a, 2018b)**

## C.9 Municipal Waste BUCH

### C.9.1 BUCH, Region & NL waste comparison

#### Municipal Waste Comparison

Onderwerp — Jaar	Nederland			Noord Holland			Bergen			Uitgeest			Castricum			Heiloo		
	2016**	2017**	2018**	2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
Totaal huishoudelijk afval	496,00	493,00	493,00	475,00	471,00	473,00	591,9	601,3	600,3	516,6	505,8	498,9	539,9	544,1	530,8	547,9	536,4	538,0
Huishoudelijk restafval	190,00	179,00	171,00	227,00	219,00	212,00	210,4	211,2	208,5	203,9	193,0	193,4	202,1	200,4	199,0	180,0	181,4	180,3
Grof huishoudelijk restafval	29,00	30,00	31,00	38,00	38,00	41,00	21,7	21,1	20,8	22,8	23,6	19,5	16,3	15,5	20,3	26,5	30,7	25,5
Verbouwingsrestafval	4,00	4,00	4,00	3,00	3,00	4,00	-	-	-	5,5	4,8	4,5	2,0	-	0,0	2,0	2,5	2,4
GFT-afval	83,00	86,00	87,00	56,00	57,00	58,00	150,5	147,0	141,9	95,7	92,5	95,0	127,4	125,1	121,5	137,0	132,5	126,4
Oud papier en karton	53,00	51,00	50,00	43,00	42,00	41,00	57,7	56,8	54,6	42,0	43,4	41,0	55,4	55,1	49,0	71,8	70,4	75,5
Textiel	4,00	5,00	5,00	4,00	4,00	4,00	4,0	5,7	3,8	4,1	3,8	4,2	4,0	4,2	3,9	4,4	4,0	3,5
Verpakkingsglas	20,00	20,00	20,00	20,00	20,00	20,00	32,5	30,5	30,6	19,7	16,3	18,4	25,8	25,9	27,2	24,4	18,6	17,9
Kunststof verpakkingen	2,00	1,00	1,00	1,00	0,00	0,00	-	-	-	9,7	-	-	7,6	-	-	-	-	-
Drankenkartons	0,1	0,0	0,0	0,0	0,0	0,0	-	-	-	-	-	-	-	-	-	-	-	-
Metalen verpakkingen (blik)	0,1	0,1	0,1	0,0	0,0	0,0	-	-	-	-	-	-	-	-	-	-	-	-
PMD-fractie	12,00	15,00	18,00	6,00	10,00	12,00	5,9	6,7	7,1	-	10,2	12,7	-	10,2	13,2	17,1	15,4	17,0
Klein Chemisch Afval (KCA)	1,2	1,2	1,3	1,1	1,0	1,1	1,4	1,8	1,7	1,6	1,6	1,8	1,4	1,3	1,4	1,3	1,4	1,9
Luiers	0,5	0,5	0,6	0,0	0,0	0,0	-	-	-	-	-	-	-	-	-	-	-	-
Frituurvet en -olie	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,2	0,4	0,1	0,1	0,0
Mengfracties	0,1	0,1	0,1	0,0	0,0	0,0	-	-	-	-	-	-	-	-	-	-	-	-
Grof tuinafval	28,00	28,00	29,00	13,00	13,00	13,00	34,8	36,6	32,9	36,4	31,5	25,1	22,2	25,3	20,6	14,6	13,0	14,2
Afgedankte elektrische apparaten	5,00	4,00	5,00	4,00	4,00	4,00	6,6	7,2	7,4	5,5	6,2	6,5	5,8	6,1	6,1	6,6	-	8,1
Bruikbaar huisraad	3,00	3,00	3,00	2,00	1,00	2,00	-	-	-	-	-	-	-	-	-	-	-	-
Harde plastics	1,3	1,4	1,5	1,0	1,2	1,3	-	1,1	1,6	2,2	2,1	2,3	-	-	-	1,7	2,0	2,2
Vloerbedekking	0,5	0,5	0,5	0,4	0,4	0,3	-	-	-	-	-	-	-	-	-	-	-	-
Matrassen	0,3	0,4	0,6	0,4	0,6	0,6	-	0,5	0,8	-	0,6	1,1	0,3	0,4	1,2	1,5	0,8	1,5
Schoon puin	24,00	25,00	26,00	19,00	20,00	22,00	25,7	29,2	33,7	28,0	34,6	28,2	33,5	27,2	26,0	24,7	22,9	25,0
Houtafval (A- en B-hout)	22,00	23,00	25,00	21,00	21,00	22,00	25,8	29,3	33,9	27,0	28,4	35,5	26,4	29,8	30,3	22,1	23,7	24,4
Houtafval (C-hout)	2,00	2,00	3,00	2,00	2,00	3,00	4,9	4,7	5,9	2,6	2,7	2,9	3,1	3,4	3,6	3,4	3,1	3,3
Metalen	4,00	4,00	4,00	4,00	4,00	4,00	7,6	8,7	9,7	5,6	5,2	2,1	2,0	2,5	2,7	5,0	5,2	5,4
Vlakglas	0,6	0,7	0,7	0,6	0,6	0,7	1,2	1,2	1,5	1,0	1,3	1,3	1,0	1,0	0,8	1,0	0,9	1,0
Bitumenhoudende dakbedekking	0,6	0,6	0,7	0,5	0,5	0,5	-	-	-	0,3	0,6	0,5	0,4	0,6	0,7	0,5	0,6	0,5
Gips	1,2	1,3	1,3	1,4	1,5	1,5	0,00	0,8	1,9	2,2	2,4	2,5	2,5	2,1	2,3	1,5	1,6	1,3
Asbesthoudend afval	0,7	0,6	0,7	0,3	0,3	0,4	0,4	0,5	0,9	0,2	0,3	0,3	0,4	0,6	0,5	0,1	0,1	0,2
Schone grond	6,00	5,00	5,00	4,00	4,00	4,00	-	-	-	-	-	-	-	-	-	-	-	-
Autobanden	0,2	0,2	0,2	0,2	0,2	0,2	0,4	0,4	0,4	0,3	0,4	0,1	0,0	0,0	0,1	0,1	0,2	-
Piepschuim	0,0	0,0	0,1	0,0	0,0	0,0	-	0,1	0,2	-	-	0,0	0,2	0,1	0,1	0,4	0,2	0,2
Gasflessen en brandblussers	0,0	0,0	0,0	0,0	0,0	0,0	0,1	0,1	0,1	-	-	-	-	-	-	-	-	-
Kadavers	0,0	0,0	0,0	0,0	0,0	0,0	-	-	-	-	-	-	-	-	-	-	-	-
Overig huishoudelijk afval	0,0	0,1	0,1	0,0	0,0	0,0	-	-	-	-	-	-	-	-	-	-	-	-

in kg / citizen a year

Figure 18: Municipal waste comparison NL, NH & BUCH in kg / citizen / year, adopted from (CBS, 2019)

## C.9.2 UCH municipalities waste comparison

Table 16: : Comparison UCH municipalities, based on (Castricum, 2019; Heiloo, 2019; Uitgeest, 2019) (bold italic is own interpretation)

Conclusion	Uitgeest	Castricum	Heiloo
<b>Environment</b>			
Amount residual waste (bulky & non bulky in 2017) (kg/citizen/year)	240	216	214
Amount bulky residual waste (kg/citizen/year)	32	15	32
Amount non-bulky residual waste (kg/citizen/year)	<b>108</b>	200	181
Fraction of that waste that do not belong to residual waste containers (percentage) (mainly: PMD, GFT, paper, cardboard)	76%	68%	76%
Percentage more total residual waste in comparison to benchmark municipalities	25%	13%	12%
PMD recycle rate improvement after increasing frequency to collect PMD (2014-2017)	66%	66%	150%
<b>Costs</b>			
Waste management costs (collection, treatment of residual waste, including policy communication, overhead minus reimbursements of the Afvalfonds)	220	213	228
Waste tax (1 person) (euros) (relatively high)	193	213	168
Waste tax (more than 1 person) (euros) (relatively high)	292	282	289
<b>Service</b>			
Waste collected at homes (low-rise buildings)	Residual, GFT, PMD	Residual, GFT, PMD	Residual, GFT, PMD
Unseparated/unsorted waste collected at homes (times/ 2 weeks) (containers)	1	1	1
PMD collection (times/ 2 weeks) (garbage bags)	1	1	1
Service on Oud Papier en Karton (OPK)	Low	Low	Low
Civic amenity site for PMD, OPK, Glass and textile			

## Appendix D | BUCH municipalities Core values in ‘Toekomstvisie’

### D.1 Heiloo

The core values of Heiloo in 2030 are:

- Space
- Nature
- Conscious
- connection.

(ruimte, natuur, bewust en verbinding)(Heiloo, 2013, 2014). Space means spacious in its broadest sense. Physical space, space for initiatives, space for each other... Heiloo is within a green environment but itself is also green. Hence nature is one of its core values. People in 2030 in Heiloo should behave in a conscious manner with each other and the environment. In the sense that they feel connected (Heiloo, 2013).

Important is the combination of the freedom of the individual and the connection of the community.

One of the powers of Heiloo is the innovative co-creation between public and private parties in the sport, culture and recreation sectors (Heiloo, 2013).

Green space and nature is central throughout Heiloo. It is filled with forests, parks and meadow that offer biking, hiking and relaxing. This ecological system is valued by the citizens of Heiloo.

### D.2 Uitgeest

The core principle for Uitgeest in 2030 is *to remain themselves* (Uitgeest, 2019b). Its core values for 2030 are:

- improved and strengthened spatial qualities that are in line with the historical values and identity of the various parts of the municipality. For that it is envisioned to strengthen the connections between parts of the municipality and the ‘pearls’ of Uitgeest.
- healthy, social and vital core and countryside. This value comes historically from health in the sense of air quality but has broadened towards an increase of the quality of life in Uitgeest (both physical and psychological). For that it is envisioned to bring more space for activities and (spontaneous) encounters. Alongside that green is an important tool to do that.
- A strong village that is easily accessible and contains good services and facilities in and around the centre and station
- A transition towards a sustainable, energy efficient and climate-resilient municipality in 2050

### D.3 Castricum

The core values of Castricum are social, flourish (progress), developments and together (with each other) (Castricum, 2014). The activities in Castricum will be in the policy criteria of Sustainability and Co-production. Three key points are:

- Govern, maintain, and utilize with quality the varying landscape around Castricum. Collaborate between parties what expectations and interest there is.
- Having a stable population and adopt the facilities to the citizens in such way that they truly represent the needs and wishes of all the citizens (starters, elderly, children...).
- Recreation and tourism should be improved and is an important factor for the local economy.

## **D.4 Bergen**

Central in the economical vision of Bergen is the ambition for sustainable developments from local economy. The municipality aims to support the sector of tourisms and recreational appearances of the municipality. It also supports and strengthens the supply and activities that build to the identity and unique selling point of Bergen (Bergen, 2017).

Central in the BUCH is the shift from involving citizens in the implementation of policies towards supporting and facilitate initiatives of citizens.

## Appendix E | SWOT analysis BUCH

These SWOT analysis is based on the various reports (Heiloo, 2013) and (Uitgeest, 2019b)

Uitgeest				
Thema	Sterkte	Zwakte	Kans	Bedreiging
	<p>Charme van een oud en historisch dorp, kleinschalig, gemoedelijk, thuisgevoel, veilig, goede sociale controle; – Ontstaansgeschiedenis is nog leesbaar in het landschap (verkaveling, bedijking, bewoning op strandwal); – Veel open groen landschap, dichtbij en om Uitgeest heen, groot aantal recreatieve mogelijkheden voor wandelen en fietsen;</p>	<p>identiteit in de bebouwde omgeving. De entrees zijn niet uitnodigend. De ruimtelijke kwaliteit van alle entrees laat te wensen over;</p> <ul style="list-style-type: none"> <li>• Uitgeest is géén gaaf historisch dorp: er is geen echt dorps hart, slechts 1 terrasje en voor luxere aankopen ben je aangewezen op dorpen en steden in de omgeving;</li> <li>• Er zijn weinig voorzieningen specifiek voor jongeren;</li> <li>• Vlees noch vis: te klein voor ... (grote watersport) en te groot voor ... (kleine watersport);</li> <li>• De aanvliegroutes van Schiphol zorgen voor geluidsoverlast boven het Uitgeestermeer en het weidevogelgebied en zorgen voor een bebouwingsvrije zone op de oevers;</li> <li>• De A9 zorgt voor geluidsoverlast (en fijnstof) aan weerszijden van de weg en scheidt Uitgeestermeer/ jachthavens/ Erfgoedpark van het dorp, waardoor Uitgeest niet letterlijk aan het meer ligt;</li> </ul>	<p>Uitgeest kan kiezen voor wel of niet uitbreiden door ligging in zowel de MRA als de Regio Alkmaar, veel gemeenten kunnen dat niet. Er ligt weinig vast, behalve de kans om iets moois te ontwikkelen in de toekomst;</p> <ul style="list-style-type: none"> <li>• Milieu als integraal onderdeel van de plannen (klimaat, water, geluid, gezondheid): herstructurering bedrijventerrein, inrichting openbaar gebied, ambities milieuzonering kern;</li> </ul>	<p>Toename rail-, verkeers- en luchvaartlawaaï. Op dit moment heeft dit soort lawaai een grote invloed op het woon- en leefklimaat binnen Uitgeest. "Uitgeest lijkt het afvoerputje van storende ruimtelijke ingrepen en ontwikkelingen. Rail-, verkeersen luchtvaartlawaaï heeft op dit moment grote invloed op het woon- en leefklimaat binnen Uitgeest. Ontwikkelingen die op Uitgeest afkomen zorgen in eerste instantie voor 'aantasting', bijvoorbeeld van het open gebied of van het woon- en leefklimaat in Uitgeest; het nieuw opstelsterrein voor treinen, een keerspoor, de aansluiting van de A8 op de A9, het intensiveren van het huidige railnetwerk (spoorboekloos rijden) hebben alle consequenties; "</p>
	<p>Ligging aan het Uitgeestermeer: veel mogelijkheden voor toerisme en recreatie op het land en op het water, open verbinding met Alkmaardermeer;</p> <ul style="list-style-type: none"> <li>– Weidevogelgebieden aanwezig;</li> <li>– Rijke cultuurhistorie: Cornelis Corneliszoon van Uitgeest van Uitgeest, Oer-IJ, eendenkooi, molens;</li> </ul>	<p>De spoorlijnen in combinatie met de N203 zorgen voor geluidsoverlast en vormen een ruimtelijke barrière in het dorp;</p> <ul style="list-style-type: none"> <li>• Het stationsgebied is vies, smal, duur, onveilig en er is te weinig parkeerplekken;</li> <li>• In infrastructuur doorsnijdt het dorp intern en versnipperd het buitengebied;</li> </ul>	<p>;</p> <ul style="list-style-type: none"> <li>• Ligging aan hoogfrequent spoor, verbeteren stationsgebied: nog betere bereikbaarheid, aantrekkelijke voor forensen en bezoekers om in Uitgeest te 'landen'; Behoud groen, waaronder het weidevogelgebied, in de nabijheid van stedelijk gebied.</li> </ul>	<p>Uitgeester bevolking vergrijsd en jongeren niet kunnen worden gehuisvest. Consequentie hiervan is dat (Uitgeester) jongeren het dorp verruilen voor omliggende gemeenten waar wel nieuwe woningen worden gebouwd;</p>
	<ul style="list-style-type: none"> <li>• Betaalbare woningen, veel eengezinswoningen, bestaande woningvoorraad bedient alle doelgroepen. Ook zorg voor jong en oud;</li> <li>• Goede (sport)voorzieningen, centraal in het dorp;</li> <li>• Groot en rijk (breed) verenigingsleven;</li> <li>• Veel inzet vrijwilligers;</li> <li>• Veel lokale evenementen.</li> </ul>	<p>De openbare ruimte in het dorp is gedateerd, meer steen dan groen en slecht toegankelijk voor wandelaars.</p>	<p>Verbinden/samenwerken van organisaties en verenigingen;</p> <ul style="list-style-type: none"> <li>• Het verbinden van de drie gebieden: het Oude Dorp, de Koog en Zuid; Grote potentie voor historisch havengebied, ontwikkeling gemeentehaven tot aantrekkelijk leef- en verblijfsgebied mits oude historische karakter behouden blijft;</li> </ul>	<p>Recreanten stellen steeds hogere kwaliteitseisen (dan Uitgeest kan bieden?) Cultuurhistorische elementen verdienen betere bescherming;</p> <ul style="list-style-type: none"> <li>• Weidevogelgebieden gaan in kwaliteit achteruit;</li> <li>• Slechte kwaliteit van bebouwing uitgeest zelf is grootste bedreiging, dorp niet bijzonder en verslechtering ligt op de loer.</li> </ul>



<b>Bergen</b>				
<b>Thema</b>	<b>Sterkte</b>	<b>Zwakte</b>	<b>Kans</b>	<b>Bedreiging</b>
	Authentiek Kleinschalig Kwaliteit Weidsheid en groen Midden in natuur Dichtbij Randstad Gastronomie Kunst en cultuur Kleine omvang Goede balans tussen inwoners en bezoekers qua aantal een soort Alleen maar laagbouw Goede fiets en wandel mogelijkheden Goede en voldoende speciaalzaken Soort inwoners gelijk een soort bezoekers Gastronomie veel beter geworden	Weinig ruimte voor jongeren in centrum Geen speelruimte voor kleine kinderen Weinig innovatief aanbod van horeca en winkels vooral Publiek van 55+ en ouder Tekort en betaalbaar werken en wonen Spreiding winkel bezoek slecht te weinig spreiding door de week Te weinig samenwerking tussen ondernemers Slecht samenwerking tussen horeca en winkels Slecht parkeren ongelijkheid tussen kennen & omgeving Kunst onvoldoende zichtbaar Schatten van Bergen slecht gepromoot en ogen profi- leert	Vergrijzing; veel tijd en veel geld en gespreid over jaar en week Profiteren van de toeristenoverloop van Amsterdam Digitalisering; Bergen is menselijke plek met menselijke maat in mooie en schone natuur Bewust recreëren; Eco chic Populariteit fiets neemt toe, ook elektrische fiets Groeiende welvaart Behoeftte aan veiligheid dichtbij huis Behoeftte aan schoonheid natuur ruim kleinschalig	Leegstand van winkels Te veel uniformiteit van winkelketens Ontgroening Urbanisatie Regelgeving had geen pas met ontwikkelingen Ontwikkelingen gaan sneller dan wet- en regelgeving Terugtrekkende overheid
<b>Egmond/Bergen</b>				
<b>Thema</b>	<b>Sterkte</b>	<b>Zwakte</b>	<b>Kans</b>	<b>Bedreiging</b>
	Kleinschaligheid; DNA, vissersdorp nog zichtbaar, laag- drempelig, vriendelijk, Bekende en vertrouwde doelgroep van Egmond; sportief, eenvoud, familie, en natuur Evenwicht en balans tussen inwoners en bezoekers en toeristen nu op dit moment Cultuurhistorische rijkdom Bestaande media; website, krant, app & informatieborden Strand duinen bollen en weidelandschap	Betaald parkeren Met munten parkeergeld moeten betalen Te weinig fietsenstallingen Te weinig openbare toiletten Weinig terrassen in Egmond aan de Hoef Geen centraal informatiepunt Behoud van aangezicht Egmond bij verbouwing en nieuwbouw Onvoldoende bekendheid van en met de drie kernen in Egmond Slechte VVV en slechte organisatie van aanbieders Weinig slechtweer voorzieningen Slechte weersvoorspellingen Winkelaanbod wordt slechter; leegstand dreigt 'Zicht op zee' niet overal goed zichtbaar	Nieuwe trend; meer behoefte aan streekproducten, 'Egmondse school', pluktuin, vissersdorp, eigen paling, forel, Cittaslow, schaapskudde Openbaar vervoer makkelijk, ook voor toerist Onveiligheid van andere landen a.g.v. terrorisme etc. Meer toeristen vanuit Duitsland België en Engeland; pro- beren om 'goede' toeristen vanuit Amsterdam hier naar- toe te halen en te lokken Groei van toerisme in algemeen Opkomst Airbnb	Overlopen worden door internationale toeristen vanuit Amsterdam Verstedelijking; verdwijnen van cultuurhistorische plekken door stedenbouw en hoogbouw Te veel tweede woningen; gaat ten koste van sociale structuur en leegstand; is gevaar Klimaatverandering; stijging zeewater Veranderend winkelgedrag
	Boulevard met goede strandtoegangen Evenementen; veel en sportief Breed seizoen veel zon en minder regen Gezellige winkelstraat Veelzijdige mix met uitzicht op zee en veel horeca en terrassen Inwoners willen delen met toeristen, zijn vriendelijk tegen toeristen, zelfde doelgroep			

Heiloo				
Thema	Sterkte	Zwakte	Kans	Bedreiging
<i>Identiteit</i>	-Groen - Rust - Historie - Dorps karakter - Sociale veiligheid - Kwaliteitsdorp	-Saai - Forensen/slaapdorp - Onbekendheid van Heiloo	-Benutten en ontwikkelen aantrekkelijke woonmilieus en leefomgeving voor nieuwkomers en blijvers	-teruglopen van de kwaliteit van het dorp - NIMBY mentaliteit
<i>Sociaal perspectief</i>	-gemeenschapszin - economisch rijke bevolking - verenigingsleven - lage werkloosheid - open t.o.v. nieuwkomers	-vergrijzing - veel forensisme (leeg en stil) - geen homogene samenstelling bevolking	-socia media voor nieuwe verbanden - creativiteit en initiatieven bij bevolking aanwezig - crisis als kans - potentieel aan vrijwilligers verder uitnutten	-individualisme - Definitief vertrekken van jongeren (steden als concurrenten) - angst voor vernieuwing
<i>Gezond duurzaam</i>	-vooruitstrevend van uit gemeentelijk beleid - bewustzijn	-uitvoering en voor het voetlicht brengen van activiteiten - burgers zijn behoudend	-bouwmogelijkheden in de ontwikkelingsgebieden ZZ en ZL - verbeteren duurzaamheid bestaande woningen	-crisis - NIMBY
<i>Ruimtelijk perspectief</i>	-ligging tov Metropool Regio Amsterdam & Regio Alkmaar - omzoomd door groen - een dorp en geen conglomeraat van meerdere dorpskernen - veel koophuizen - hoge kwaliteit van ruimte en gebouwen - Intercity station - veel cultuurhistorische elementen	-geen centrale ligging in NL - geen specifiek dorpscentrum - doorsnijding door spoor - verkeersafwikkeling - Oost West verbanden voor langzaam verkeer	-bouwmogelijkheden in de ontwikkelingsgebieden ZZ en ZL - mogelijkheden tot verbetering van mobiliteit - minder regels en meer ruimte bieden - flexibele BP en nieuwe functies voor bestaande gebouwen - Centrumfunctie van 't Loo verder ontwikkelen	-leegloop van (openbare) gebouwen - teruglopen kwaliteit OR - oost-west verkeerscirculatie - geen afslag A9 - behoudende regelgeving - verminderen parkeerfaciliteiten
<i>Economisch perspectief</i>	MKB is diep geworteld in de samenleving van Heiloo - goede vestigingsmogelijkheden - goed woon-werkklimaat	zwakke sector voor recreatie en toerisme - lokaal georiënteerd - lage koopkrachtbinding voor non- food	bevorderen en uitnutten van thuiswerken - toerisme stimuleren en ontwikkelen - ontwikkeling kleinschalige economie in zorg en dienstverlening - kracht MKB benutten - inzetten op combinatie van digitaal en fysiek winkelen	verdwijnen dag- en verblijfsrecreatie - verschalig winkelaanbod - verminderen parkeerfaciliteiten - Geen afslag A9
<i>Voorzieningen</i>	-gevarieerd aanbod van sport, basisonderwijs en restaurants - op regionaalniveau breed aanbod van cultuur, theater en film - peil van voorzieningen is hoog	-veel voorzieningen buiten het dorp zoals middelbare school, theater en cultuur - slechte regionale recreatieve verbanden (fietspaden) - tweedeling in centra (stationsplein en 't Loo)	-uitnutten van de cultuurhistorische elementen (gebouwen, strandwal, landgoederen) - regionale samenwerking - benutten en stimuleren van initiatieven en creativiteit van bevolking - multifunctioneel gebruik van accommodatie	-verdwijnen van dag- en verblijfsrecreatie - Teruglopende voorzieningen (sport, scholen, etc.) - bezuinigingen
<i>Demografie</i>	-grootste vergrijzingsgolf achter de rug - lichte groei van de bevolking	-vergrijzing - onevenwichtige opbouw bevolkingspiramide - slechte doorstroming in woningvoorraad - weinig betaalbare huisvesting voor starters en jongeren	-bouwmogelijkheden benutten (ZZ en ZL) om jongeren aan te trekken en doorstroming te stimuleren - gemeleerde bevolkingsopbouw houden/creëren door o.a. op peil houden van voorzieningen - diversiteit woonvormen	-bevolkingsopbouw moeilijk stuurbaar - verdere vergrijzing en mogelijke leegloop

<b>Schoorl</b>				
<b>Thema</b>	<b>Sterkte</b>	<b>Zwakte</b>	<b>Kans</b>	<b>Bedreiging</b>
	<p>Cultuurhistorie</p> <p>Combinatie groene hart en dorp ernaast Staatsbosbeheer</p> <p>veel bezoekers</p> <p>Veel vrijwilligers</p> <p>De jongens van school</p> <p>Evenementen en activiteiten</p> <p>natuur gezondheid sportief live stijl</p> <p>Braderie</p> <p>Kleinschalige verblijfsrecreatie</p> <p>Organisatiegraad ondernemers</p> <p>Ligging ten opzichte van Darwin in kust</p> <p>Klimduin</p> <p>Uniekheid van duinen, bos, hoge duinen, kust</p>	<p>Natuurhistorische waarden onvoldoende zichtbaar, ook van groene hart</p> <p>Na zes uur 's avonds niets te doen</p> <p>November tot en met maart niets te doen</p> <p>Winkel en horeca matchen nog niet met bezoekers</p> <p>Bewegwijzering; geografische benaming</p> <p>Routes Camperduin; wandelroutes onderbelicht in pol- derlandschap</p> <p>SBB-routes verwarrend</p> <p>Geen info plus app opstart.</p> <p>Agrarische wandelroutes</p> <p>Parkeren infrastructuur niet in mijn gericht op toerisme en mountainbiken</p> <p>Voorzieningen; toiletten</p> <p>afspuiten mountainbikers water tap.</p>	<p>Schoorl meer een samenhangend geheel maken</p> <p>Duurzaamheid en uitstraling</p> <p>24-uurs-economie drukte</p> <p>Toename populariteit van fietsen en wandelen Vaker korte vakanties</p> <p>Vergrijzing; geld, tijd, spreiding in tijd buiten pieken</p> <p>Communicatie; info; nieuwe technische en communicatiemiddelen</p> <p>Toenemende wens en behoefte aan natuur, rust, yoga, gezonde lifestyle, actief, bio, lokaal, verwennen, Eco chic</p> <p>Exclusief slapen op het strand</p> <p>Natuurbewust recreëren</p>	<p>Geen tweede Zandvoort</p> <p>Te veel toeristen waardoor slechte bereikbaarheid en intolerantie en weinig acceptatie</p> <p>Te veel exploitabele elementen zoals slapen op het strand Van buiten het dorp komt de 24 uurs economie</p>
	<p>Stilte Potentie voor mountainbikers</p> <p>Dorpse karakter; laagbouw en kleinschalig wonen; woondorp</p> <p>Infra/pieken; zondagen, zomers, zomerse dagen, zomer, jaarrond</p> <p>Inwoners wandelen met toeristen en bezoekers</p> <p>Campings naar bungalowparken betekent andere doel- groepen</p> <p>Eco Bio detailhandel</p>			

## Appendix F | Intervention 1.0

### F.1 Listing assumptions & insights

In order to gain a deeper understanding of the context various assumptions were listed. These assumptions were based on insights gained from an in-depth interview with the recycle centre' foreman, Senior Policy Officer Resources & the Circular project leader at the BUCH organization, and with 9 citizens whom received sensitizing booklet (to see these in-depth semi-structured interviews and context mapping result see appendix I).

Listing these assumptions is part of a methodology frequently used by start-ups called the Riskiest Assumption Test (RAT) (Hall, 2019b, 2019a). This test is a new take on the Minimum Viable Product (MVP) method used in new product development processes. The RAT tests whether a predefined assumption is either true or resolved in order for an idea to work (Hall, 2019a). Whereas the MVP method focusses on the building aspect of the Build-Measure-Learn process, RAT focusses on the learning aspects (Hall, 2019a). One makes an assumption, then builds for that assumption, to measure and learn for that assumption, to better understand it. Below are the assumptions listed.

Assumption list:

1. People want to bring stuff to their local thrift shop before going to the recycle centre (milliesutraat), but they do not accept their products
2. Products inside the bulky waste (grofaval) bins are of good quality
3. People sort their waste already before going to the recycle centre
4. Elderly sort their waste at the recycling centre (plenty of time, only 1 in 4 times)
5. Making more waste than the waste bins fit
6. Current recycle centre fit the wishes of people visiting
7. The municipality is responsible for my waste, I am not
8. Waste = dirty
9. personal waste is not dirty
10. Waste = reusable
11. People have not a lot of knowledge about materials and not its destination
12. People are aware of all the possible ways to get rid of their stuff
13. People do not care at what place their stuff ends
14. Recycle centre is most easy way to get rid of your stuff
15. A more beautiful looking recycle centre will change the perspective on waste (broken window effect)
16. Thrift shop is garbage, curiosa, useless etc
17. When it rains, people don't want to sort their waste
18. People understand they have to sort their waste
19. There exists season depended waste, and climate dependent waste (storms)
20. Baby-boomers sort worse than youngsters

These assumptions were mapped on a quadrant based on two dimensions: Level of risk, and level of validation. This to find the assumptions that are relatively easy to validate, and to find those that are high in risk. This to test the idea or concept on its viability, feasibility or desirability without developing the complete product or service (Hall, 2019a).

To be pragmatic, the listed assumptions were plotted on the quadrant by discussing with Thijssen and were argumented on our own interpretations and MVP, Quick and Dirty prototyping, or Design expertise.

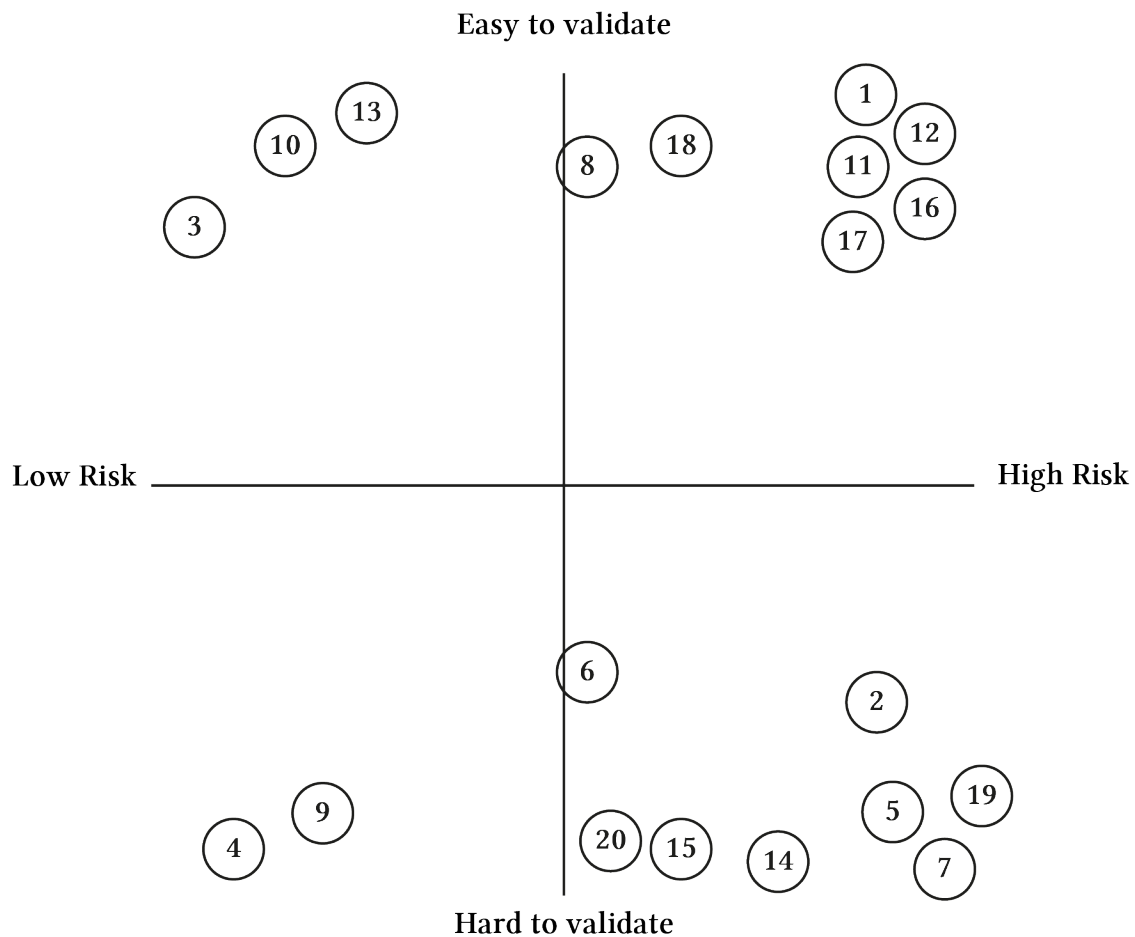


Figure 19: Listing assumptions

From the quadrant can be observed a distinct cluster in the High risk and easy to validate corner (right top). The assumptions 1, 11, 12, 16, & 17 are therefore interesting to test.

Assumption 17 can be observed by cross comparing an observation during a sunny and a rainy day. However, to be pragmatic and more convenient this assumption was. Assumption 16 was more related to the perception of thrift shops and not on the behaviour of waste disposal. The assumptions 1, 11, and 12, do have this relation to waste disposal.

Assumptions 11 & 12 can be understood as more generic assumptions, and therefore assumption 1 belongs to those assumptions. This makes it interesting to first explore assumptions 11 and 12. Both 11 and 12 are strongly related to each other. From these two assumptions a goal was stated:

***Mapping out what different people there are with different attitudes and different behaviour on how to handle old products.***

## F.2 Approach



It is important to note that this happened on a Thursday during the day. Making it questionable whether this is a representable group of all the citizens in Heiloo. These were mainly people whom are free of work, or whom went to the supermarket after work on that specific day. Also, it is only limited to people whom are willing to participate in such research study, and thus to those whom we have talked to.

Also, important to mention is the approach taken. It was in a setting in which people could position themselves as being the expert: How would you do it? Instead of proposing: Would you bring your products to the local thrift shop? This is easier and more comfortable for people to do, as they can utilize their own experiences, thoughts and invent and formulate the criteria themselves of their own decision (Mlodinow, 2019, p. 54; Sanders & Stappers, 2018). On top of that the introduction sentence that was used to attract people was: Hello, **would you like to help** in our research **for** our graduation project. Such sentence following the order of 'statement-request-justification' is claimed to be a successful structure for a sentence (Langer, Blank, & Chanowitz, 1978; Mlodinow, 2019, p. 35). This sentence emerged throughout the first half hour of that day, as people explained that the people visiting 't Loo are not fond of people trying to sell them stuff. Making the justification '*for helping us graduate*' worked. People whom seemed in a rush and said no while we were asking, were converged once we said that justification. It is important to notice here, that the justification why you ask a person something is in the pursuit of something. In our case *for us to graduate*. Would that be *to sell something to them*, did not work. It is important when approaching people in 't Loo to do that by making explicit what justifies for doing that. And that justification should be something the people want, can or will hang on to.





## F.3 Typologies

Making typologies based on 41 short informal conversational interviews is not a high enough sample-size to be representative for the whole population in neither Heiloo and the BUCH with a population of 23464 and 101000 respectively (AlleCijfers, 2020; de BUCH, 2020; Gemeente Bergen, 2020). This is a limitation in the reliability and validity of this intervention. However, as the interviews were conducted in a mixed manner of informal conversational to inform the reasonings behind the closed, fixed-responsive interview questions AND to be pragmatic it was chosen to use this data to define typologies. This because there was no interest in the specifics of each behavioural type, but on the meaning of those behaviours. The reasoning behind the behavioural types, to get grip on the different reasonings that promote (any) behavior.

Segmentation is used in business to draw boundaries in industries. As Grant (2005a, p. 117) defines, segmentation is the “disaggregation of industries into specific markets”. Such market segmentation is useful to get a certain understanding of the market you are working in. The same approach of market segmentation can be applied on the approach of clustering the 41 informal conversational interviews. This because they can be seen as a market and can be segmented to differentiate that market. In this sense the sample is a market that is in search for a way (product, service, PSS) to dispose the exhibited products.

An accepted framework that is commonly used in market segmentation is making the main distinction between demographic and behavioural, macro and micro or nested hierarchical factors (Powers & Sterling, 2008; Shapiro & Bonoma, 1984; Wind, 1978). The four most widely known segmentation approaches are geographic, demographic, psychographic and behavioural segmentation (Kotler & Armstrong, 2010). From that segmentation we can clearly indicate what the segmentation is based on. These segments are summarized in Table 17, as adopted from (Goyat, 2011).

*Table 17: Segmentation approaches, adopted from (Goyat, 2011)*

<b>Geographic</b>	<b>Demographic</b>	<b>Psychographic</b>	<b>Behavioural</b>
Region (continent, country, neighbourhood)	Age	Interests	Benefits sought
Population size (by metropolitan area)	Gender	Activities	Usage rate
Population density	Family size	Opinions	Brand loyalty (how loyal to a certain brand)
Climate	Family life cycle	Values	User status
...	Income	Attitudes	Readiness to 'buy'
	Occupation	...	Occasions
	Education		...
	Generation		
	Ethnicity		
	Nationality		
	Religion		
	Social Class		
	...		



The key steps to segment a market in a needs-based fashion, by (Best, 2004) as cited in (Goyat, 2011) is shown in Table 18. The segmenting process happened following the 7-step process until step 4. This because the clustering process' main purpose was to understand various reasonings for disposing products and find its segment identification and potential impact.

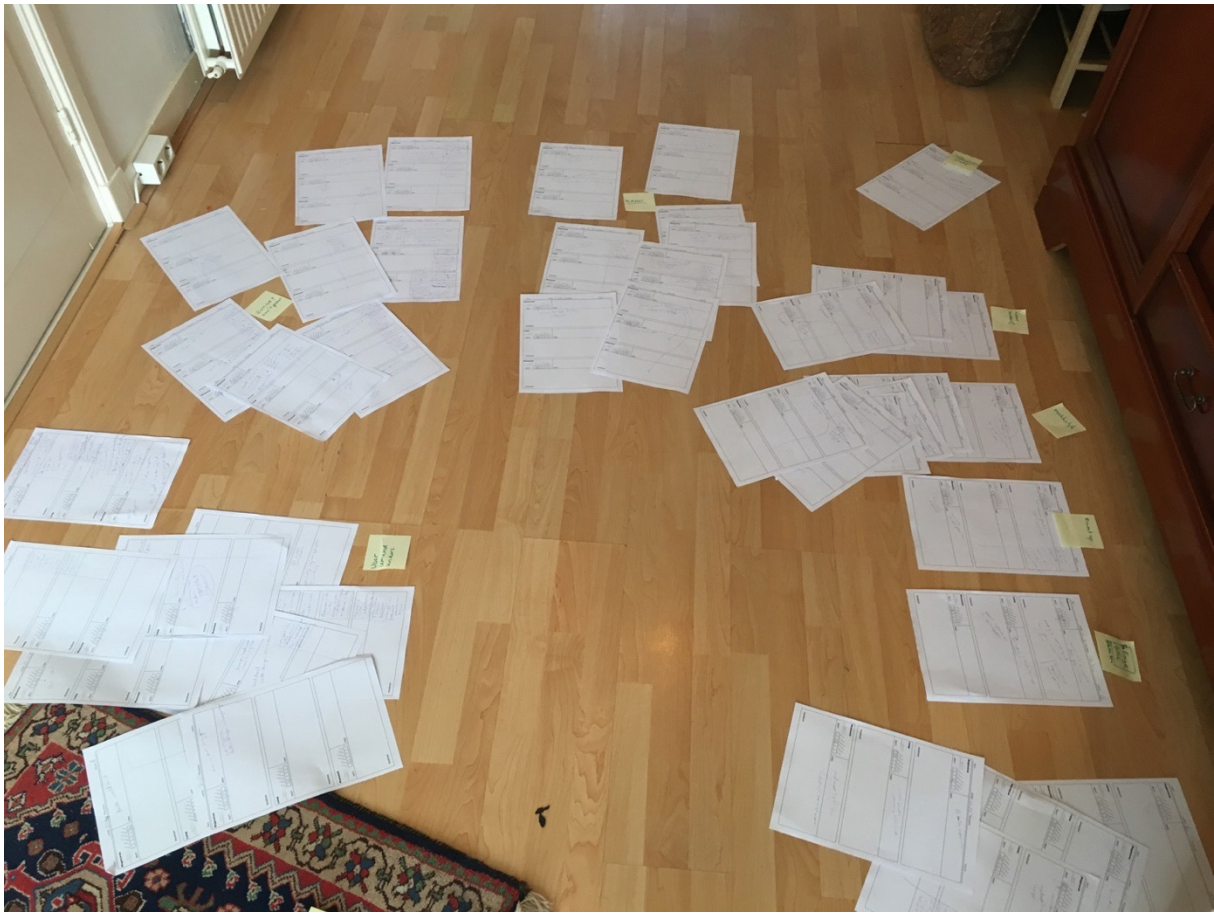
*Table 18: The key steps to segment a market in a needs-based fashion, by (Best, 2004) as cited in (Goyat, 2011)*

Step in segmentation process	Description
1 Needs-based segmentation	Group customers into segments based on similar needs and benefits sought by customer in solving a particular consumption problem.
2 Segment identification	For each needs-based segment, determine which demographics, lifestyles, and usage behaviors make the segment distinct and identifiable.
3 Assess segment attractiveness	Using predetermined segment attractiveness criteria, determine the overall attractiveness of each segment.
4 Evaluate Segment Profitability	Determine segment profitability (net marketing contribution).
5 Segment positioning	For each segment, create a "value proposition" and product-price positioning strategy based on that segment's unique customer needs and characteristics.
6 Segment 'acid test'	Test the attractiveness of each segment's positioning strategy.
7 Marketing-mix strategy	Expand segment positioning strategy to include all aspects of the marketing mix: product, price, promotion, place, and people.

Markets can be segmented by geography, demography, psychography or behaviour. These segments can make different clusters from the same population. Linking however behavioural characteristics with another segmentation can help to promote the understanding of a population and its behaviour for approaching them. For that reason, the 3 steps of the above were taken into consideration. For that reason, the initial clustering was approached by finding the behavioural or psychographic reason: **the reason mentioned why they would dispose a product in their answered response**. After that process of clustering the clusters were analysed with the question: **what are the demographic overlapping characteristics?**

### F.3.1 Behavioural analysis

The typologies are based on the 5 clusters. They are further discerned by the differences found within each of the found clusters. This is described for each typology below as a short summary.



*Figure 20: Analogue clustering of interviews*

#### 1. The shame of throwing away

Throwing products away is concerned to be a shame by 8 people. This group does not mention the recycle center to be an option for the exhibited products. They all mention the thriftshop, repairing or giving away to be the option for disposing products. They use the local supermarket notice board to give away products for free or bring their products to the local thrift shop. It is mentioned that they know that a lot of people around them are throwing away a lot of stuff that can still be used. They call this a shame (or in Dutch: 'zonde'). They do not associate a broken product with a completely broken product. They imagine that a partly broken product can still be fixed by someone else or a thrift shop. It is also mentioned that it is too crazy to bring these products to the recycle center. Part of this group also mention their concerns about the environmental impact of throwing products away and see that as not sustainable.

#### 2. For somebody else

9 people mentioned prominently the reason for disposing things is to put it to use for somebody else. They mention this is for a good cause or charity. As the stuff have still some potential value in it, that is not utilized by them, but could be utilized by someone who needs it. Their focus is more on the 'giving' or 'donating' side of disposing stuff. They age that mentioned this is equally spread across the age of 35 to 80. This cluster of people are all mentioning the thrift shop as the best place to dispose of stuff, to bring the value of that stuff to others. Among this group, belong two people from a group of six friends. They mentioned that they are an exceptional group of friends that respect products in a sustainable matter. They explained that whenever a product is broken the tools and parts to fix that product, are made by themselves. Also, they recently made their houses energy neutral by insulating it better and installing solar panels. In that way they explain that they saw on the Dutch Design Week a recycled chair made from Construction waste. They collecting construction waste form the neighborhood in Heiloo, and made they own recycled chairs.

### 3. 'Broken broken'

Another group of 9 people mention the status of a completely broken product (it cannot be used anymore for its original function) to be the cause of disposing it. The way to do that is divided into two camps, thrift shops or at the recycle center. One group explains that when a product is broken, nobody can utilize or do anything with the product. Therefore, it should go to the recycle center. As that is the best destination for such broken product. On the other hand, it is mentioned that when a product is broken, it can be fixed. This sub-group explains that the local thrift shop or repair cafe is able to do that. They decided to bring the broken product to the thrift shop. But when a thrift shop does not accept it, it is 'recycled' at the recycle center. It is interesting to see that the definition of when something is broken or cannot be used anymore varies widely. Some noticed that a broken light in the microwave means broken broken, whilst others explained that it would still function and is not broken broken. The age of this group was varying between the age of 20-80 years old.

### 4. What else?

This group of 5 people all mentioned the same reason for disposing at the recycle center: "What else should I do with it?" "Where else should I dispose of it, it **must** go to the municipal recycle center, that is obliged?". The age of this group varied between the age of 45-80 years. Two of them mentioned the thrift shop when we explicitly asked why they did not bring it to the thrift shop. It was explained that they could not see somebody else wanting to have the product, therefore it should be thrown away at the municipal recycle center. Even the lamp from 2003 was seen as an old product, that nobody wanted anymore and should be thrown away at the recycle center.

### 5. Easy, but respectful

A group of 6 indicated that they wanted the easiest way of disposing. This can also be explained as the path of least resistance. Both the recycle center **and** the thrift shop were seen as the easiest ways to dispose their stuff in a good manner. Selling online is mentioned by many as taking too much effort. Disposing it next to the waste bins/containers at the street might seem to be the easiest solution, but that was also not the 'right thing to do'. To them it doesn't really matter where the product ends, as long as it is easy to get rid of and still belongs to the 'way to do that' (not throwing it on the streets). The age of this group was between 45 and 65 years old.

## F.3.2 Demographic analysis

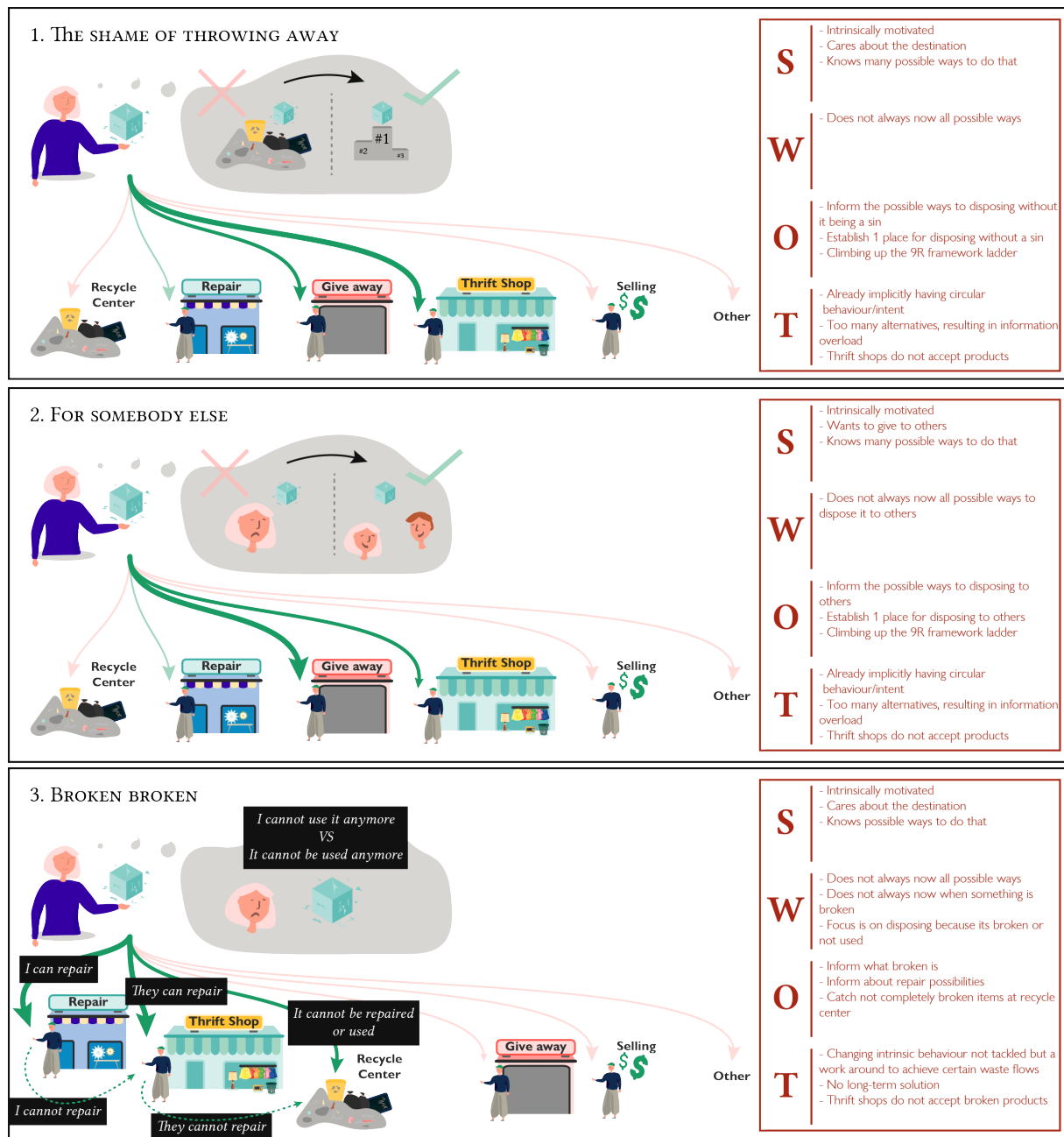
Each cluster shows an equal variance in terms of age. No distinct elder, mid or youth cluster can be observed. Meaning to discern or classify the groups in terms of age is rather limiting. For instance, when we look at the age of 65+ a wide variety of reasons were given. On the one hand we see pro-environmental reasons, and completely on the other side are only the reasons for easiness mentioned. Also, the age group 35-50 mention these same reasons as the 65+ group. From this insight it can be stated that whilst demographic differences are differences amongst people, they do not determine differences in reasons why they had chosen a certain way of disposing the exhibited products. This difference is also acknowledged by UX designers. As explained by (Farino, 2013) *"a person's characteristics and behavior do not always align. The difference between characteristics and behavior, in some cases, could be very volatile."* It is thus important to not only group people in terms of characteristics or demography, but by also by behavior (according to the behavior wheel: Capability, Opportunity & Motivation (Michie et al., 2011)). For that a so called behavioural archetype can be used (Farino, 2013; Smashing Ideas, 2016). This broadens the 'who' that a persona describes with behavioural patterns. This summarizes a groups needs, motivations and pain points as opposed to only characteristics.

To exemplify this way of discerning, imagine a music festival of **BLØF** – a well-known Dutch pop rock band from Zeeland – . Imagine the festival being in Nijmegen at the venue Doornroosje on a Saturday evening. The visitors you will see vary from: 12 years with parents, 16-25 group of friends, 45-60 group of friends or 26 years with their family in law (that was the author). These groups all share one thing in common, they went to BLØF. The groups with an age between 45-60 on top of that share their age in common. But within this group a lot of different reasons can be found why they went to BLØF. Some go because they have a monthly subscription at Doornroosje, some love BLØF and belong to the groupies, some might be invited by a friend, some love the music and are zoning off from a hard period at work. These are all different reasons, motivations, values of why they are there but within the same group of 45-60. The group of friends 16-25 might be there for the same actual reasons; just a night out at some nice band we like VS the hardcore groupies. We see in this example that groupies are both seen in the age 45-60 and 16-25.

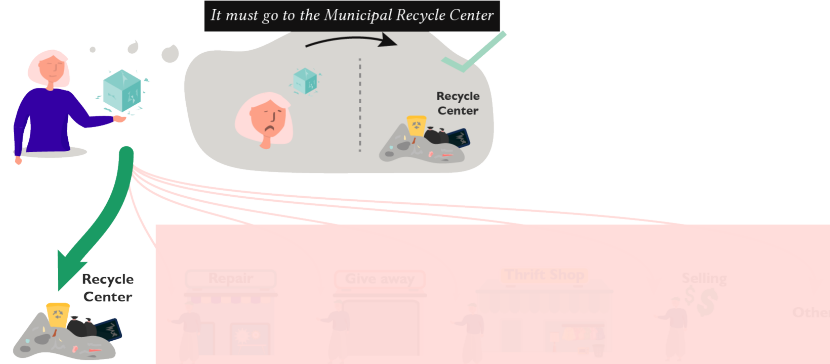
### F3.3 SWOT analysis for adopting circular behaviour

To make use of these typologies a SWOT analysis was used to indicate the Strengths, Weaknesses, Opportunities & Threats. A SWOT analysis is a method that helps to systematically analyze the strategic position of something to inform the development of its strategic plans – this something is sometimes referred to a company' business (van Boeijen, Daalhuizen, Zijlstra, & van der Schoor, 2013), organization (Pickton & Wright, 1998) or even a person like yourself (Krogerus & Tschäppeler, 2014). –. The Strengths and Weaknesses are seen as internal and Opportunities and Threats as external factors (Pickton & Wright, 1998; van Boeijen et al., 2013). In the typologies the SW stand for the internal factors, which in this case is the typology of people. The OT stand for the external factors, which in this case represent the BUCH municipality as contextual factor.

The SWOT factors are explained for each typology in respect to adopting circular waste disposal behavior. That is any behavior from the in section 2 explained 9R Framework.



## 4. WHAT ELSE?



S

- Knows to dispose waste at the municipality recycle center
- Disposing happens with multiple products and waste at once

W

- Only knows the recycle center as possible way to dispose waste
- Sees a 'broken' product as waste

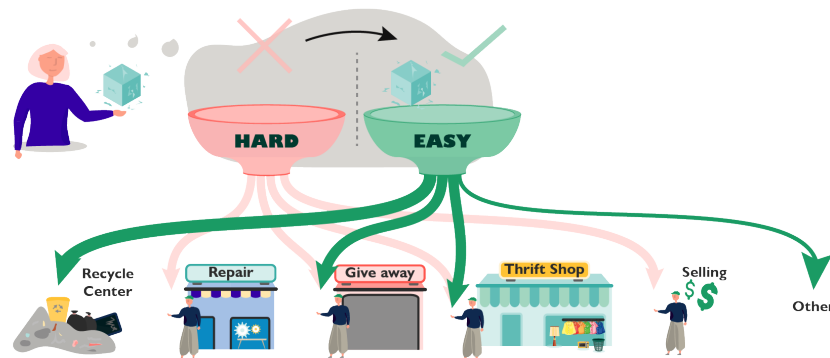
O

- Inform the possible other ways to disposing waste
- Open up mindset to see waste as resource
- Make visible what 'waste' can go to thrift shops, repair cafe, etc.

T

- Rejecting behaviour change

## 5. EASY



S

- Disposal is regulated by the easiness to do so
- Thrift shop and giving away is seen by some as easy

W

- Does not care about the end but the means, this means should be easy
- What is considered easy differs

O

- Making it easier to flow still usable products from recycle center towards other destinations
- The most easy solution will be chosen

T

- Recycle center is frequently being seen as the easiest solution

### F3.4 Typology analysis

We can see that the first two typologies are already practicing and preferring circular behaviour. The main output channels for their 'waste' or obsolete products are more circular than the other typologies, making them already within the realm of circular norm behaviour. 3,4 and 5 are however not within that circular realm and are therefore rated positive for their opportunity.

Typology 4 does not know the alternatives. Therefore, two assumptions can be drawn: either they do not know the existence of the possibility to repair, give away or thrift shops OR they interpret or perceive products as waste too early (meaning that a scratch on a product is already seen as broken). In the first they simply do not know, and in the second they simply perceive products too soon as waste. The latter group can be put under typology 3.

Typology 3 shows that what becomes waste is dependent on the people's perception of when something is regarded as waste. In simple words, if everyone regards a product as unusable and as waste when it has a scratch, much waste will be made. But when these people will only regard a product as waste when it cannot be used anymore for any other purpose (such as worn tyres of a car can still be used as a pot for plants), in this sense they will never perceive a product as waste, no waste will be made. Those two are the most extremes of course on the spectrum of perceiving a product to be waste/obsolescence or not. In Figure 21 this principle is visualized. The same product can be perceived by different people through different views. To spark our imagination and seek for novelty let us question the 'what if' question (Heilman, Nadeau, & Beversdorf, 2003):

***What if People not perceive a product as broken anymore but only as broken or unusable for them and still usable for others?***

***Or What if People not perceive a product as broken anymore but as repairable?***

***Or What if those people want to be circular but cannot do so?***

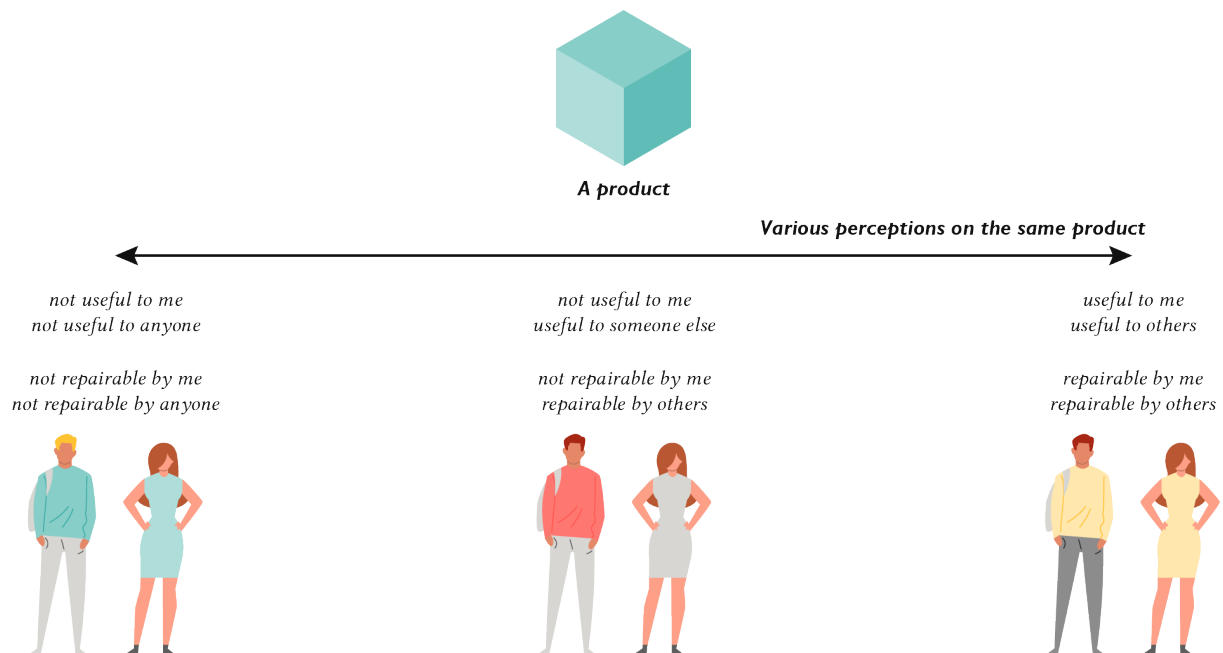


Figure 21: Various perceptions of the same product

Typology 5 explains us that for some it does not explicitly matter at what destination 'waste' ends. Still it needs to end respectfully at a designated area and not in nature. Any of the options are seen as respectful, but the easiest one is chosen and is the main reason for that decision. Whether the repair café, thrift shop or recycle centre is the easiest differs. This differs to the perception and the personal defined easiness. Some prefer the opening hours of the recycle centre and combine it with other household waste that they need to dispose. Others find the thrift shop easy because it is nearby. When we question the novelty seeking question 'what if', we get: ***What if People Perceive more 'circular behaviour' as most easy and respectful behaviour?*** This question broadens this typology towards typology 4, as this is also concerned on the perception, but then the perception should be in specific 'easy and respectful'.



## F.4 Questionnaire

Naam	Leeftijd	Woonplaats	Email #							
<b>Magnetron</b> Benoemt = S Direct gekozen = X Verkozen      Kringloop      Milieustraat      Opknippen      Weggeven      Anders										
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<b>WAAROM?</b>										

## Appendix G | Competitor analysis

### G.1 People perspective

Another way to view the circularity of products is through a user perspective. This perspective is different from the more frequently used production and business model perspective which is based on the product life-cycle (Selvefors, Rexfelt, Renström, & Strömberg, 2019). Such perspective views the usage of a product mainly with a focus on the product' production, manufacturing, distribution and disposal. Selvefors et al. (2019) argue that the user perspective "points to new opportunities for designing products and services that can create enabling preconditions that make it possible, more convenient and more preferable for people to circulate products". The user perspective consists of three main elements: Obtainment, Use and Riddance. In Figure 22 both perspectives are shown as illustrated by Selvefors et al. (2019).

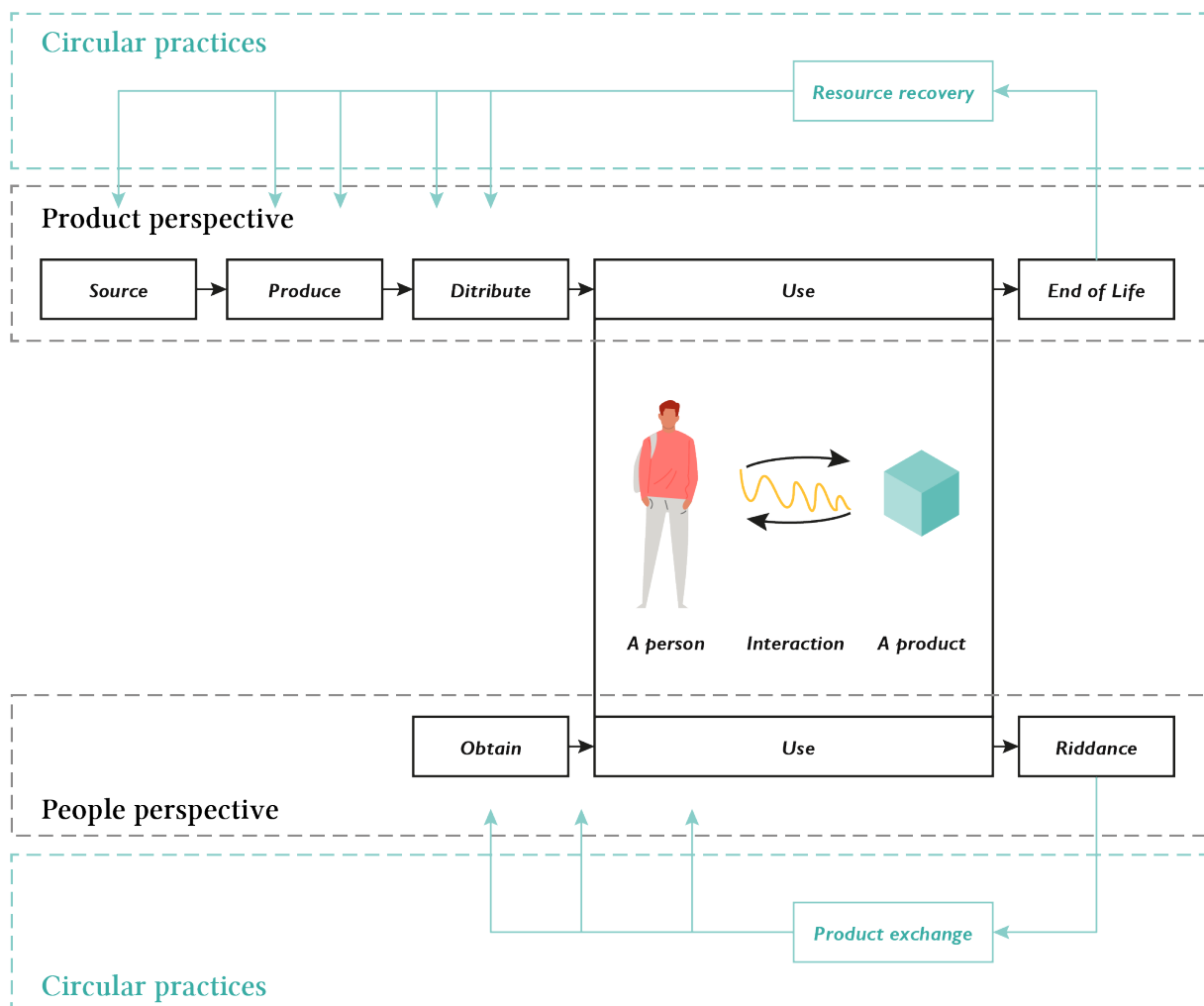


Figure 22: People & Product perspective

In essence the obtainment of a product for usage is a much broader view than only 'buying or acquiring' a product. This view encompasses many forms of obtainment through various forms: Buying new, buying second-hand, renting, leasing, borrowing from a neighbour, picking up from the streets, etc. In that way not only is decided what product should be obtained, but also in which way and in what form to acquire that (e.g. complete ownership or temporary access). This perspective then enables and opens up the possibility to see the less frequently viewed practices such as the classic 'borrowing sugar from your neighbour'.



The use phase is the phase in which a product is used in a broader sense than ordinarily viewed. Ordinarily the use phase views mainly when a product is in use or utilizing its function. Though in this perspective it also includes the moments of storing, repairing, maintaining, transporting etc. This view is acknowledged to be essential to maximize the utilization of a product's value and so increasing its circularity through for instance innovative business models (see for instance: Deleris & Mac Aonghusa, 2020; Michelini et al., 2017; Tukker, 2004).

Riddance is the opposite form of obtainment. Like obtainment, many types and forms of riddance are possible. One can get rid of products through: online marketplaces, physical marketplaces, renting out, disposing in the garbage bin, throwing into the bushes, giving away, etc. To that belong both the mental and physical act of shedding off products. These are key to get a broader view on 'disposal' options for people, going from disposal to riddance. As this perspective also encompasses both the visual disposition and emotional detachment (see for instance: Poppelaars et al., 2020). Looking from this perspective opens up the possibility to design for emotional detachment and use that as a basis for a way to get rid of a product.

This perspective can be elaborated upon by showing the possibilities of obtainment and the various reasonings for these types. On the other side of riddance, the same various possibilities of riddance and reason for those can be added. It is important to note that the riddance and obtainment are depending on each other. For instance, choosing a soft drink in a disposable aluminium can or a recyclable plastic bottle that has a deposit is a reason for obtainment that depends on the reason for riddance that might come. In this way the type of riddance could influence the type of obtainment.

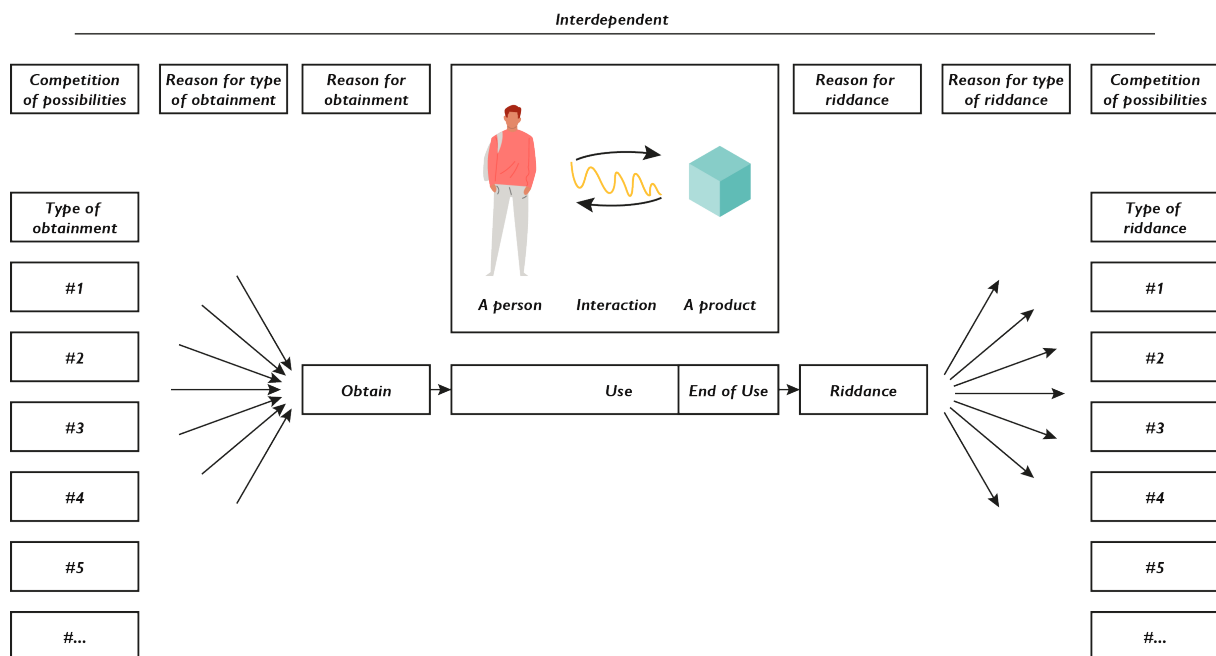


Figure 23: People perspective

The various types of obtainment and riddance can both be seen as 'facilities' that offer the possibility to obtain or get rid of certain products. Viewing these types as competing facilities enable us to apply various valuable methods stemming from business strategy. This in turn brings the ability to assess the market position of the various facilities.

## G.2 Overview facilities in competitor analysis

Obtainment / Riddance / Circular Usage	Cluster	Name	Location	Product type	Notes
O/R	Informal local practices	Facebook groups give away	Locally	Reuse	
O/R	Informal local practices	Supermarket noticeboard	Locally	Reuse	
O/R	Informal local practices	Giving away to family & friends	Locally	Reuse	
O	Local artistic interior shops	Keramiekwinkel dieren in de tuin	Schoorl	New	Ceramic maker, mainly for birds in the garden
O	Local artistic interior shops	Woon en kunstgalerie 'Regenboog'	Bergen	New/restyled	Home shop by artist, restyled reused products.
O	Local artistic interior shops	Shouwenburg interieur	Egmond a zee	new/Reuse/ art	interior home shop, decoration
O	Local furniture makers / interior design	Maurits oud	Castricum	New	Interior quality design and builder
O	Local furniture makers / interior design	Oak & Iron	Castricum	New	Mainly wood, all types of benches, couches, tables, closets HAND MADE FURNITURE
O	Local furniture makers / interior design	Studio erwin zwiers	Castricum	new	Product design, art, custom made furniture.
O	Local furniture makers / interior design	Malmock Meubelmakerij	Egmond a/d hoef	New	Furniture maker.
O	Local furniture makers / interior design	Dennisjanse	Heiloo	New	Meubels en interieur op maat
O	Local furniture makers / interior design	Hetmakerscollectief	Heiloo	New	Interior design and buidling.
O	Local furniture makers / interior design	Meubelmakerij wood interior	Schoorl	New	Furniture maker wood products
O	Local furniture makers / interior design	Zonneveld Meubelen	uitgeest	New	Custom build interior and exterior furniture
O	Local furniture makers / interior design	Ruw072	Uitgeest	New	Furniture and interior custom build, prof (ambachtelijk)
O	Local furniture makers / interior design	Beautiflier design	Heiloo	New/art	Artist and furniture maker making unique custom build furniture/art/decorations, kitchens/tables/and more!
O	Local interior shops	Bergerac B.V.	Bergen	New	Shop, new 'stylish' furniture home products
O	Local interior shops	Mijn smaak lifestyle	Bergen	new	Clothing and interior products, all new
O	Local interior shops	Huitenga	Castricum	New	Sleeping, living shop 'professional'
O	Local interior shops	Rozing	Heiloo	New	Nieuwe meubels
O	Local interior shops	Stronkwonen	Heiloo	New	Interior shop
O	Local interior shops	Puur & mooi wonen	Schoorl	New	New products for home decoration and small furniture (tables)
O	Local interior shops	Geluk in Wonen	Uitgeest	New	Interior products, decoration/styling
O	Local interior shops / interior design	Decoraafjes	Akersloot	New	Interior design and buidling
O	Local interior shops / interior design	Beko interieurs	Bergen	New	Quality interior design
O	Local interior shops / interior design	Findmelater	Bergen	New	New Zealand woolen rugs, animal-friendly
O	Local interior shops / interior design	t schaap over de dam en terug	Bergen	New	Mainly woolen rugs and home decoration inspired by that.
O	Local interior shops / interior design	Alma creations	Castricum	New	Interior products, furniture, 'prof'
O	Local interior shops / interior design	SPRDLX	Egmond a zee	New	Interior home shop, decoration
O	Local interior shops / interior design	Hammerfest	Egmond a zee	New	Interior home shop
O	Local interior shops / interior design	Sondag	Limmen	New	Interieur products
O	Local interior shops / interior design	Interieur werk	Uitgeest	New	Interior design and building, 'professional'
O	Local interior shops / interior design	Jantien	Uitgeest	New	Wood Interior custom build, prof
O	Local interior shops / interior design	Selligh	Uitgeest	New	Interior, kitchens maker prof
O	Local interior shops / interior design	Interiorcowboys	Bergen	New/used	Interior designer, designs and styles interiors
U	Local repair shops	Repaircafe	Bergen	repair	repaircafe, Very limiting opening hours
U	Local repair shops	Repaircafe	Egmond a zee	repair	repaircafe, Very limiting opening hours
U	Local repair shops	Repaircafe	Egmond-binnen	repair	repaircafe, Very limiting opening hours
U	Local repair shops	Repaircafe	Schoorl	repair	repaircafe, Very limiting opening hours
O/R/U	Local reuse/restyle furniture shops	Madelief	Heiloo	Refresh	Refreshed furniture, second hand, sustainable, collect furniture
O/R/U	Local reuse/restyle furniture shops	Sure interieur	Limmen	Refresh	Refresh and restyling of furniture and interiors service.
O/R/U	Local reuse/restyle furniture shops	Ietsmetvintage	Egmond a/d hoef	Restyled	Restyling of furniture Vintage second hand products, & interior design

U	Local reuse/restyle furniture shops	Kwast, Restyled Vintage & More	Schoorl	Restyled	Restyling of furniture
U	Local reuse/restyle furniture shops	Het sfeerwinkelje	Uitgeest	Restyled	Brocante, second hand
O	Local reuse/restyle furniture shops	Brechje Olsthoorn Interiors	Bergen	Reuse	(imported) Design furniture interior shop
O	Local reuse/restyle furniture shops	Kstudio	Castricum	Reuse	Recycle/design – Artistic wooden closets, paintings.(uses branches from a tree as legs for tables)
O/R	local reuse/restyle furniture shops	Meubels en Fabels	Castricum	Reuse	Interior vintage shop.
O	Local reuse/restyle furniture shops	Shopfordesign	Heiloo	Reuse	Vintage. 60s. 70s
O/R	Local reuse/restyle furniture shops	Bij- deHand	Limmen	Reuse/Refre sh	Second hand products reused or refurbished. interior home shop, unique products
O/R	Local secondhand shop	akerslootantiek	Akersloot	Reuse	Antique decorations, small company
O/R	Local secondhand shop	De 2e Ronde	Akersloot	reuse	Kringloop. wat kleiner
O/R	Local secondhand shop	De boekenkraam	Bergen	reuse	only books
O/R	Local secondhand shop	Oud & nieuw kringloopwinkel Bakkum	Castricum	reuse	Kringloop
O/R	Local secondhand shop	Anne-Moon	Castricum	reuse	Tweedehands dames kleding
O/R	Local secondhand shop	Mullathara	Castricum	reuse	Kringloop
O/R	Local secondhand shop	Suzzies	Castricum	reuse	tweedehands kleding
O/R	Local secondhand shop	Dreantiek	Egmond a/d hoof	Reuse	Antieke winkel
O/R	Local secondhand shop	Kringloopbedrijf Tol	Egmond a/d hoof	Reuse	Kringloop
O/R	Local secondhand shop	Dorcas	Heiloo	Reuse	Kringloop
O/R	Local secondhand shop	Kringloop Heiloo	Heiloo	Reuse	Kringloop authentiek
O/R	Local secondhand shop	Kring-in-loop	Limmen	reuse	kringloop
O/R	Local secondhand shop	Stichting keer op keer	Limmen	reuse	kringloop
O/R	Local secondhand shop	Noppes	Uitgeest	Reuse	Kringloop
O/R	Online marketplaces	Gratisoptehalen	Locally	Various	
O/R	Online marketplaces	Marktnet	NL	Various	
O/R	Online marketplaces	Marktplaats	NL	Various	
O/R	Online marketplaces	Markt plaza	NL	Various	
O/R	Online marketplaces	Speurders	NL	Various	
O/R	Online marketplaces	Facebook marketplace	NL	Various	
O/R	Online marketplaces	Antiekmarkt	NL	Various	
O/R	Online marketplaces	Ebay	NL	Various	
O/R	Online marketplaces	Amazon	NL	Various	
O/R	Online marketplaces	Koopplein	NL	Various	
O	Retail chain interior shops	Xenos	0 - 25km, Castricum, Alkmaar, Heemskerk, Beverwijk	New	
O	Retail chain interior shops	Action	0 - 15 km, Uitgeest Alkmaar, Beverwijk	New	
O	Retail chain interior shops	Ikea	10 – 25 km, Haarlem	New	
O	Retail chain interior shops	Kwantum	5 – 15 km Alkmaar, Beverwijk	New	
O	Retail chain interior shops	Leen Bakker	5 – 15 km Alkmaar, Beverwijk	New	
O	Retail chain interior shops	Big Bazar	5 – 15 km, Alkmaar, Beverwijk	New	
O	Retail chain interior shops	Woon express	5- 25 km Beverwijk	New	
O	Retail chain interior shops	Homestore Bergen Riviera Maison	Bergen	New	Furniture, home products
R	Waste recycle centre	HVC afvalbrengstation	Bergen	Recycle	Vaak open
R	Waste recycle centre	Schulpstet	Castricum	Recycle	Niet veel open, gelimiteerd
R	Waste recycle centre	HVC afvalbrengstation	Egmond a zee	Recycle	Semi vaak open
R	Waste recycle centre	Afvalbrengstation Heiloo	Heiloo	Recycle	Vaak open
R	Waste recycle centre	Afvalbrengstation Schoorl	Schoorl	Recycle	Niet veel open, gelimiteerd

## Appendix H | Survey

### H.1 Introduction

A survey was conducted to research the prevalence, experienced capabilities, opportunities and motivation of practicing circular behaviour of the citizens in the BUCH municipalities. In this section first the research question of the questionnaire and the definition of circular behaviour is explained. After that the questionnaire is further elaborated upon by explaining the overarching structure, and each sub-component is explained. Then the Invitation of the survey, the collection and processing of data is explained. Then, a large section shows the various descriptive analysis done. The section concludes with the insights. At last the final survey is shown.

#### H.1.1 Method

The study followed a cross-sectional survey design as research methodology. Central in that survey design was a questionnaire that is later on explained. This questionnaire was of a self-generated research type and chosen to collect broad, as opposed to rich, data on the citizens of the BUCH municipalities. This with the objective to obtain fundamental knowledge of citizens in the BUCH in respect to their circular behaviour and its opportunities.

According to Peterson (2000) it is critical to develop potential research questions to which answers are being sought for a questionnaire. From these research questions the questionnaire was designed. The research questions are based upon the research sub questions.

*Thesis research sub-question: How could the current norm behaviour of citizens in the BUCH in the context of circular economy be defined?*

*Thesis research sub-question: What norm behaviour could have potential for transitioning towards a circular one?*

*Questionnaire research question: Is circular behaviour practiced and or are people motivated, capable and have the opportunity to practice circular behaviour?*

#### H.1.2 Defining circular behaviour

As explained in the thesis, circular economy is a broad term. It encompasses many specifics, behaviours, types, practices, and many more. On top of that, some practices or behaviours might be the same, but the outcome might differ enormous in respect to how circular it is. For each product, person and context this differs.

**Product:** For instance sewing/repairing a torn sweater made from organic cotton will have less impact than repairing a polyester sweater (Palamutcu, 2017, p. 10). Repairing is more circular than buying a new one, less resources are needed from our earth to have a sweater. But repairing a polyester one is more circular than an organic cotton one. This difference seems obvious, evident and clear. But this difference makes it hard to define what is 'better' or 'worse' in terms of circular behaviour.

**Person:** To make it even more complex, circular behaviour is not only product dependent but also 'person' dependent. In the sense that some people might have 4 sweaters, whereas others have 30, and buy 5 'new to them' sweaters every year. The person with 30 sweaters will have more impact if we follow the 'circular behaviour' of swapping clothes than the person with 4 sweaters. It is important to acknowledge that some people simply differ in their desires and wishes. Some just love to have 30 sweaters, whereas others are fine with 4.

**Context:** The last factor shows that circular practices and their impact are context dependent. For instance, in the context of high-rise buildings different measures are needed for people to recycle their waste than for low-rise buildings. Within a high-rise building context, people have no physical space for storing bulky waste or have to walk many stairs to dump their garbage bags. Whereas for low-rise buildings this significantly differs. For both contexts there is a facility to recycle, but they differ in their form due to the contextual differences.

Hence, the concept of circular economy is broad, and specific to whom, where and what it applies. Another notion that is used in this survey is that of circular behaviour. This means the behaviour (practices / activities, opportunities, capabilities or motivation ) of a person in terms of circularity. This does not mean whether the actual process following that behaviour is circular or not. This means that when somebody 'throws' away a product this is seen as non circular. But might be in practice circular as the thrown away product is recycled. Though, we want people themselves to recycle, as then the conscious behaviour is at the people, and not an aftermath solution. For that reason a specific notion of circular behaviour is used.

To work with this dependency and relative notion a dichotomous or binary approach to circular behaviour is followed. This means to see circular behaviour as either non-circular or circular. This approach has been central in various approaches to sustainability theories and management and was put forward by McElroy, Jorna, & van Engelen (2008) (Widok, 2009). An absolute orientation has an in-between area. A relative one as well. The binary orientation to circular behaviour brings us the possibility to either view it as 'non-circular' or circular. Nothing in between. It falls in either one of these two sides, depending on where that demarcation point is. Such viewpoint takes away the ambiguity when something is for instance less (McElroy et al., 2008) circular but still circular.

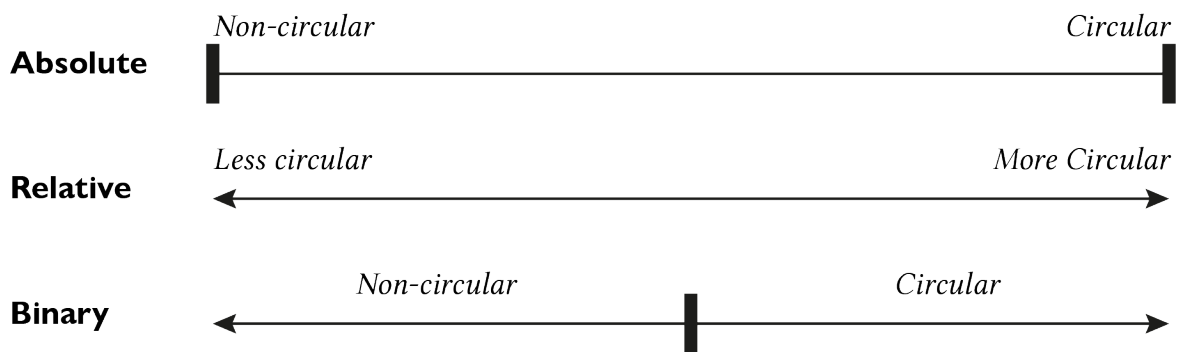


Figure 24: Orientations on circular behaviour, adapted from (McElroy et al., 2008)

The BUCH follows the LAP3 ladder constituting out of 5 dimensions. This ladder is however mainly concerned with waste management, and not with 'waste producing behaviour'. To elaborate on that the, 9R-framework is used as suggested by (Kirchherr et al., 2017). This helps to broaden the by the BUCH used ladder with 'practices of circular behaviour'. This relates better to and for practical 'How to' behaviours/activities of people and to the interpretations of the more abstract LAP3 Lansink ladder. A summary is shown in Table 19.

Table 19: LAP3 &amp; 9R framework

#	L a d d e r (LAP3 & BUCH)	9R-framework (Potting)	9R explanation	Practice or 'How to'	C i r c u - lar or Non-cir- c u l a r score
1	Prevention	R0,R1,R2	Verminderen, Voorkomen, het anders doen	Delen	1 (wanted)
2	Reuse	R3,R4,R5,R6,R7	Hergebruiken, repareren, opknappen, nieuwe producten van maken, hergebruik voor een ander doel	Kringloop, repair café,	1 (wanted)
3	Recycle	R8	Energiewinning uit materiaal	Recyclen thuis of op Milieustraat	1 (wanted)
4	Incinerate	R9	Materiaal dumpen	Milieustraat weggooien	0 (not wanted)
5	Landfill	-	-	0	0 (not wanted)

The binary circularity score is indicating whether the practice is Circular or Non-circular. This indication is based on the three waste resource and policy plans by the UCH municipalities (Castricum, 2019; Heiloo, 2019; Uitgeest, 2019a). It is aimed to reduce bulky waste to 5 kg per citizen per year. Number 4 and 5 in the ladder are pathways that potentially lead products into the bulky waste container, and so increase the number of kg's bulky waste citizen per year. As that needs to be lowered, 4 and 5 are *not wished for* pathways and can be referred to as non-circular practices. Recycling is a better pathway, therefore it is rated as 1. Reuse is preferred over, as then no recycling is needed. The best is prevention, resulting in a score of 1.

These scores are not prescriptive, grounded but are pragmatic and relative. However, this perspective was used as an indication on what practices to ask in relation to the later explained COM-B factors. This resulted in questioning the circular practices as opposed to for instance what the experienced opportunity to dispose at the recycle centre is.

### H.1.3 Questionnaire Design

The questionnaire was consisted out of the six blocks, see Figure 25. The question blocks were asked in this particular order for the reason to start with simple behavioural and reasoning questions. These require less effort and so enables to 'zone into' the questionnaire. The COM factor questions require the most effort to think and concentration. Therefore, they are asked in the middle. The practices & values are on a more intuitive and less thinking level and so are placed after the COM factors. At last are the demographic questions that are the boring closing of questions. These are specifically asked at last and not in the beginning to gain a more energetic and positive vibe, so it feels less like a 'generic' questionnaire (Patton, 2002).

Whilst the blocks were asked in this particular order, the questions inside each block were randomized to reduce bias as suggested by Brinkman (2009) and Krosnick & Presser (2010).

Central in most questions was the usage of questions with a scale as answer. Such scales consist of points ranging from one end to the other end on a specified dimension. Such as: frequency, quality, likelihood, agreement etc. Adding a no-option in the scale would not be wise to do (Krosnick & Fabrigar, 1997), but adding a 'middle ground' or mid-point in the scale is desirable to improve reliability and validity. For that reason a uneven scale is used.

To increase the reliability of the study all points in the scale are labeled. As suggested by (Krosnick & Presser, 2010). As reliability & validity between 5 – 9 points on a scale not differ significantly scale in cross-sectional survey studies (Krosnick & Presser, 2010), a 5 point scale was chosen to decrease the amount of text in the survey.

First a set of questions were made following an agreement scale: Strongly disagree, disagree, neutral, agree, strongly agree. It is presumed that people are biased toward saying 'yes' or 'agree' on questions. This form of being in compliance or acquiescence happens as it is 'what the interviewer or researcher 'wants to hear'. Another negative effect of the agreement scale is that it can violate the monotonic equivalence of the response dimension underlying the construct of interest (Krosnick & Presser, 2010). Krosnick & Presser (2010) exemplify this by "the statement "I am usually pretty calm", one might disagree because they believe they are always calm or because they are never calm". For that sense for each set of question was transformed so it would ask the evaluative underlying dimension. In the example this dimension would be frequency, and one would ask: How often are you calm? These underlying dimensions were found by looking at the ordinal scales as explained by Kasunic, (2005, pp. 123-125).

Once the questionnaire content was constructed in version 1.0, it was pretested and in between updated by three people as recommended by (Krosnick & Presser, 2010). One pretest was conducted with a person whom had already been interviewed, and by two people whom were personally known to the author. This for pragmatic reasons. The people sampled were two extremes and one in middle in respect to circular behaviour. One handyman who does not behave and feels motivated to be circular, one who cannot behave circular but wants to, one who behaves circular.

Beside testing with potential citizens, the questionnaire was assessed by the author's mentor from the TU Delft. Also, a final check of the questionnaire was done by someone from the BUCH municipality. Each block of the questionnaire design is further explained in depth in the following sections (see Figure 25).

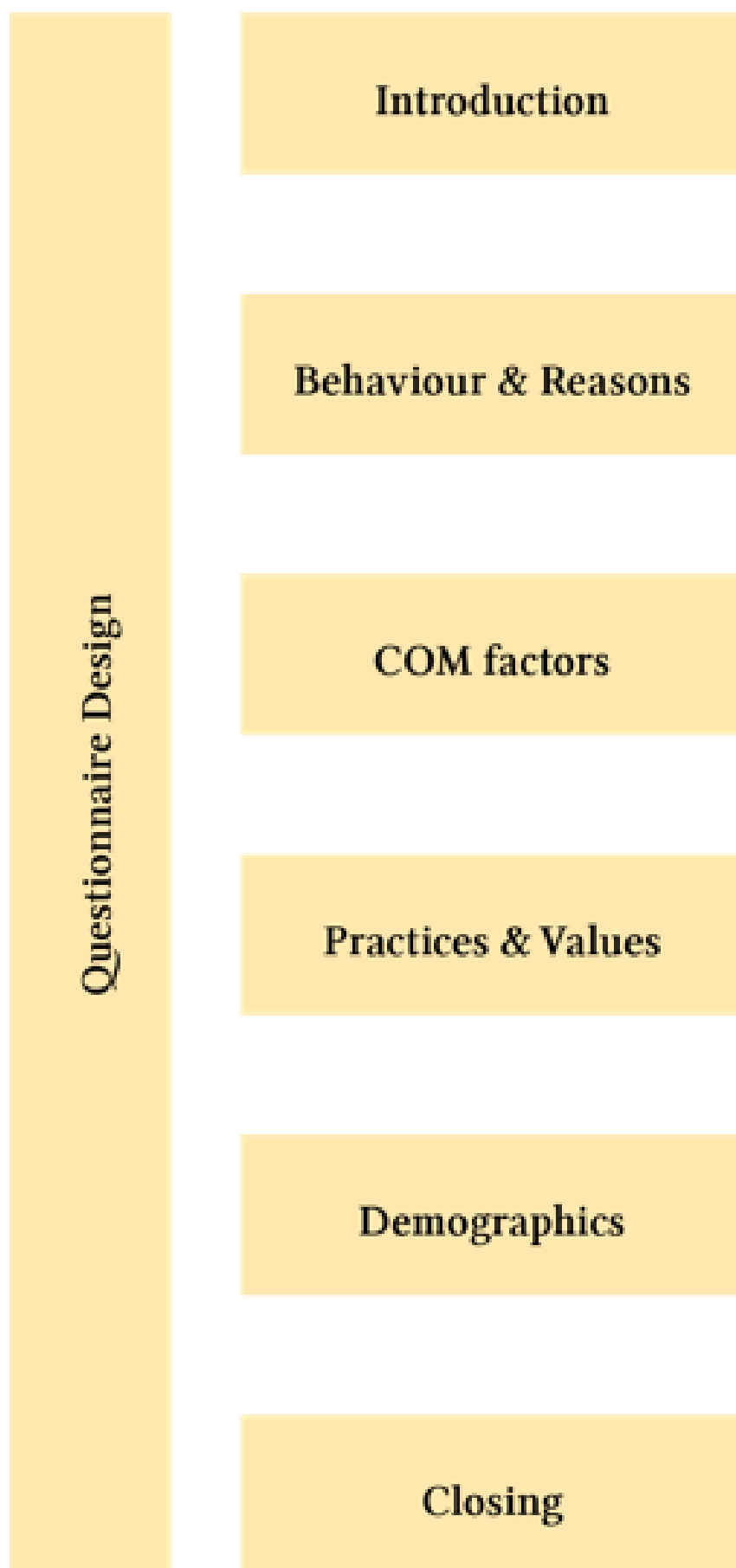


Figure 25: Questionnaire design



### *H1.3.1 INTRODUCTION*

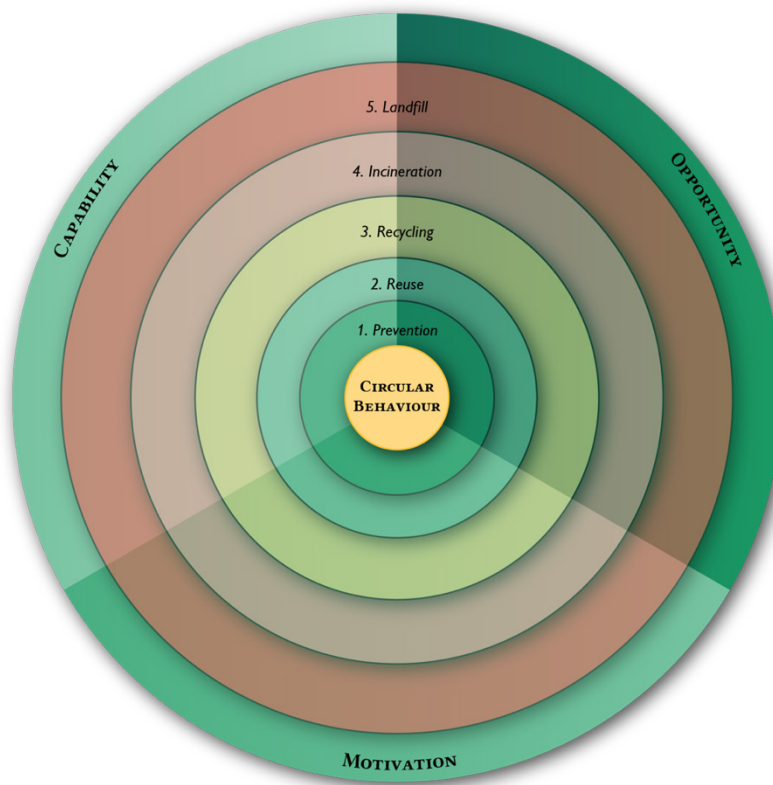
The introduction section informed the respondent on the specifics of the questionnaire and the required privacy statements following the GDPR (AVG wetgeving). One question was asked whether the respondent would agree or not upon using their answers within this graduation project.

### *H1.3.2 BEHAVIOUR & REASONS*

The first set of questions was to obtain the 'status quo' behavior of each respondent before going into the COM components. For that it was asked how frequently they practiced each circular behavior.

### *H1.3.3 COM FACTORS*

A conceptual model was constructed from the behaviour change wheel model and the circular economy as explained (see Figure 26). The conceptual model and how it is built up is explained below.



*Figure 26: Conceptual model COM-factors & circular behaviour practices*

## **Behaviour**

The COM-B model distinguishes between the three essential factors to be in place for behaviour to happen: Capability, opportunity and motivation. Looking at the behaviour of citizens through these dimensions show us the possible opportunities and barriers (levels of COM) for changing behaviour. e.g. the motivation can be there, but when it is socially not accepted behaviour is not there. OR when it is seen as possible by those who are motivated, but the unmotivated are not behaving solely due to their unmotivated mindset these are the group that can have more impact than the motivated ones.

Following (Atkins et al., 2017) the behavioural determinants (COM) were further subdivided by using the Theoretical Domains Framework. These consist out of 15 indicators that give indication about the COM determinants (Cane, O'Connor, & Michie, 2012). See table Table 20 of the COM-B components and their corresponding TDF domains. Each TDF domain is constructed by its corresponding set of TDF constructs. These TDF domains were used to assess and design the questions for the three COM-B behaviour determinants.

Table 20: COM-B component and corresponding TDF domain, adopted from (Cane et al., 2012).

COM-B Component	COM-B sub-group	TDF domain
Capability	Physical	Skills
	Psychological	Knowledge
		Skills
		Memory. Attention and Decision Processes
		Behavioural Regulation
Opportunity	Social	Social influences
	Physical	Environmental context and resources
Motivation	Automatic	Social / professional role & identity
		Optimism
		Reinforcement
		Emotion Social / Professional role & identity
		Beliefs about capabilities
		Optimism
		Beliefs about consequences
		Intentions
		Goals
	Reflective	

### COM-B behaviour Questions

Following the conceptual model questions were made to assess each COM component. As suggested by Krosnick & Presser (2010), various studies using the COM-B model and questionnaires were used as inspiration to design the questions. These studies were by Ellis, Pears, & Sutton (2019; and Tam, Le, Wang, & Illankoon (2018). The final questions and the complete reasoning can be seen in the figures: Figure 27, Figure 28, Figure 29, & Figure 30.

More specifically for the Opportunity factor subgroup social, it was looked at how to identify a social norm. To do that, Gerry Mackie et al. (2015, p. 55 & p. 9) suggests to know: who the reference group is, what is typical in the group and what is approved of in the group. From that the question, 'In my social circles it is normal too', was designed.

	Sub-group	TDF domain	TDF explanation	TDF constructs	Question (In DUTCH formulated)
Capability ( <i>I am capable / Ik ben in staat</i> )	Physical	Skills	Ability or proficiency acquired through practice	Development of skills / Competence / Ability / Interpersonal Skills / Practice / Skill assessment	<i>Ongeacht u het doet of niet, hoe vaak heeft u de juiste vaardigheden om uw verschillende producten:</i> 1. te repareren 2. te onderhouden 3. op te knappen <i>Ongeacht u het doet of niet, hoe zijn uw vaardigheden om uw verschillende producten:</i> 1. te repareren 2. te onderhouden 3. op te knappen
	Psychological	Knowledge	To be aware of the existence of something	Knowledge of condition / Scientific knowledge / Procedural knowledge / Knowledge of task environment	<i>In welke mate weet u over uw verschillende producten:</i> 1. waar u deze kunt laten repareren.
		Skills	–	–	
		Memory, Attention and Decision Processes	Ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives	Memory / Attention / attention control / decision making / cognitive overload or tiredness	2. hoe u deze kunt repareren
		Behavioural Regulation	Anything aimed at managing or changing objectively observed or measured actions	self-monitoring / breaking habits / action planning	3. hoe u deze kunt opknappen 4. wie in uw omgeving u zou kunnen helpen met het repareren als deze kapot zijn 5. van wie u deze zou kunnen lenen 6. hoe u deze kunt onderhouden

Figure 27: Capability questions reasoning

Opportunity ( <i>It is possible for me / Ik heb de mogelijkheid om</i> )	Social	Social influences	Those interpersonal processes that can cause individuals to change their thoughts feelings or behaviours	Social pressure / social norms / group conformity / social comparisons / group norms / social support power / intergroup conflict / alienation / group identity / modelling	In welke mate is het gebruikelijk in uw sociale kringen om producten: 1. met elkaar te ruilen 2. aan elkaar uit te lenen of delen 3. een tweede leven te geven 4. tweedehands te kopen 5. zelf te repareren 6. te laten repareren 7. zelf op te knappen In welke mate wordt het in uw sociale kringen afgekeurd of goedgekeurd om producten: 1. met elkaar te ruilen 2. aan elkaar uit te lenen of delen 3. een tweede leven te geven 4. tweedehands te kopen 5. zelf te repareren 6. te laten repareren 7. op te knappen
	Physical	Environmental context and resources	Circumstances of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence and adaptive behaviours	Environmental stressors / resources or material resources / organisational culture or climate / salient events or critical incidents / person and environment interaction / barriers and facilitators	Hoe ervaart u de mogelijkheden in uw omgeving om producten: 1. een tweede leven te geven 2. zelf te repareren 3. te laten repareren 4. tweedehands te kopen 5. te ruilen 6. uit te lenen 7. zelf op te knappen

Figure 28: Opportunity questions reasoning

Motivation ( <i>I want / Ik wil</i> )	Automatic	Social / professional role & identity	Coherent set of behaviours & displayed personal qualities of an individual in a social / work setting	Professional Identity / Prof. Role / Social identity / Identity / Prof. Boundaries / Prof. Confidence / Group identity / Leadership / Organisational commitment	In welke mate bent u bereid om uw producten:
		Optimism	Confidence things will happen for the best or desired goals will be attained	Optimism / Pessimism / Unrealistic optimism / identity	1. te delen met anderen
		Reinforcement	Increase probability of a response by arranging a dependent relationship or contingency between the response and a given stimulus	Rewards / incentives / punishment / consequences / reinforcements / contingencies / sanctions	2. te ruilen met anderen
		Emotion	Complex reaction pattern involving experiential behavioural and physiological elements by which the individual attempts to deal with a personally significant matter or event	Fear / anxiety / affect / stress / depression / positive or negative affect / burn-out	3. zelf te repareren
	Reflective	Social / Professional role & identity	–	–	4. op te knappen
		Beliefs about capabilities	Accept truth, reality or validity about ability, talent or facility that a person can put to constructive use	Self-confidence / perceived competence / self-efficacy / perceived behavioural control / beliefs / self-esteem / empowerment / prof. Confidence	5. tweedehands te kopen
		Optimism	–	–	6. een tweede leven te geven
		Beliefs about consequences	Accept truth, reality or validity about outcome of behaviour in a given situation	Beliefs / outcome expectancies / characteristics of outcome expectancies / anticipated regret / consequences	7. te delen met mensen die u kent
		Intentions	Conscious decision to perform a behaviour or a resolve to act in a certain way	Stability of intentions / stages of change model / transtheoretical model and stages of change	8. te ruilen met mensen die u kent
		Goals	Mental representations of outcomes or end states that an individual wants to achieve	Goals / Goal priority / goal/target setting / action planning / implementation intention	

Figure 29: Motivation questions reasoning

Behaviour	-	-	-	
Potential Behaviour (MOTIVATION ASPECT)	Does it happen? Or want to happen?			<div>Hoe vaak zult u uw producten:</div> <div>1. repareren</div> <div>2. opknappen</div> <div>3. een tweede leven te geven</div> <div>4. delen / uitlenen</div> <div>5. ruilen</div> <div>6. tweedehands kopen</div> <div>7. onderhoud geven</div> <div>Zou u in de toekomst graag uw producten:</div> <div>1. delen met anderen</div> <div>2. ruilen met anderen</div> <div>3. zelf repareren</div> <div>4. opknappen</div> <div>5. tweedehands kopen</div> <div>6. een tweede leven geven</div> <div>7. delen met mensen die u kent</div> <div>8. ruilen met mensen die u kent</div>

Figure 30: Actual intended behaviour potential reasoning

## Limitation of model

Circular behaviour is ranked on 3 dimensions that are treated separately and consist of multiple individual questions. It is a limitation that the multi-collinearity is not taken into account in this model. This means to take into account the cross-interactions that might or might not happen between and within the COM aspects, or in other language the correlation between the variables. Despite its acknowledgements, it is not taken into account in this graduation project due to pragmatic reasons.

## Envisioned purpose

The answers of the questions were envisioned to be plotted on the conceptual model in such way that a visual representation would appear of that person. In such way a circular behaviour profile can be visualized of a person See Figure 31, for example Circular Behaviour Profiles (CBPs).

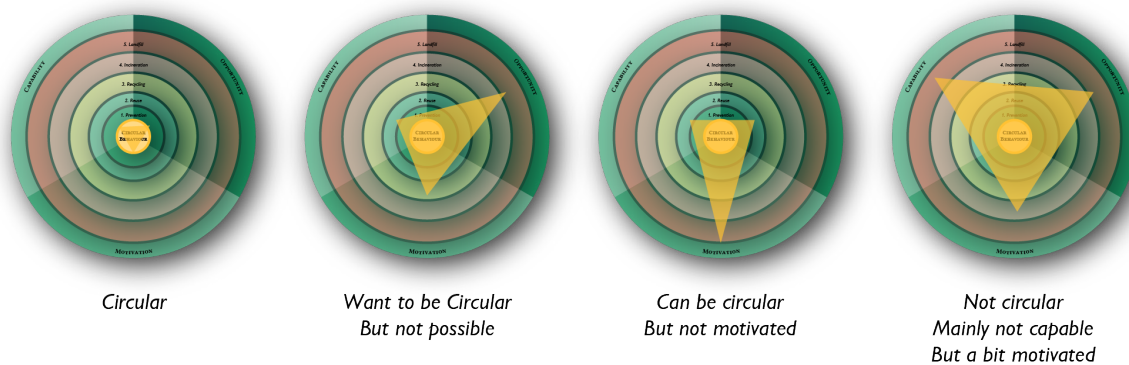


Figure 31: Example Circular Behaviour Profiles

### H1.3.4 PRACTICES & VALUES

The practices of each person were questioned by asking how many times they would visit in their free time certain communal places.

Various semantic differentials were asked to determine the values of each person. To do that a 7 point scale was used as suggested by (Osgood, Suci, & Tannenbaum, 1957). This means to let the participant rate on a scale with bipolar adjectives where their preference is. Such scale could be beneficial in

### H1.3.5 DEMOGRAPHICS

The demographic question block was based on definitions used by the Dutch Centraal Bureau Statistiek CBS and inspired by a questionnaire of a well cited study on recycling intention (CBS, 2020c; Tonglet, Phillips, & Read, 2004). As having an understanding of circular behavior postal code wise would be beneficial, the postal code was specifically asked. For privacy reasons it was therefore chosen to ask less detail questions on age. This question block would be beneficial to obtain a demographical perspective on circular behavior.

### H1.3.6 CLOSING

As closing section, it is asked if the respondent would like to participate in further research.

## H1.4 Inviting participants & gathering responses

### Message

A generic text was written for communicating the survey. This was written in collaboration with the municipality.

*TU Delft afstudeerder zoekt online hulp in tijden dat geen fysiek contact gezocht mag worden!* 🏠♂🏠

Het is te druk op de milieustraten tijdens de Corona crisis. Veel mensen zijn thuis bezig met klussen, herinrichten en opknappen. Daarbij komt dus ook veel afval vrij. De gemeente Bergen heeft de ambitie om samen met inwoners te zorgen voor minder grof restafval zodat minder waardevolle materialen verbrand worden.

Om aan deze ambitie bij te dragen, ben ik, Willem, student industrieel ontwerpen aan de TU Delft, een afstudeeronderzoek gestart voor de gemeente Bergen. Dit onderzoek gaat over op een andere manier naar opknappen, repareren en herinrichten kijken om zo minder afval op de milieustraten te krijgen. Met mijn ontwerp achtergrond wil ik interessante oplossingen bedenken, samen met u, zodat we minder afval creëren en minder bruikbare spullen en materialen onnodig verloren gaan.

Helpt u mee met mijn afstudeeronderzoek? 🤔

Vul de vragenlijst in op:

Links towards Wx survey.

## Channels for sending questionnaire

The survey was posted in various Facebook groups, see Table 21. In parallel the survey was sent out through the municipal Facebook group, see Figure 32: Municipal Facebook group Survey post. However due to a delay for the formal process of posting on the municipal and time constraints this data is not taken into account in the analysis.

Table 21: Send out strategy of survey

#	Name	Members	Notes	Part of Bergen	Link to survey	Done?	Re-sponse
W1	Politiek Discussieplatform Kust & Duinstreek	828	Political discussion platform for the citizens.	Egmond Binnen - Rinne-gom - Egmond aan de Hoef - Egmond aan Zee - Wimmenum - Bergen - Bergen aan Zee - Aagtdorp - Schoorl - Schoorl dam - Bregtdorp - Catrijp - Groet - Hargen - Camperduin	<a href="https://forms.gle/CyMxrfH2P3hfVby5">https://forms.gle/CyMxrfH2P3hfVby5</a>		x
W2	Als je Roots in de Heerlijkheid Bergen lagen dan	3389	Stories about how it was and is in the Bergen municipality	Municipality Bergen	<a href="https://forms.gle/kgHF8y1p7F4kp7Y6">https://forms.gle/kgHF8y1p7F4kp7Y6</a>	Ya	5
W3	Vraag en Aanbod Bergen Nh e.o.	3687	Marketplace in Bergen Nh, max 10km from Bergen away	Bergen (centrum)	<a href="https://forms.gle/Ep4dkqNnshHvND5r6">https://forms.gle/Ep4dkqNnshHvND5r6</a>	ya	5
W4	Samen Bergen Verzetten	5012	Brings attention to every miscommunication and problems in the municipality of Bergen	Municipality Bergen	<a href="https://forms.gle/qyYb4L8ZgMBK1LX9">https://forms.gle/qyYb4L8ZgMBK1LX9</a>	Ya	x
W5	Je bent een Berge-nees als	3901	Various things from Bergen like, moments, parties, reminders, help, etc	Bergen (centrum)	<a href="https://forms.gle/k2MpvjsukSGKT8K8A">https://forms.gle/k2MpvjsukSGKT8K8A</a>	ya	18
W6	Egmonder markt-plaats	3419	Marketplace, renting, swapping, buying etc	Egmond	<a href="https://forms.gle/f5tWqco3MYjaynn58">https://forms.gle/f5tWqco3MYjaynn58</a>	ya	2
W7	Hart voor Egmond	1479	Everything, is a gernal page for everyone of Egmond	Egmond	<a href="https://forms.gle/6VhDcRHQn3a5XXNt5">https://forms.gle/6VhDcRHQn3a5XXNt5</a>	ya	3
W8	Je bent Egmond-Binner als....	2068	Everything about Egmond-binnen	Egmond-binnen	<a href="https://forms.gle/z5TNyzWp9btAwDRd7">https://forms.gle/z5TNyzWp9btAwDRd7</a>		x
W9	Egmond	619	The sympatisants from egmond. An initiative to keep everyone updated.	Egmond	<a href="https://forms.gle/xWEJQF1py8cRd3jJ8">https://forms.gle/xWEJQF1py8cRd3jJ8</a>		x
W10	Je bent een derper als.....	6522	For everyone in Egmond aan zee	Egmond aan zee	<a href="https://forms.gle/5xP4H8WhiADDUwdr5">https://forms.gle/5xP4H8WhiADDUwdr5</a>	ya	2
W11	Verenigd Hargen en Camperduins prikboard.....	191	Noticeboard	Hargen & Camperduin	<a href="https://forms.gle/2sa3BnPsRKLcq7Y8">https://forms.gle/2sa3BnPsRKLcq7Y8</a>		x
W12	Je bent een Groet-er als.....	408	Everything for Groet	Groet	<a href="https://forms.gle/AfLhayaJEEG1agn67">https://forms.gle/AfLhayaJEEG1agn67</a>	ya	6
W13	Je bent Schoor-laar als	468	Everything for Schoorls people	Schoorl, Schoorl dam, Aagtdorp, Hargen, Camperduin en Groet	<a href="https://forms.gle/v2YtgCdsZfQqkZx6">https://forms.gle/v2YtgCdsZfQqkZx6</a>	ya	3
W14	Advertenties Groet en Schoorl	140	Marketplace for people in Groet and school	Groet, Schoorl	<a href="https://forms.gle/tkf2bdoFN1r54Mj9A">https://forms.gle/tkf2bdoFN1r54Mj9A</a>		x

The screenshot shows the Facebook profile of 'Gemeente Bergen NH'. The page has a blue header with navigation icons (home, video, marketplace, group, and a profile icon). Below the header, there's a section for 'Paginatransparantie' (Page Transparency) stating that Facebook shows information to help understand the page's purpose. To the right, there's a 'Bericht versturen' (Send message) button and a 'Vind ik leuk' (Like) button. The main content area features a post from 'Gemeente Bergen NH' dated '14 mei om 11:51'. The post text discusses waste management, mentioning that many people are busy with household tasks and that waste is a common problem. It mentions a student, Willem, who is conducting research on waste management for the municipality. The post includes a link to a survey titled 'Enquête over u en uw producten – 2020' and a button to 'Vul de enquête in' (Fill out the survey). The post has 7 likes, 4 comments, and 1 share. Below the post, there's a section for 'Gerelateerde pagina's' (Related pages) listing 'Gemeente Heide', 'RTV80', and 'Initiatiefgroep...'. At the bottom, there's a section for 'Je bedrijf toevoegen op Facebook' (Add your business to Facebook) with a 'Pagina maken' (Create page) button. The footer contains links for 'Privacy', 'Voorwaarden', 'Adverteren', 'Advertentiekeuzes', 'Cookies', and 'Meer'.

**Gemeente Bergen NH**

1,6 d. weergaven · 8 weken geleden

**Paginatransparantie** Alles weergeven

Facebook toont informatie om je een beter inzicht te geven in het doel van een pagina. Bekijk acties die zijn uitgevoerd door de mensen die inhoud beheren en plaatsen.

Pagina gemaakt: 26 februari 2014

**Gerelateerde pagina's**

- Gemeente Heide** Overheidsorganisatie Vind ik leuk
- RTV80** Dico Tol vindt dit leuk Vind ik leuk
- Initiatiefgroep...** Non-profitorganisatie Vind ik leuk

**Je bedrijf toevoegen op Facebook**

Laat je werk zien, maak advertenties en kom in contact met klanten en supporters.

**Pagina maken**

Informatie over gegevens van Paginastatistieken · Privacy · Voorwaarden · Adverteren · Advertentiekeuzes · Cookies · Meer · Facebook © 2020

**Gemeente Bergen NH**

14 mei om 11:51

Veel mensen zijn thuis bezig met klussen, herinrichten en opknappen. Daarbij komt dus ook veel afval vrij. Dat merken we ook door de drukte op de milieustraten. Veel nog goede materialen en producten komen bij het grof restafval terecht en een groot deel daarvan wordt verbrand. De gemeente Bergen wil samen met haar inwoners werken aan een duurzame gemeente.

Om aan deze ambitie bij te dragen, hebben wij Willem, student Industrieel Ontwerpen aan de TU Delft gevraagd een afstudeeronderzoek te starten voor de gemeente Bergen. In dit onderzoek gaat Willem op een andere manier kijken naar opknappen, repareren en herinrichten om zo minder afval op de milieustraten te krijgen.

‘Met mijn ontwerpachtergrond wil ik interessante oplossingen bedenken samen met u, zodat we minder afval creëren en minder bruikbare spullen en materialen onnodig verloren gaan.’

Help je mee aan zijn afstudeeronderzoek? Vul de enquête in

**Enquête over u en uw producten – 2020**

Deze vragenlijst is onderdeel van een Master afstudeeronderzoek aan de faculteit Industrieel Ontwerpen van de Technische...

7 likes · 4 opmerkingen · 1 keer gedeeld

Leuk · Opmerking plaatsen · Delen

**Gemeente Bergen NH**

Figure 32: Municipal Facebook group Survey post



## H.2 Processing raw Data

### H.2.1 Results

A total of 45 filled in the survey. These were from the various Facebook groups. The most replies, 13, came from the group that had the widest audience: Je bent Bergenees als...

The results were put into excel and briefly scanned for missing answers. Two respondents missed a large amount of answers, for that it was chosen to eliminate them from the data set. The rest of the dataset was complete. Each respondent also indicated that the use of their data for the analysis was accepted. This resulted in a total of 43 complete replies.

To work with the dataset, the data was put in SPSS. Each variable was named in such way to be short but recognizable to which question it belonged. To work with the dataset, the answers of the COM-B matrix questions were translated towards a numerical scale as shown in Table 22.

Table 22: COM-B translation from semantic to numerical scale

COM	Q u e s - tion	Question					
Aspect	#						
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

H2.2 Normalizing

As first descriptive statistical analysis it was looked at what the results were for each respondent on the three circular behaviour aspects COM to get an overview of the individual COM aspects. To do that, each score of the questions for the corresponding COM aspect was add up together. The minimum that could be scored for each question was 1 and a maximum could be scored 5. For that the total score per component for each respondent was within a specified range. This data was further normalized following the equation as in Function 1 & Table 23. After normalizing the processed data was put into SPSS.

Table 23: Normalizing reasoning

Aspect	Questions	Range
		$x_{\text{minimum}}$ & $x_{\text{maximum}}$
Capability	12	12-60
Opportunity	21	21-110
Motivation	16	16-80

Function 1: Normalizing

H.3 Analysis & findings

H.3.1 Explorative analysis

Once the data was put into SPSS, an explorative descriptive analysis was done using various SPSS analysis methods. Below are the relevant graphs and tables as shown from those analysis to show the findings.

H.3.1.1 DESCRIPTIVE ANALYSIS

The first analysis shows the generic description of the dataset.

Case Processing Summary

	Cases				Total	
	Valid	Percent	Missing	Percent	N	Percent
	N		N			
Capability	43	100,0%	0	0,0%	43	100,0%
Opportunity	43	100,0%	0	0,0%	43	100,0%
Motivation	43	100,0%	0	0,0%	43	100,0%

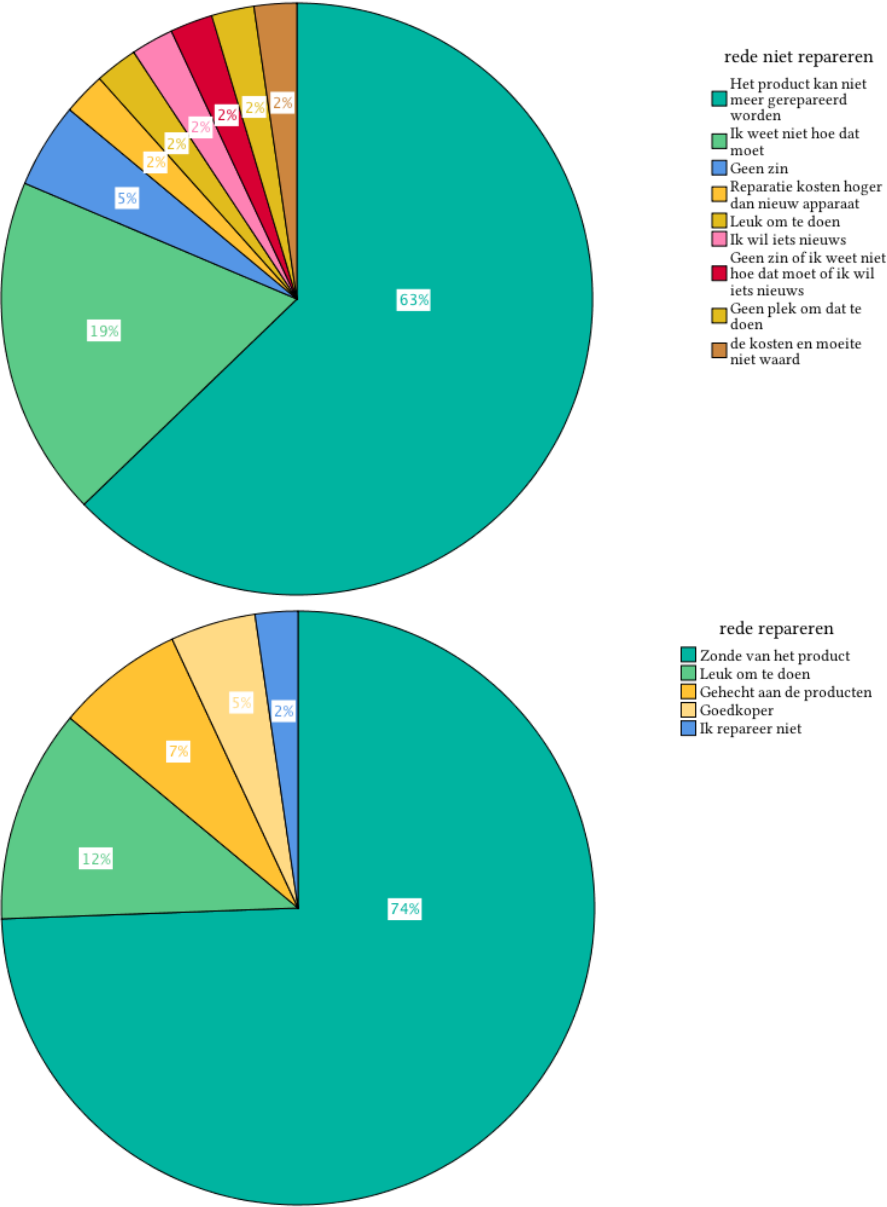
Descriptives

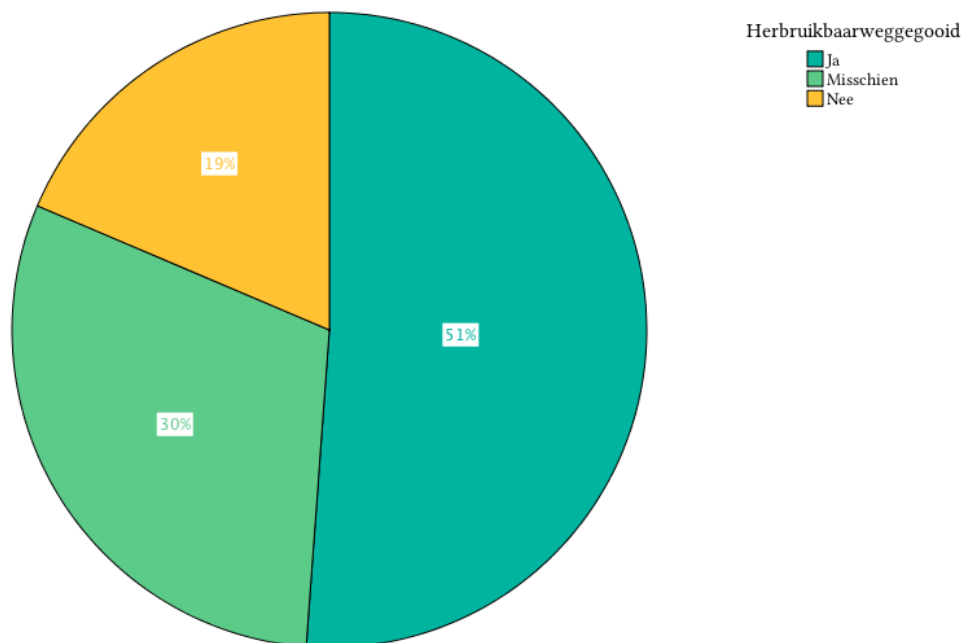
	Statistic	Std. Error
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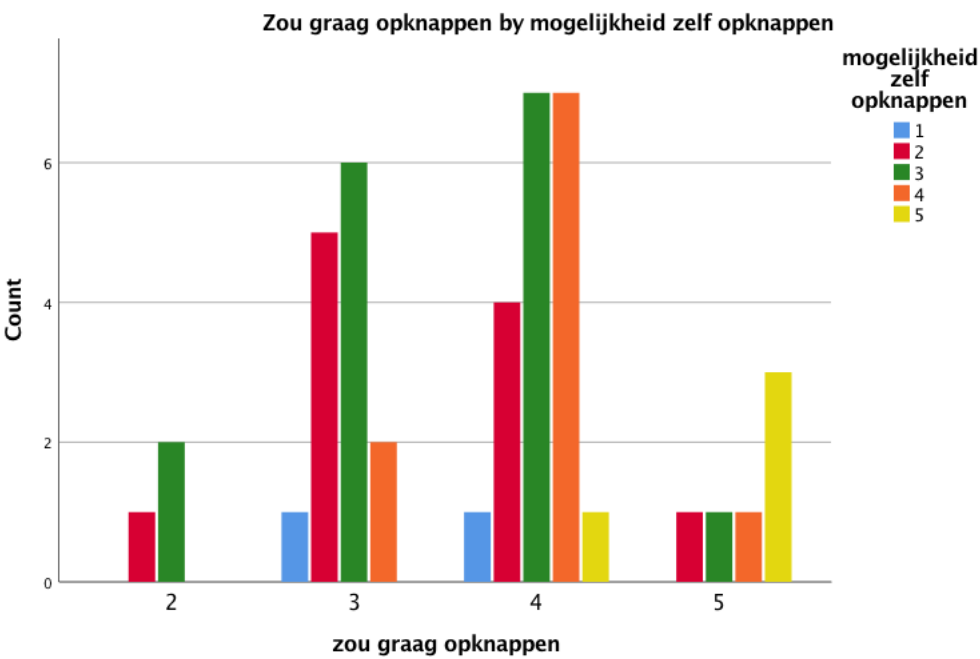
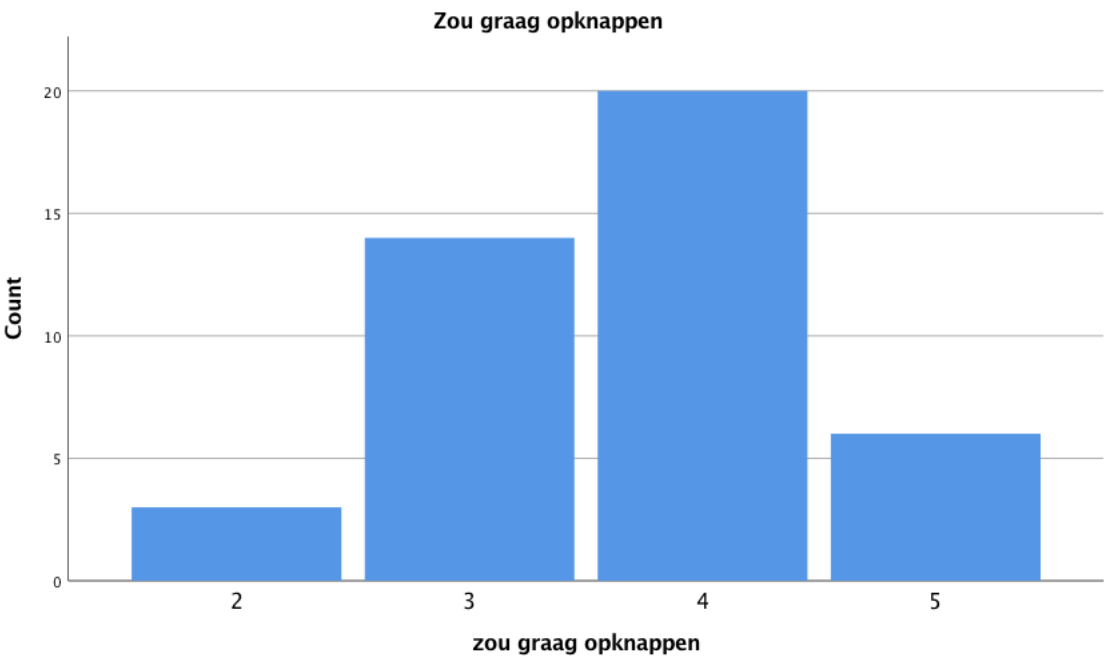
Capability	Mean		38,65	1,359
	95% Confidence Interval for Mean	Lower Bound	35,91	
		Upper Bound	41,39	
	5% Trimmed Mean		39,07	
	Median		41,00	
	Variance		79,471	
	Std. Deviation		8,915	
	Minimum		16	
	Maximum		57	
	Range		41	
	Interquartile Range		14	
	Skewness		-,616	,361
	Kurtosis		,156	,709
Opportunity	Mean		70,19	1,739
	95% Confidence Interval for Mean	Lower Bound	66,68	
		Upper Bound	73,70	
	5% Trimmed Mean		70,00	
	Median		68,00	
	Variance		130,060	
	Std. Deviation		11,404	
	Minimum		50	
	Maximum		94	
	Range		44	
	Interquartile Range		19	
	Skewness		,277	,361
	Kurtosis		-,598	,709
Motivation	Mean		56,21	1,665
	95% Confidence Interval for Mean	Lower Bound	52,85	
		Upper Bound	59,57	
	5% Trimmed Mean		56,27	
	Median		55,00	
	Variance		119,265	
	Std. Deviation		10,921	
	Minimum		24	
	Maximum		80	
	Range		56	
	Interquartile Range		15	
	Skewness		-,176	,361
	Kurtosis		,778	,709

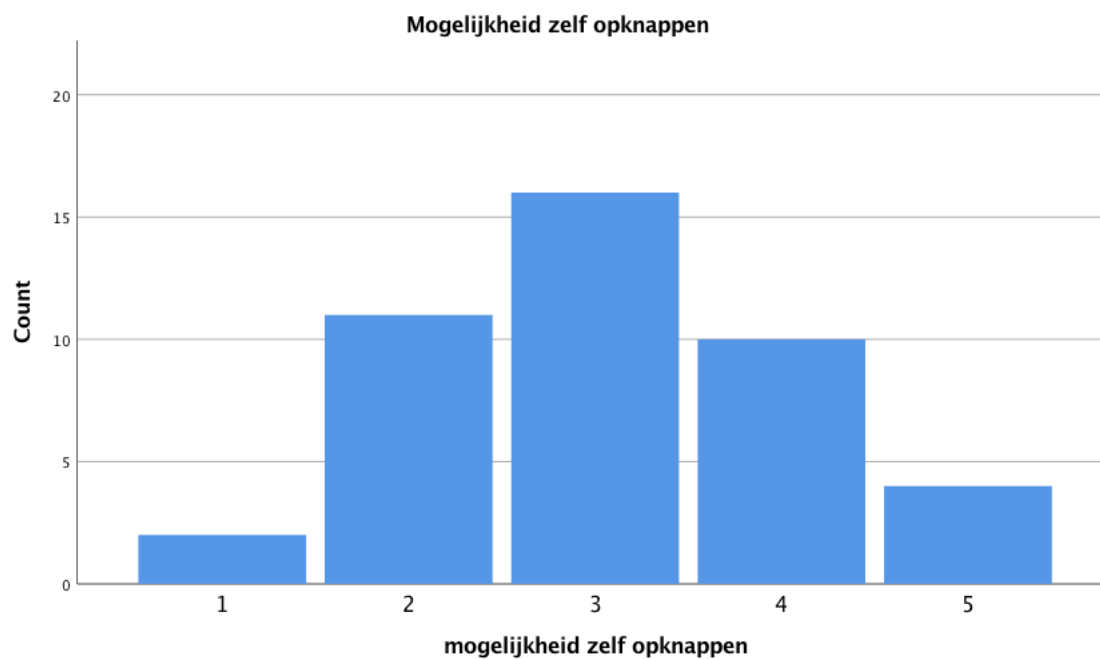
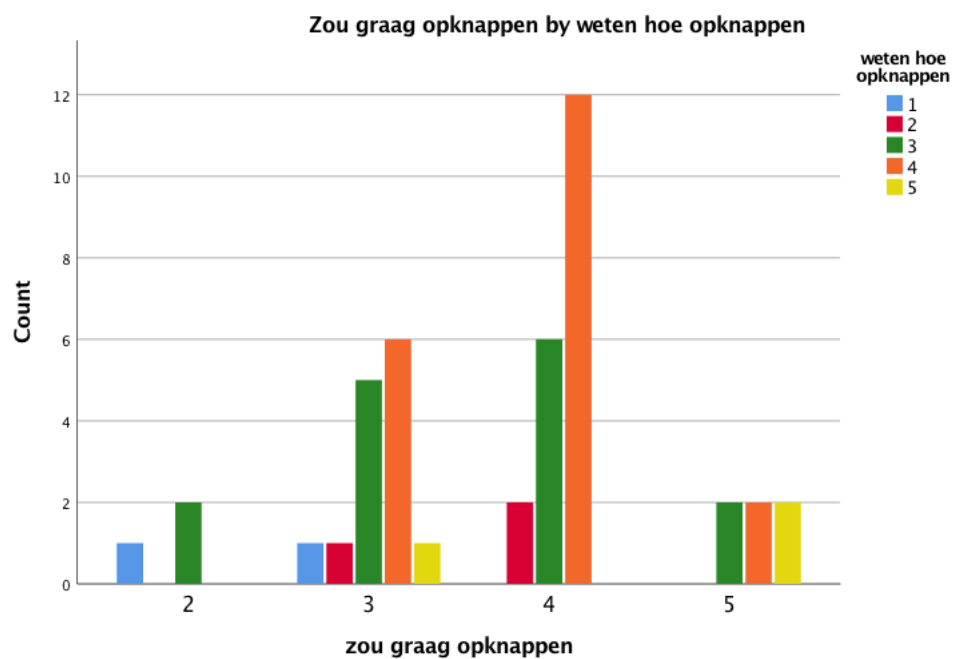
H.3.1.2 DESCRIPTIVE GRAPHS, REASON TO REPAIR, REASON TO NOT REPAIR & EVER THROWN AWAY REUSABLE PRODUCTS

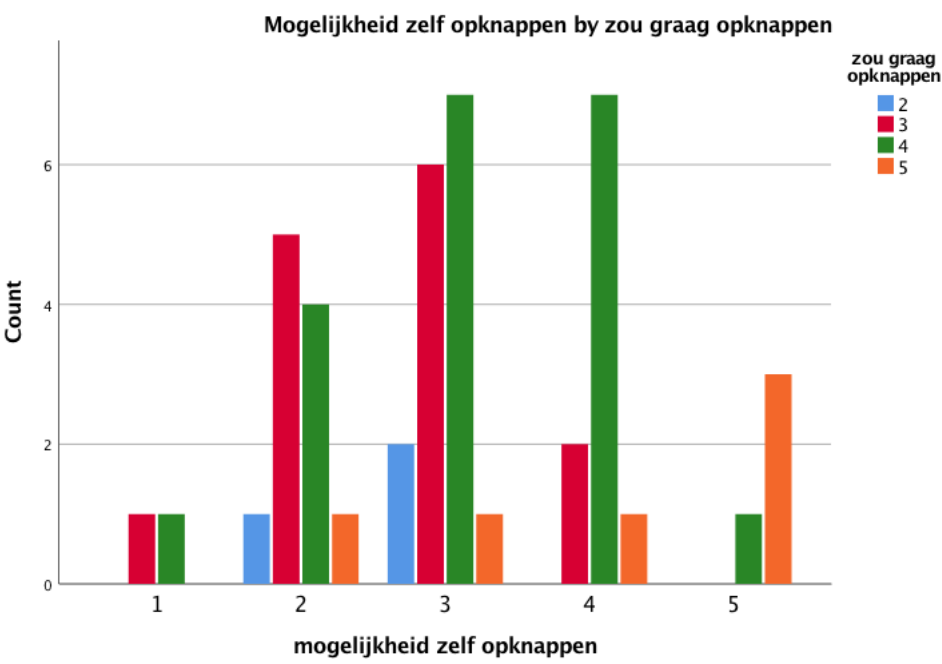
The descriptive graphs visualize the reasons to repair and not repair products. Also whether people have ever thrown away products that are reusable is shown.



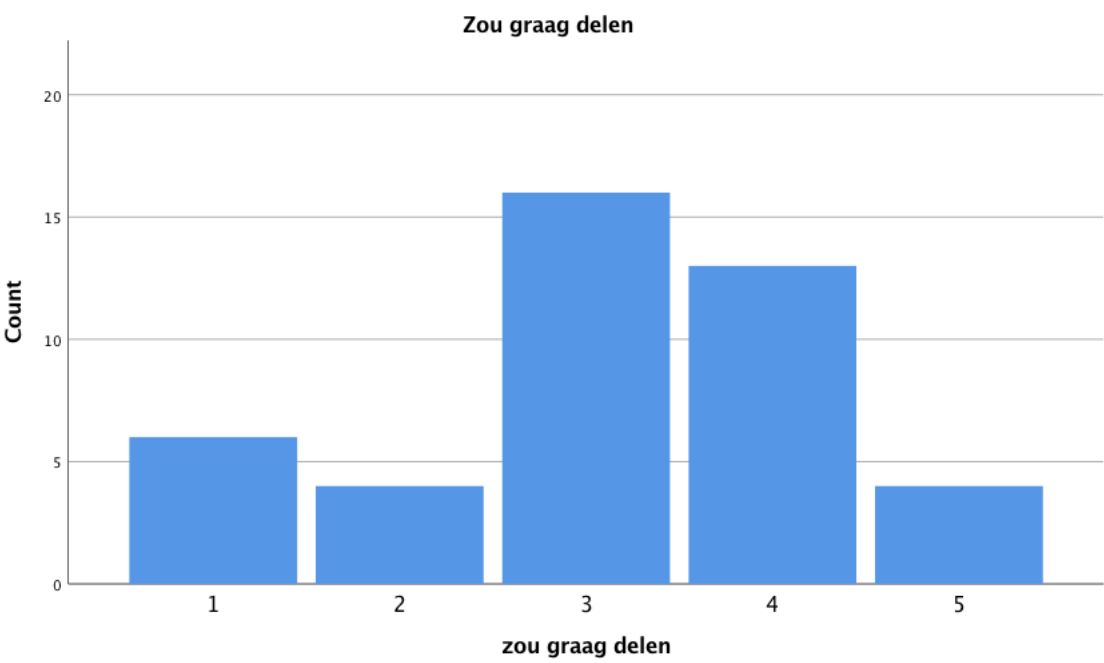




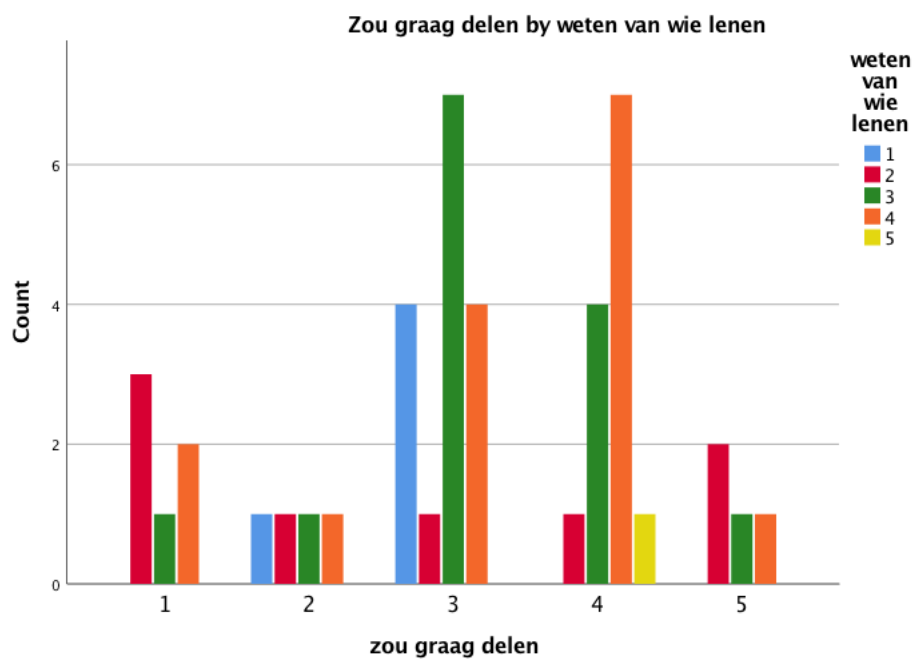
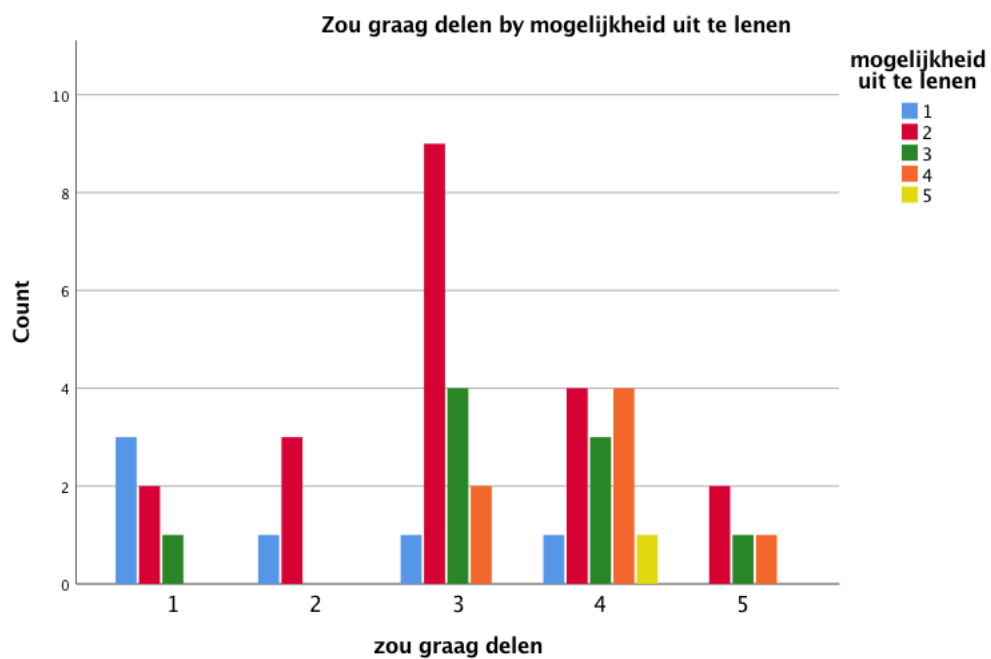


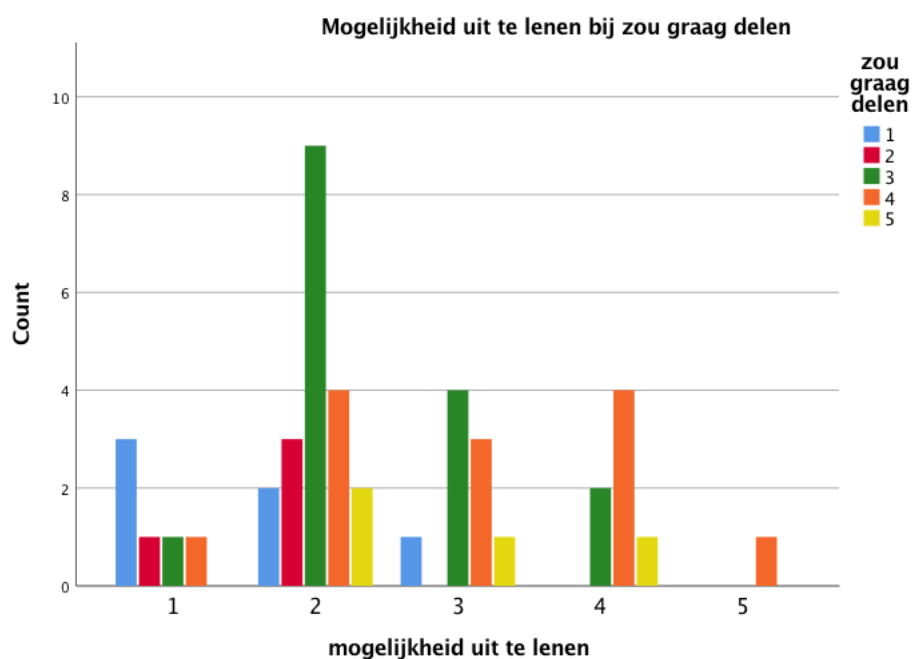
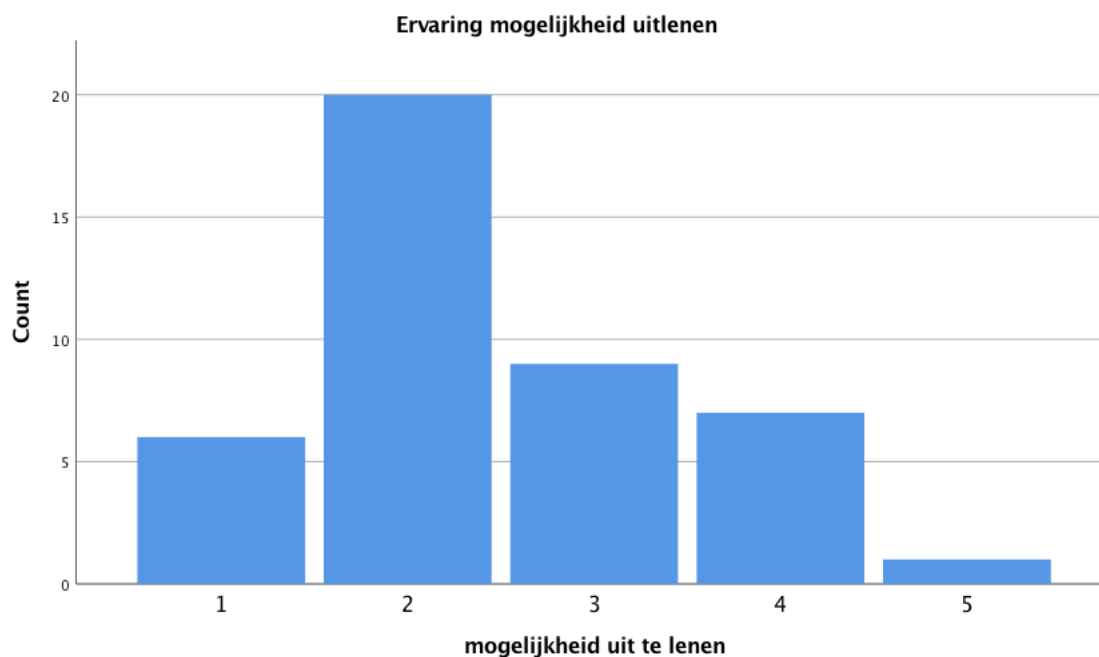


H.3.1.4 SHARING









## Insights

As can be seen from the above graph, more than half of the respondents experiences the opportunity to share their products as insufficient. This group can be further subdivided by their motivation to share their products. From that we can see that most of those people would actually in the future want to share their products.

## Restyling

People are relatively motivated to refresh their products. 93% of the people indicated that they would like to refresh their products in the future. 30% from those indicate that the opportunity to do so is insufficient to mediocre. The other 70% indicate that the opportunity is sufficient. Interestingly is the missing opportunity for people whom are willing to refresh their products.

Alongside, of the 93% of people, only 10% indicate that they do not know how to do that.

## Sharing

People are relatively missing the opportunity to share their products. 60% indicates this opportunity is insufficient to mediocre. From those 60% of people that indicate the opportunity is insufficient, 65% would like to share their products.

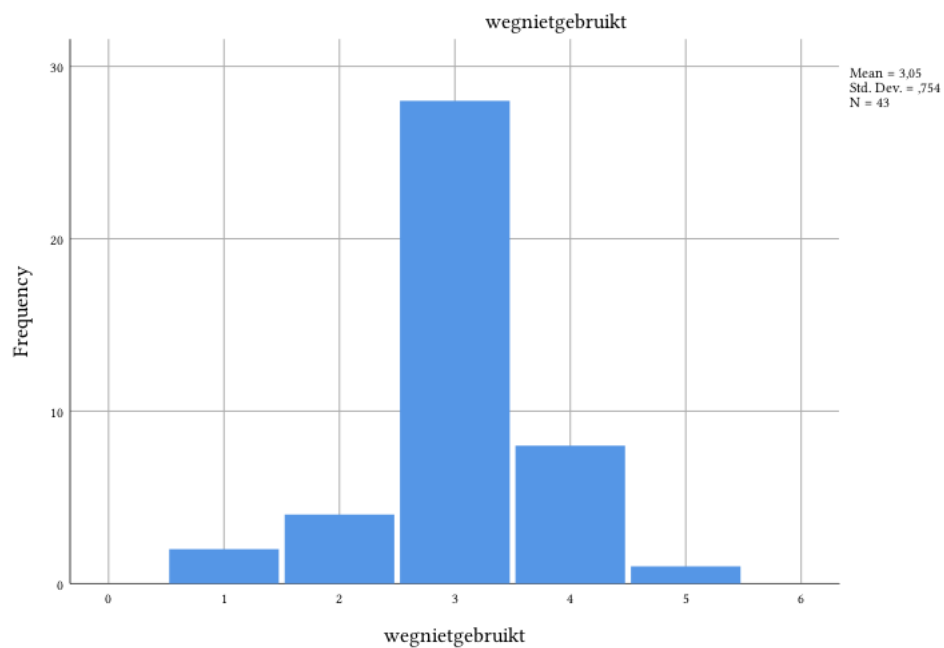
77% indicates that they want or are willing to share their products. From those 77% of people, 24% does not know the people whom they can borrow products from.

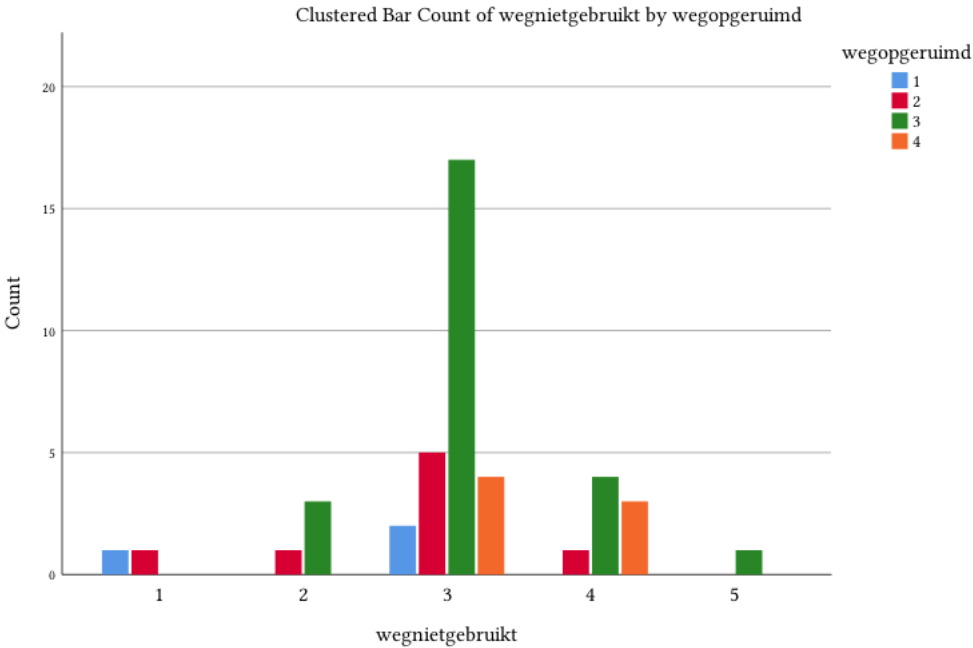
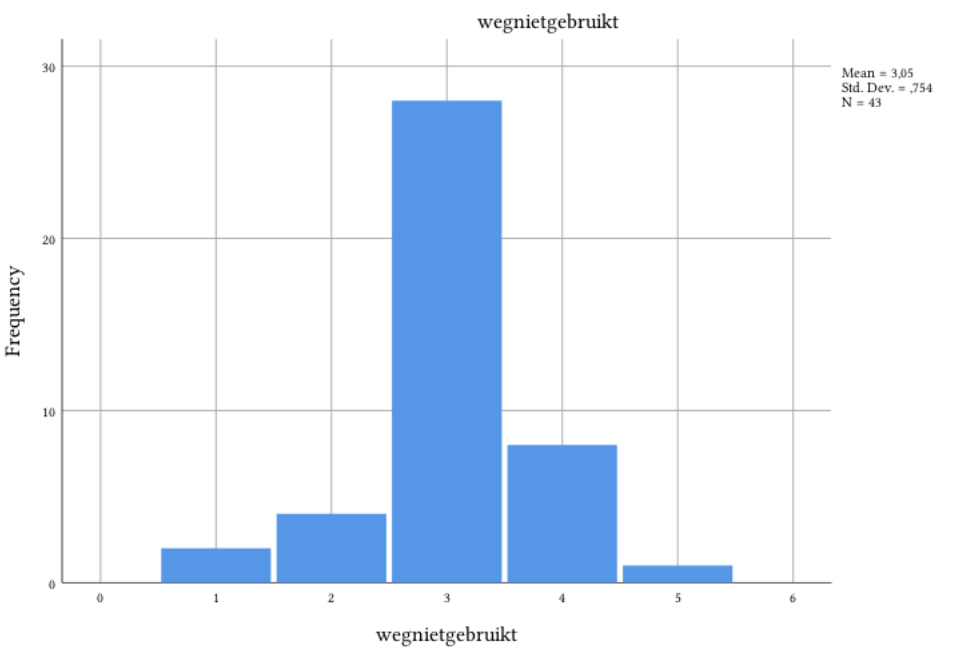
### wegnietgebruikt

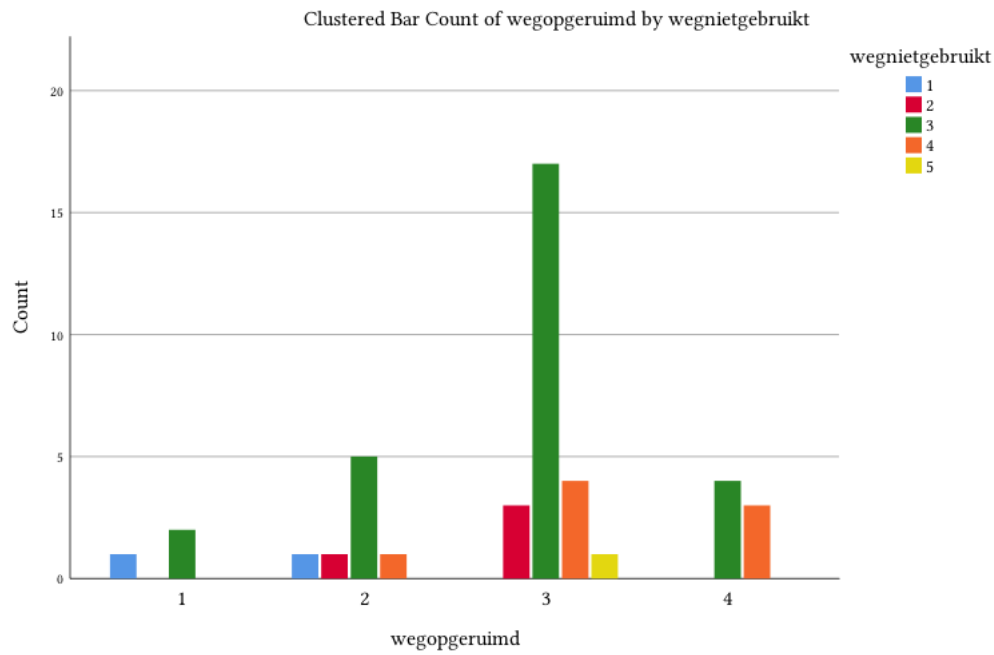
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	4,7	4,7	4,7
	2	4	9,3	9,3	14,0
	3	28	65,1	65,1	79,1
	4	8	18,6	18,6	97,7
	5	1	2,3	2,3	100,0
Total		43	100,0	100,0	

### wegopgeruimd

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	7,0	7,0	7,0
	2	8	18,6	18,6	25,6
	3	25	58,1	58,1	83,7
	4	7	16,3	16,3	100,0
Total		43	100,0	100,0	







#### zou graag delen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	14,0	14,0	14,0
	2	4	9,3	9,3	23,3
	3	16	37,2	37,2	60,5
	4	13	30,2	30,2	90,7
	5	4	9,3	9,3	100,0
Total		43	100,0	100,0	

#### bereid delen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	2,3	2,3	2,3
	2	9	20,9	20,9	23,3
	3	18	41,9	41,9	65,1
	4	11	25,6	25,6	90,7
	5	4	9,3	9,3	100,0
Total		43	100,0	100,0	

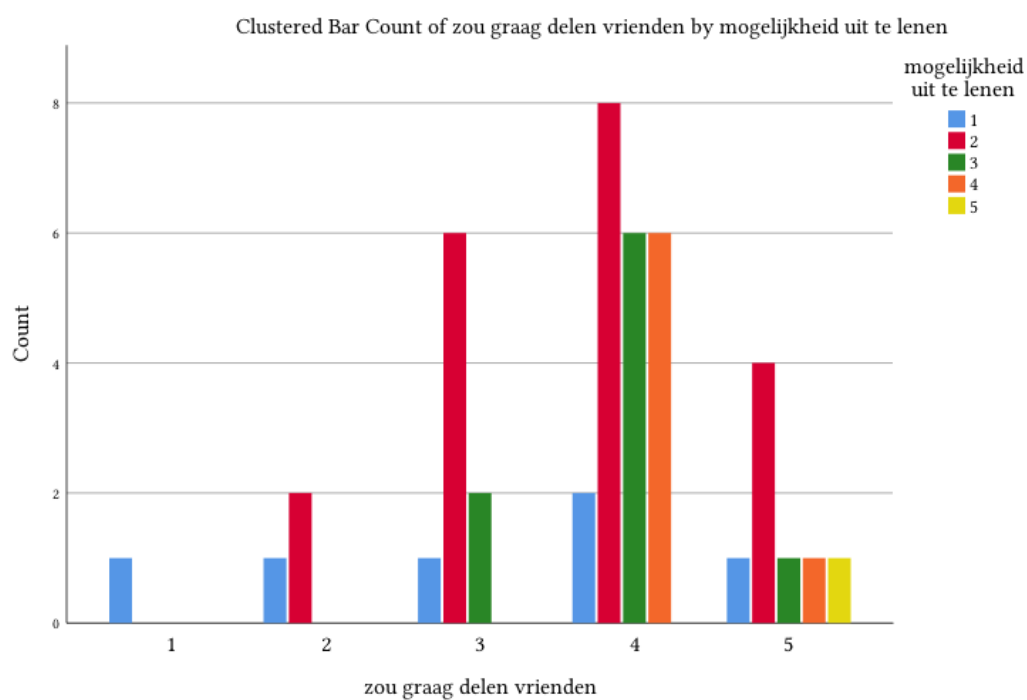
#### bereid delen mensenkenn

		Frequency	Percent	Valid Percent	Cumulative Percent
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Valid	1	1	2,3	2,3	2,3
	2	4	9,3	9,3	11,6
	3	12	27,9	27,9	39,5
	4	20	46,5	46,5	86,0
	5	6	14,0	14,0	100,0
Total		43	100,0	100,0	

### **zou graag delen vrienden**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	2,3	2,3	2,3
	2	3	7,0	7,0	9,3
	3	9	20,9	20,9	30,2
	4	22	51,2	51,2	81,4
	5	8	18,6	18,6	100,0
Total		43	100,0	100,0	



**bereid delen**

		Frequency	Percent	Valid Percent	Cumulative Per- cent
Valid	1	1	2,3	2,3	2,3
	2	9	20,9	20,9	23,3
	3	18	41,9	41,9	65,1
	4	11	25,6	25,6	90,7
	5	4	9,3	9,3	100,0
	Total	43	100,0	100,0	

**zou graag tweede leven geven**

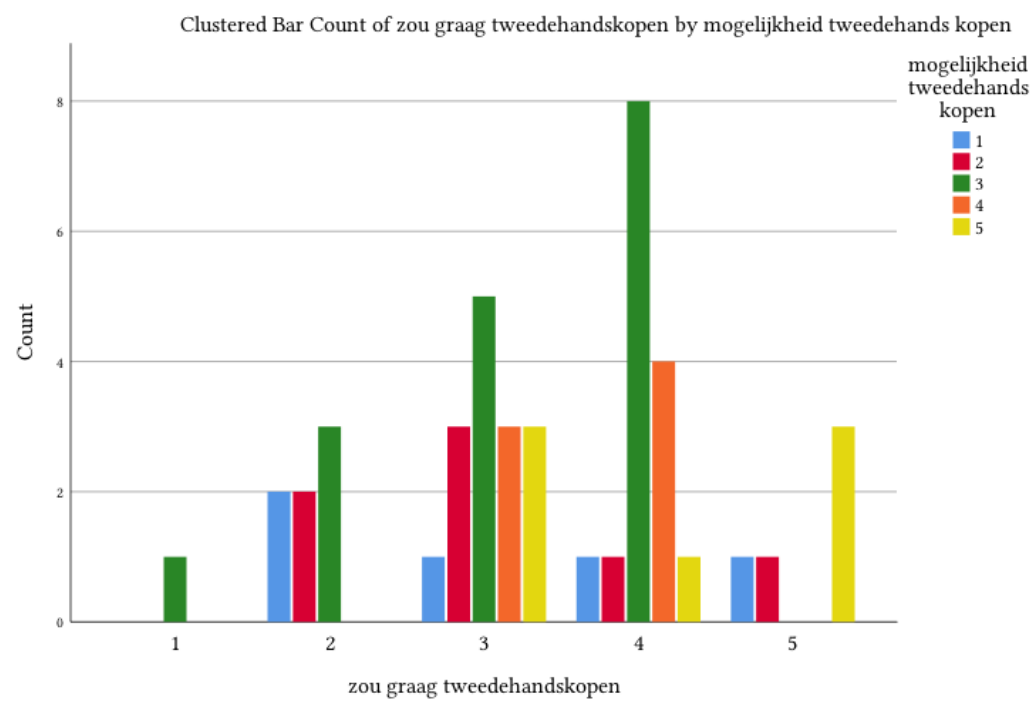
		Frequency	Percent	Valid Percent	Cumulative Per- cent
Valid	2	1	2,3	2,3	2,3
	3	10	23,3	23,3	25,6
	4	16	37,2	37,2	62,8
	5	16	37,2	37,2	100,0
	Total	43	100,0	100,0	

**zou graag tweedehandskopen**

		Frequency	Percent	Valid Percent	Cumulative Per- cent
Valid	1	1	2,3	2,3	2,3
	2	7	16,3	16,3	18,6
	3	15	34,9	34,9	53,5
	4	15	34,9	34,9	88,4
	5	5	11,6	11,6	100,0
	Total	43	100,0	100,0	

**bereid tweedehands kopen**

		Frequency	Percent	Valid Percent	Cumulative Per- cent
Valid	1	2	4,7	4,7	4,7
	2	5	11,6	11,6	16,3
	3	14	32,6	32,6	48,8
	4	15	34,9	34,9	83,7
	5	7	16,3	16,3	100,0
	Total	43	100,0	100,0	



**bereid zelf repareren**

		Frequency	Percent	Valid Percent	Cumulative Per-cent
Valid	1	1	2,3	2,3	2,3
	2	5	11,6	11,6	14,0
	3	11	25,6	25,6	39,5
	4	22	51,2	51,2	90,7
	5	4	9,3	9,3	100,0
	Total	43	100,0	100,0	

**bereid op te knappen**

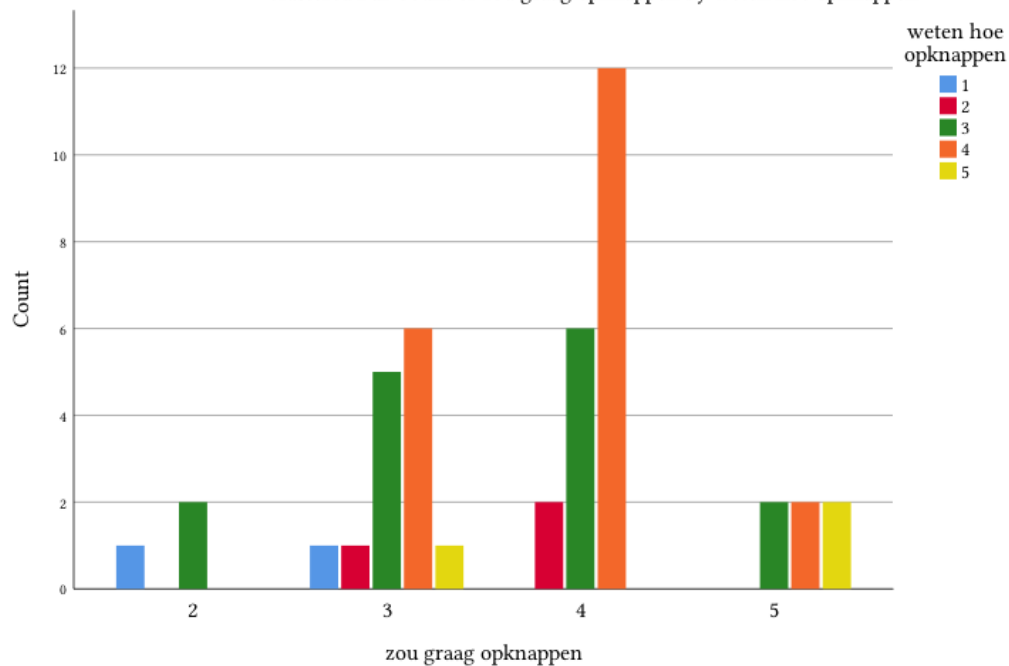
		Frequency	Percent	Valid Percent	Cumulative Per-cent
Valid	2	2	4,7	4,7	4,7
	3	12	27,9	27,9	32,6
	4	20	46,5	46,5	79,1
	5	9	20,9	20,9	100,0
	Total	43	100,0	100,0	



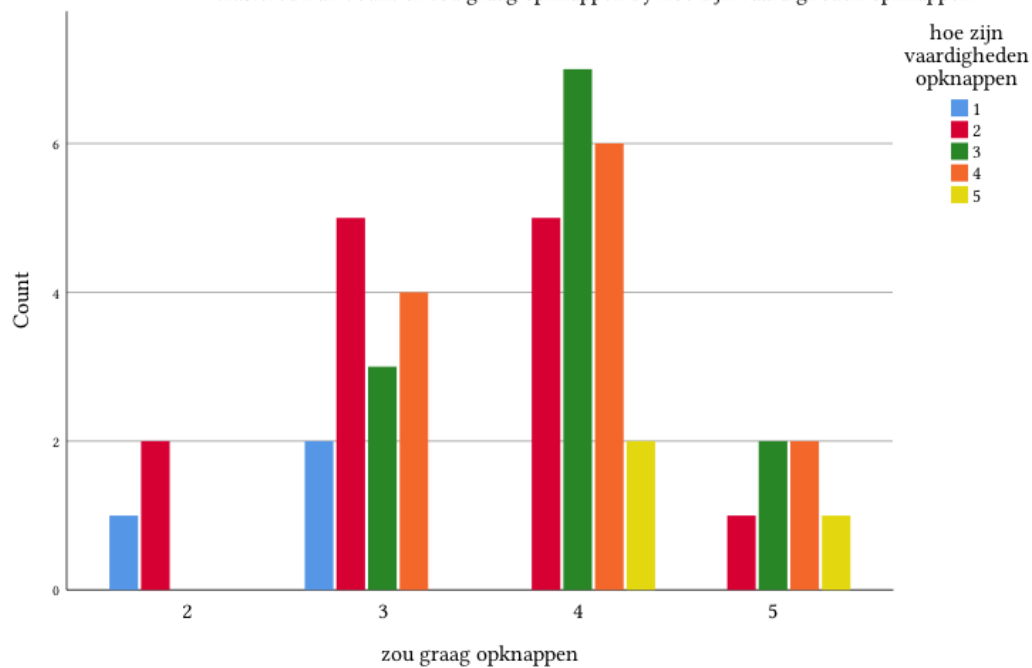
**zou graag opknappen**

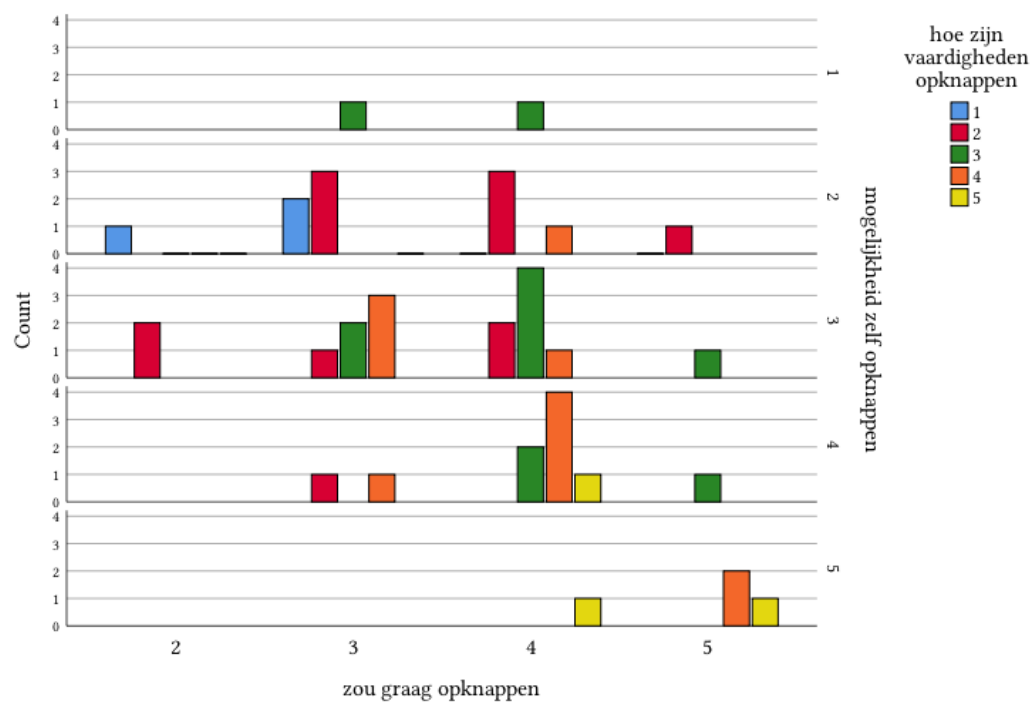
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	3	7,0	7,0	7,0
	3	14	32,6	32,6	39,5
	4	20	46,5	46,5	86,0
	5	6	14,0	14,0	100,0
Total		43	100,0	100,0	

Clustered Bar Count of zou graag opknappen by weten hoe opknappen



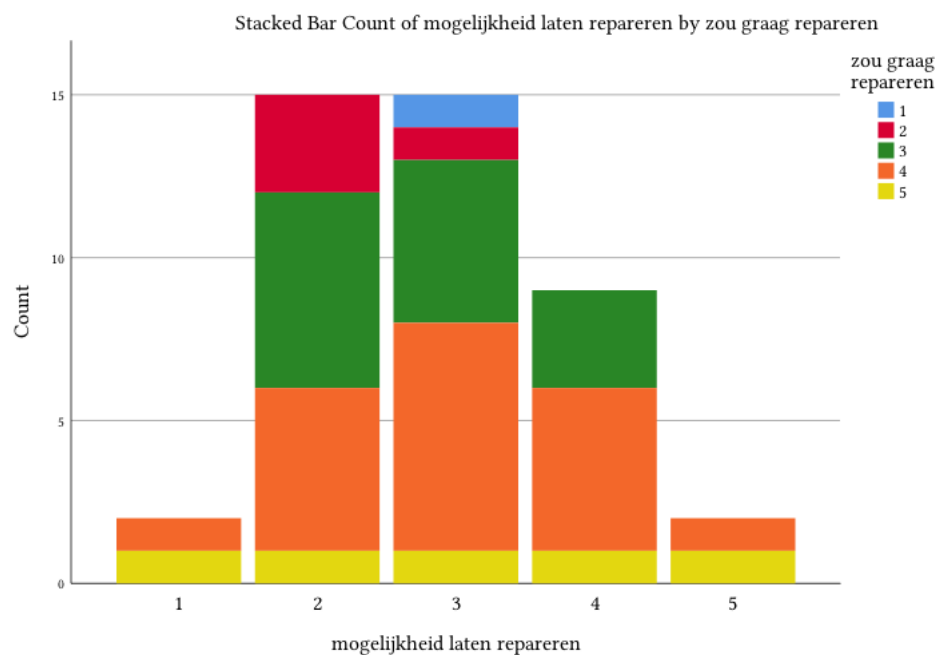
Clustered Bar Count of zou graag opknappen by hoe zijn vaardigheden opknappen





**zou graag repareren**

		Frequency	Percent	Valid Percent	Cumulative Per- cent
Valid	1	1	2,3	2,3	2,3
	2	4	9,3	9,3	11,6
	3	14	32,6	32,6	44,2
	4	19	44,2	44,2	88,4
	5	5	11,6	11,6	100,0
	Total	43	100,0	100,0	

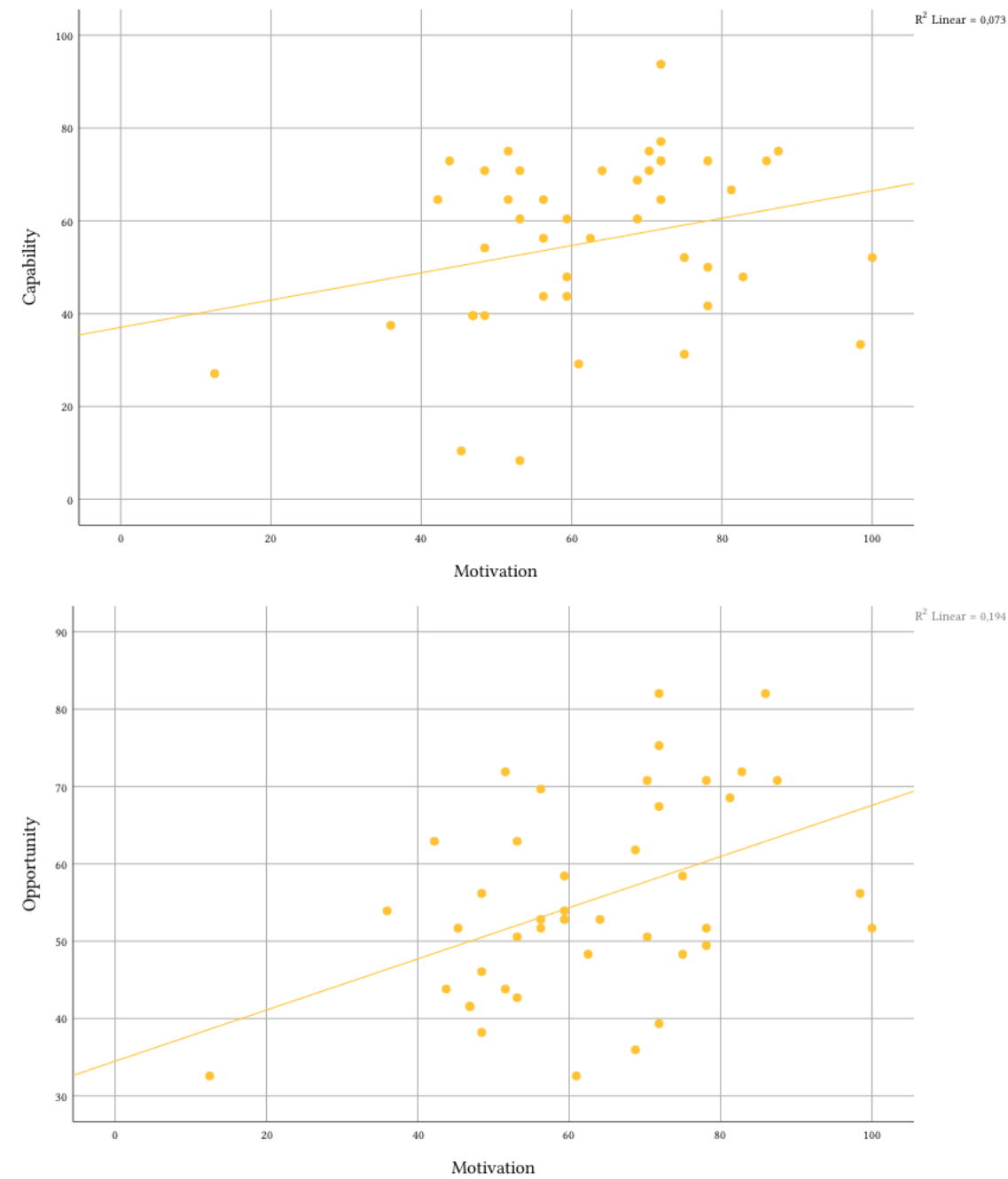


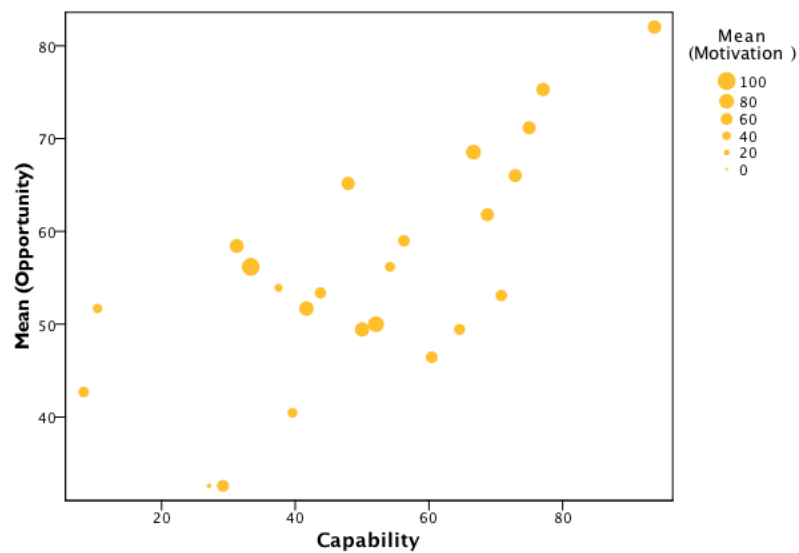
#### *H.3.1.5 CONCLUSION SURVEY*

The people whom are motivated to share their products with others, both known and unknown to the people, are not having the opportunity to do so. (show graph of this, these are the people that score high on wanting to share and low on opportunity of sharing in the BUCH ).

From the normalisation the answers of each COM aspect were ranging between 0-100, instead having their own individual range.

Plotting the COM aspects gives a coherent overview of the respondents and their position in the COM aspects.

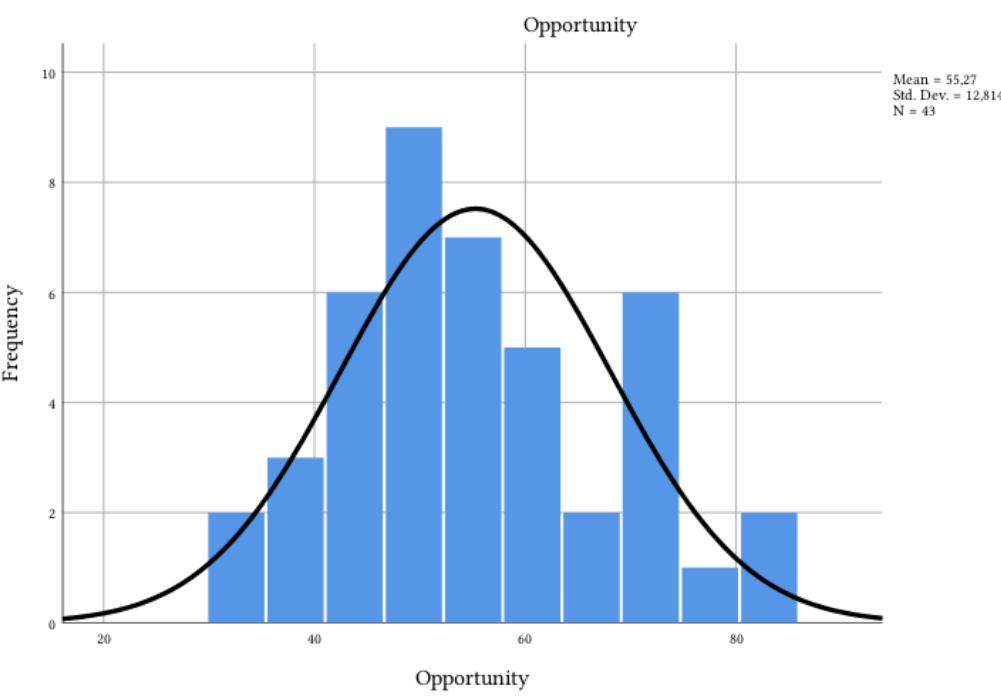
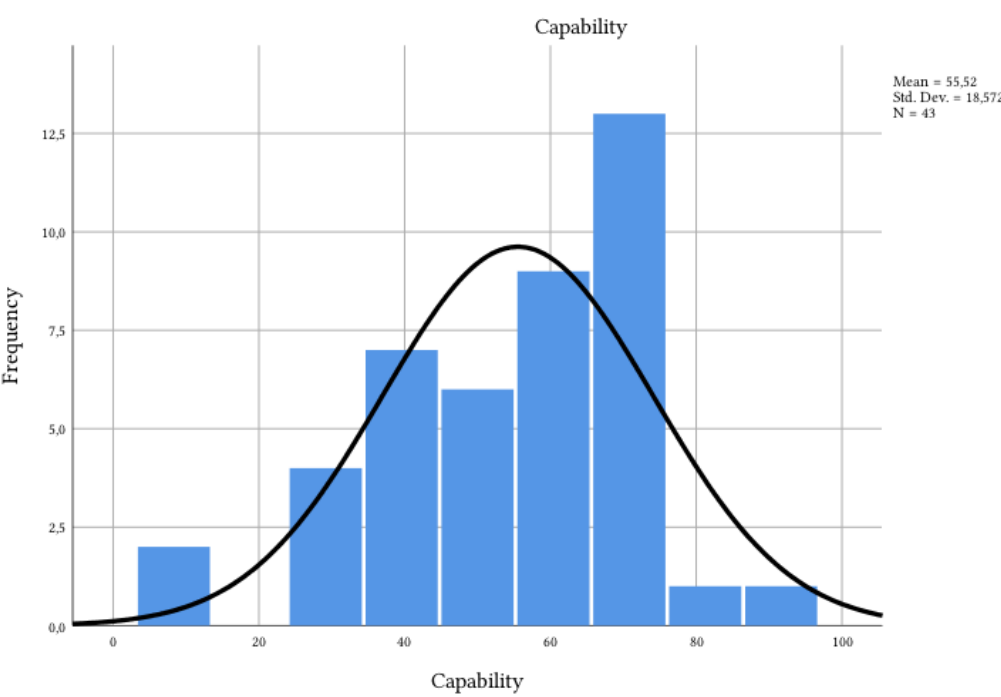


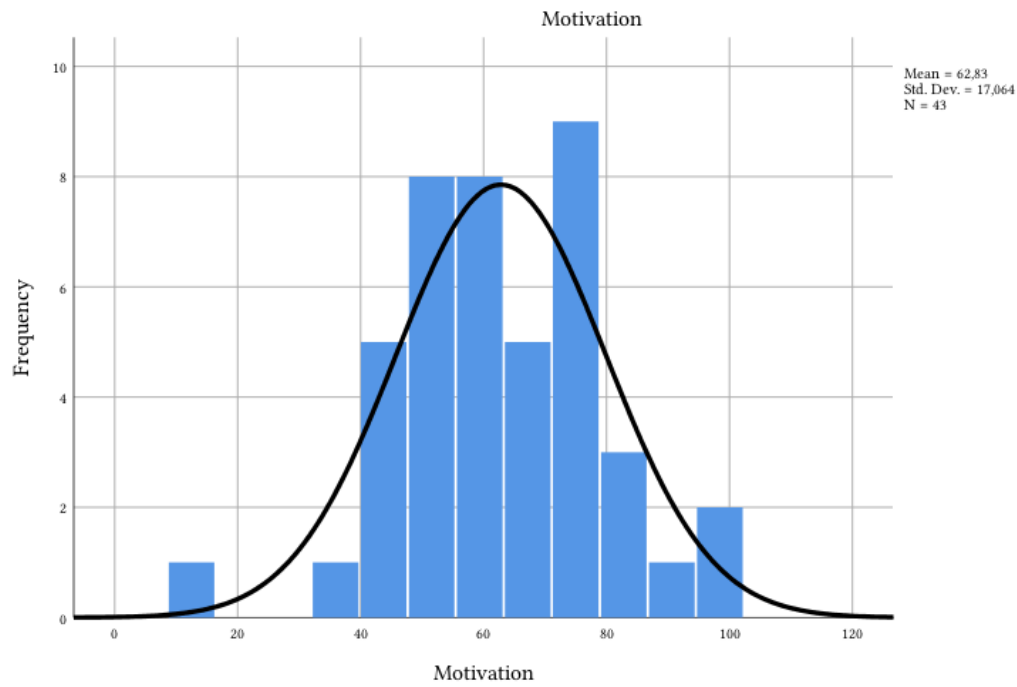


### Statistics

		Capability	Opportunity	Motivation
N	Valid	43	43	43
	Missing	0	0	0
Mean		55,52	55,27	62,83
Median		60,42	52,81	60,94
Std. Deviation		18,572	12,814	17,064
Minimum		8	33	13
Maximum		94	82	100
Percentiles	25	41,67	46,07	51,56
	50	60,42	52,81	60,94
	75	70,83	67,42	75,00

When we look into the COM aspects individually we can see the following charts:





## H.4 Insights

Opportunities in the BUCH.

Circular behaviour is ranked on 3 dimensions that are treated separately. It is a limitation that the multi-collinearity is not taken into account in this model. This means to take into account the cross-interactions that might or might not happen between the COM aspects, or in other language the correlation between the variables. Despite its acknowledgements, it is not taken into account in this graduation project.

## Appendix I | Semi-structured in-depth interviews

### I.1 Kringloop Heiloo – 20-02-2020

On this day one semi-structured interview was held with the owner of a Thrift shop. Also two visitors were asked about their experience and relation to visiting thrift shops.

#### I1.1 Owner Kringloop Heiloo

According to Frank, he owns one of Heiloo's traditional thrift shops. His store is breathing a certain soul that is lacking most of the newly built shops. Franks' entire shed is packed with products. Old racks and former bookcases display a wide variety of tableware, books and knickknacks. He created an extra level in the shed where he displays his extensive collection LPs CDs and cassette collection. From the ceiling several random items are dangling above the heads of customers. Customers often do not know where to start, he laughs.

Thrift shopping is about finding and browsing. The new thrift stores display their products in newly built racks and are too sterile, Frank explains. "They are more like companies". Franks' store is a one-man business, but he provides employment opportunities for people with a social distance from the labour market.

**Franks' relation with the municipality of Heiloo is mildly said, weak.** There was a time he received subsidies from the municipality but at a certain point it stopped. Frank does not elaborate on this, but we sense a strong disbelief in the governmental organization. He explains that he is the one who is actually doing good looking at sustainable and social responsibility. **The municipality acts too officially, he explains.** We expect that the approach of the municipality does not suit Franks' way of working.

Frank operates on his own. **A goodwill-factor does not exist in this world,** he points out. "Vintage traders are the worst. **Almost no one is willing to offer you a fair share.** "

#### I1.2 Retired Woman

We encounter a friendly, retired woman browsing through several books. She lives close by and regularly visits thrift stores with her husband (sometimes 2 times per week). They go out everyday for a walk and visit several places in the neighborhood. Today she is looking for knitting needles, but **she cannot stop herself from browsing the rest of the store.** She likes **the ability to find things from the past** that are not available in shops anymore.

She does not only shop for herself, but also keeps an eye on things that might come in handy for her children or grandchildren who also shop secondhand from time to time.

Since she was not raised in a wealthy family, **she grew up with second hand products.** She has been visiting the thrift store for quite some years now. "it is a shame to buy new if it is just lying here". We observe an **economical and sustainable motive** here.

"When I see the irons standing there, it makes me think of my iron which has a short wire. If I find one which has a longer wire, I will probably buy it and bring my 'old' iron back to this store."

#### I1.3 Former ceramic collector

At the furniture section we are able to get the attention of a man. "I don't know if I am the right person to interview", he laughs, "I never come here!" He is not looking for anything particular, but if he encounters a nice pair of chairs he might purchase them. The middle-aged man from Castricum used to be a ceramic collector who visited thrift shops frequently in his younger years. He argues that **the quality of the products decreased over the years.** "Almost everything of quality is in the hands of traders and is sold over the internet", he elaborates. He is planning to visit Muttathara (thrift shop in Castricum) next. Some of his friends were able to buy there time after time, but he never found something. He explains that in wealthy municipalities like Heiloo and Castricum one might find a treasure, but still the majority of products are crap. The friendly man is currently in a decluttering phase and sold his ceramic collection. He recently brought a lot of carpet and furniture to the thrift shop.



## I.2 Heiloo Recycle Centre

### I.2.1 HT, Administrator Millieustraat

HT is the **foreman/administrator** at the recycle center of the Municipality Heiloo (RCH) and works there for already 20 years. This recycle center is open to the public of all BUCH municipalities. Anyone, who the employees allow, can sort and dispose their waste at the facility. HT is responsible of the dynamics at the RCH. Among others, HT plans when and how containers have to be emptied, how many employees are needed at the facility, guides visitors in sorting their waste and manages the employees.

RCH is open on Monday, Tuesday, Wednesday, Friday, and Saturday. To run the facility 2 to 4 employees are needed, depending on the day. Saturday is argued to be one of the busiest days. On Saturday **an average of 500 to 600 cars** make use of the facility. The facility is open to the citizens of the BUCH and rejects local businesses. Though that is not always as easy to distinguish but can be seen from the type of waste that people dispose. This is regulated by a remote control for opening the barrier so cars can pass through. No checks are done to see whether they are from the BUCH municipalities or outside. This saves a lot of hassle and time.

When a container is full, the local waste treatment facility is contacted, transport is arranged for the containers and they are emptied at that facility. These local waste treatment facilities are known to HT, although HT has no specific knowledge about the what and how of these facilities. The main transport company is GP Groot.

Some of the stuff that is disposed still looks very useable or is of good quality. **Many products in the bulky waste container are still possible to use or sell.** Also is mentioned that most products are quality products due to the relatively rich municipality of Heiloo. It is noted that **people are often not willing to drive by the local thrift shop, because the RCH is so easy** to use and the local thrift shops do not accept all products anymore because they are full.

RCH is planning to update its recycling policy next year in such sense that garbage bags are not allowed anymore. To improve the sorting quality. The sorting rate is said to be fine, people visiting the RCH either sort it already at home or at the facility. On top of that the employees that keep an eye, improve the sorting capabilities and willingness of people. Though when it rains, people tend to be sloppy and the sorting rate is less fine. The people that have sorted and know what belongs in what bin are the most ideal visitors. This because they do not take too much time, and need less guidance. Most people that come dispose waste, dispose multiple types of waste and larger quantities. Most of the time it is not just one piece of waste.

**The largest waste flows is B-Wood** (b-hout). This is every kind of wood, with the exception of impregnated wood. A-wood and b-wood are not sorted separately but go together. Everyone from the area disposes this type of waste. It comes in the forms of: closets, planks, boxes, panels, etc.

Throughout the year **some peaks can be seen, resulting in higher waste flows.** During the spring season people tend to clean up their houses and make renovations. Or after storms a lot of broken fences or other waste flows in. During the prune season a lot of branches flow in. This last peak is high due to the fact that Heiloo is relatively a green municipality with large gardens and a lot of trees, plants and bushes. These branches are then collected by GP Groot to make biogas or compost, this changes every time.

Comparing now to 20 years, when HT started working, there is a lot changed. **People sort their waste way more than 20 years ago.** HT explains that youngsters (18-30) understand the best that waste has to be sorted. The people older than that are less likely to sort in an appropriate manner. **HT explains that the older group of people need to be informed**, and has the opinion that this is not done enough by the municipality.

Sometimes people do not get why certain waste that is for instance made out of hard plastic, cannot go into the plastic recycling bin. This because GP Groot indicates that these certain waste products do not belong there. An example is corrugated sheets (golfplaten). These are made out of plastic but cannot be treated like the other plastic products. This confuses the visitors. Or for instance laminate flooring seems to be wood, but only a small part of that is actually wood. This has to go to the bulky waste container. But for the people this product is and looks like wood, again confusing people. On top this brings a negative feeling to the people. While they think they have done a great job, they did it wrong.

It is planned to rent two roll packers, depending on the cost/savings. These machines cut and compress the waste in the container 5 times more efficiently. Instead of 20/80 waste/air ratio it becomes 80/20. Specially on Saturdays this will be beneficial. **On Saturday 3 to 4 containers of B-wood are emptied.** A negative effect of these roll packers

are however that it has to run throughout the whole day and requires one employee to safeguard it for the visitors. RCH pays the transport, deposit cost and weight. However, the main costs are within transporting the materials. **The costs for transporting one time are 70,- euro excl BTW** (from RCH to Boekelerdijk; 4km).

The brown white good container brings money in. This is collected by Sortifa. Sortitfa disassembles the products, and recycles the materials collected. This waste flow brings money in. The old iron containers balance themselves with the transport costs. Textile is getting harder to bring money from. This due to changes in the market.

**The overall cost for B-wood is 30 euro per ton kg. The cost for bulky waste is 100 euro per ton kg.**

It is further wished for by HT to develop a recycle center with lower containers or uplifted floors. This to make it easier to throw waste into the containers.

### I.2.2 Sensitizing booklets

2 people noted during the casual talk that they preferred to bring their products to the local thrift shop. **Though all thrift shops wouldn't accept their products anymore** as they were too full. This made them throw away their stuff at the millieustraat.

4 people noted that they **liked the current millieustraat, and had no complaints.**

1 man explained that he came here to dump his waste that would not fit his small waste bin provided by the municipality. He noted that these days a lot of waste is made, and a solution to that problem would be a solution to all Dutch. **Remarkably he did not seem to be conscious about the possibility to reduce his waste production.**

It was observed that the elderly people, approx. 5, had their car filled with dedicated boxes for plastic, carton, paper, and glass. **They already sorted this at home,** and just came to deposit it here.

### I.2.3 EK, Senior Policy Resources

EK is a senior policy resources employee at the BUCH municipality. Together with a team, policies and plans are made. Currently the new policy is to reduce bulky waste from 30 to 5kg per citizen in the BUCH municipalities. EK is responsible for the Recycle centers in the BUCH, and organizing these to meet the new policy.

There is a vision to renew the recycle centers towards **circular centrums (CC). This to promote and communicate the recycle center in a different way.** As EK explains, citizens need to build another association with waste. It is envisioned that the CC will be more beautiful, comfortable and a nice place. In this CC the idea is to bring in: re-use options, upgrading options, a workshop, thrift shop, repair café, adoption corner, nice coffee bar. At the lowest end will be the bulky waste container.

The UCH municipalities have adopted a new resource policy plan, partly inspired by the government. **Such policy is approved by first the local councilors (de wethouders), than by the advisory board (de raad).** Starting with the people responsible for waste in the local council, than it has to be accepted by the wider audience of the local councilors. In that way the vision has to fit the ambitions of the local councilors.

The CC was pushed forward and into the agendas of the councilors and advisory board by winning the competition of Rijkswaterstaat. This has helped to make the councilors and advisory board interested. Yet they are only informed about the dynamics of the CC, no concrete plan or policy has been accepted. It is still in the research phase.

EK does not seem to be knowledgeable about what waste stream is the highest. It is also hard to see whom, from what area or postal code throws away what type of waste. EK does not envision this process to be implemented in the local recycle centers. This because each person has to be tracked from what postal area they are, and what type and the amount of waste the deposit at the recycle center. It needs to be as easy as possible for the visitor to deposit waste. **No extra service should be in place that does not satisfy that need of easiness.**

To reduce waste a lot of proven measures are known to reduce fine residual waste (fijn huishoudelijk afval). These can be for instance PAYT, extra PMD containers, etc. **However, to reduce bulky waste has not many proven measures.** Only the most obvious is to let people pay extra for it. Though this is not reducing the waste necessarily enough at the recycle centers, to go from **30 to 5 kg**. Therefore, the CC is started and there **need to be experimented with possible measures and the feasibility of those**. The question is, what works at the CC; thrift shop? Repair café? Workshops? Etc.

The idea is to **make this visible to the public and make them conscious about the topic**.

The only insight about people their waste behaviours and their geographical position in the municipalities are from a survey. It is believed by EK that the elderly are not adopting well enough to change, and thus are a hard group to change their behavior.

From another survey it became evident that people did not find it important that a thrift shop or repair café is present at the recycle center. EK wants this to change to being important.

## I.3 People on disposing products, in-depth

### I.3.1 HZ, Citizen - A big house clean 14-03-2020

HZ is a 'frequent' (once a month) thrift shop visitor. During a big cleaning of the house, various products were stored in a large barn. To that belonged: a white leather couch, a billiard table, 10 different types of chairs, 10+ mattresses, and some small tables. To dispose of these products, HZ called the local thrift shop. But they wouldn't pick up those items, or he had to deliver it himself. Than, at the thrift shop they would see whether they would accept or reject the products.

Throwing away the stuff was not an option for HZ. As these products are good products. To him it's a sin to throw that away. Within that situation he tried to put the products on marktplaats, a white leather design couch for 30 euros, and a billiard table for 30. Nobody wanted the products, and if somebody wanted to come, he did not show up, which happens all the time. So I cannot get rid of my couch, billiard and 10 chairs. I know I can throw it easily away at the recycle centre, but that would be a shame. But probably that is going to happen. There is no option for me to get rid of these products. Nobody wants it.

Probing into the experience with selling to others either through marktplaats or other ways, HZ explained that he once bought a car from somebody HZ knew, an elderly couple. HZ once more contacted the elderly couple to take a ride in the car together, to bring back the nostalgic feeling to the elderly couple. HZ explains that this is the nice touch of selling it to others that you know, you know it's in good hands or that a sort of relationship establishes between you and the other through the product. Which also makes the products more valuable to you.

### I.3.2 NH, Citizen Disposing old products 08-04-2020

NH can be seen as a person who behaves 'circular' and who wants to behave that way. Also wants others to do that.

Reusable products and stuff are brought by NH to thrift shops. Clothes, an old washing sink, table, closets. Products that NH not anymore uses, are in NH's way, unnecessary, or when changing a hobby. These are given to the thrift shops because somebody else can still use the products. NH has been raised to repair, be mindful and take care of products in a good way. Throwing away the product in a container does not suit NH, as this is a waste to do. The product can still be used.

NH explains that the products almost always are accepted by the thrift shop because they are of good quality and good products. This because NH's products are bought for a lifetime. Tableware and a closet are bought with the idea and expectancy to remain forever 'good'.

Whilst explaining NH distinguishes between two products; cheap and expensive. NH is more leaning to buy expensive products and is more attached to those products. In that way it is harder to get rid of the products to which NH is attached. The cheaper products are easy to get rid of as NH is not attached to them. On top of being attached to more expensive products, NH is more careful with these expensive products and thus less inclined to throw them away, and more inclined to 'save it for someone else' so he or she can use it. This is a mentality you need to have.

A recent event for NH was the moving of houses. NH and NH's partner moved in together. 1 house had to be emptied. Everything went through an online market platform or the local thrift shop away. Even the almost broken products are accepted by the thrift shop and repaired. When further probed NH explains that some products were not accepted. Inferior products are not accepted. The cheaper products, are not accepted. The products that you can buy for cheap somewhere else. NH explains that despite they accept the IKEA closets, they throw it away in the container. Which NH find a shame.

'Every cheap product will end in the waste container'.

Back in the days NH repaired products, this was normal. In the current economy you buy a product new for a much cheaper price. And so you are economically inclined to do that.

Interestingly is NH's reasoning why others buy so many 'cheap products that will end in the waste container'. It seems that shops that sell those products change the interior style for houses each quarter of a year. A lot of people buy those things, and throw them away, I don't. I have my own style, NH explains. NH has no need to do that. NH also explains that those cheap products can be defined as 'junkfood products'. Even in the thrift shops today, a closet that is antique, that used to be the most expensive closet, that is of high quality and already exists for 3 centuries is cheaper than one from a 'cheap new store (ikea,jysk,leenbakker,kwantum)'. But it is not the style or fashion for interiors. So people don't buy it. That is a shame that people then are inclined to buy a cheap product that they will definitely soon throw away.

It is as simple as when you say that it is fashionable, everyone will buy it. Today that is 50/60/70s Next year it will be the 40s or 80s, who knows. It is incorrect that you NEED this fashion or product. It is incorrect, you need a closet to store your stuff, and you want it to look a bit nice. All those fashion things are going out of fashion, and you throw them away.

One experience that NH did not like was throwing away a 'sleeping couch'. This couch was not picked up by anyone using Facebook, marktplaats or thriftshops. It's a shame to throw such thing away, but it was in the way.

Why throwing it away?	What should happen?		
Change of hobbies	Somebody should use it		
In my way			
Unnecessary			
Not used anymore			

## I.4 Follow up interviews on survey

### I.4.1 J. - Survey follow up– 08-05-2020

#### Generic

J. was motivated to behave and act sustainable. To that she mentioned the need to buy products from the secondhand shops to reduce the need for an extra amount of resources to be extracted from the earth.

Also was mentioned that in her area, Egmond aan zee, people are not having a need to have the latest fashion or products. Its more 'je eigen zeeman cloffy aan' comfortable clothes.

#### Delen

For sharing J. shares mainly to j's family. Recently she shared her Child box to a colleague. It is noted multiple that the most important factor to j's to share a product is to know whom that is, and that that person is using the product with respect (zuinig). Also to share products to J.'s children is nice as that means that the products are easier to get back as they see each other frequently. J is a member of the local peerby platform. Though that is not working as many products are not in ownership of J. that are requested.

Buying is very easy to do. Sharing is not so easy.

J's does not know a lot of people in the street or the area. For that it becomes difficult to share or borrow products. However, multiple times asked, j is very open to share j's products.

The risk of sharing is that the product comes back broken, or that it cannot be used anymore, or does not come back at all for the time when J needs it.

### **Opknappen**

For restyling the products, it is mentioned that J does not have the skills but also not to mention the patience to do it. J's partner does have this and is more handy. It is explained that restyling a old school table with chair was very easy to do, and was done during a weekend. Though J did not do it, as the sanding took too much of her patience. For that there is a reason that it takes too much time to do it, a whole weekend, and does not give the needed satisfaction. It is to bring back the functionality of the product, the style or so does not make that much of a difference.

### **Repairing**

For repairing it is mentioned that clothes are frequently repaired as J is equipped with the needed skills to do that; such as sewing. When skills are there, its easy to do, and so not a lot of patience is needed. Also is does not need to be too difficult to repair it. Also you need time to do it.

The example is mentioned that a product could not be taken apart for repairing it. This also triggered J to buy products that are more easy to take apart and repair, and also buy more frequently at the secondhand shops.

### **Balance**

J mentioned many times the balance between sustainable practice and patience/easiness/complexity of doing the sustainable practice.

Single used plastics are very bad according to J and promote the waste that is produced. Also this makes it hard for J to practice circular behavior. It is also questioned what happens with the recycled plastics, do they recycle it? Or what happens with it?

## **I.4.2 E. - Survey follow up – 11-05-2020**

Schoorl community manager. Serving as a social network representative person. Having a lot of knowledge on the community needs, wants, dynamics, etc.

It is mentioned that sometimes the officials forget the practicalities of everyday life. When there is a need from the community, this is discussed with the appointed 'gebiedsregisseur'. This happened a year ago for the plan to have a local secondhand shop. This was put forward to the 'raad', which gave agreement, then it was put forward to the 'wethouder'. Also the 'wethouder' agreed to that.

So a secondhand shop is wanted, it is agreed by all parties to have it, but still after a year there is no secondhand shop. E. explains that the missing elements for that are the fact that there is no: budget, support and facilitation for these kinds of initiatives. Once it is agreed or pushed through the 'wethouder' it has to be organised by ourselves, and that is not possible.

***It can be said that innovative or entrepreneurial spirit is missing in Schoorl to setup initiatives and push them through realization. It is missing the realization and facilitation of that.***

The plan to do it is not there. The action that is needed to do it is missing. Probing into this elicits the fact that there is

no initiative leader or owner. Everyone wants it, agrees upon it, but nobody enacts it. This means that realizing initiatives is hard to do. There is no pathway to realise the idealized things such as a secondhand shop and a local makerspace.

To the knowledge of E., school is equipped with a good fundament to transition towards a circular economy, a lot of companies are already practicing circular business models.

Two core groups can be distinguished: the first lives in Oost & Groet. These belong to the lower class and middle class. They already repair, share and restyle a lot of products and tools with each other in an informal manner.

The other group are the rich. In this group large 'throw away' culture is present. Financially there are no problems to them, and they would rather buy something new. Also it can be observed that a lot of people in these areas buy products new online. This is also the case because not a lot of physical facilities exist to buy products. One company exists, K[w]AST. Though this company is mainly focused on the tourists or the German market. Tourists come here, and order products to be shipped towards Germany.

Three points are indicated to be needed for having impact on circular behavior:

- ☐ Awareness
- ☐ Redesign of the recycle centre
- ☐ Secondhand shop / thrift shop & repaircafe & makerspace in Schoorl

A lot of 'technical' people live in Schoorl that are handy or have the needed skills to repair products. This is mainly because of the mountain biking scene.

### **Needs**

Initiative leader

Financial support

Official support

### **Insight**

The people in Schoorl want a secondhand shop

The Bergen municipality agrees to that

There is not secondhandshop.

Reframing:

***From what we want to do, towards what we are going to do.***

## **I.4.3 A. - Survey follow up – 11-05-2020**

Older person of the age of 75. Partly living in Amsterdam and in Schoorl.

### **Generic**

It is explained that A. is a real 'throw away person'. This means that getting rid of products is not hard to do. The most preferred option to get rid of products is by giving it away to known people or for free using online platforms. The most frequently used platform in Amsterdam is Gratisoptehalen. Though Bergen does not have this option, also the

local thrift shop is 10 km far away and not in town. It is mentioned that there is a need to have a in between station in the local recycle centre, as a lot of products are thrown away there that can be reused.

To give away products A. uses the cleaning lady from Bulgaria and Ukraine. A lot of clothes and products are given to them for their families. Giving these products to people who become very happy from that is nice to do. Also throwing away products that can still be used is just worthless.

There is the option to sell products at the local markets but than you can only sell or give away for free one product. And also you need a license or stand to do that. For one product that is not practical.

Giving away would preferably being done to people whom become very happy with that product and can do something with it.

### **Delen**

Informally a lot of products are borrowed between A. and the neighbors. Many garden tools for instance. A. is also very open to share products, for instance to share the car, or not even owning a car but a 'sharing' car. Though that does not exist yet in Schoorl.

### **Opknappen**

It is explained that A. does not want to restyle products. A. just wants to buy it new. For that reason, the old product need to be either sold or given away. But is that is not possible, the only option is to throw it away at the local recycle centre. It is however not visible to the people what the possibilities are to give it a second life.

### **Repairing**

The local repair café is known to A.. Once a small broken lamp was brought to the repair café for repairing. Though it could not be repaired. So it was thrown away at the local recycle centre. The reason for throwing away these products at the local recycle centre is when they are broken.

### **Extra**

There exist no opportunity in Schoorl or Bergen for A. to give away products for free, share or bring away. For A. it would work to have a sharing facility that enables to see what is available for and from everyone. Also a 'blacklist' should be available to 'delete' or delegate people out that should not belong to the community of sharing.

Currently A. has 8 picture frames. A. called to the local school if they need them. They did not need it. There is not other option for A. to get rid of these picture frames in an way that A. wants; giving it to someone.

## **I.4.4 A.W. M. - Survey follow up – 13-05-2020**

### **Generic**

AWM lives in Bergen aan zee. I do not belong tot he throw away society. I try my best to repair, restyle products. Though sometimes I have to throw it away. As the secondhand shop does not accept it. Or it is unrepairable by me. I have a couple of products that can still be used but it is laying at home.

Despite I have enough capital to buy everything new I respect products and try to give it the right usage it needs. Though when the product is less valuable to me I tend to bring it to the secondhand shops, but if they do not accept that than I need to plan that it is also possible to go to the recycle centre.

### **Delen**

AWM shares products and tools with family. A garden tool was laying in front of AWM that AWM was going to share. Though products will not be shared with people he does not know.

AWM was an active participant of Nextdoor. Though that was to commercially working. And therefor did not work. As this extended to far across the personal town.

There are no possibilities or opportunities to share products besides calling each other. Whilst a neighbor asking to borrow something would be fine. As long as the risk to borrow it is low. I want the product to come back in the same and original state. They need to be respectful while using the product.

It is important that products that AWM shares come back in the same situation.

Sharing is an way more efficient way to go about with products.

I need assurance how people will treat the products. Who is going to pay when it breaks?

When having a sharing platform, Suikerkopje was a nice initiative. But they had to close as it was not professional enough. When there would be such very local sharing platform I would use it. But it has to be local for my postal code or street and not across that. Or that I could select what I would like. It must not become a commercial platform. It really has to go about my neighbourhood. Not those in Bergen. Only Bergen aan Zee. If the municipality would do this professional that would be nice.

### **Opknappen**

I also always try to refresh or restyle it. To bring it a bit of new life. Most often with furniture. Though with small electronic appliances it is harder to do that. I also like to do this. Its fun to do it.

### **Repairing**

I always try to repair it. I like to do that. But I do not always have the correct tools to do that. Or the correct knowledge or spare parts to do that.

### **Extra**

What really works to get rid of products is to put it on the street with a sign. Then people pick it up informally.

### **KEY insight**

Sharing platform by street, postal code, town, municipality

Sharing platform represented by the municipality in a professional manner (private data) but also managed well

Sharing platform noncommercial

Sharing platform should give assurance on who is responsible when it breaks, or what happens when it breaks

Sharing is granting Delen is gunnen

Sharing should be LOCAL

A platform should remain to its initial function and not go broader than that.

## **I.4.5 T. Med. - Survey follow up – 13-05-2020**

### **Generic**

T. is living in Schoorl and is the organiser of the local garage sales. It is organized by T. with 40 volunteers. This is a child theatre school that has lessons in theatre but they also organize and sell the garage sales multiple times during the holidays. Children range between 8 to 18. Also there is a youth café in the Blinkerd.



T. is not open to become a foundation. But also, it is mentioned that when T. stops, the whole thing will stop. She is the initiative leader. The only problem that is experienced is that there is not enough space to store products that will go to the garage sale. The input of products is immense. A lot of people come and bring me stuff.

The sold products in the garage sale go to the trips T. organizes with the children and the renting of space. The trips are 'art' trips for the children.

Not being a foundation also means not possible to apply for subsidies and funds. But this means that we do not need time for official meetings and other bureaucracy.

### Insight

When initiative leader stops, initiative stops

## I.4.6 H. T. - Survey follow up– 14-05-2020

I am a person that has a large group of friends, about 20, and we make it a sport to reuse all kinds of products and materials. I live in the municipality of Bergen and share and reuse a lot within my network.

I cannot handle the waste of materials. If you look at the local recycle centre it makes me cry. What people throw away is really disappointing.

It is important when we share that it becomes visible why or what we share it for, and that we know that when it is in use that it is used with respect and in the correct manner. For that you have to be open and honest.

We have an informal whatsapp group with a lot of friends and we share everything in an informal manner. When something is shared it gets back in a 'newer' state than we borrowed it, with a bottle or wine or something. Also this has to be done with respect. Do not over borrow or share products. We do have a makerspace in Alkmaar, this is a private one and we do all sorts of stuff there. This is like a clubhouse.

When I have repaired products or restyled them I get more and more attached to it. I

As example we have a hotel or pension in Bergen aan Zee. We have restyled and built this from the bottom up with friends from reused materials and products.

It is important that when you want to reuse or repair or restyle products you need a bit of fantasay. A bit of creativity. You need to be able to see it.

Sometimes it goes wrong in our group of friends, when somebody overuses products. Than he is kicked out of the group. You have to be respectful towards each other. But when you are kicked out of that group, there are no opportunities in Bergen to do this kind of things. There is no 'makerspace'. Only the repair café, but they cannot really repair a lot. Only small electronic appliances. And they have a lot of small rules, limiting opening hours etc.

Three key points for sharing are:

Open

Honest

Accepting no for an answer

It would be cool to have a place in between the recycle centre that sorts products for reuse in an informal manner.

We cannot talk with gemeente Bergen, because they are so formal and have too much bureaucracy. Talking to them is difficult. They often come and talk in a way that they work from a 'Not my job' principle. I have talked with 'wethouders' and municipality for plans for Bergen aan Zee, as I am the chairman of the local Foundation. Though, after five years a new 'wethouder' comes and does not know anymore the agreements we made 5 years ago. You are talking with someone with a shelf life. Also the local council does not have enough ambition and vision, or at least shows that.

To get this circular behavior across you have to show it to the people, so they will start thinking about it. This is not visible in Bergen. There are too many rules when you want to think creative. For that it becomes very important to have it local and small. You do not want to set the rules.

It can be helpful to have a place in which materials can be stored, and that can show or present these kind of things. So the results become also visible.

**If the municipality of Bergen would start a warehouse with reusable materials and products and shows what can be done with these kind of things this would be very valuable. Though this should happen as a pilot or experiment, and not set in stone within rules within rules. Also this should not become commercial like a secondhand shop. It should be way more low key and informal. For that you need an alpha man that 'sets' the rules, or how we do things, that makes action.**

**For this to happen the municipality should take the initiative and lead that pilot project. For that there is someone needed that has that as a full time job. Otherwise we get 'that is not my job'.**

**We need an initiative leader that realizes projects.**

**Otherwise the people without informal network will throw away products.**

## **I.5 Kringloop Tol thrift shop owner, 18-05-2020**

I saw the survey on the municipality of Bergen' Facebook. I need to talk to you. A casual interview with Owner of the thriftshop 4000m<sup>2</sup> in Egmond.

The first sentence; "je komt als geroepen".

I have arranged a lot of arrangement with Jan Houtenbos. A lot of agreements were made. But the management of the municipality changes so many times. I get no feedback on my questions, ideas and doings. The arrangements that were made were to put an adoption corner at the recycle centres of the civic amenity sites throughout the BUCH. Though now Jan Houtenbos is away, the arrangements are two, away..

Also I have the idea to start an 'bouw'kringloop at the municipality. Though for that I need to do a tender.. I get no other collaboration from the municipality. I have a lot of ideas, but I cannot spread my ambition. It would be hard to do it in Uitgeest, Castricum and Heiloo is easier as they are more willing. Really the only actor that has been a barrier for the progress towards all those ideas is the municipality. They just do not want to collaborate. And I get no facilitation or collaboration from the municipality. I already know the local contractors and local real estate families with whom I work. I also know that this contractor will help me to get the local contractors on board to get a building or contracting thrift shop going. Also I know the local real estate family in Egmond whom renews the products in these holiday houses every year with the newest products (Familij Groot/voort?. I get all the products from those houses.

### **Insights**

Within the informal open-ended interview it became evident that the owner was very motivated to stimulate circular behaviour and even to broaden his shop towards an 'bouwkringloop'. Though the only reason for not doing that was the lack of response from the municipality. As to that the owner does not proceed in realizing these ideas. This has to do with the required tender from the municipality but also the non active role taken by the municipality.

## **I.6 F. B. Repair café Schoorl Initiative leader 22-05-2020**

FB is an older person whom have been involved in the initiating of the Repair Café in Schoorl. The casual interview was on his experience on building an initiative in Schoorl.

I have initiated the Repair café in Schoorl. This happened when I was in Bergen and observed what it did there. They were running very good and were very busy. Beside repairing products, they were repairing the social fabric. Establish-

ing the possibilities to talk to each other and have a place to be. I have done this by the foundation Welzijn. Despite the efforts I am currently unsure about the stability and placement of the repair café in Schoorl. The municipality can say every minute that we have to leave...

The municipality is lacking the competences to proceed in these projects. As for example I have been trying to realize a neighborhood building already since 1994. I have build the calculations for an responsible sustainability investment and verified this with KPMG for the outcome of such building. Also I have been in contact with various funds from foundations to financial support this idea. Though the municipality cannot push this through. This perhaps because they have been changing the responsibilities of projects from councilors all the time. These are efforts for the citizens, but this also means to reduce for instance the pressure on the health system. Older citizens come there and talk for an hour, instead of doing that with other parties in the healthcare system.

I have every party in my hand, yet the municipality needs to be on my side for us to start taking action.

The main question for that to start an initiative is to come together and ask how we can realize it. How can we do it?

## Appendix J | Creative problem mapping brainstorm 3.3

The problem for the BUCH municipalities is that too much waste is produced by their citizens. This has been challenged by their resources policy plans and the development of the Circular Centrum project. To understand this problem better from all perspectives of the stakeholders involved a Creative Problem Mapping Brainstorm was practiced. The brainstorm consisted first of mapping out the relevant stakeholders. These are the municipality, the citizens and the local entrepreneurs. The municipality manages, leads and facilitates everything for its citizens, whereas the citizens live inside that municipality. The local entrepreneurs facilitate both the municipality and the citizens with products and services. From these three actors their problem related to the municipal problem was formulated and it was looked at what their wishes, needs, values and opportunities were. In parallel while doing their problems were iteratively re-framed until a central tension or problem was found.

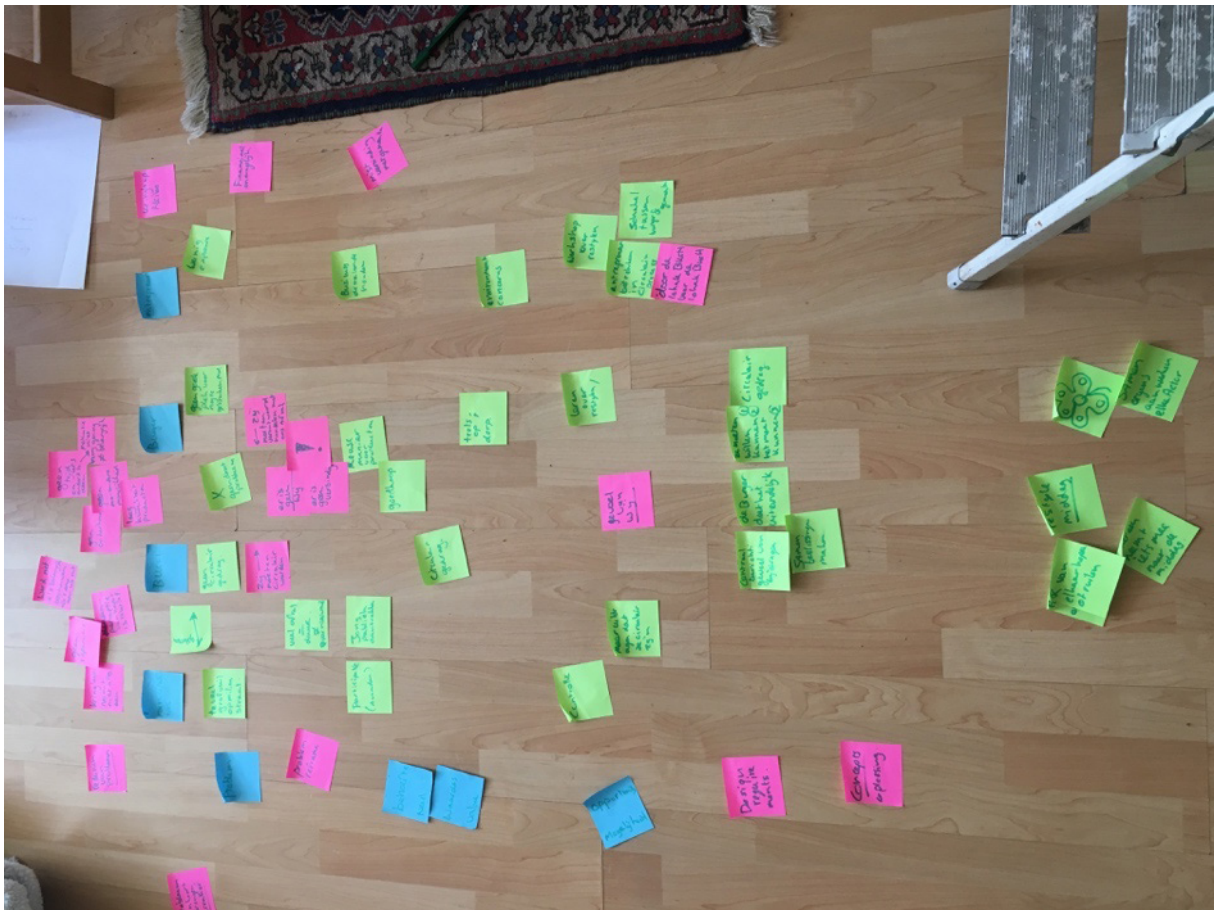


Figure 33: Creative Problem Mapping brainstorm

## Appendix K | Design opportunity brainstorm

### K.1 Brainstorm

All relevant insights from the descriptive survey were noted on wide yellow post-its and the key insights that came throughout the brainstorm on pink post-it notes. The green was used to show the positive and the blue the negative sides. The central question in the brainstorm session was, how can we go from each insight towards the enablement of circular behaviour for the citizens. This resulted in four design opportunities: Design for repair opportunity, Design for 'refresh' opportunity, Design for share opportunity, and Design for products between Thrift shop and Recycle center opportunity



Figure 34: Design Opportunity Brainstorm

## K.2 Reframing

From these spaces of opportunity, it was looked at the possible points for reframing. These were inspired by first asking ‘what can we do to’ questions. The reframing followed the principle of asking the following what if question:

***What if people would go in their mind or practices from A towards B, would they then be able to practice circular behavior?***

This resulted in the following set of reframe statements:

Frame	Reframe
Broken	Repairable
Not using	Someone else using
Get rid of	See someone else using
I cannot refresh / redecorate	We refresh / redecorate
I have	We have
I and They	We



### K.3 Reasons for 9R-behavior

Table 24: Various reasons for and against product disposal methods, from various interviews. Reasons why not and reasons why, show the reasons that make that specific behaviour possible or happen.

Circularity	Facility / method	Reasons why not	Reasons why
R3-R7	Marktplaats	People do not show up	Money from the sale
		Takes long, need to wait	Personal, you see who buys it
		No commitment or insurance	Easy from home, people pick it up
	Facebook	The product is to 'broken' or 'old' to be sold	Easy to put online
		Takes long, need to wait	Easy to put online
		Nobody wants the product any longer as its out-dated	Easy to see whom wants to pick it up
	Gratis op te halen	People do not show up	Easy to put online
		Takes long, need to wait	Somebody will be happy
		It is not worth it for others	
	Thrift shop	They do not accept all products	Somebody will be happy
		They will not accept 'broken' products or products that need a little bit of repair	Easy to drop of stuff, combine it with taking a look inside
			It is for a good cause
	Give away	Nobody wants it in my circles/network	No waiting, all of of time open
			People will be happy with it, nice to give it away to somebody who needs it
	Self-repair	Nobody wants a 'broken' product	
		I cannot repair it	Easy to repair
		I do not know how to repair it	
R8-R9	Recycle Centre	The spare materials cannot be found	
		Easier to buy a new one	
		Not frequently open	It can still be repaired
		Not open when I am available	
		Easier to buy a new one	
		Products end up in incineration, that is bad for the environment	Easy
		Product can still be used by others, it's a sin	I can combine it
			It is good as they recycle it
			'broken' products belong here
			When I want to dispose, it can be disposed

## Appendix L | Ideation session for design opportunities

These reframe statements were used as inspiration source to develop ideas. For developing ideas a brainstorm session was followed by asking 'How to' questions. These 'How to' questions were rephrased questions that were asked during the reframing session. From that brainstorm 15 ideas emerged, inspired by the reframe statements.

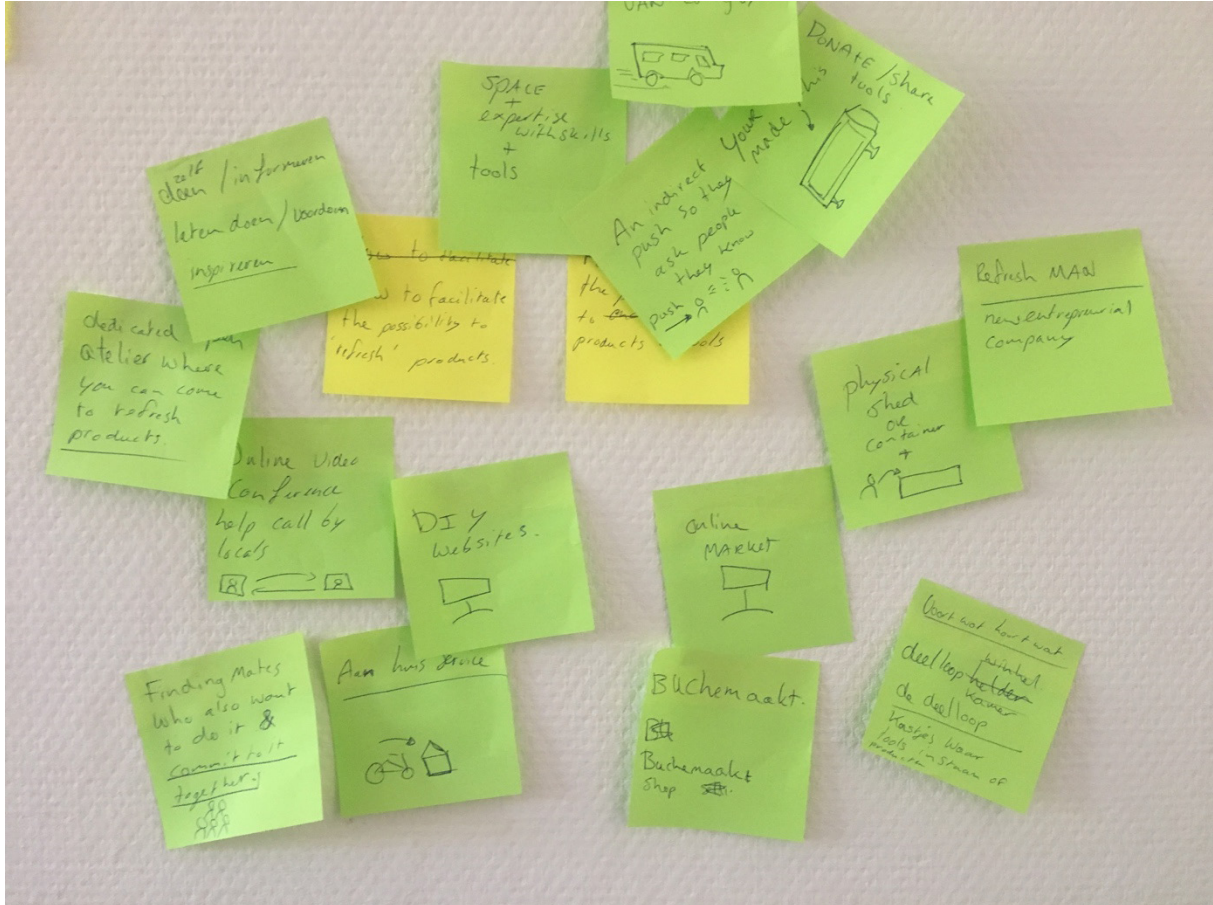


Figure 35: Ideation brainstorm

The ideas were evaluated following the vALUe framework (van Boeijen et al., 2013). In this framework it is looked at the Advantages, Limitations and Uniqueness. See Table 25: vALUe framework, mapping out ideas. This framework was used to find a set of advantages and unique values that could be used together for conceptualizing the ideas.



Table 25: vALUe framework, mapping out ideas

Idea	Advantages	Limitations	Unique
DIY website for 'refreshing' products	Low cost, can be self-generated,	Does already exist	Low key
Do yourself, Inform, Somebody else does, Show it, Inspire	Various sets on literally how to do it	Not an idea or concept	Show, inform, Inspire, Do yourself. Learning effect so it can grow
Online video help calls	Online, easy accessible,	Someone has to be available, online not always practical as it's a physical thing to do	Easy accessible, 'on-demand' help
Refreshing atelier	Physical space, own timing, physical repertoire of activities	Expensive as requires rent and maintenance, surveillance	Physical place & opportunity
Committing together	Finding other people that are motivated to commit to it as a group	No real facilitation of the practice	Group commitment
Home refresh service	Active solutions	Introducing competition to local entrepreneurs	Refresh service could be interesting for the local entrepreneurs
Space + expertise & skills + tools	Sharing & Refreshing by refreshing with shared tools	Expensive as requires rent and maintenance	Sharing & refresh
The refresh van	On-demand share service	Very expensive	On-demand, flexible
Indirect push	Spread sharing principles by another activity, saying that for the workshop they need to ask their friends to share them their tools	Requires motivation and time from the people	Spread sharing by refreshing
Physical sharing shed	Physical place to kickstart sharing principles	Expensive as requires rent and maintenance	Physical place
Your tool made this	People will see what their tools made, making it visible what other people to with their tools	Needs a place to store the tools	Visibility of activities
Online share market	Online is cheaper	Already a lot of solutions online, nextdoor, facebook, peerby.	Cheap
Buchemaakt	A shop that sells products made in the BUCH	Expensive	Locally produced
De Deelloop kast	Sharing products through small cabins spread, giving access to tools etc.	How to regulate!	accessibility

## Appendix M | De BUCH rond maken

### M.1 Initiatief Makers Pakket





## Introductie

Het starten van nieuwe, circulaire initiatieven wordt met behulp van het Initiatief Makers Pakket mogelijk gemaakt. In dit pakket is een proces beschreven waarin stappen doorlopen worden om de initiatieven verder uit te werken en in zo goed mogelijke banen te leiden. Tevens wordt het pakket gezien als hulpmiddel in de communicatie naar de buitenwereld.

Wanneer mensen bij elkaar komen ontstaan vaak ideeën. In dit pakket wordt de gebruiker dan ook aangemoedigd om actief opzoek te gaan naar, en in gesprek te zijn met, andere mensen om zo tot nog betere ideeën te komen en deze verder uit te werken.

Daarbij is het van belang dat de haalbaarheid van een initiatief wordt gevalideerd door alle belanghebbenden. Het creëren van draagvlak is daarbij van essentieel belang. De mensen waarin het initiatief wordt toegepast, moet dus goed kunnen inspelen op de kennis, ervaringen en wensen van alle partijen die hierbij betrokken zijn. Ga naar buiten en praat met mensen!

## Een aantal belangrijke gedachtes

- Innoverend denken en doen is cruciaal om het initiatief uit te voeren
- Probeer een dialoog te voeren met mensen die het er niet mee eens zijn, om zo samen het wel eens te worden
- Wees creatief en ben niet bang om het fout te doen
- Neem degene die het initiatief gaat gebruiken centraal in de uitvoering van het initiatief
- Ga in dialoog, experiment en test! Go into the field!
- Achterhaal hoe mensen die achter het initiatief staan, een bijdrage kunnen leveren
- Blijf pragmatisch
- Laat zien wat het resultaat is van het initiatief
- Blijf altijd in dialoog met alle partijen en ook het publiek
- Blijf open, eerlijk en vertrouw elkaar
- Blijf vragen stellen
- Blijf routines bevragen om deze zo te doorbreken en je te verwonderen
- Blijf ambitieus en zet het initiatief door
- Enthousiasmeer anderen met je initiatief
- Elke betrokken partij is van belang
- Geloof het perspectief van anderen



N.B.: Het Initiatief Makers Pakket is ontworpen en gevalideerd op basis van persoonlijke ervaringen en theoretische onderbouwingen. Er zullen meerdere mogelijkheden en werkwijzen bestaan ter realisatie van circulaire initiatieven. Kijk voor meer informatie op [DeBUChrond.nl](http://DeBUChrond.nl)

# 1. Het initiatief

## Wat voor soort circulair initiatief is het?

De eerste stap is het in kaart brengen hoe uw initiatief een bijdrage levert aan een circulaire transitie. De eerste stap is het omschrijven van uw circulaire initiatief. Omschrijf hoe uw initiatief kan bijdragen aan een circulaire transitie.

verminderen  
Opknappen  
Reviseren  
Herbestemmen  
Hergebruik  
Het anders doen  
Repareren

*Mijn idee draagt bij door...*

## Welk initiatief heeft u voor ogen?

Omschrijf enerzijds het probleem, de actuele situatie en omschrijf anderzijds hoe uw initiatief hiervoor een oplossing zou kunnen zijn. Beantwoordt hierbij de volgende vragen: Wat is het? Waar is het en Hoe werkt het? Bedenk een pakkende titel voor uw circulaire initiatief!

*Titel*

*Schets*

*Beschrijving*

Wat ? Waar ?

Hoe groot Hoeveel ?

**Hoe**

Waarom ?

## 2. De betrokkenen

### Wie is er bij betrokken?

Het is belangrijk om in kaart te brengen voor wie het initiatief bedoeld is en welke betekenis het initiatief voor hun heeft. Denk erover na op wie uw initiatief nog meer invloed zal hebben en wat het effect hiervan is. Waarom hebben deze groepen mensen met het initiatief te maken of is het initiatief voor hun belangrijk?

Ook zijn er altijd mensen die nog missen die wel belangrijk zijn of er mee te maken hebben. Wie zijn dat?

Geef hier aan wie de belanghebbende zijn en ook belangrijk zijn om het initiatief op te zetten.

Ik ben ...

Het is het belangrijk voor...

Ik ken ...

Deze mensen hebben veel invloed...

De mensen die missen zijn...

### 3. Waar het initiatief komt

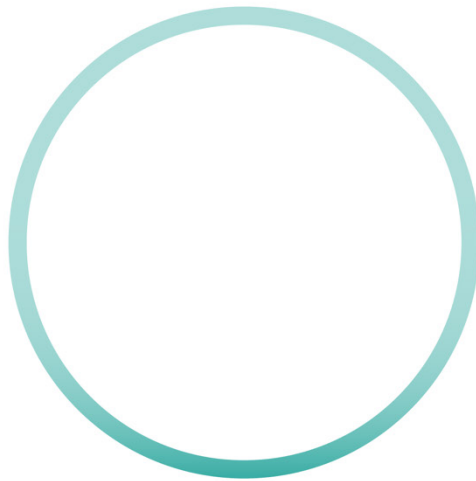
#### Waar wil je het initiatief realiseren?

De locatie is een zeer belangrijk aspect van het initiatief om in kaart te brengen. Waarom past het op die locatie? Beschrijf deze redenen zo goed en uitgebreid mogelijk op. Ook helpt het enorm om te gaan praten met mensen in uw omgeving over wat de juiste locatie zou kunnen zijn. Kijk hiervoor bij de in de vorige pagina ingevulde mensen. Ga langs, en praat er over! Dit is ook goed om na te gaan of er genoeg draagvlak is voor het initiatief, en waar dat dan is.

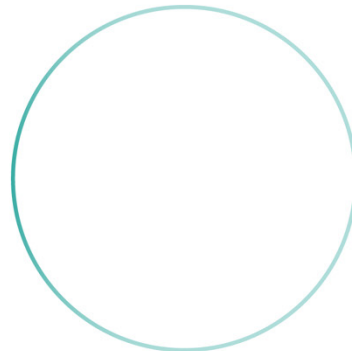
Geef in het kaartje aan waar het initiatief gerealiseerd moet worden, en wat de redenen zijn om dat daar te doen.



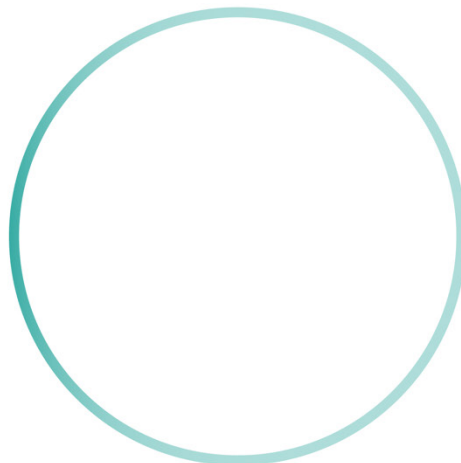
De eerste rede is ...



De tweede rede is ...



Er is behoefte omdat ...



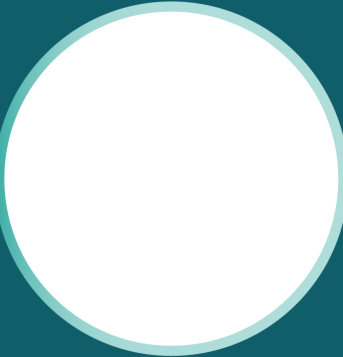
## 4. De kern punten

### **Wat zijn de drie kern punten waarom het belangrijk is om dit initiatief te realiseren?**

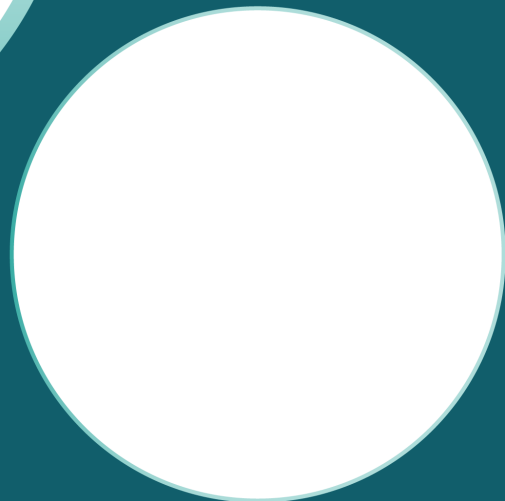
Het is belangrijk om de kern van je initiatief goed te kunnen formuleren. Dit helpt om het initiatief beter te begrijpen en nog duidelijker te kunnen communiceren naar anderen toe. Beschrijf de drie kernpunten waarom het initiatief belangrijk is.

Het idee is belangrijk omdat ...

Ook is het belangrijk omdat ...



Ook is het belangrijk omdat ...



# 5. De vervolgstappen

## Wat is er nodig om vervolgstappen te kunnen zetten?

Nu het initiatief op papier staat is het belangrijk om te vervolgstappen in kaart te brengen. Stel jezelf hierbij de vraag wat er nodig is om deze vervolgstappen te kunnen zetten. Waarom is dit nodig? Door hierover na te denken wordt er automatisch gedacht over wat er nodig is in de toekomst: de langere termijn.

Een stap verder is het uitwerken van actiepunten op de benodigdheden om verder te gaan. Dit kan gedaan worden door je af te vragen hoe deze benodigdheden het best bereikt kunnen worden, door wie en hoe je dat gaat doen.



*Wat er allemaal nodig is voor de volgende stappen...*

*Waarom dat nodig is ...*

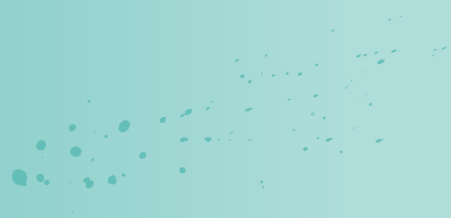
**Praten met bewoners**

**Beter beeld krijgen  
of het nodig is**

*Hoe ik dat ga doen ...*

**Buurthuis bezoek  
& mensen interviewen**





de **BUCH**  **TU**Delft

## M.2 Four stages of a collaboration process

Based on (Bailey & Koney, 2000; Tuckman, 1965; Tuckman & Jensen, 1977) (Gajda, 2004) explains the collaboration process for establishing strategic alliances through 4 stages. These stages are explained and elaborated upon in Table 26.

**Table 26: The four stages of collaboration,** ( Bailey & Koney, 2000; Gajda, 2004; Lucidchart Blog, 2019; Tuckman, 1965; Tuckman & Jensen, 1977).

#	stages	Explanation
1	Assemble & Form	Come together for the first time to form the initial mission & vision. Discuss what the value is of coming together. Setting expectations. Getting acquainted with the project, with each other. Looking for the goals of the team. The team still needs guidance from the team leader.
2	Storm & Order	Find the collective ambition. Though also find the individual values and interests Finding interpersonal role in the initiative. Can be interpersonally intense. Establishing the norms and strategies of the collaborative effort. What are the goals, objectives, indicators and outcomes?  This is an moment in the collaboration that requires full effort and dedication and disagreement between people in the team. For the this conversation needs to be guided by the team leader, but the content is created by the individuals themselves. During the storm it is made into order. Also this is the moment to reflect whether someone is missing that is needed. Are we missing any capabilities? Capacity to do the initiative process (idea validation/budgeting/testing/formalizing).
3	Norm & Perform	When everyone has a place it becomes important that each individual is treated with respect. Respect each others differences and opinions. Remember the collective goal. This is the step when action or the real performance happens. For this it is important to have a feedback mechanism in place such as double loop learning.
4	Transform & Adjour	Work with evaluation, data and assessment. How is it going? What needs to happen next to proceed. Assess the process, how is it going? Is it on track? How can we keep the project running? What is the long term strategy for continuing the project? How is the collaboration going between all individuals? Reflective session.

# Appendix N | Creative session

## N.1 Creative session explanation

The creative session was used to explore the process the municipality could follow to determine what an initiative needs and what they can do themselves, to take action. For this reason, the research question for the session was, how can the municipality facilitate the initiative in taking steps further for operationalising the initiative?

### N1.1 Participant Sampling

In purpose of validating the design an interactive session was organised. The participants were sampled by guidance of the potential profiles that could participate in the imagined collaborative sessions. For this reason, a wide variation of people was selected. The people were selected from the pool of in-depth interviewed people for this graduation project. The group for the interactive session was selected in such way that a wide variety of people were together in a session. This to maximise the representativeness of such a collaborative session and serving as an exemplary case (Patton, 2002; Vaca, 2018).

A total of four participants were selected. The first participant was a community worker in the town of Schoorl to which the session was applied. The participant had a wide range of knowledge on the area and its inhabitants. The second participant was selected for its experience in initiating initiatives for citizens in the municipality of Bergen. The participant was expected to be the initiative leader for such a session. The third participant was selected for its knowledge and experience as a citizen in enacting circular behaviour. The participant served as a 'expert' on citizen circular behaviour. The fourth participant was selected for its neutrality and normality serving as a 'normal' citizen (compared to the 41 people spoken to in intervention 1.0).

### N1.2 Session

The session was one and a half hour and held in the evening to promote elastic thought as suggested by Mlodinow (2019). For the session two media were used: Zoom and Mural. Zoom (2020) is a video conference tool that has been popularized during the COVID-19 pandemic as, among others, an qualitative research method (Archibald, Ambagtsheer, Casey, & Lawless, 2019). The tool helps to communicate and see each other. The other tool, Mural (2020), was used as an online whiteboard tool to collaborate. This tool enables the participants to place and move digital coloured post-its and write on those post-its. This serves as an alternative to facilitate an creative session using post-its (see for instance using post-its for creative faciliation: Tassoul, 2009). Such session enables people to place and put their ideas out. This to built upon each other ideas. This is a very fruitful and easy way to facilitate an environment for the participants to let novel relationships emerge, and so develop new ideas (Adarves-Yorno, Postmes, & Haslam, 2007; Heilman et al., 2003; Mlodinow, 2019; Sleeswijk Visser, Stappers, Lugt, & Sanders, 2005).

The session was structured in 3 sections. The first section was a welcome and instruction section consisting out of 3 parts that was 20 minutes long. The second section was a collaborative body of 2 parts that was 50 minutes long. The last section was a reflection and closing section of 2 parts that lasted 20 minutes. These sections with their parts are briefly explained below, for the script and the Mural board that was used in the session see appendix N2.

## Section 1 – Welcome

The first section was to get familiar and comfortable with the session, the Mural tool and each other. For that three parts were distinguished. According to Mural (2018) other relevant reasons for having such welcome section are:

- Reduce shyness of people
- Increase trust across parties
- Making everybody comfortable
- Familiarize with the MURAL tool
- Encourage for self-reflection
- Start to bond on an emotional level
- Boost the creative thinking and/or elastic brain mechanisms (Mlodinow, 2019)

### Part 1 – Welcome

The first part was to introduce the session and getting acquainted with the Mural workspace. Also the concept of 'De Schoorlse Ronde' was explained to the participants that did not know the concept.

### Part 2 – Who is around the table?

This part served as interactive and easy exercise to get familiar with the tool of Mural and with each other. The participants were asked to place post-its on the locations they were and where they would like to be. While doing they were asked to explain something about what they posted. This helped them to introduce themselves to each other in a easy way.

### Part 3 – What are your super skills?

This part served as follow-up to explore what super skills each person had. This to get an better view of whom we have around the table in respect to skillsets.

## Section 2 – Collaboration

The second section was the body of the creative session. In this part the aforementioned 'makers-pakket' was tested and used as basis to build upon the initiative concept for further initiative development. The second part was used to bring the concept further into action.

### Part 4 – De Schoorlse Ronde

The fourth part was used to explain the initiative of 'De Schoorlse Ronde' in a structured way, which was build using the 'makers-pakket' (based on the business model canvas (Osterwalder & Pigneur, 2010)). Each box was explained following the suggested sequence for filling the Business Model Canvas by Osterwalder & Pigneur (2010). During the explanation the participants could add post-its and together collaborated to explore the options and opportunities for making the concept of the initiative having a better product/market fit in Schoorl. The results of this was an elaborated and more detailed version of the initial initiative. And so a closer step towards operationalizing the circular initiative.

From the collectively formed initiative the next exercise was to put wide yellow post-its individually on the model. These post-its should contain the actions necessary to realise what was in each of the boxes. This to make action points visible for each of the box.

### Part 5 – Action points

This part took all the actions that were posted in the previous part. The actions were put on a line and for each action is was asked whether we could do it ourselves or if we needed someone or something to do that. In this way each action was put on either side of the line.

The next step in this part was to make action points out of each of the actions that were needed to be done. These actions were asked on blue post-its: How can we realise or acquire that? To elaborate upon that an extra purple post-it was used to ask: Do we need something extra for that?

This last step is the critical step, serving as the probing framework for eliciting the deeper needs of the initiative leaders for taking action.

### ***Section 3 – Closing***

This section served as last part to reflect together and close the session.

#### **Part 6 – Reflect**

For reflecting purposes, a feedback grid was used inspired by IBM' Design Thinking Feedback Grid (2020). The grid contained the questions: What worked? What did not work so well? What can be done better? What was missing? The grid was used in the session more as a guidance tool for reflecting together as opposed to its intended use to individually put post-its into the grid. For that the richness of this part was in the conversation that came.

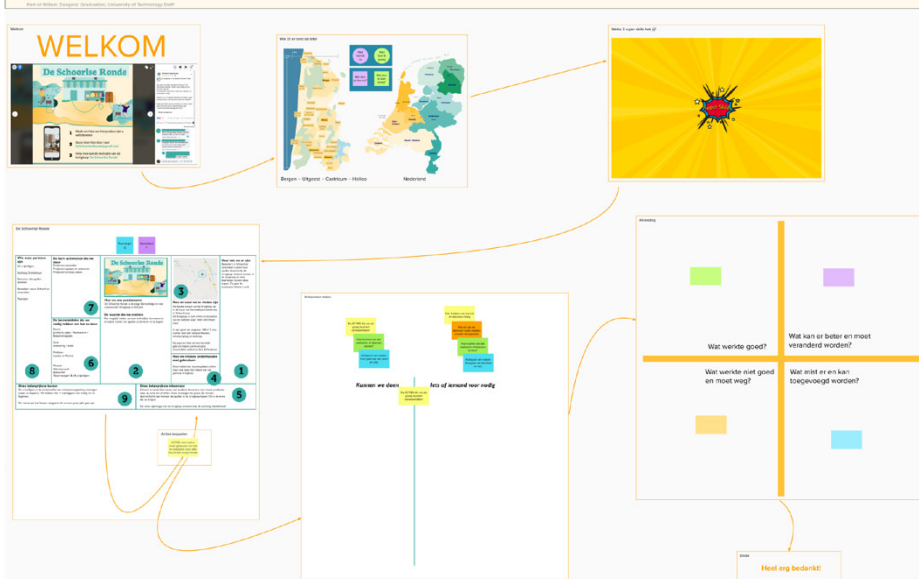
#### **Part 7 – End**

Within the last part a specific question was asked to the participants. The question was: What is your opinion on this type of collaboration when this is provided by the municipality? This question was asked to elicit the participants reaction to what such collaboration would mean to them when this was provided by the municipality.

### N1.3 Insights

### Before session – Everything

**De BUCH rond maken**  
Samen doen we het.



### After session – Everything

**De BUCH rond maken**  
Samen doen we het.

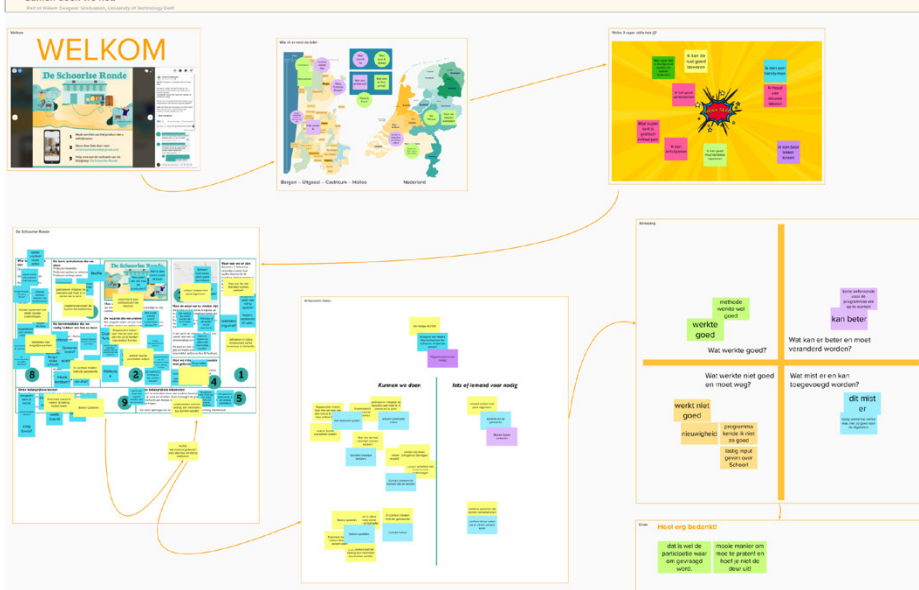


Figure 36: Mural board results

The first section was a critical section to get familiar both with the way of working but also with each other. The most important learning and insight from this section was the importance to get acquainted with the tool. The participants were all not tech-savvy. For that reason, it took more time to get acquainted with the tool than was expected. Despite these obstacles the participants became quite familiar with the Mural tool and were able to put post-its themselves all over the place. These first parts were very much liked by the participants as it was an low-key and easy way to get familiar with each other.

The most interesting period in the whole session was the moment when we went through the part of 'De Schoorlse Ronde'. The participants were able to build upon each other very well. Key for that was the fact that the initiative was already made tangible. This enabled the participants to experience how it could be, reflect whether it was logical or fitting in Schoorl, and then replied with their ideas. The building up upon each other's ideas made this part the most interesting. Collectively we were able to combine ideas and come up with an initiative with a better fit to Schoorl.

From the newly made initiative, action points were made. This made clear that for each of the boxes some components had to be done before others. This was made explicit and centralized in the yellow action post-its by defining what action needed to be done for each of the box for it to go a step further. This was a very easy task to do and helped to converge from the ideas made in the blue post-its into practical actions.

In the part of 'Making Action points', it became clear that some actions could be clustered and belonged to the same theme. For that reason, some actions were clustered in the Action points. This to make it a 'single' set of actions instead of multiple separate ones. This promotes the effect to bring multiple actions into one action point. For that reason, one person could be serving as the leader for such point.

Central in the feedback was that due to the media of Zoom and Mural used, the session wasn't as smooth as expected. It would have been even better to do these kinds of sessions in real-life. However as acknowledged by the participants this was not possible due to the COVID-19 pandemic. The online version of collaborating however, served as a low threshold in participating in such session. This was mentioned by one person in specific to be the reason for being here.

Each participant referred to two core answers of the last question posed. This is the type of participation that everyone in my social circle is asking for & this is a very nice way to discuss together the potentials for such initiative in which I really have a saying.

## **N1.4 Limitations**

A critical limitation that has to be mentioned is the limitation of the validation of the contents of the tool. Due to the 'newness' of such a collaborative session the main focus was having such a session. As opposed to a more in-depth detailed focus on the contents of the designed 'Making action points' tool inside the session. The tool was said to be easy to use and made sense. Also, it was clear what the next steps would be for getting 'De Schoorlse Ronde' further. However, the session did not test nor validate whether those steps would indeed be the right steps to take.

## N.2 Creative session script

Mensen die geïnterviewd zijn doen mee aan de sessie:

- 1 persoon die veel weet van alle mensen in de gemeente Bergen
- 1 persoon die een initiatief heeft gestart in de gemeente Bergen
- 1 persoon die duurzaam probeert te leven in de gemeente Bergen
- 1 persoon die duurzaam leeft en dit zelf regelt in de gemeente Bergen

Lengte sessie: 90 minuten.

Via Zoom & Mural als online video conference tool en collaborative working tool.

### Goede Avond! – 2 min – 00:00-02:00

Voordat we beginnen wil ik graag vragen of ik de sessie mag **opnemen** zodat ik het kan terug kijken. Ik zal de opname en alle inzichten volledig anoniem gebruiken. Het is dus **niet** naar een van jullie te herleiden. Mijn vraag is of jullie hier allen mee akkoord gaan?

### Welkom – 8 min – 02:00-10:00

Voordat we beginnen wil ik even uitleggen wat de doeleinden zijn van deze sessie, en die zijn tweevoudig.

De eerste om concrete stappen te zetten voor het realiseren van een kringloop in Schoorl. Om een beter beeld te krijgen en hier een verdere invulling aan kunnen geven.

Ten tweede om een advies te geven aan de gemeente vanuit mijn afstudeeropdracht. Deze werkvorm speelt daarin een centrale rol in dat advies.

Het hoofddoel is het mogelijk maken vanuit de gemeente om een werkvorm te creëren waardoor circulaire initiatieven in de gemeente kunnen worden gerealiseerd.

De Schoorlse Ronde is dus voor degene die het niet weten een kringloop concept dat ik samen met Schoorl community en Eveline heb opgezet.

Nou dit is dus Mural. Hierin ga ik de sessie leiden. Het betreft een interactieve sessie waarin niks goed of fout is. Elke mening en argument telt. Ook als je denkt dat het geen goed antwoord is is het toch wel een goed antwoord. Dit heeft er voornamelijk mee te maken dat we kunnen bouwen op elkaars ideeën. En dat is nodig om tot goede resultaten te komen. We bouwen op en met elkaar hieraan.

In Mural kan je inzoomen en uitzoomen. En het scherm verplaatsen. Kan iedereen dat eens proberen? Als je een trackpad hebt kun je met je vingers zoals op een smartphone in en uitzoomen. En met een muis kun je dat met de scroll knop doen.

Wat we voornamelijk gaan doen in deze Mural is post-its plakken en deze verschuiven.



Probeer allemaal maar eens dubbel te klikken en dan zie je dat er een post it gemaakt word.

Hier kun je weer op klikken en dan kun je er iets in typen.

Ook kun je erop klikken en de kleur veranderen.

**Ik doe het ook even voor.**

Vervolgens kun je de post-its ook nog verschuiven. Nou nu gaan we dit even proberen met z'n alle doormiddel van twee kleine opdrachtjes.

### **Wie zit er rond de tafel? – 5 min – 10:00-15:00**

We kennen elkaar vast niet allemaal.

Ik heb twee kaartjes gemaakt, BUCH en NL.

Aan de rechter zijde zie je de twee ronde post-its en twee vierkante. Je kunt hier naast de post-it dubbel klikken en dan krijg je een zelfde post-it. Kunnen jullie de post-its invullen en op het kaartje zetten?

Nu gaan we gewoon even de tafel rond, kan iemand eens uitleggen welke post-its die heeft geplakt en waarom?

... kun jij eens uitleggen over de post-its die je hebt geplakt?

### **Welke 3 super skills heb jij? – 5 min – 15:00-20:00**

Nu we een beetje weten wie we om de tafel hebben wil ik graag vragen of jullie in dit canvas jullie 3 of meer super skills willen plaatsen. Ik heb er zelf ook al een paar geplaatst ter inspiratie, en mag van persoonlijk tot professioneel. Dat maakt niet zoveel uit. Je kunt weer de post-its plakken door te dubbel klikken.

Kan iemand iets vertellen over zijn super skills aan de hand van een voorbeeld om het wat concreter te maken?

(stel ook vragen erover)

Nu weten we wie we zijn, wat we kunnen en gaan we centraler kijken waarom we hier zijn en gaan we in op De Schoorlse Ronde.

### **De Schoorlse Ronde – 15 min – 20:00-35:00**

Ik heb De Schoorlse Ronde verder uitgewerkt aan de hand van het business model canvas. Dat is een framework wat je kan invullen om zo gestructureerd je business model neer te schetsen.

Dat zie je hier. Dit heb ik zelf gemaakt aan de hand van interviews maar ook mijn eigen invulling. Het is natuurlijk open voor input vanuit jullie, daarom hebben we deze sessie ook. Samen geven we de kringloop hier dus de vorm die hij zal krijgen.

Ik neem jullie mee door de punten en heb hier maximaal 15 minuten voor staan.

Ik ga door elk aspect heen, en leg deze even kort uit en dit doe ik in de genummerde volgorde. Dan is het ook de bedoeling dat jullie opmerken wat er toe gevoegd moet worden, en wat er veranderd moet worden en dan hebben we het daar even gezamenlijk over. Dit kan met behulp van een post-it te plaatsen in de kleur zoals ze boven staan.

Er door heen gaan ....

### **Acties koppelen– 5 min – 35:00-40:00**

Nou nu we weten waaraan we werken, wil ik graag met jullie acties gaan koppelen aan elke box voor wat er moet gaan gebeuren om het te gaan realiseren.

Dit doen we met de **gele post-its**. En we gaan dit per box doen. Hierin gaan we **ieder voor zich** in elke box een aantal acties maken. Dit doen we binnen 4 minuten. Kijk ook wat een ander typt, en zorg ervoor dat er niks dubbel komt te staan. Wil je het uitbreiden dan plak je de post-it gewoon erbij.

### **Actiepunten maken – 10 min – 45:00-55:00**

Nou nu we de acties hebben ga ik ze in het volgende model kopiëren, daar ben ik even 1 minuutje mee bezig.

*Kopieer acties en sleep ze naar rechter model. Zet ze op de middel lijn.*

Nu gaan we van deze acties kijken hoe we dat kunnen realiseren. Dit is natuurlijk geheel vrijblijvend. Als we straks deze meeting afronden betekent dit dus niet dat je ook echt daadwerkelijk deze acties moet gaan doen.

Nu gaan we eerst kijken voor elke actie, of we die zelf als groep al kunnen doen. Of dat we daar iets of iemand voor nodig hebben. Dus dat het buiten ons als groep ligt.

Nu gaan we kijken voor elke actie hoe we dat kunnen realiseren met de blauwe post-it.

Dan als extra vraag die we hier gelijk bij gaan stellen is of daar nog iets extra's voor nodig is.

// hier doen we het en bespreken we het //

Nu hebben we aan de hand van het canvas dat we samen hebben gemaakt en de actiepunten die we hebben, best wel een goed begin van de vervolgstappen om de kringloop van de grond te krijgen. We hebben nog niet bepaald wie wat gaat doen en hoelang dat duurt en wanneer. Maar dit zou nu wel bepaald kunnen worden, maar dat gaan we niet doen in verband met de vrijblijvendheid die ik aan jullie allen gun.

Het zou natuurlijk supergaaf zijn als dit door gezet kan worden, maar dat is geheel vrijblijvend. Want ik heb jullie uitgenodigd voornamelijk om mee te werken aan mijn ontwerp afstudeeropdracht.

**Afronden – 5 min – 55:00-60:00**

Nou dat was tot zover de sessie eigenlijk.

Nu wil ik nog kort even reflecteren met behulp van een kader. Hierin zie je vier plaatsen waar je ook weer post-its kan plakken. De vraag of jullie daar je feedback op kunnen plaatsen op de post-its. En dan kunnen we die gezamenlijk even nog bespreken.

**Einde – x min – 60:00-xx:00**

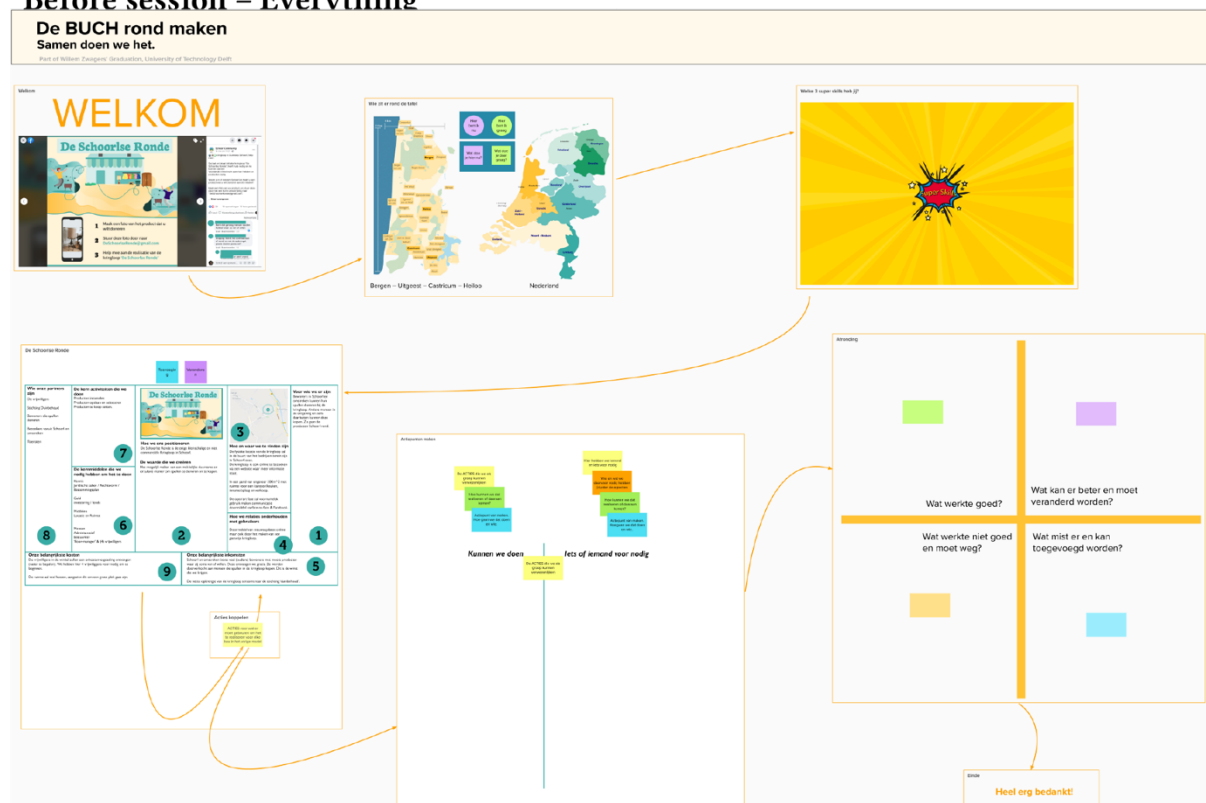
**Dan wil ik jullie enkel nog om een laatste post-it te vragen over wat jullie er van vinden als de gemeente zo'n soort werkvorm (online of offline) zou aanbieden.**

Zijn er dan nog vragen of opmerkingen die belangrijk zijn?

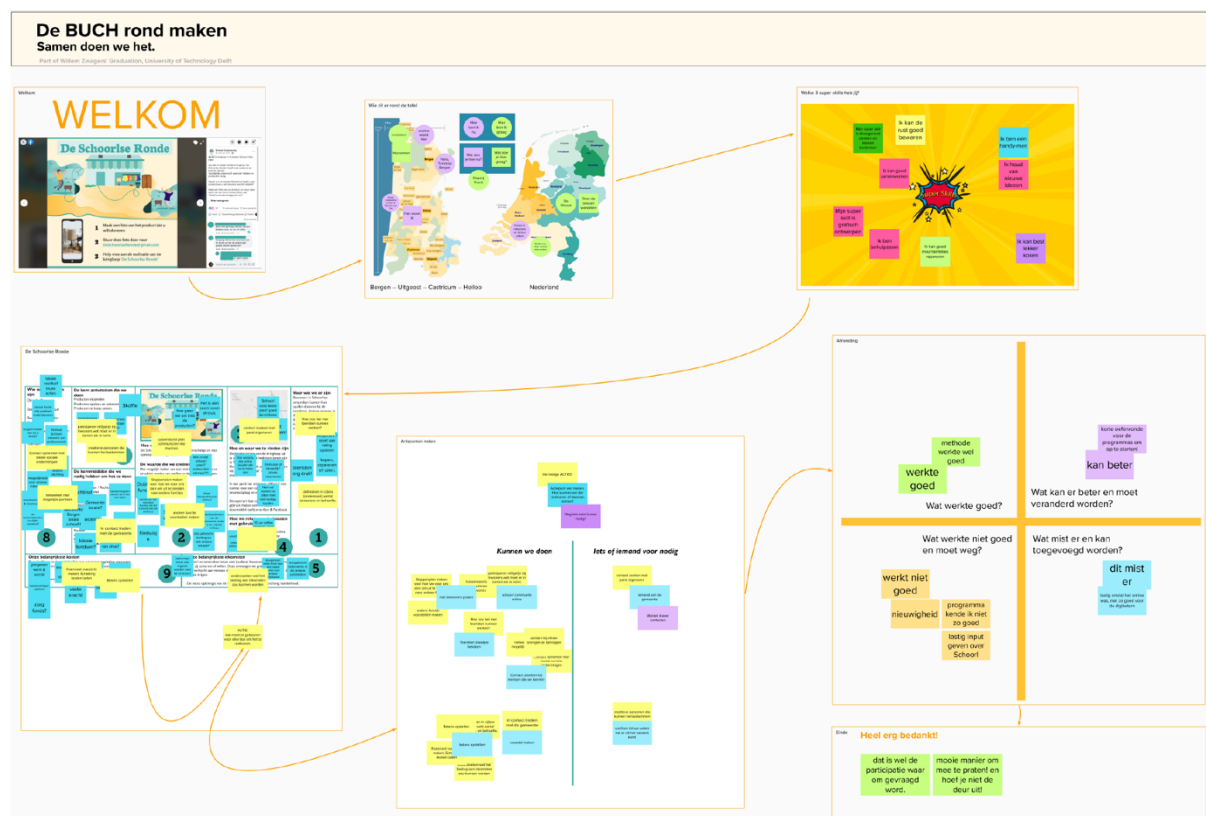
### N.3 Mural screenshots

## Overview of Mural

## Before session – Everything



### After session – Everything



## Part 1/7 Mural

### Before session – Welkom – Part 1/7

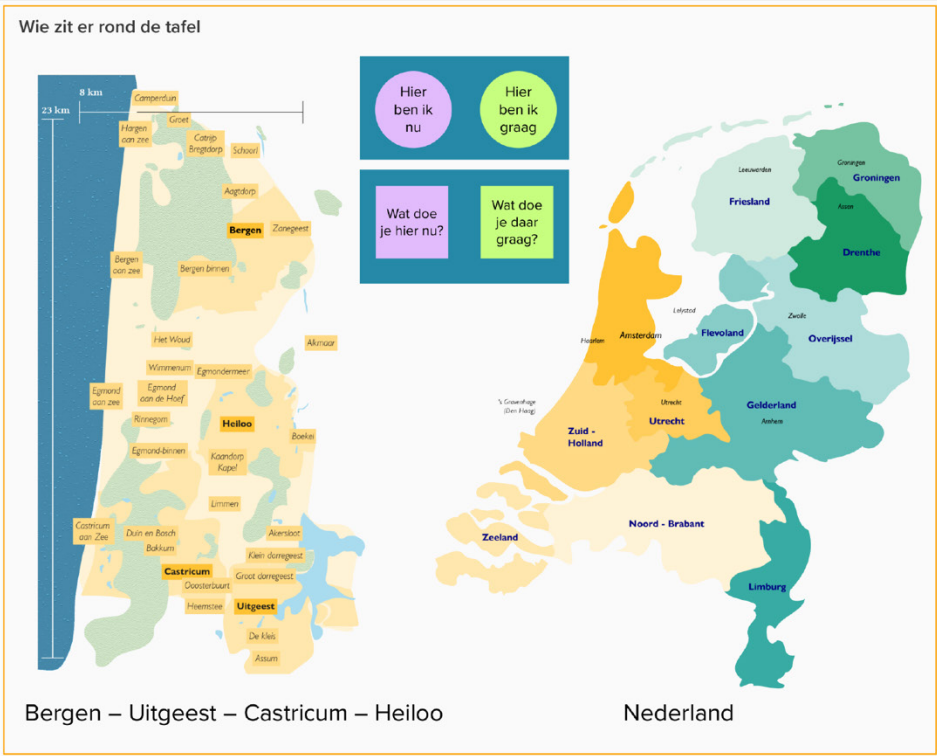


### After session – Welkom – Part 1/7

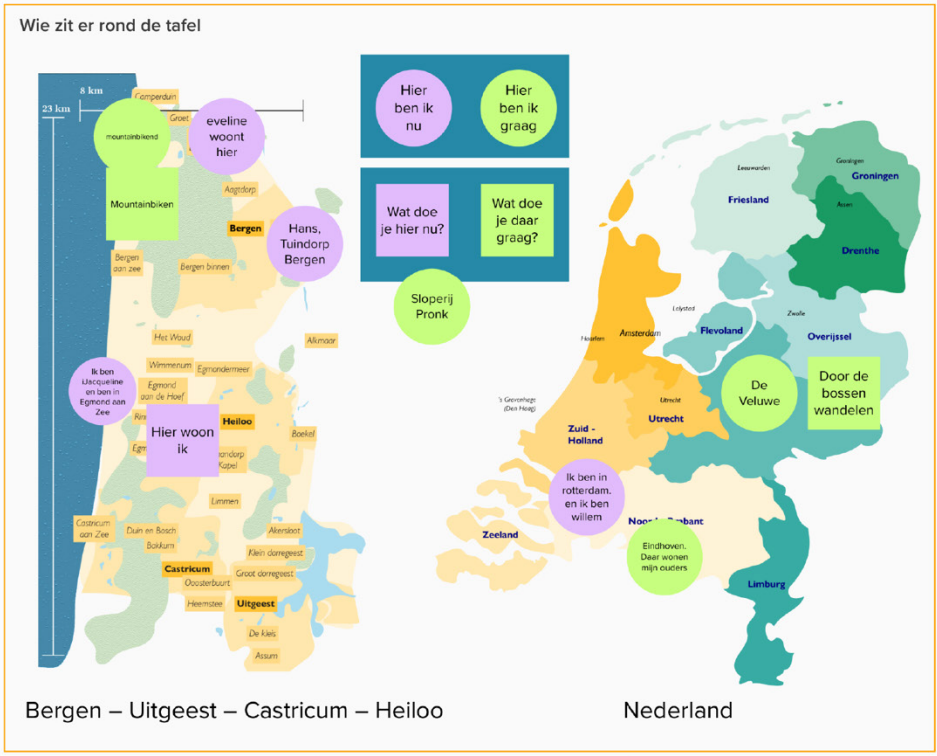


Part 2/7 Mural

Before session – Wie zit er rond de tafel?– Part 2/7

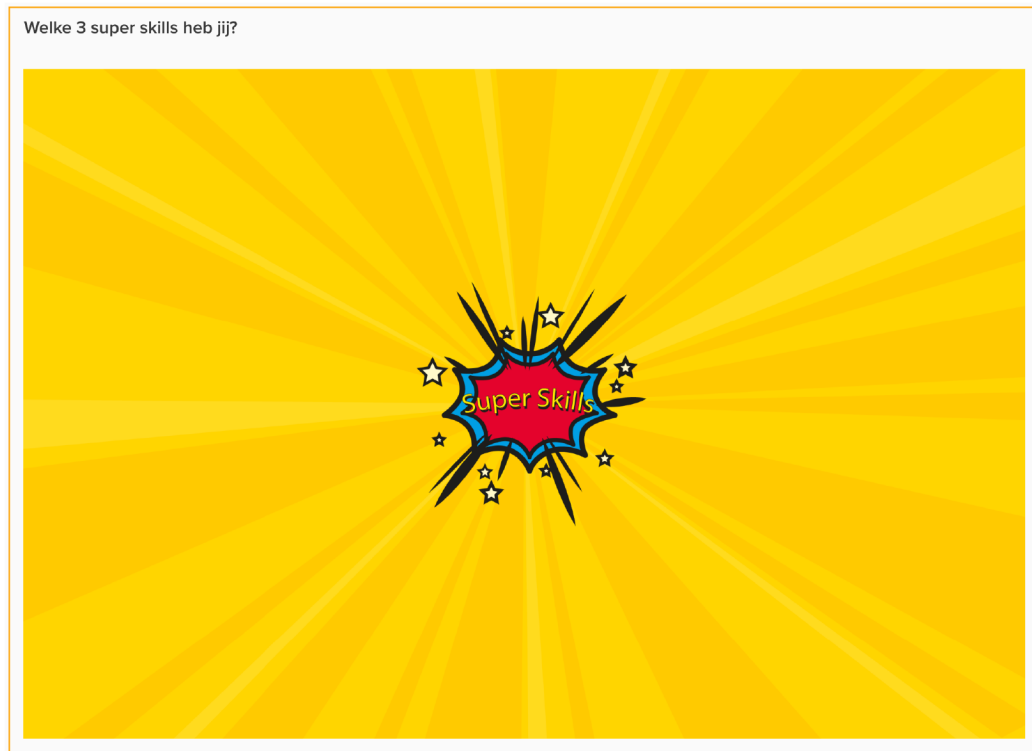


After session – Wie zit er rond de tafel?– Part 2/7



## Part 3/7 Mural

### Before session – Welke 3 super skills heb jij?– Part 3/7

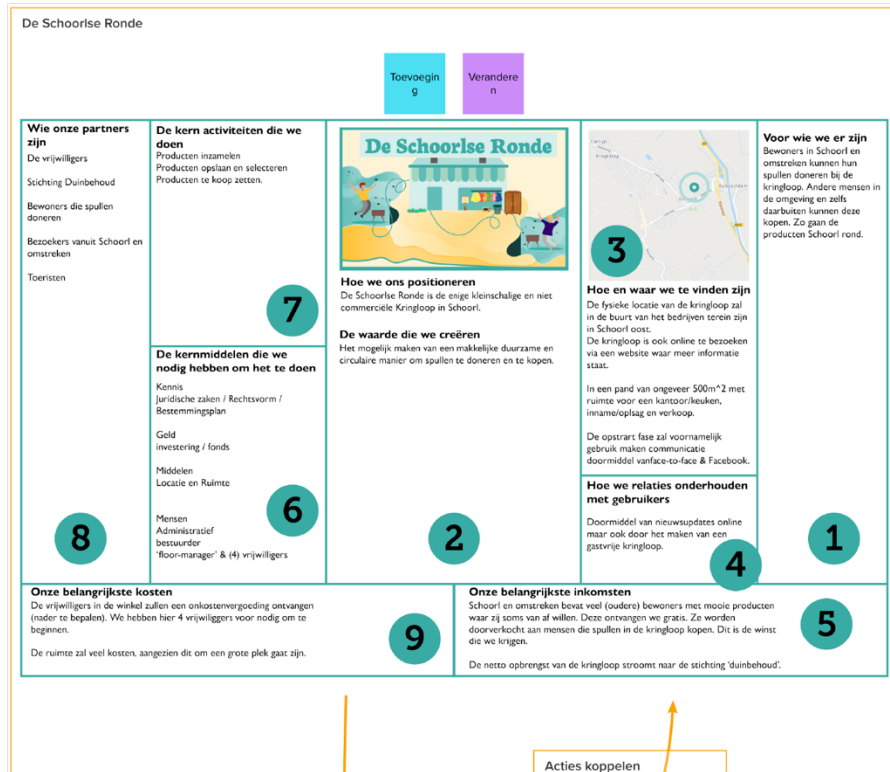


### After session – Welke 3 super skills heb jij?– Part 3/7

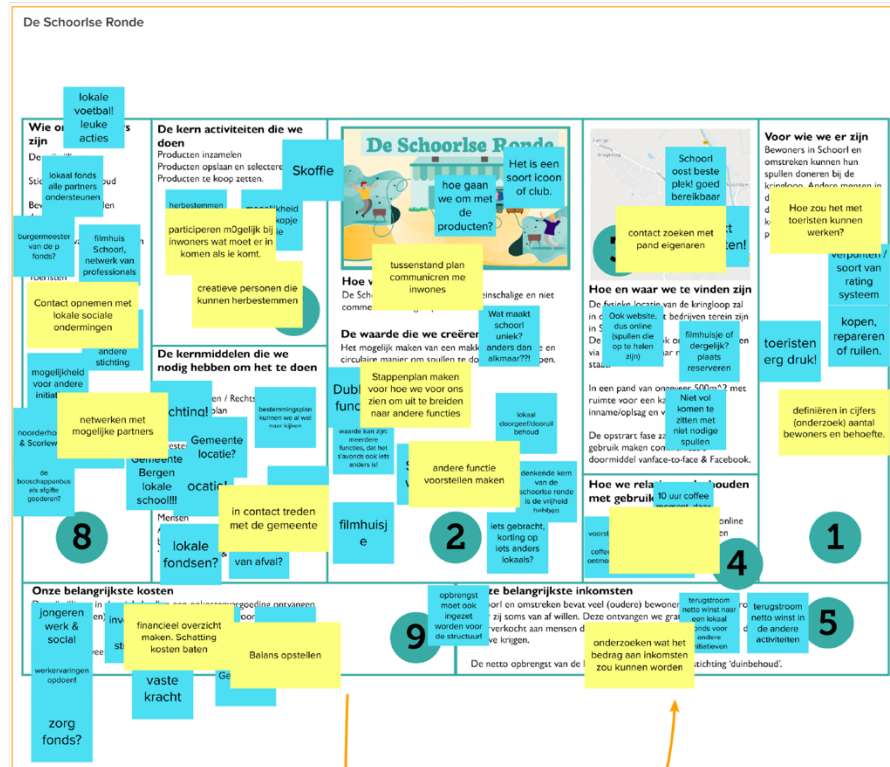


## Part 4/7 Mural

## Before session – De Schoorlse Ronde– Part 4/7



## After session – De Schoorlse Ronde– Part 4/7

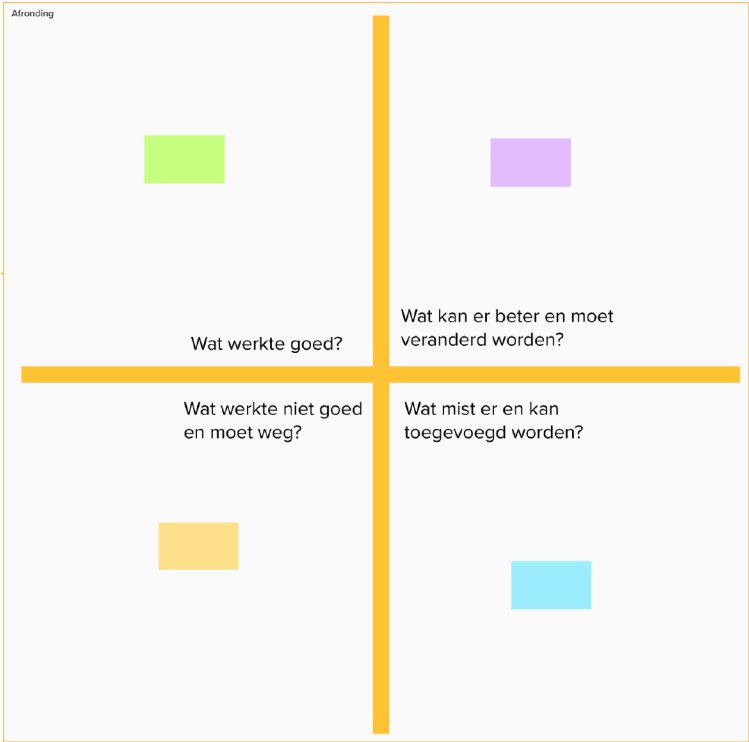




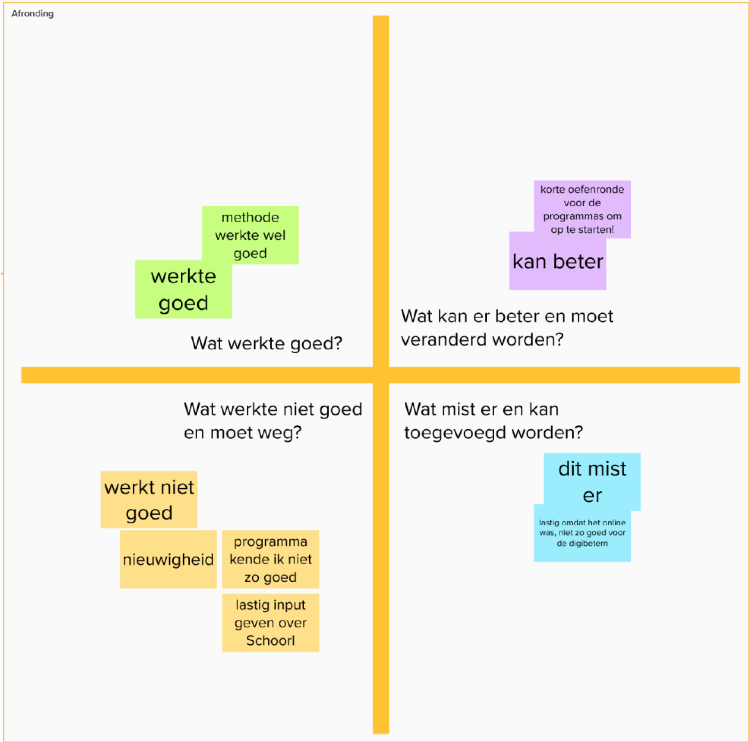


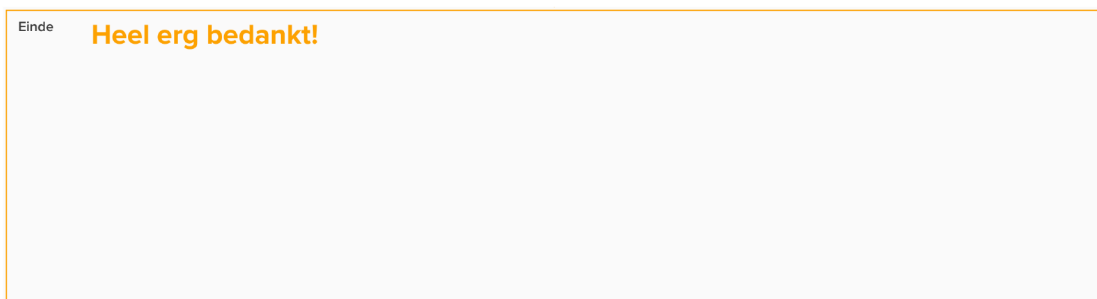
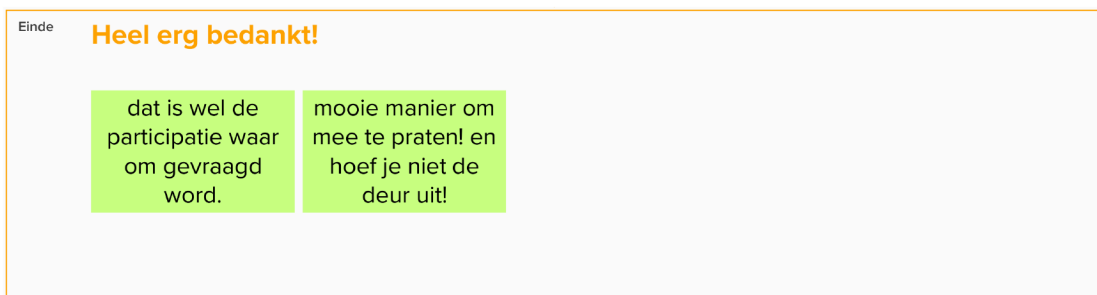
Part 6/7 Mural

Before session –Afronden– Part 6/7



After session – Afronden– Part 6/7



**Part 7/7 Mural****Before session – Einde– Part 7/7****After session – Einde– Part 7/7**

## Appendix O | Survey - Questionnaire

17-4-2020

Enquête, u en uw producten – 2020

### Enquête, u en uw producten – 2020

Deze vragenlijst is een onderdeel van mijn Master afstudeer onderzoek aan de faculteit Industrieel Ontwerpen van de Technische Universiteit Delft. Bij voorbaat veel dank voor het invullen van deze vragenlijst. U helpt mij daarbij met mijn afstudeeronderzoek. De vragenlijst voor mijn onderzoek gaan over de relatie tussen producten en mensen. Er zijn geen goede of foute antwoorden! Ik ben benieuwd naar uw ervaring.

Let op! Sommige vragen lijken redelijk op elkaar, maar er is geen enkele vraag het zelfde!

Uw data worden geheel geanonimiseerd, gebruikt en verwerkt. Dit om te voldoen aan de AVG (GDPR) wetgeving en het waarborgen van uw anonimiteit. Uw antwoorden kunnen dus niet naar u worden herleid worden.

Enkel ik, Willem Zwagers, zal de data inzien voor onderzoeksdoeleinden voor mijn afstudeer onderzoek.. Deze gegevens worden bewaard tot het afstudeeronderzoek is afgerond en worden daarna geheel verwijderd (dit zal rond September 2020 zijn).

U kunt ten allen tijden het onderzoek annuleren. Ook kunt u ten alle tijden contact op nemen met mij als u vragen en/of wensen heeft met betrekking tot dit onderzoek via:  
[w.a.zwagers@student.tudelft.nl](mailto:w.a.zwagers@student.tudelft.nl)

Willem Zwagers

Hier moet ik nog over schrijven / ligt aan hoe het publiek bereikt word (wij hebben uw email adres nodig voor het verzenden van de Eetbonnen)

Vragen  
deel  
1/3

Dit gedeelte van de vragenlijst gaat over de producten die u in huis heeft. Denk hierbij aan meubels, gereedschap, elektronische apparaten, witgoed, fietsen, skeelers, keukengerei en dergelijken.

17-4-2020

Enquête, u en uw producten – 2020

## 1. Hoe vaak zult u uw producten:

*Markeer slechts één ovaal per rij.*

	Nooit	Zelden	Soms	Vaak	Bijna altijd
repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
opknappen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een tweede leven geven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
delen / uitlenen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ruilen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tweedehands kopen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
onderhoud geven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Vragen  
deel  
2/3

Dit gedeelte van de vragenlijst gaat dieper in op de relatie tussen u en uw producten. Denk hierbij aan meubels, gereedschap, elektronische apparaten, witgoed, fietsen, skeelers, keukengerei, en dergelijken.

## 2. Ongeacht u het doet of niet, hoe vaak heeft u de juiste vaardigheden om uw verschillende producten:

*Markeer slechts één ovaal per rij.*

	Nooit	Zelden	Soms	Meestal	Altijd
te repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te onderhouden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
op te knappen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[https://docs.google.com/forms/d/1SE5Z9uMVZfROwP-NSpTGidIB\\_17YEp6SlZ06bMtmvvg/edit](https://docs.google.com/forms/d/1SE5Z9uMVZfROwP-NSpTGidIB_17YEp6SlZ06bMtmvvg/edit)

2/10

3. Ongeacht u het doet of niet, hoe zijn uw vaardigheden om uw verschillende producten:

*Markeer slechts één ovaal per rij.*

	Onvoldoende	Matig	Voldoende	Ruim voldoende	Goed
te repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te onderhouden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
op te knappen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. In welke mate weet u over uw verschillende producten:

*Markeer slechts één ovaal per rij.*

	Nooit	Zelden	Soms	Meestal	Altijd
waar u deze kunt laten repareren.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hoe u deze kunt repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hoe u deze kunt opknappen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
wie in uw omgeving u zou kunnen helpen met het repareren als deze kapot zijn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
van wie u deze zou kunnen lenen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
hoe u deze kunt onderhouden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Enquête, u en uw producten – 2020

## 5. In welke mate is het gebruikelijk in uw sociale kringen om producten:

*Markeer slechts één ovaal per rij.*

	Heel Ongebruikelijk	ongebruikelijk	Neutraal	gebruikelijk	Heel gebruikelijk
met elkaar te ruilen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
aan elkaar uit te lenen of delen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een tweede leven te geven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tweedehands te kopen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
zelf te repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te laten repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
zelf op te knappen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[https://docs.google.com/forms/d/1SE5Z9uMVZfROwP-NSpTGidIB\\_17YEp6SIZ06bMtmvvg/edit](https://docs.google.com/forms/d/1SE5Z9uMVZfROwP-NSpTGidIB_17YEp6SIZ06bMtmvvg/edit)

4/10

6. In welke mate wordt het in uw sociale kringen afgekeurd of goedgekeurd om producten:

*Markeer slechts één ovaal per rij.*

	Sterk afgekeurd	Afgekeurd	Neutraal	Goedgekeurd	Sterk goedgekeurd
met elkaar te ruilen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
aan elkaar uit te lenen of delen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een tweede leven te geven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tweedehands te kopen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
zelf te repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te laten repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
op te knappen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. Hoe ervaart u de mogelijkheden in uw omgeving om producten:

*Markeer slechts één ovaal per rij.*

	Onvoldoende	Matig	Voldoende	Ruim voldoende	Goed
een tweede leven te geven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
zelf te repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te laten repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tweedehands te kopen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te ruilen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
uit te lenen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
zelf op te knappen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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Enquête, u en uw producten – 2020

## 8. In welke mate bent u bereid om uw producten

*Markeer slechts één ovaal per rij.*

	Nooit	Zelden	Soms	Meestal	Altijd
te delen met anderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te ruilen met anderen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
zelf te repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
op te knappen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
tweedehands te kopen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een tweede leven te geven	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te delen met mensen die u kent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
te ruilen met mensen die u kent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 9. In welke mate bent u bereid om

*Markeer slechts één ovaal per rij.*

	Nooit	Zelden	Soms	Meestal	Altijd
anderen te helpen met het opknappen of repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
anderen te helpen door het uitlenen van uw producten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iemand die u kent te helpen met het opknappen of repareren	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iemand die u kent te helpen door het uitlenen van uw producten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Vragen deel  
3/3

De vragenlijst is bijna klaar! Enkel volgen nog een aantal korte vragen en stellingen.

10. Waar hecht u meer waarde aan?

*Markeer slechts één ovaal.*

	1	2	3	4	5	6	7	
Modern	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Traditioneel

11. Waar hecht u meer waarde aan?

*Markeer slechts één ovaal.*

	1	2	3	4	5	6	7	
Digitaal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Analoog

12. Waar hecht u meer waarde aan?

*Markeer slechts één ovaal.*

	1	2	3	4	5	6	7	
Maatschappelijk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Financieel

13. Waar hecht u meer waarde aan?

*Markeer slechts één ovaal.*

	1	2	3	4	5	6	7	
Kwaliteit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Prijs

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Enquête, u en uw producten – 2020

## 14. Waar hecht u meer waarde aan?

*Markeer slechts één ovaal.*

	1	2	3	4	5	6	7	
Sociaal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Individu

## 15. Hoe vaak bezoekt u in uw vrije tijd:

*Markeer slechts één ovaal per rij.*

	bijna nooit	Minder dan een keer per maand	Een keer per maand	Een keer per twee weken	Een of meer keren per week
het strand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
het bos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een voetbal club	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een hockey club	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een golf club	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een kringloop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een boeken club	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een bibliotheek	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
een nabij gelegen stad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
winkelcentra	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
musea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
de markt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Enquête, u en uw producten – 2020

Enkele laatste demografische  
vragen

De vragenlijst is bijna klaar! Enkel volgen nog een aantal korte  
vragen.

16. Wat is uw leeftijd?

*Markeer slechts één ovaal.*

- ☐ Jonger dan 18
- ☐ 18–24
- ☐ 25–34
- ☐ 35–44
- ☐ 45–54
- ☐ 55–64
- ☐ 65–74
- ☐ 75 of ouder

17. Wat is uw hoogst behaald onderwijsniveau?

*Markeer slechts één ovaal.*

- ☐ Basisonderwijs
- ☐ Mbo
- ☐ Havo, Vwo
- ☐ Hbo-, wo-bachelor
- ☐ Hbo-, wo-master, doctor

18. Wat is uw postcode?

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Enquête, u en uw producten – 2020

19. Heeft u kinderen?

*Vink alle toepasselijke opties aan.*

- ☐ Nee  
☐ Ja, onder de 12 jaar  
☐ Ja, tussen de 12–18 jaar  
☐ Ja, ouder dan 18 jaar

Dit was de vragenlijst. Enorm bedankt voor het invullen!

20. Zou u eventueel verder willen helpen met een vervolg onderzoek ? Uw antwoord is uiteraard geheel vrijblijvend.

*Markeer slechts één ovaal.*

- ☐ Ja  
☐ Nee

21. Uw email

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Deze content is niet gemaakt of goedgekeurd door Google.

Google Formulieren

## Appendix P | Context mapping

### P.1 Context mapping

People are equipped with their own experiences that have been built throughout their life. Making people experts of their 'being' in a certain context, and thus have knowledge about that. Tapping into this knowledge might bring valuable insights that can inspire and be used to work with. To elicit such knowledge of the interaction between a person and its context, one can use techniques and methods from context mapping (Patton, 2014; Vaca, 2018). Context mapping is a form of Participatory Design — a dual form of research and designing. The design emerges by iteratively co-constructing the design based on the participant's tacit knowledge and the researcher's abstract, analytical knowledge (Sleeswijk Visser, Stappers, Lugt, & Sanders, 2005). By doing the problem and potential solutions can be observed more holistically, fostering the idea generation phase for more novelty and user benefit (Spinuzzi, 2005) — that can be used to map the context. The typical process consists of Preparation, Sensitizing participants, Group session, Analysis, and Communication (Visser et al., 2005). Preparation concerns the setting of goals, objectives, preliminary outcome etc. of the session. Sensitizing helps to prepare the participant to access their (past) experiences at home and express their memories, opinions, thoughts, dreams etc around the topic to be studied (Sleeswijk Visser et al., 2005). In this way the participant is better prepared for the following session as their latent knowledge becomes more explicit or raises to the surface, which can then in a later phase be better tapped into (Sleeswijk Visser et al., 2005).

These two steps of preparation and sensitizing were used to prepare people for an in-depth semi-structured interview. This to sensitize the people on their latent and tacit knowledge before doing an in-depth semi structured interview, as they will be better able to express and discuss their knowledge.

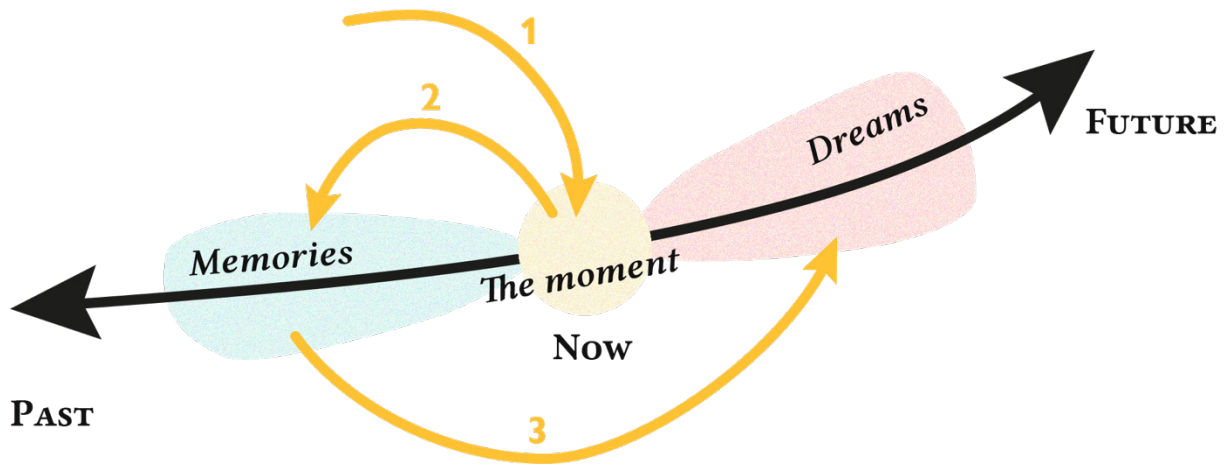
The sensitizing tool was in the form of a booklet / diary that people could fill in at home. The booklet consisted out of 4 topics: Present, Past, Future, and Environment. According to (Sanders & Stappers, 2018; Wallas, 1926), an experience that has been lived in the past can be termed as Memories. Experiences that still need to be felt and lived in the future, are imagined and can be termed Dreams. Experiencing is happening between Dreams and Memories and can be termed as The moment. This is what Sanders (2001) calls the experience domain.

Sanders & Stappers (2018, pp. 55-57) suggest that the awareness of a person about their experience can be guided by beginning with 1. The Moment, followed by 2. The Memories, into 3. their Dreams. Following this path helps people better to connect to their current experience, their past and using that as springboard for imagining their future (Sanders & Stappers, 2018).

The Moment was sensitized by suggesting people to sit somewhere in their house and observe their surroundings. Their task was to think about what their relationship was with the objects – couch, chairs, posters, lamps, paintings etc – in their surroundings. They were asked to place these objects in a quadrant. This quadrant was built on the two dimensions; (emotional) Attachment & Essentiality. These two dimensions were based on the notion that “people form feelings of attachment to objects irrespective of the primary functions these products perform” (Sanders & Stappers, 2018). Attachment would be the relationship of the emotional attachment a person has to an object, whereas the Essentiality would be the functional performance of that object and its perceived level of Essentiality.

The Memories was used to get to know what type of response people had towards broken, unnecessary, or out of date objects. They were asked to name the discarded objects of 1-3 years and 3-20 years ago and how they did that. They could choose from: Sold, Bring away, Refreshed/Refurbished/Repaired, Different, Thrown away, and Given away. These strategies were based on a simplified version of the suggested 9R-framework by (Mugge, Schoormans, & Schifferstein, 2005; Schifferstein & Zwartkruis-Pelgrim, 2008).

The Dreams topic questioned how people would discard, the in the Moment defined, objects in the future. This to make explicit how they would deal with what type of relationship to their objects.



The experience domain. Adapted from (Sanders, 2001; Sanders & Stappers, 2018)

Aside exploring their experiences, the last topic went into exploring the perception of their environment. This to sensitize the people to think about what the people in their environment do and how they relate themselves to that behaviour. This topic was introduced to gain insight on the perceived social norms. This was by asking whether they are 'more' 'equally' or 'less' performing a given set of behaviours than the people in their environment. To bring in a socio-ecological perspective, the environment was further distinguished between Friends / Families, Area / Neighbourhood, and the Municipality they live in. The purpose for doing was to gain a better overview of the individuals' perceived position and relation to its socio-ecological environment and so identifying their perceived social norm(s).

## P.2 Context mapping Booklet

### Mijn spullen en ik

Hee wij zijn willem en Fieke. we zijn blabla en bla bal.  
danku voor de bla bla. Hee wij zijn willem en Fieke. we  
zijn blabla en bla bal. danku voor de bla bla. Hee wij zijn  
willem en Fieke. we zijn blabla en bla bal. danku voor de  
bla bla. Hee wij zijn willem en Fieke. we zijn blabla en bla  
bal. danku voor de bla bla

Willem Zwagers & Fieke Thijssen

w.a.zwagers@student.tudelft.nl

Master Industrial Design Engineering, University of Technology Delft

Mijn naam is:

.....

Ik woon in:

.....

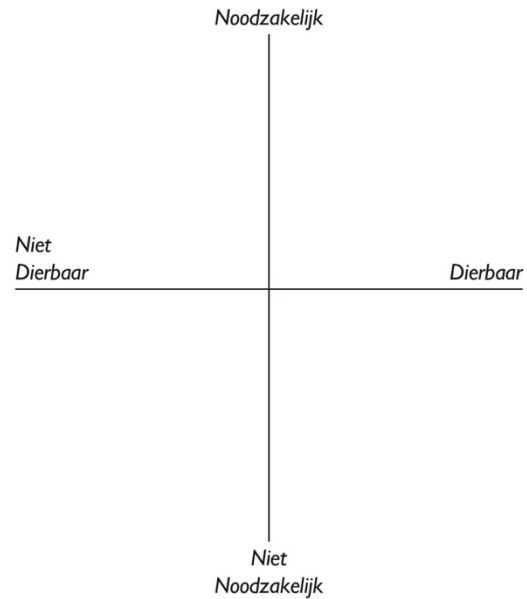
## Mijn spullen en ik

Ieder mens verzamelt een talloze hoeveelheid aan spullen om zich heen. In het dagelijks leven zijn we niet eens meer bewust van wat soms hebben. Neem eens plaats in uw woning, en kijk om u heen. Wat voor spullen ziet u? Wat hangt er aan de muur of aan het plafond? Waar zit u op en waar drinkt u uit?

Om een beeld te krijgen van de relatie die u heeft tot u spullen vragen we u om het schema hiernaast in te vullen. Zet de spullen om u heen in het assenstelsel, door ze te plaatsen op een schaal van dierbaarheid en noodzakelijkheid.

Met dierbaarheid bedoelen we spullen met emotionele waarde of die een speciale betekenis hebben voor u. Deze producten zijn vaak moeilijk(er) te vervangen, zelfs door gelijknamige producten. Niet dierbare spullen zijn spullen met lage emotionele waarde of betekenis. Met noodzakelijk bedoelen we spullen die u bezit vanwege de functie die ze vervullen. Deze spullen zijn essentieel en maken uw leven comfortabeler of leuker. Niet noodzakelijke spullen zijn spullen die u gemakkelijk zou kunnen wegdenken.

Maak het schema levendig met illustraties en/of kleuren!

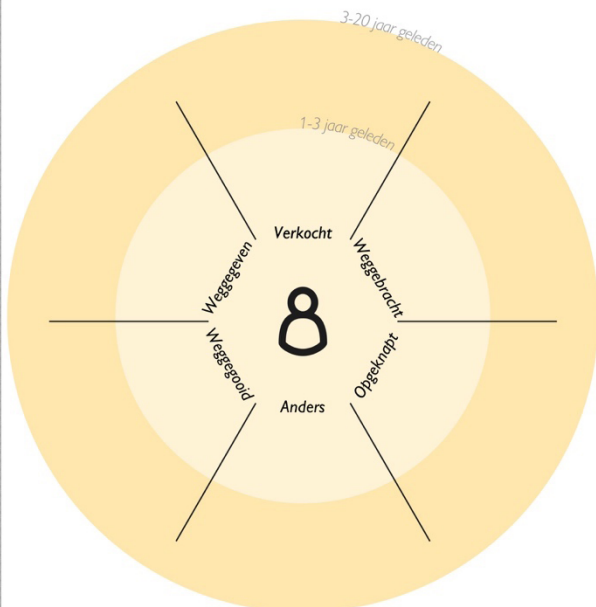


## Terug in de tijd

De producten om ons heen, houden we niet voor altijd. Ze slijten, gaan kapot, worden overbodig, of raken uit de mode.

Wat doet u met spullen die u niet meer gebruikt? In het onderstaande plaatje staat uzelf in het midden. Welke producten heeft u de afgelopen jaren weggegooid? Welke producten kon u nog verkopen?

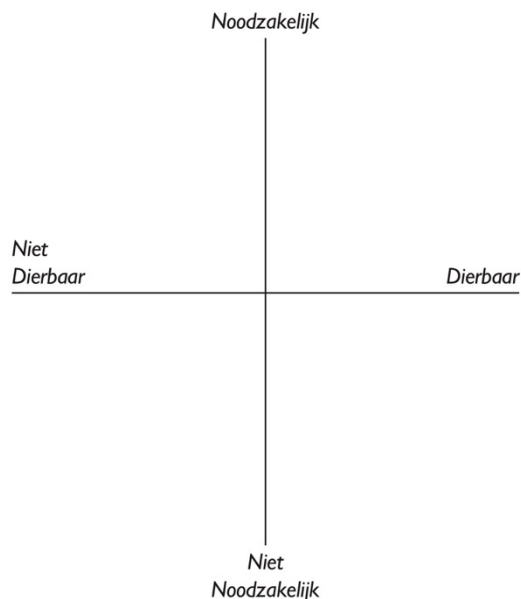
Plaats ze in het schema.





## Naar de toekomst

Bij vraag 1 hebben we uw persoonlijke spullen en uw relatie tot deze spullen in kaart gebracht. Stelt u eens voor, over 5 jaar, welke producten bezit u dan nog? Wat zou u het liefst doen met producten die u niet meer gebruikt? Als u ooit afstand zou moeten doen van een van de producten, hoe zou dat er idealiter uitzien? Schets het hieronder:



## Mijn omgeving

Als u zichzelf vergelijkt met uw omgeving, hoe schat u zichzelf in dan op de onderstaande aspecten?

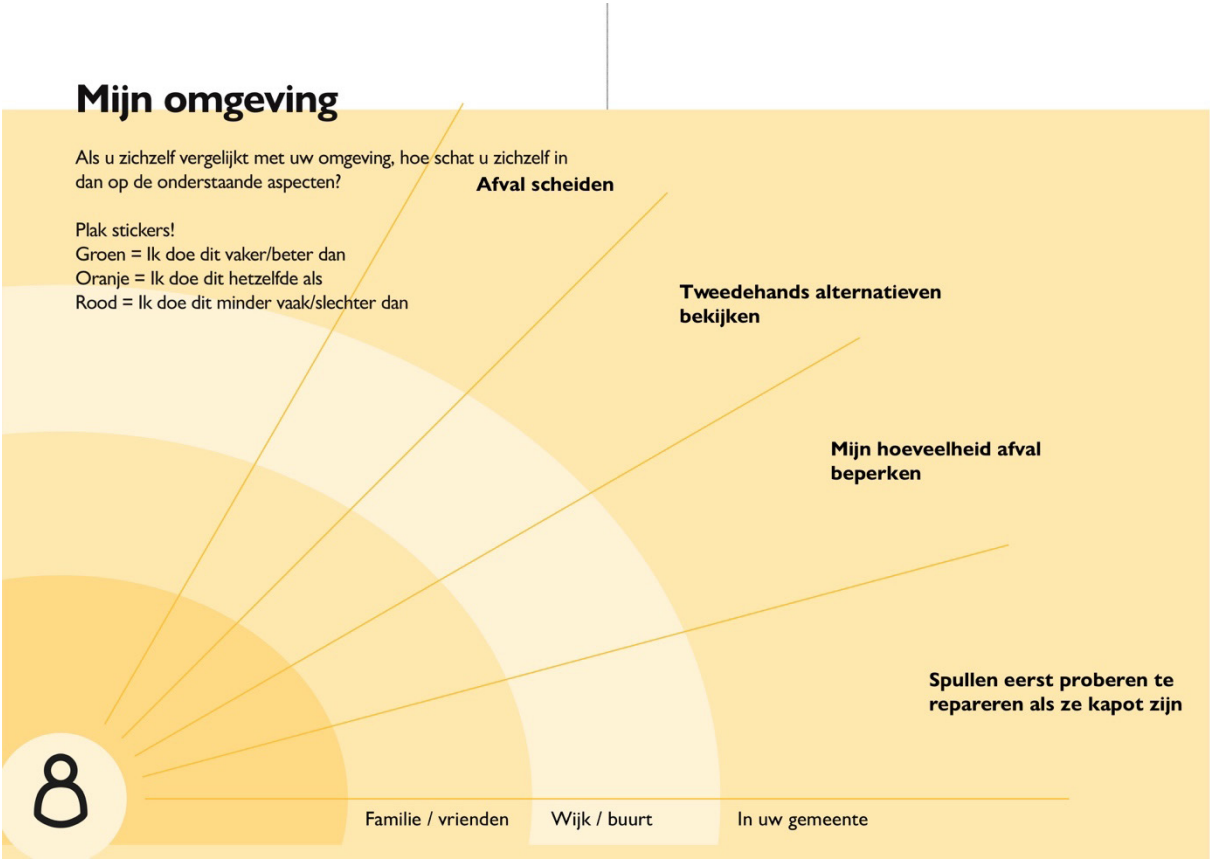
Plak stickers!

Groen = Ik doe dit vaker/beter dan

Oranje = Ik doe dit hetzelfde als

Rood = Ik doe dit minder vaak/slechter dan

	Familie / vrienden	Wijk / buurt	In uw gemeente
<b>Afval scheiden</b>			
<b>Spullen eerst proberen te repareren als ze kapot zijn</b>			
<b>Tweedehands alternatieven bekijken</b>			
<b>Mijn hoeveelheid afval beperken</b>			
<b>GFT zelf compostering</b>			



## Appendix Q | Covid 19

### Q.1.1 Covid-19

At the end of 2019 a disease was identified in Wuhan, Hubei China. It was Dr Li Wenliang who put out on the 30<sup>th</sup> of December his concerns to the novel coronavirus that caused the Coronavirus disease (Petersen et al., 2020). The disease has been named COVID-19 and is caused by the virus Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (WHO, 2020a). The virus spread around Wuhan and due to its ease in contamination around the world. Within only 2 and a half month, 150.000 confirmed COVID-19 cases had been reported, with an still increasing rate (OWiD & WHO, 2020). On the 11<sup>th</sup> of March the World Health Organization assessed the COVID-19 to be a pandemic, a prevailing disease over a whole country or the world (WHO, 2020b).

The effects of COVID-19 hit the world hard and were innumerable. As of 16<sup>th</sup> of March, schools, restaurants, coffee shops, sport events, concerts, theatres, and more were closed (Rijksoverheid, 2020). On top of the policies put forward by the government, local and global businesses took precautions and measurements in relation to the COVID-19, such as working-from-home policies and KLM's almost fly-stop policy (NOS, 2020b, 2020e). From an economical perspective, the DOW and AEX on the stock exchange show a biggest loss since 1987 (De Volkskrant, 2020; NOS, 2020a, 2020c).

On the 16<sup>th</sup> of March, the prime minister of the Netherlands, Mark Rutte, spoke to the public formally described as: address to the nation. Last time that happened was during the 70's oil crises by prime minister Den Uyl (NOS, 2020d).

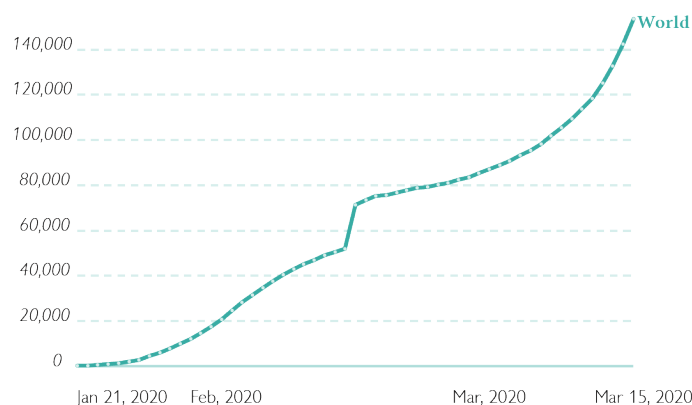


Figure 37: Reported cases of COVID-19 until 15th of March, (OWiD & WHO, 2020)

According to BloombergNEF (2020) the COVID-19 will also hit circular economy hard. To name a concrete example. Starbucks, Dunkin' and Tim Hortons announced the pausing of personal cup usage (Danigelis, 2020; Grist, 2020; Heath, 2020). This to increase hygiene, and lower the possibility for contamination (Grist, 2020). This factor of hygiene also became evident in the local supermarkets and shops in the Netherlands. Disinfection gels or hand gels to disinfect hands were sold out in all types of shops (AD, 2020b; Omroep West, 2020; RTV Noord, 2020). This increasing need/interest in hygiene might hit circular economy practices, as often second hand products and clothing are not associated with the same sterility as products and clothing from 'brands'/'shops'/'factories'.

### Q.1.2 Consequence

Whilst the pandemic had severe 'negative' consequences (death, economic crises, chaos, turmoil etc), some 'positive' consequences can also be distinguished. As such, the lock-down and from home working policies reduce the amount of people needing to travel to work by car or reduce flying. Beside these direct consequences some more abstract consequences arise. As Heath (2020) explains in his article in POLITICO:

**“Minds may open for structural change:** The focus is on health and supply chains right now. But the process of challenging assumptions and fundamentally altering behavior — illustrated by remote work — can be seized on by climate action advocates once the worst of this health crisis is over.”

Challenging and questioning assumptions is argued by Mlodinow (2019, p. 128-131) to be the most powerful for one to have a revelation. During this event, rules one is accustomed to, no longer apply. Making people arise above their fixed paradigms and restructure their thinking. In the example of remote working this means that people AND businesses can experience what it means for people to work from their homes. This not only for a week period, but for a couple of months (Rijksoverheid, 2020).

Another direct related consequence to this graduation project is the increase of people cleaning their houses, gardening, building, etc. (AD, 2020a; indebuurt, 2020; Noordhollandsdagblad, 2020; Omroepwest, 2020). This trend is the consequence of the policy that enforced people to work from home, or stay home due to the closing of schools, restaurants, public transport, etc. This mass 'cleaning up' behaviour resulted in many people visiting the local recycle centres. Hence the 'waste' for municipalities is increasing, diminishing the wished-for circular economy by the BUCH.

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