Exploring institutional barriers of the circular economy
On the examples of coworking spaces in Utrecht

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EXECUTIVE SUMMARY

The circular economy (CE) has gained increasing attention within the European Union (EU) and member states such as the Netherlands, however limited progress has been made in the implementation of the concept in specific sectors such as Coworking spaces (CWS). Existing literature often explains this through technological barriers while lacking focus on a wider range of barriers for specific industries. In response, this research aims to understand the key institutional barriers that are hindering the move of CWS towards circularity.

The explorative research revealed that cultural barriers, more specifically, the lack of common understanding of the CE concept, a hesitant company culture, and a lacking long-term vision were among the most pressing barriers. These often result from market barriers such as low virgin material prices or the need for high initial investments, which are found to be induced by regulatory barriers. Overall, this research suggests that it is vital to understand possible barriers and their relations in order to transition towards CE. Therefore, a prototype website was created, which enables CWS to assess their key barriers and receive tailored recommendations on how to overcome them.

1. INTRODUCTION

Driven by economic growth, Western economies are characterized by resource-intensive production and rising urbanization, which is causing increased environmental damage. It is, therefore, of the essence to identify solutions which aim to sustain current and future generations, while allowing economic progress. As a result, interest in the Circular Economy (CE) as a possible alternative to the currently used linear model has grown among both policymakers and business leaders (Rizos, Behrens, Drabik, Rinaldi, & Tuokko, 2018). The Ellen MacArthur Foundation (EMF) has developed one of the most commonly used definitions, referring to the concept as restorative and generative by design, thus replacing the prevailing 'take, make and dispose' model (EMF, 2013).

FIGURE 1: THE CIRCULAR ECONOMY (EMF, 2017)

While the increased attention on the concept led to the emergence of new business models, the commercial opportunities that the CE creates have not yet been exhausted by the industry (Ranta, Aarikka-Stenroos, Ritala, & Mäkinen, 2018). Shifting a system as deeply rooted as the linear economy towards circularity is confronted by various barriers, since economic structures have been historically designed for linear processes (Pfeifer, 2017). Literature has shown that Coworking-spaces (CWS) are built upon the circular principle of sharing models (Ranta et al., 2018), and as such, are defined as shared workspaces for businesses or freelancers (Stam & van de Vrande, 2017). However, many CWS are struggling to implement circularity beyond the concept of sharing.

This research aims to explore the regulatory, market, and cultural barriers that hinder CWS transitioning towards circularity. The primary focus of existing research has been on issues surrounding technology (Geng, Zhu, Doberstein, & Fujita, 2009; Mathews & Tan, 2011), therefore largely ignoring societal factors, such as institutional drivers (Murray, Skene, & Haynes, 2015).

In cooperation with the docent and researcher Evert-Jan Velzing, this thesis is designed to generate insights for consulting CWS and cities in the development of circular areas. The client's current project is for the Werkspoorkwartier in Utrecht, where multiple CWS take residency. According to the client, the area has a shared vision of becoming fully circular (Gemeente Utrecht, 2012), however, many of the

residential organizations are still struggling with the implementation of CE principles. The resulting prototype enables the client to assess the key barriers of CWS' transition towards CE and give actionable recommendations.

2. CURRENT KNOWLEDGE

2.1 THE CIRCULAR ECONOMY

The core concept of the CE has its roots in the 1970s, where Kenneth Boulding (1966), amongst other authors, discussed the idea of an economic system based on loops to reproduce the limited available resources. However, the origins of the concept are difficult to pinpoint due to the multiple theories that question the ecological impacts of the widespread linear economy (EMF, 2013; Allwood, 2014). This fragmentation leads to a lack of understanding of CE in the context of specific industries, hindering them from adapting circularity into their operations (Velzing, Van der Meijden, Vreeswijk, & Vrijhoef, 2019).

2.2 TRANSITION THEORY

For any business to incorporate fundamental changes such as the move to a circular system, they have to go through a transitioning process, which can be understood as sequential steps of change in different areas of a business (Rotmans, Kemp, & van Asselt, 2001). While looking at transition theory as a whole exceeds the scope of this research, it helps to understand how barriers are hindering the adaptation of circularity. According to De Haan and Rotmans (2011), the first stage of transitional management is concerned with analyzing the existing system to identify possible roadblocks along the way.

2.3 INSTITUTIONAL THEORY

Institutional theory has traditionally explained the resemblance of organizations operating in a particular sector (Scott, 1987). However, literature suggests that the implementation of CE initiatives is hindered by institutional barriers (Levänen, 2015). W.R. Scott's regulatory, normative, and cognitive pillars build the units of analysis used to understand the different types of institutional barriers. This aligns with similar researches, which have also adopted his conceptualization of institutional theory (Ranta et al., 2018; Mac, 2002).

Current literature, however, primarily focuses on technological barriers (Geng, Zhu, Doberstein, & Fujita, 2009; Mathews & Tan, 2011), resulting in a lack of studies on a variety of institutional barriers which are affecting organizational change, specifically in the context of the CE. Therefore, this study

consciously investigates the regulatory, normative, and cultural barriers through the lens of CWS, to close the aforementioned knowledge gap.

	Regulative	*Normative*	*Cultural-Cognitive*
Basis of compliance	Expedience	Social obligation	Taken-for-grantedness Shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules Laws Sanctions	Certification Accreditation	Common beliefs Shared logics of action Isomorphism
Affect	Fear Guilt/Innocence	Shame/Honour	Confusion/Certainty
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible Recognizable Culturally supported

TABLE 1: THREE PILLARS OF INSTITUTIONS (SCOTT, 2008)

2.3.1 COGNITIVE BARRIERS

Advocates of the cognitive perspective have identified the aim of a shared mindset as a primary driver for transitions (Palthe, 2014). Cognitive theorists emphasize the connection between changes within an organization and changes in shared values or conceptual beliefs (Powell & DiMaggio, 1991). From this perspective, change needs to be culturally supported and internalized as it may not be dictated by regulative or normative elements. The organizational members share common beliefs and hence must drive change out of personal desire (Scott, 2008).

2.3.2 NORMATIVE BARRIERS

Selznick (1948), alongside other normative theorists, mainly focuses on the impact of informal structures, such as social obligations, on organizational change. This normative perspective stresses the moral and immediate organizational environment as a means of enabling change (Palthe, 2014). Scott (1987) argues that normative expectations form a sense of duty that either constrains behavior or empowers change with certifications or accreditations.

2.3.3 REGULATORY BARRIERS

According to literature, economists often view regulations as formal rule systems that can spark legitimacy (Palthe, 2014). Many scholars who prioritize the regulative pillar are conjointly emphasizing the driving impact new policies or regulations have on organizational change (Barnett & Carroll, 1993). On the contrary, Scott (1987) argues that regulations can also constrain institutional behavior.

	Regulative	Normative	Cognitive
Signals	Laws, Subsidies	Certification, Accreditation	Common Believes, Shared Logics
Legitimacy	Legal System	Moral System	Cultural System
Behavioral Drivers	Fear, Compulsion	Duty	Personal Desire, Social Identity

TABLE 3: FRAMEWORK FOR ANALYSIS

Based on this theoretical framework, the research questions are as follows:

How can Coworking spaces in the Netherlands understand the institutional barriers hindering the transition from a linear business model towards circularity in 2020?

Sub-question 1: How are cognitive barriers hindering CWS' transition towards circularity?

Sub-question 2: How are normative barriers hindering CWS' transition towards circularity?

Sub-question 3: How are regulatory barriers hindering CWS' transition towards circularity?

3. RESEARCH PROCEDURE

As the perspective of institutional barriers of the CE has not yet been thoroughly analyzed, an explorative and qualitative research design was found to be most applicable. While this approach is not gathering statistically substantial results (Bryman, 2016), it is established for collecting in-depth knowledge (Kumar, 2014), which is needed to understand perceptions and experiences relevant to the topic. The methods used to explore these cases will follow a multimethod approach to ensure triangulation (Bryman, 2016).

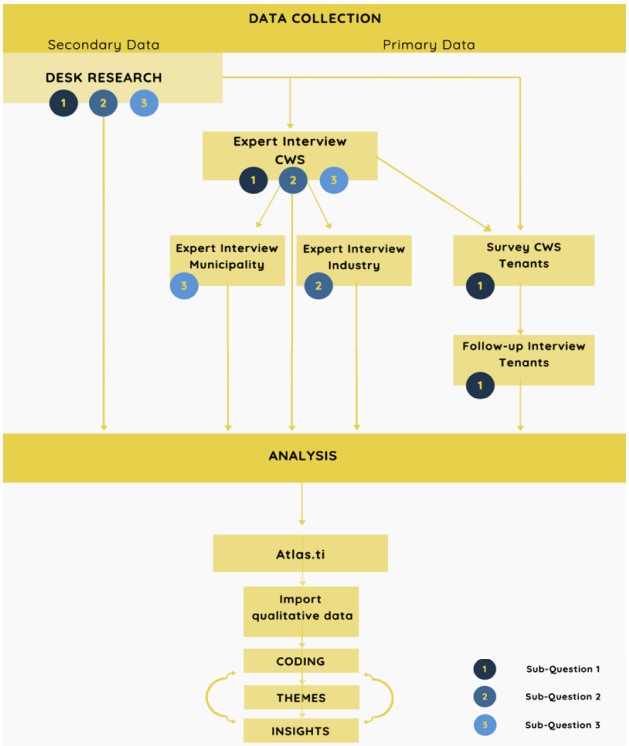

FIGURE 2: RESEARCH PROCEDURE (OWN CREATION, 2020)

3.1 DESK RESEARCH

For reasons of accessibility, the first phase, namely desk research, began by undertaking searches in Science Direct and Elsevier's Scopus to gather knowledge about the current legislative framework of CE and the impact of institutional barriers on the transitioning process. Keywords included 'circular economy' and 'change process' in combination with 'institutional barriers' or related synonyms.

3.2 EXPERT INTERVIEWS

Secondly, expert interviews were conducted, as they are commonly used in qualitative research to gather in-depth data (Bryman, 2016). Literature refers to CE as a concept which is shaped by multiple stakeholders (De Jesus, Antunes, Santos, & Mendonça, 2018). Interviews were therefore conducted with a range of actors in a multi-step approach, which allowed for different perceptions of the barriers to be represented (Bryman, 2016). Firstly, personnel at the management level of CWS were interviewed. The desk research enabled the researcher to be aware of potential biases of the experts. With a better understanding of relevant barriers, additional interviews with policymakers, academics, and practitioners were conducted to identify potential gaps of knowledge within the data gathered from the CWS.

#	Position	Type
1	Management	Co-working space
2	Management	Circular Co-working space
3	Management	Circular Co-working space
4	Management	Circular Co-working space
5	CE Development	Municipality Utrecht
6	CE Consultant	Region Utrecht
7	Project Lead CE	Region Utrecht
8	CE Architect	Government
9	Management	Circular Building
10	Management	Circular Practitioner
11	Management	Circular Practitioner
12	Organizational Design Expert	Consultancy

TABLE 4: OVERVIEW OF INTERVIEWS

Considering the explorative nature of this research, a semi-structured interview format was chosen to enable the flexibility needed to explore the themes found most relevant by the interviewees (Kumar, 2014). Since this method is susceptible to the interviewer's bias, the interview guide (Appx. 7.3) was developed based on the theoretical framework and the guidelines of Bryman (2016).

The first group of interviews were conducted face-to-face, however, due to the COVID-19 pandemic, this approach had to be adapted to virtual (via Zoom) and epistolary (on GoogleDocs) interviews, which have been chosen based on the interviewee's preferences. While the results of the virtual interviews did not significantly differ from the in-person interviews, the epistolary method showed limits in terms of

the provided number of insights. However, this method was promising when looking at the quality of the inputs, as answering a question in a written format often requires more consideration (Debenham, 2007). In total, 12 interviews were conducted until the emerging repetition of key elements led to the researcher's assumption of having reached the saturation point. It is important to mention that this is a highly subjective concept (Kumar, 2014) and that the sample size was also influenced by the time limitations of the study.

3.3 SURVEY

To get a better understanding of the cultural barriers of CE, a qualitative survey was conducted. This method was chosen as a way to collect specific insights into the tenant's motivations towards CE. Although these result in shorter answers, literature has acknowledged the time efficient characteristics of qualitative surveys (Evans & Mathur, 2005). This proved especially beneficial when talking to startups, as they tend to be time-constrained, according to I1 (2020). The survey was created based on the steps provided by the Nielsen Norman Group (2016), using the insights from the theoretical framework, as well as the previous interviews (see Table 5). GoogleForms was used to ensure accessibility and ease of distribution. The joint approach with a fellow research team member increased the survey's reach while simultaneously avoiding the same tenants being contacted multiple times. The survey was sent via email to 82 tenants of the previously selected CWS, which resulted in 12 replies. The answers have been reviewed by the two researchers to identify unclarities which were further investigated in follow-up interviews. Supplementary data was only required in two cases, which speaks to the perceived quality of the survey input.

#	CWS	Follow up
1	CWS A	YES
2	CWS B	X
3	CWS B	YES
4	CWS B	X
5	CWS B	X
6	CWS B	X
7	CWS C	X
8	CWS C	X
9	CWS C	X
10	CWS C	X
11	CWS C	X
12	CWS C	X

TABLE 5: OVERVIEW OF SURVEYS

3.4 SAMPLING

This study uses a qualitative approach, and as such, followed a non-random sampling to gain insights into the barriers of circularity based on the experiences of specific participants. Judgmental sampling was conducted based on the researcher's perception of the interviewee's expertise on the topic under investigation. The CWS at the Werkspoorkwartier in Utrecht were selected to ensure applicability for the client Evert-Jan Velzing. In addition, two examples of circular CWS in the Utrecht Area have been selected based on accessibility.

3.5 ANALYSIS

Data gathered throughout the research process was coded using Atlas.ti, to systematically analyze the information and cluster emerging themes (Appx. 7.5) The gathered insights were compared and established in the results presented below.

Concept	Dimension	Themes/ Indicators	Method Phase 1	Method Phase 2	Method Phase 3
Regulative Drivers	Laws Subsidies	- Excising laws and subsidies - Influence of legal system on legitimacy of circularity - Role of compulsion as behavioural driver	Desk research	Expert Interviews with management of Coworking spaces	Expert Interviews with management of Municipality and Practitioners
Normative Drivers	Certification Accreditation	- Implemented Certifications and Accreditations - Influence of moral system on legitimacy of circularity - Role of duty as behavioural driver	Desk research	Semi-structured Expert Interviews with management of Coworking spaces	Expert Interviews with management of Municipality and Practitioners
Cognitive Drivers	Common Believes Shared Logics	- Exploring/mapping of existing believes - Influence of cultural system on legitimacy of circularity - Role of personal desire or identity as behavioural driver	Desk research	Qualitative Survey	Follow-up Interviews

TABLE 6: OPERATIONALISATION

4. RESULTS

Due to the study's relatively small sample, the number of times a barrier was mentioned is not an indicator of their relative importance.

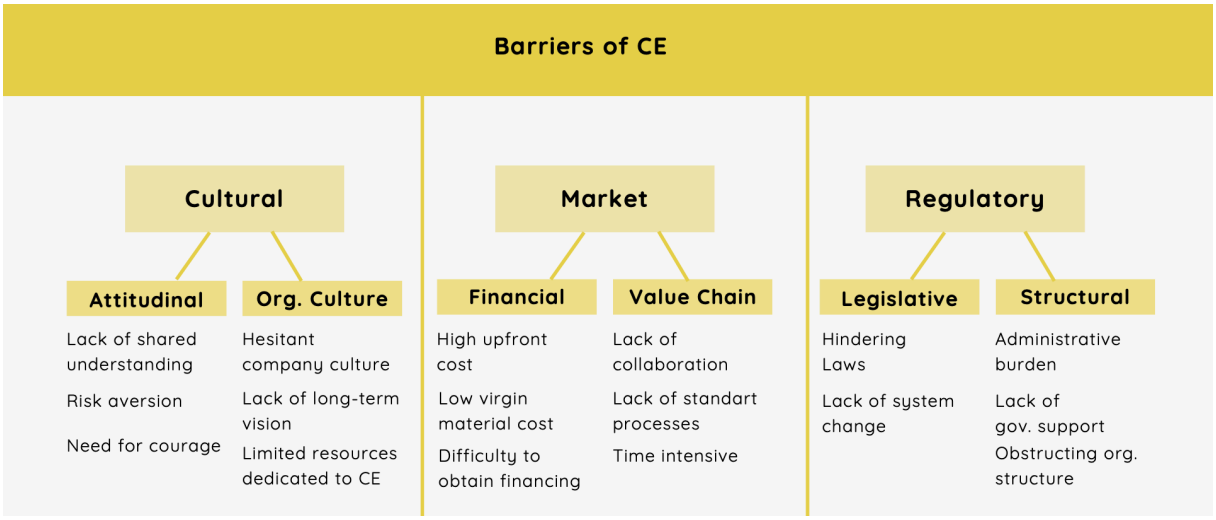

FIGURE 3: KEY BARRIERS (FOR QUOTES SEE APDX 7.5)

4.1 CULTURAL BARRIERS (SQ1)

While the framework used as a base for gathering data solely focused on cognitive barriers in terms of attitudes and beliefs, research revealed a more extensive range of barriers (see Figure 3). Therefore, the overarching theme is cultural barriers, which can be further clustered into organizational and attitudinal barriers.

4.1.1 ATTITUDE

According to I3 (2020), gaining a sufficient knowledge level and common understanding of CE within the team was a main barrier before taking concrete steps towards circularity. Additionally, multiple respondents revealed that it is important not only to understand the concept itself, but also how it can add value to a business (I2, 2020; I4, 2020; I6, 2020). I4 (2020) further explained, "(...) the holistic concept of CE motivates the few courageous individuals, which are key for showing what is possible, but to make the concept mainstream, people need to understand how it will benefit their business." This is aligned with literature stating that risk aversion is one of the main barriers to disruptive change processes (Morton, Rabinovich, Marshall, & Bretschneider, 2011).

4.1.2 ORGANIZATIONAL CULTURE

Among other respondents, I1 (2020) revealed that although the CWS is already incorporating circular initiatives such as cascading biological waste, they are lacking a clear vision of the level of circularity

they aim to achieve in the future. This may correlate with the fact that CWS, which are not initially designed circular, often lack clearly assigned roles to make the transition actionable (I1, 2020; I3, 2020). The transitioning process can further be restricted by a hesitant company culture, where innovative thinking is less encouraged (I3, 2020). Many respondents shared the view of CE still being a niche discussion within CWS (I1, 2020; I3, 2020; I4, 2020;, I11, 2020), which is at odds with the increasing attention the topic is gaining internationally (European Commission, 2015).

4.2 MARKET BARRIERS (SQ2)

Looking back at the theoretical framework, normative barriers have been defined based on the immediate organizational environment. Throughout the research phase, it became apparent, that this does not only include certifications and accreditations, but also the value chain and financial structures. Accordingly, the overarching concept has been adapted to include market barriers.

4.2.1 FINANCE

Interviewees implicating financial barriers have primarily been focused on the affordability of circular products (I3, 2020). As mentioned by I7 (2020), low virgin material costs make it difficult for circular products to be competitive in terms of price. According to Mont et al. (2017), externalities like environmental impact would have to be priced to equalize the market. High upfront investment costs, largely related to circular buildings, were mentioned by a range of respondents as a financial barrier in the transition to CE (I8, 2020). I9 (2020) mentioned that "(...) building circular is often more expensive at the beginning, which makes it hard to find investors, as they don't see the long-term benefits of for example building modular." I1 (2020) noted that this can also be seen within businesses, as the hesitant company culture is possibly in correlation with the high upfront investment, as CWS might perceive CE as "too expensive".

4.2.2 VALUE CHAIN

For CWS to become circular, they have to close the material loops within their business (I4,2020). Some respondents claimed that doing so is complex, as it requires "collaboration and co-creation" along the value chain (I4, 2020; I11, 2020). I3 (2020) further elaborated that "there is a lack of mainstream processes to enable the facilitation of circularity in CWS". In contrast, I4 (2020) did not see this as a major drawback, as the CWS invented those processes itself. I4 (2020) did state, however, that the implementation was time-intensive and took experts in the field, which could have been made easier through relevant business examples.

4.3 REGULATORY BARRIERS (SQ3)

Throughout the research process, the legislative framework and structural barriers emerged as the main themes with respect to regulatory barriers, which are further explored below.

4.3.1 LEGISLATIVE FRAMEWORK

Multiple respondents gave specific cases of how current legislation hindered them from implementing circular initiatives (I2, 2020; I4, 2020; I6, 2020). I4 (2020) referred to an example where they could not give their biowaste to a recycler in Belgium as the waste legislation does not allow for waste to cross borders. This barrier is also closely connected to the attitudinal barriers as stated by R3 (2020): “every time you succeed in something, you get a lot of power and motivation to push (circularity) further until the next frustration comes.” Conceivably, policymakers are pushing for circularity to become the new mainstream (European Commission, 2015), however, according to the respondents I7 (2020) and I5 (2020) governmental interventions are not yet tackling issues such as the aforementioned market barriers.

4.3.2 STRUCTURAL

According to multiple respondents, the transition towards circularity usually incurs administrative burdens, which are often a result of the legislative framework (I1,2020; I3,2020, I9,2020). R7 (2020) explained: “We wanted to be really energy neutral. But we just couldn’t get the permit to put the panels on the roof.” This is aligned with a study of the European Commission (DTI, 2013) stating that although businesses such as CWS have a basic understanding of the environmental legislation, they often lack the required in-depth knowledge to comply with the requirements for obtaining governmental support. I3 (2020) further mentioned that “(...) the timely and complex procedures require time and money or external consulting that we simply didn’t have starting off”. As mentioned by I5 (2020), the regional government is often restricted by the national government and may provide visions for future plans locally but no clear guidelines for reaching these goals (Government NL, 2016). As a result, the regional government can only allocate limited resources to the CE due to a lack of streamlined structures of CE (I5, 2020).

5. CONCLUSION

To enable the CWS’ transition towards circularity, thus overcoming the problem stated in section 2, it is essential to understand the potential barriers. The main research findings concluded that cultural barriers (SQ1), more specifically the lack of common understanding of the CE concept, a hesitant company culture, and a lacking long-term vision, were among the most pressing barriers. These often result from market barriers (SQ2) such as low virgin material prices or the need for high initial investments, which have been found to be induced by regulatory barriers (SQ3).

As mentioned in section 2, CE tends to be complex, and it is, therefore, vital to turn the research findings into an understandable prototype which offers actionable results for the CWS and client. Accordingly, a mockup website was created to enable CWS to gain knowledge and identify their most pressing barriers.

Throughout the research process, a large number of barriers to CE were identified and further classified into cultural, market and regulatory barriers. To create an easy to use interface for the website, the categories have been translated into three action types (see Figure 4), namely commitment (cultural), means (market), and necessity to change (regulatory).

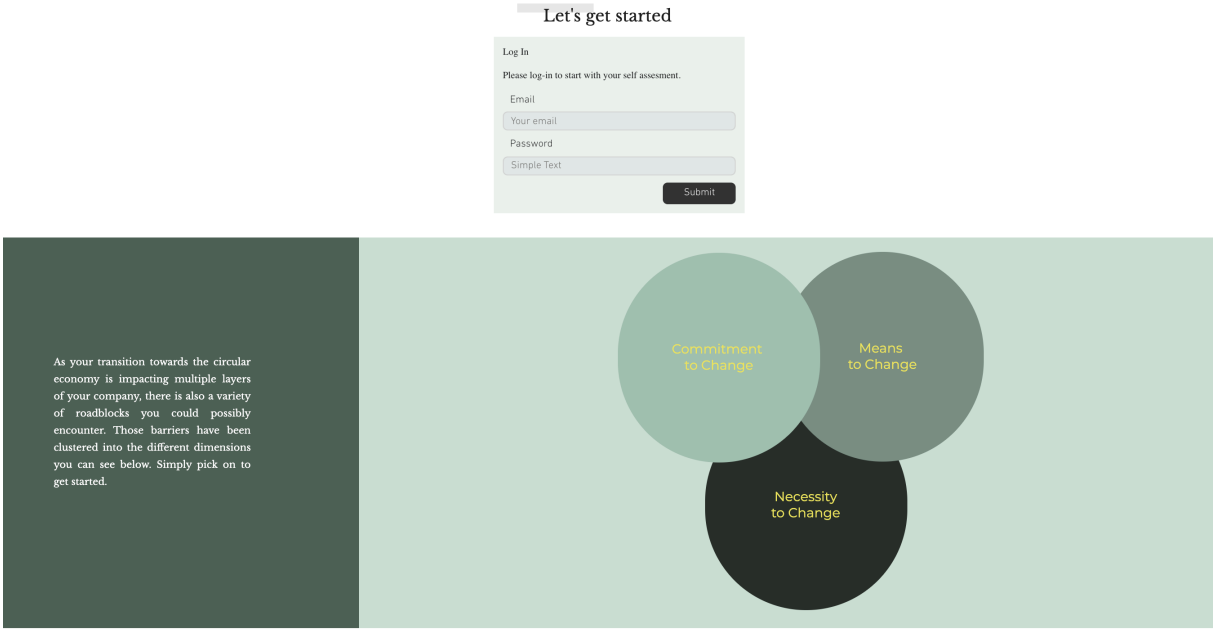

FIGURE 4: PROTOTYPE WEBSITE - OVERVIEW

Although participants overall mentioned similar barriers, they could be perceived very differently in terms of urgency. The prototype, therefore, proposes a set of questions per category which can be

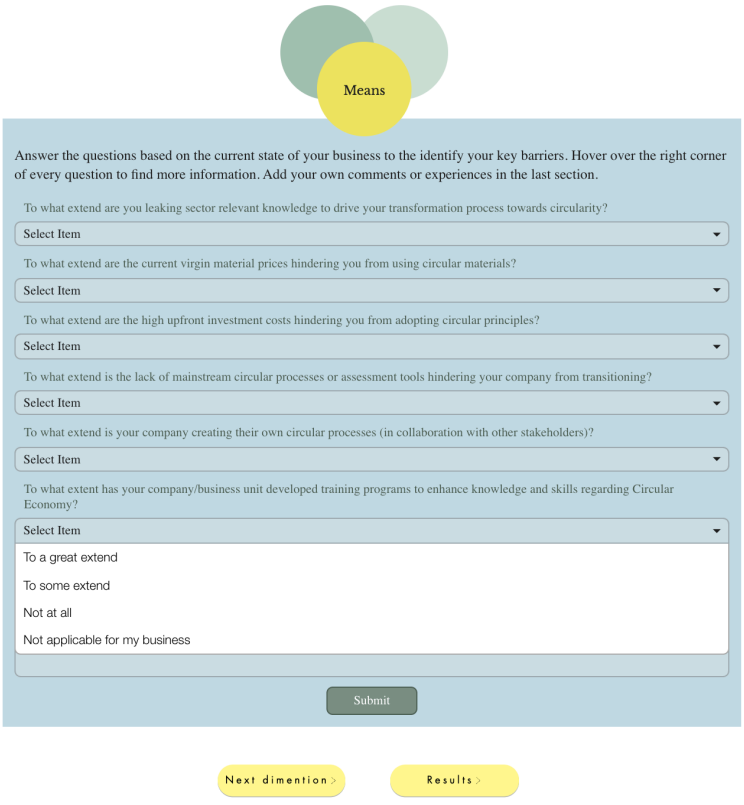

FIGURE 5: PROTOTYPE WEBSITE - BARRIER ASSESMENT

answered on a scale (see Figure 5). Based on the answers, businesses will then receive an overview of their most pressing barriers with recommendations on how to tackle them (see Figure 6). Although the research provided some case-based examples of how to overcome certain barriers which will serve as a foundation, the recommendation section of the prototype will need to be further developed based on research.

The above-mentioned barrier categories have often been surprisingly interconnected, as one barrier can trigger another. The prototype will, therefore, offer an overview of possible chain reactions related to the identified key barriers, which makes it easier to pinpoint a starting point for the business (see Figure 6).

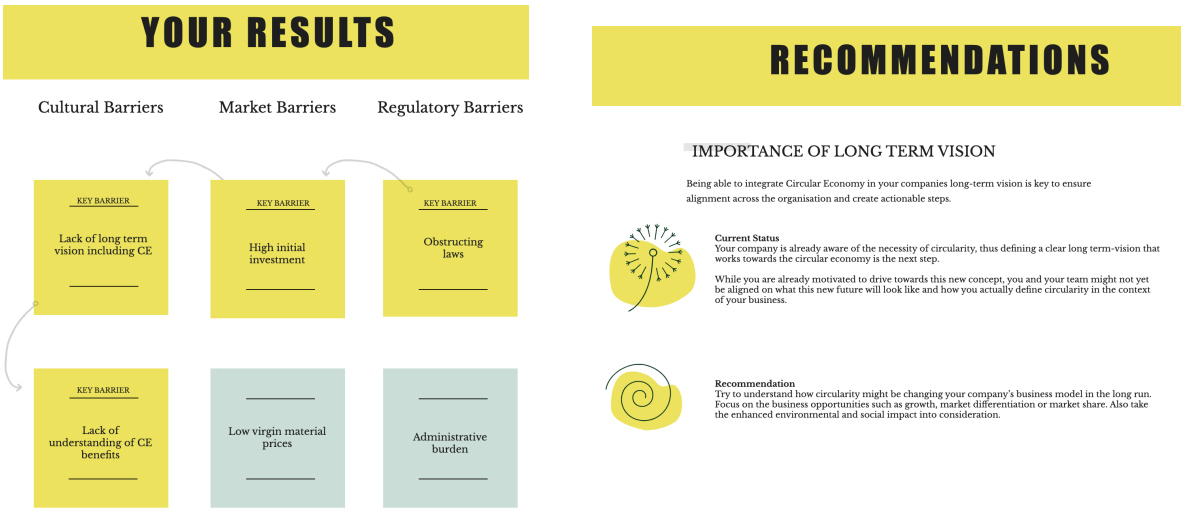

FIGURE 6: WEBSITE PROTOTYPE - RESULTS

5.1 RECOMMENDATIONS

For the client to implement a fully functioning website, he will first need to build the platform based on the prototype. As the client mentioned that he is also cooperating with other studies, he could potentially place the development of the website into the hands of students.

The information delivered in the mockup is grounded enough to get the platform started, however, it was created through the lens of CWS. To make the tool applicable to a wider range of businesses, additional input is needed. This information can either be collected through additional research, or through the platform itself, as it offers a comment function (see Figure 7) for businesses to fill in their own experiences, which was based on the client's feedback (Appx. 7.7.2).

FIGURE 7: PROTOTYPE WEBSITE - FEEDBACK

In the long run, the tool can possibly be used for a growing base of stakeholders. As the client is also consulting the municipality, the data gathered through the platform could be used to identify key areas for the municipality to focus on. Additionally, the platform could be connected to further partners. On one hand to other tools, like the ones developed by the full project group, but also to external platforms which already offer information on certain barriers. Therefore, the client could benefit from a range of modular tools which can be used individually or in collaboration, depending on the client's needs.

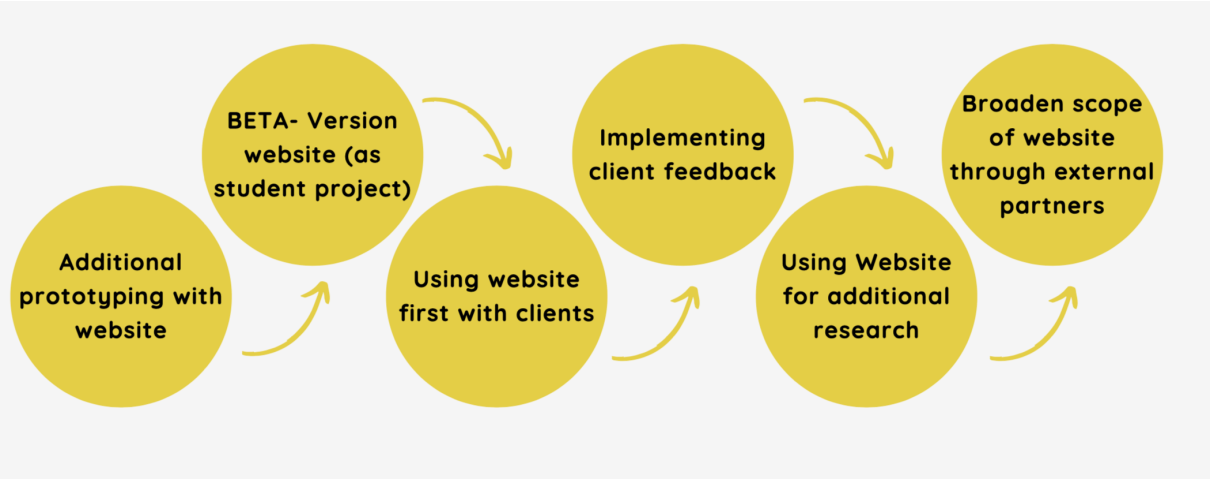

FIGURE 8: RECOMMENDATION FOR FUTURE PROCESS

Access Prototype:

https://appelmalou.wixsite.com/circulartransitions/circular-roadblocks

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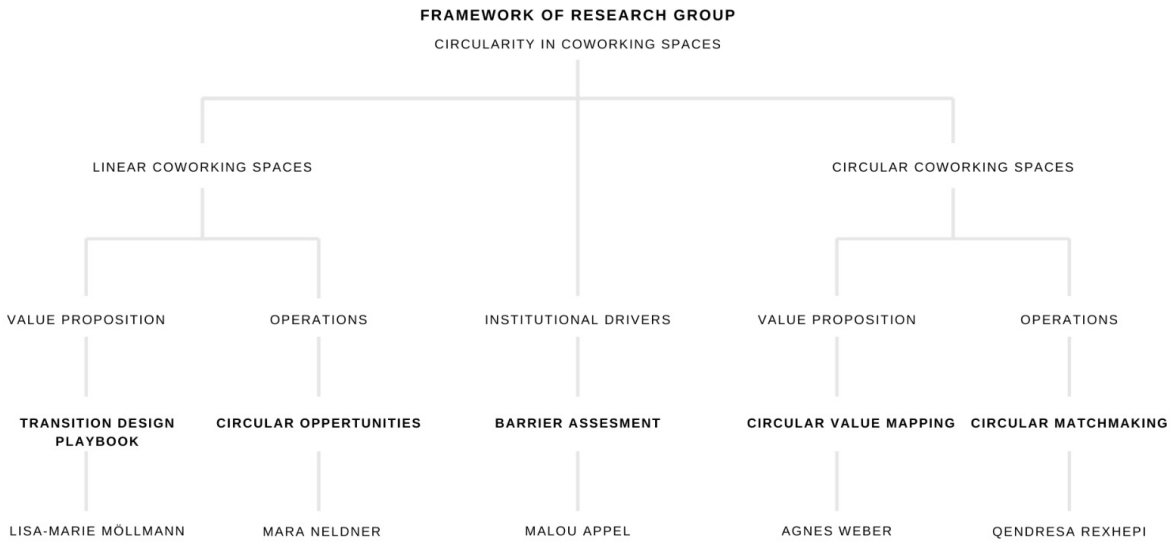
7. APPENDIX

7.1 GROUP RESEARCH FRAMEWORK

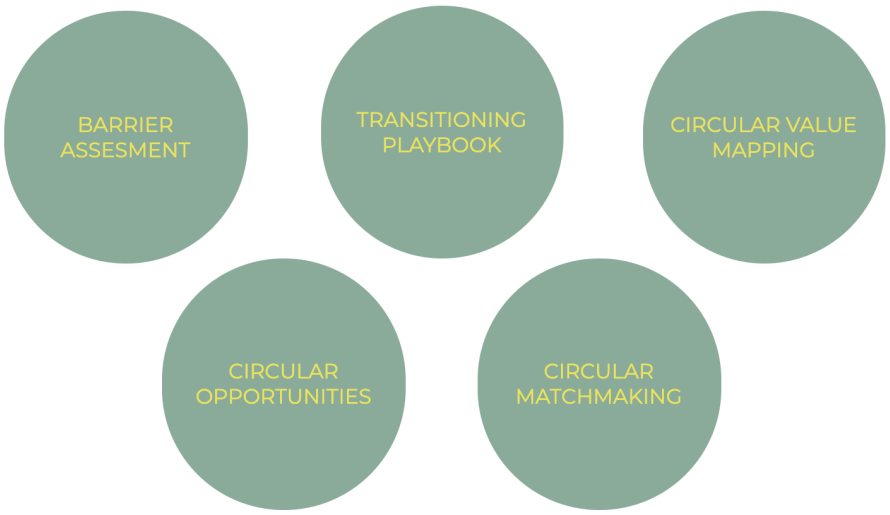


FIVE MODULAR PROTOTYPES COMBINED INTO A CIRCULAR TRANSITION TOOLKIT FOR COWORKING SPACES

Our Research Group consists out of five team members which have conducted explorative research for the Client Evert-Jan Velzing. As shown above we all have our own research area within the same overarching problem. We all developed an individual prototype/solution for our individual research problem. While the individual solutions are fully functional on its own, they are connected on an overarching website, which links the different tools together.

WEBSITE LINK: https://appelmalou.wixsite.com/circulartransitions

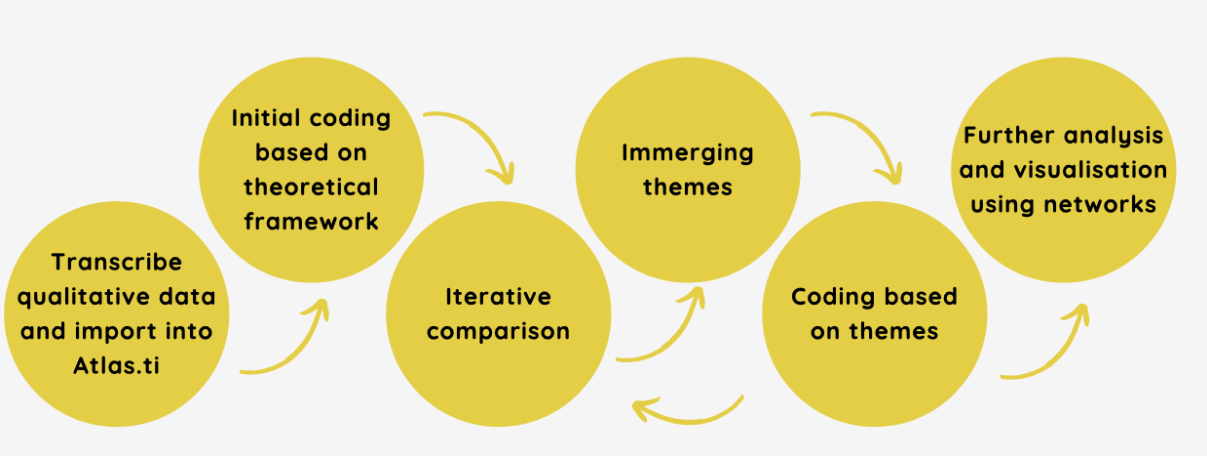
The transition towards a circular economy is a step-by-step process. It is often best stimulated through a series of projects used as stepping stones towards the goal of circularity:



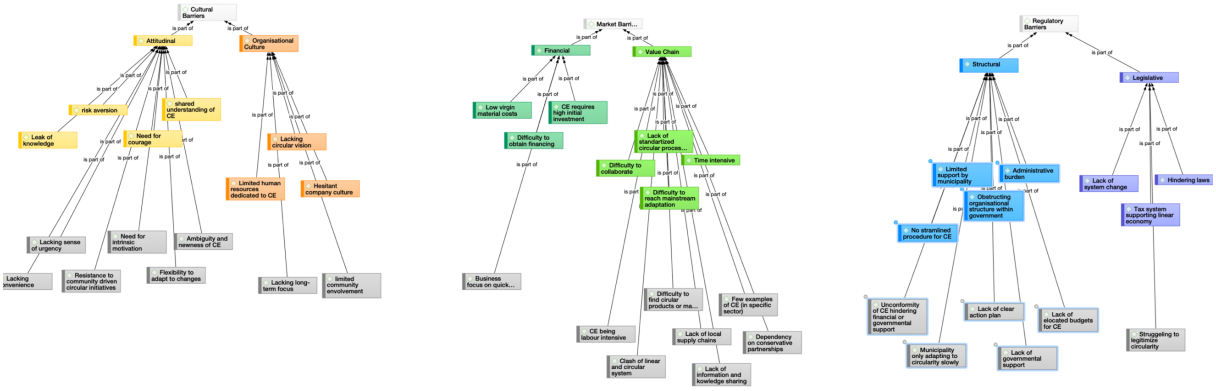
7.4 DATA ANALYSIS

7.4.1 STEPS OF DATA ANALYSIS

The qualitative data was analysed in multiple stages using Atlas.ti.

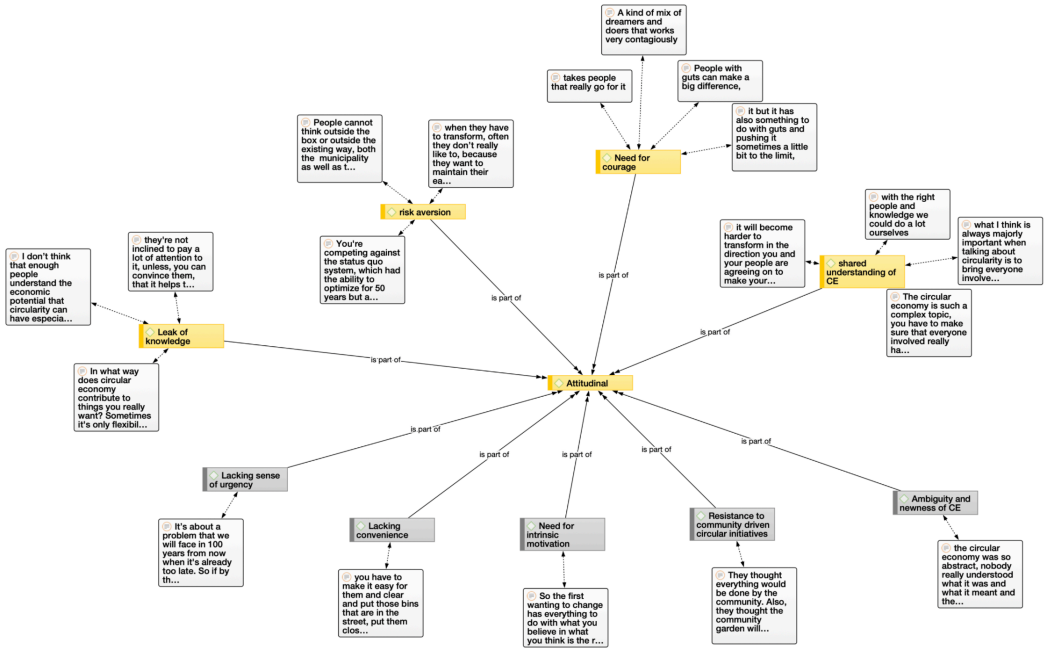


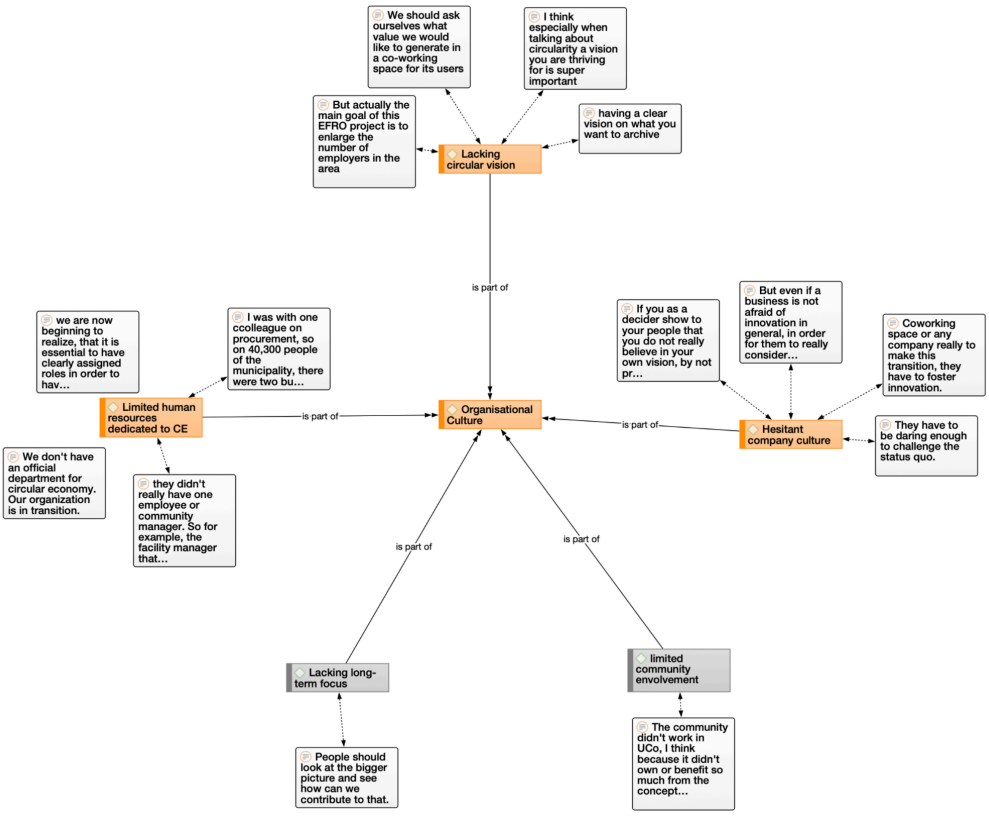
7.5.2 OVERALL BARRIER NETWORK



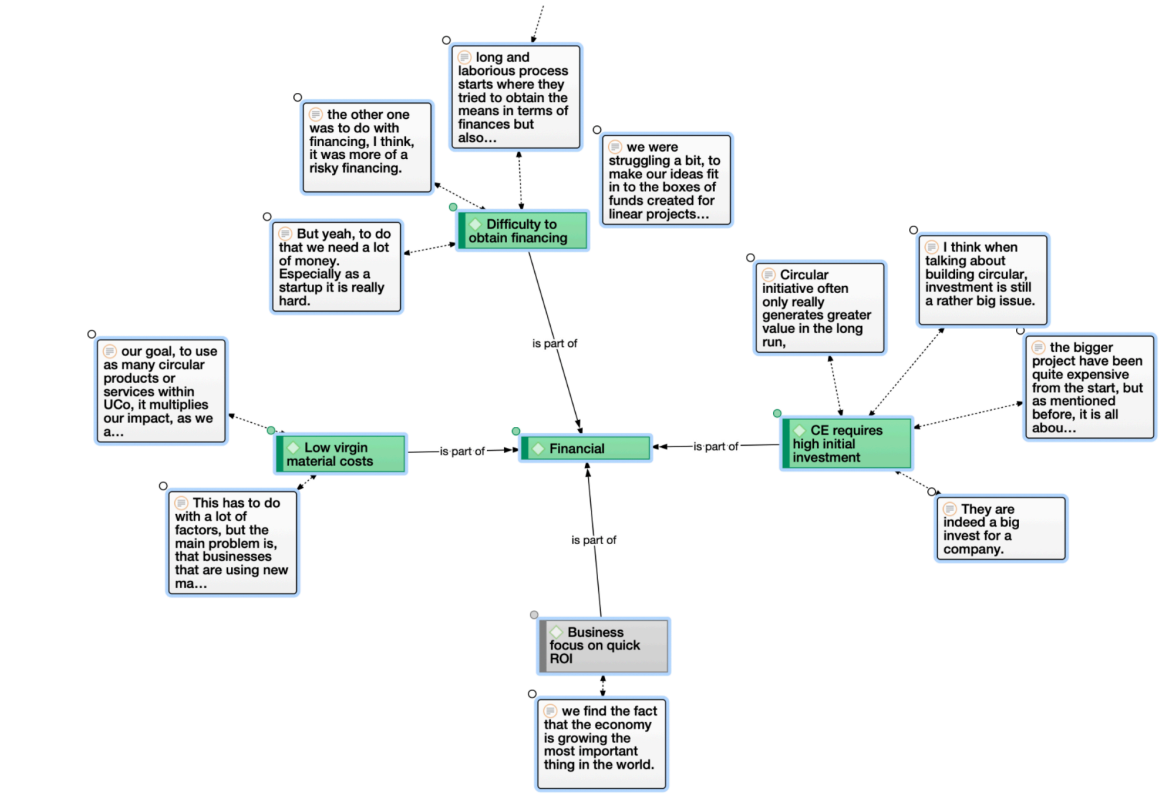
Showing all quotes of each barrier in a visualisation would be hard to grasp, therefore, examples quotes were chosen per barrier. The key barriers are shown with a range of quotes, while the other barriers only include one quote each.

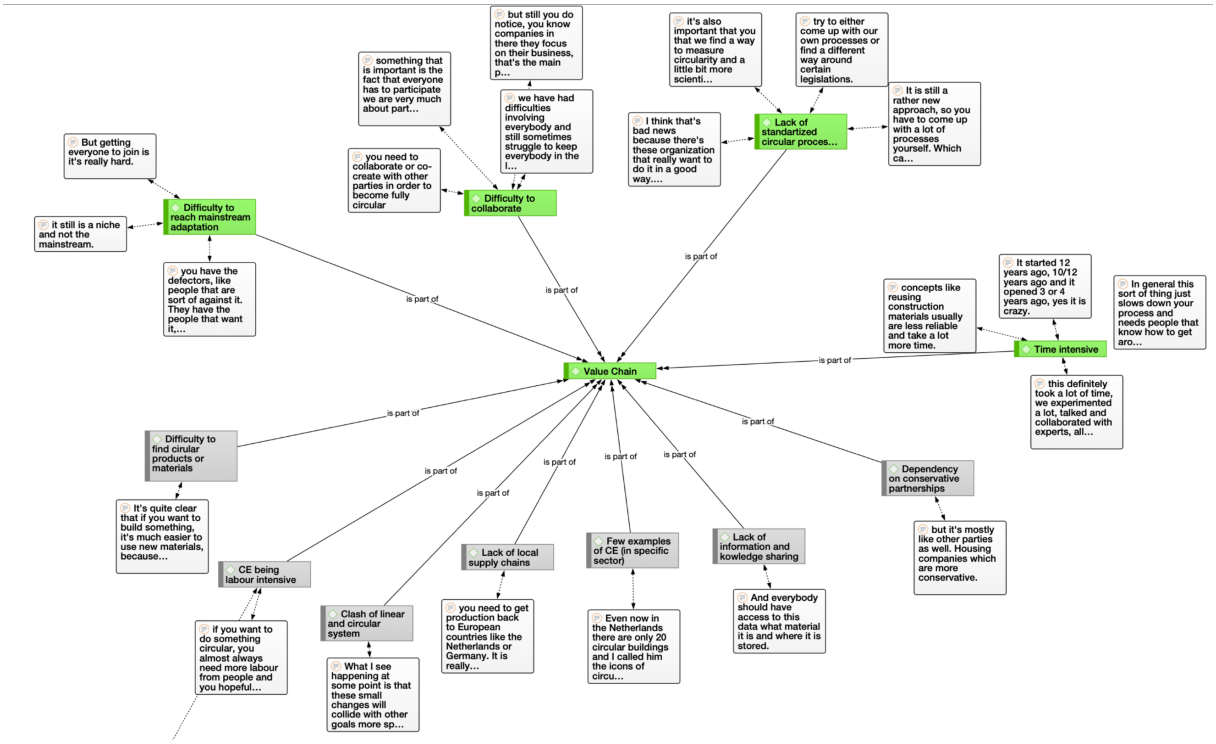
7.5.3 CULTURAL BARRIERS



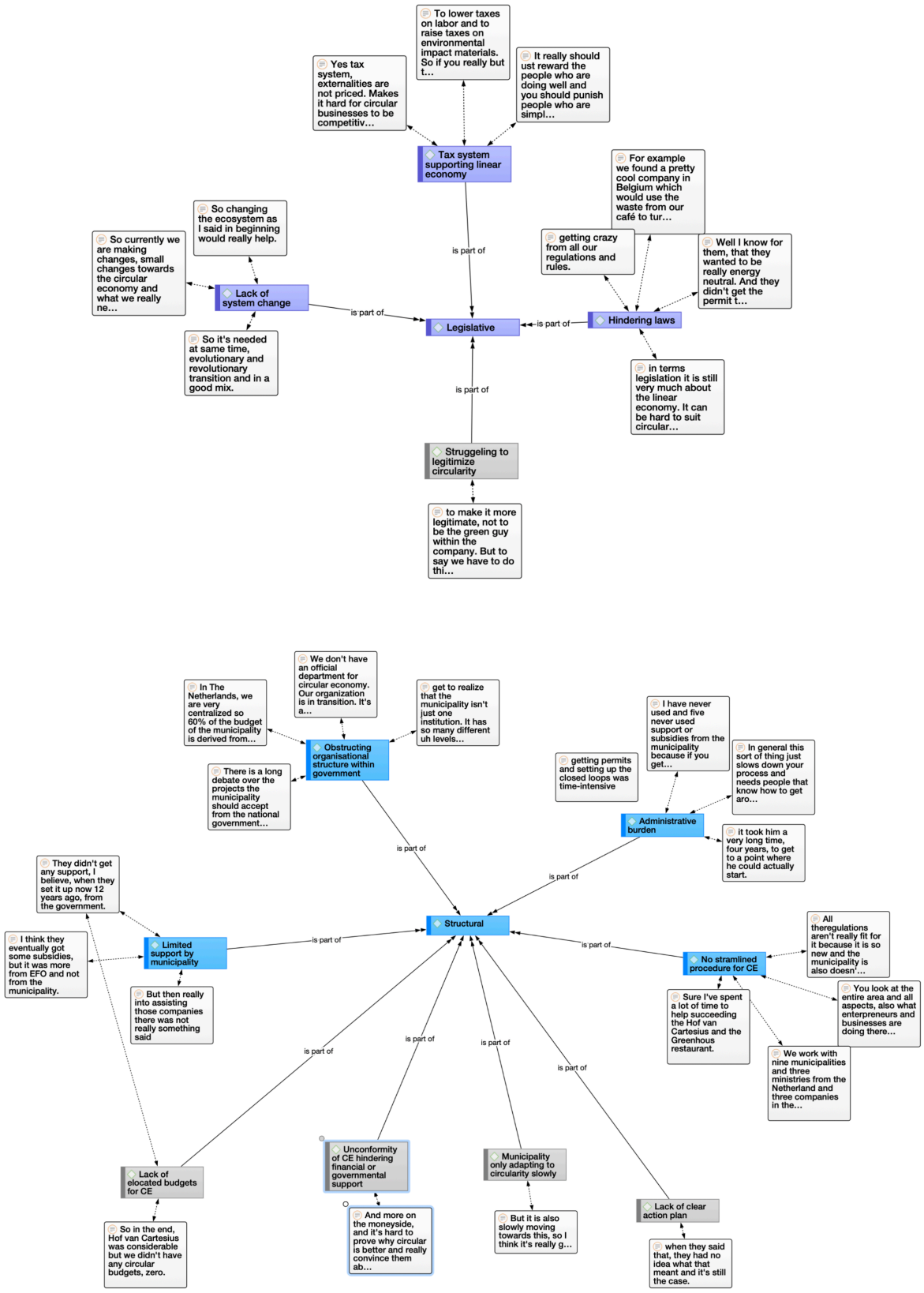


7.5.4 MARKET BARRIERS

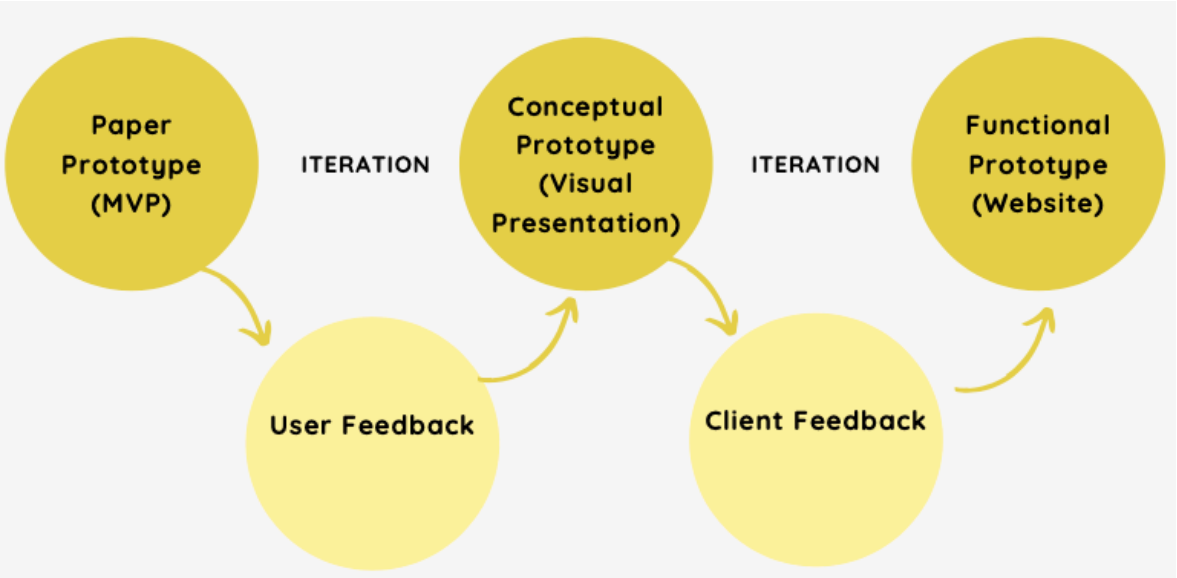




7.5.5 REGULATORY BARRIERS



7.6 PROTOTYPING PROCESS



7.7.1 PROTOTYPE 1

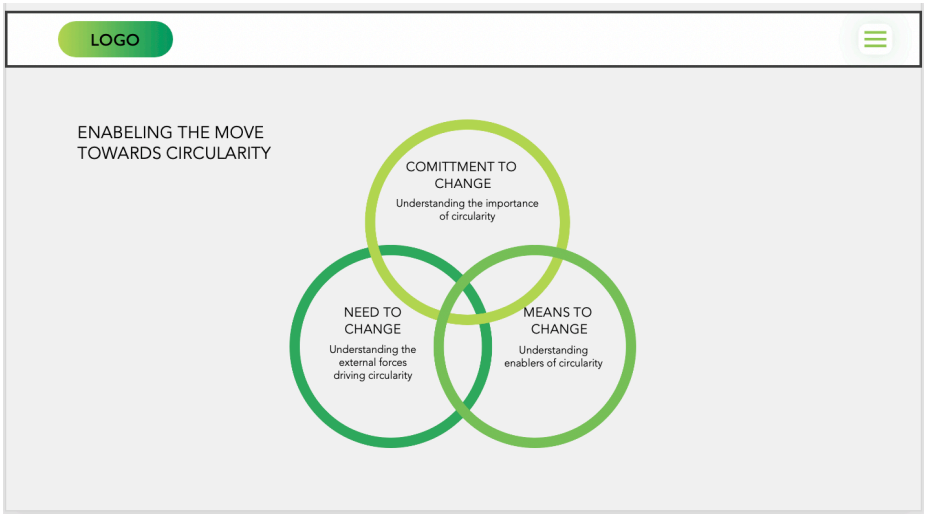
The first prototype created was a simple paper prototype for a knowledge platform about the barriers of CE. The idea behind was meant to enable the client to share insights about possible barriers so he can start his consulting with a base line of understanding on the side of the co-working spaces.

While testing the MVP the focus was on the functionalities of the website more than on the content. The aim was finding out more about how the information would need to be structured and linked in order to be understandable and engaging for the user.

Feedback

- Make the first page more visual, show how the barrier categories are connected
- Do not just list information, make it more engaging through for e.g. examples
- Make clear what the website is about → what is the service you provide
- What value do you offer to the client and the user?

7.7.2 PROTOTYPE 2



The second prototype was created to pitch the concept idea to the client, which is why it used the format of a presentation with visuals. The client was guided through the presentation. He was first asked to give his initial thoughts to the prototype and then more specific questions have been asked to better understand the client needs.

Feedback

- Make the information more engaging
- Give the users a possibility to work with the platform and not just look at it
- Since the client will send out the website to his own clients, it is important to give them a way to feedback

This feedback was implemented in the final prototype.