

THE INSTITUTIONAL PATHWAY TOWARDS A CIRCULAR ECONOMY

31-08-2019

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Word count: 31 250

Abstract

The so-called circular economy has become one of the newest hypes, but the many applications of the concept also led to a wide diversity of the concept's meanings. Within the scope of this research it is defined as *“an economy that aims to reduce the input of primary resources and the output of waste by using energy efficient biological and technical feedback loops and renewable energy resources in order to decrease its impact on the earth, especially in regard to climate change and the loss of biodiversity.”*

Since the circular economy makes a business model from being sustainable, the concept is embraced by many governments. However, some researchers have suggested that the current institutional settings of these countries are ill-equipped for the transition towards a circular economy. As we will see, empiric support for this assumption is still lacking. This knowledge gap leads to the following question: *What is the influence of institutional factors on the transition towards a circular economy?*

A mixed method design will be used to answer this question. Moreover, a quantitative regression analysis will be conducted to determine the influence of institutional arrangements on the level of circularity in a country. Qualitative interviews and observations were carried out in order to correctly interpret the quantitative results. In addition, the qualitative interviews were used to reflect on both the future of the circular economy concept and on the possible future institutional arrangements for promoting the transition towards a circular economy. To be able to say something about the influence of institutional factors on the transition towards a circular economy, it is important to measure the presence of such an economy. Within this research, the measurement was based on the scientific definition of circular economy. During the analysis this definition was also assessed. A principal components analysis proved that the three main elements of the circular economy: resource efficiency, energy efficiency, and sustainability cannot be seen as one empiric element. The results of the interviews underlined that these three elements are considered to be different things in the realm of politics. Consequently, the circular economy cannot be seen as an empirical construct. Instead, researchers could see it as an ideal type. A critical assessment of the different elements of the circular economy is necessary to ensure that the transition contributes to a more sustainable economy.

Furthermore, it is argued that institutional arrangements are a crucial element of the transition towards a circular economy. Even though the regression analysis did not give any significant positive relationships for the influence of political institutions on the level of circularity within a country, the results of the interviews gave a strong reason to believe that institutional settings do indeed matter. Unfortunately, the results did not give a definite answer on the exact influence of institutional factors on the transition. A major problem with the conducted regression analysis is the way circularity was measured. The used indicators were strongly influenced by the historical developments of the different included countries. As we talk about a transition towards a circular economy, the historical scores on circularity are less interesting. Therefore, it is suggested that future research will use leading indicators to measure circularity.

The results of this research led to a new conceptual model to study the influence of institutions on the circular economy. During this study, five institutional capacities of the government were taken into account: regulatory capacity, organizational capacity, resources, collaborative capacity, and learning capacity. The research's results suggest that another kind of capacity can be added to this list: the government's narrative capacity. To make the transition towards a circular economy, governments should actively promote the ideas behind the concept to multiple actors in society: businesses, consumers, and financial institutions. Moreover, politicians and other practitioners should think about the right mix of institutional arrangements that they can use to promote the CE among all these actors.

Preface

Given one hour to save the planet, I would spend 59 minutes understanding the problem and one minute resolving it.

- Albert Einstein

Two and a half years ago, I followed a course 'Climate economics' at the University of Kassel. I remember the lectures as being very depressing. Every Tuesday afternoon, I left the lecture room with emerging tears. It is not that I disliked the lecturer. It is not that I disliked my peers. It was the subject of the course that was striking me down. I will never forget the afternoon in which we discussed the consequences of climate change for the existence of the Netherlands. Whereas I was taught that the dikes and dunes could protect this small and beautiful country from the sea, the results of the lecture made me aware of the opposite. As the globe is becoming warmer and the sea level rises, this will eventually lead to an unattainable situation in the Netherlands. There will be a time when Amsterdam is the next city to disappear in the sea. Even though I still look back at this afternoon with a little disgust, I am also thankful for the insights the lecturer gave me. It motivated me to write my Master's thesis on the circular economy.

I would like to thank everyone that encouraged me in the process of writing my thesis. My special thanks are for Mirco Vantangoli, who was always there for me during the last few months, Bobbi Steele, Mingchun Xu and Salma Samir. I will never forget the day that we translated my survey in a six hour during train trip from Bari to Faenza. I still feel the need for coffee. Furthermore, I should thank my family. They have always been very supportive and, sometimes, a welcome distraction. Another person I would like to thank is my guiding professor Rebecca Moody. Her critical reflections helped me to ensure the academic quality of this research. Moreover, I really appreciate the way she has guided me during the last few months.

Last but not least, I want to thank all the inspiring people I have interviewed during the last few months. Your ideas and suggestions have been of great help to come to a better understanding of the relationship between institutional arrangements and the transition towards a circular economy.

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List of abbreviations

Circular economy = CE

European Union = EU

Principal Component Analysis = PCA

Kaiser-Meyer-Olkin = KMO

1. The institutional pathway towards a more circular economy

Global warming, the loss of biodiversity, the huge amount of waste and the limited availability of minerals are four problems many societies are facing right now. The occurrence of these problems is a motivation for many individuals, organizations and researchers to start looking for solutions. To fight the four mentioned problems one solution is thought to be found: Circular economy (CE) is one of the newest hypes (figure 1). Whereas the contemporary linear economy is based on the ‘fast turnover’ principle, which stimulates people to buy new gadgets, clothes and furniture regularly, the CE aims to minimize the amount of waste by making consumer products last. Use and reuse are the goal, not using up. Many governments, businesses and newspapers see the CE as the future model of our economy and praise it for many things: *“The circular economy could bring 70 percent cut in carbon emissions by 2030”* (Guardian, 2015), *“We need to switch to a circular economy to ensure that there is enough food, water and prosperity by 2050 ... and to cause less harm to the environment.”* (Rijksoverheid, n.d.). The feeling of urgency of moving towards such an economy is also underlined by the Dutch national government, which wants to create a ‘full’ CE before the year 2050 (Bastein, Rietveld & Keijzer, 2017), the United Nations, which sees the transition towards a CE as important for reaching sustainable production and consumption (UN,2018), and the European Union (EU).

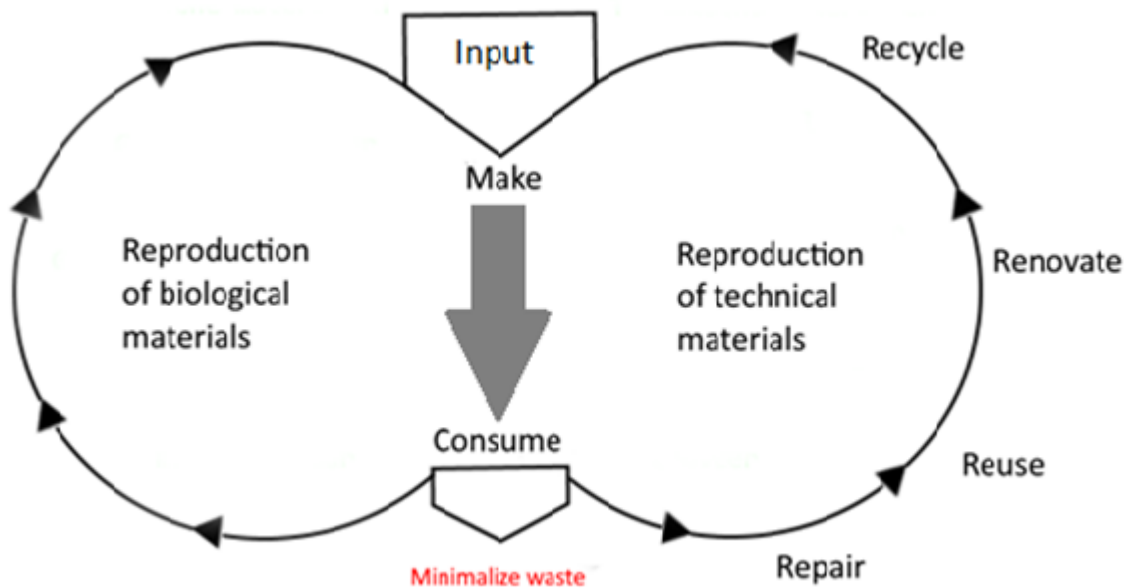


Figure 1: Circular economy

Obstacles in the transition towards a circular economy

The CE is, however, not only applauded. According to the Guardian it should not be seen as a magical fix, but as a part of a bigger effort to tackle wasteful consumerism, ever increasing economic growth and undemocratic power structures (Guardian, 2017). Another issue is addressed by a Dutch newspaper <NRC Handelsblad>. In one of their news articles it is argued that the contemporary way of thinking, the dominant habits, and the shared norms and values in Western societies are based on a taking-making-consuming-throwing away mentality. This mentality could hinder the transition towards a CE. Although the number of circular initiatives is rising, this growth is not sufficient to establish the big shift from a linear economy to a circular one. At the moment there are 85.000 CE

initiatives in the Netherlands, only 1.500 more since the start of the policy program towards a CE in 2016. To establish a full CE by 2050, many more initiatives are needed. A gap in the market one might reason, but the reality is harsher. Many circular initiatives run aground (NRC, 2019). This leads to the following puzzle, why do so many circular initiatives fail in the Netherlands even if the government's goal is to promote them? The answer on this puzzle might partly be found if one examines the technical challenges, such as recycling plastics and electronic hardware, circular businesses are facing right now (Lintsen et al., 2018). In this paper, however, attention will be paid to obstacles of a more political character, because political institutions are assumed to have a huge influence on the success of the CE (Raworth, 2017).

Political institutions and the circular economy

In the context of this research political institutions can be defined as formal and informal procedures, routines, norms and conventions (Lowndes & Roberts, 2013). This definition is still rather vague. More concretely political institutions can be seen as the organizational structures of the government that are used to create, enforce and apply laws. These structures can be formal like the tax regime, but also informal. An example of an informal institution is the Dutch government's tradition to use voluntary agreements with private actors in order to implement policies (EEA, 2016). Many researchers in the field of CE have made the assumption that the current political institutions should be changed before a CE can flourish (Lintsen et al., 2018; Stahel, 2016). In general, the argument is that the current institutional setting is too much focussed on promoting the linear economy and is, therefore, ill-equipped to facilitate a transition towards a CE. The evidence for such statements is mostly gathered through case studies, where firms were asked which obstacles they encountered in the transition towards a CE (Ritzen & Sandström, 2017). Consequently, most gathered data focuses on the level of circularity on micro or meso scale. All these research projects are of great value for understanding the influence of political institutions on the circularity level of individual firms, eco parks and value chains (Winans, Kendall & Deng, 2017). These studies, however, do not provide any evidence for the assumption that political institutions influence the level of circularity within a country. In fact, large scale research on this relation has not been done up to now. To be able to say something about the influence of political institutions on the transition towards a CE, it is interesting to compare the institutional settings of different countries and to look at the influence of these settings on the level of circularity. As this approach seems to be promising, one issue remains unsolved: which countries are to be included in such a comparison?

Since 2014 the EU has a policy program that aims to promote the CE among European member states. The aim of this program is that all EU member states will transform in a CE the upcoming years, but how EU member states reach this target is up to them (EU, 2019). Within the scope of this EU CE policy, there are important differences in the countries' CE policy programs. Some focus on waste management, some aim to demote unsustainable consumption patterns, others focus on innovation policies more general. This is not the only difference, also the used policy instruments vary. Some countries mainly use financial incentives. Portugal, for example, aims to facilitate the transition towards a CE with a reform of its tax system. In 2015 they introduced the Green Fiscal Reform, which fiscally promotes the efficient use of resources, the reduction of energy dependency, and sustainable consumption and production. Some other countries mainly use regulatory arrangements. One example can be found in France, where a law on consumption was introduced in 2014 that includes several articles on the life span of products. Another example comes from the United Kingdom (UK), where the Materials Recovery Facility Regulations were adopted in 2014. The aim of this piece of legislation is to improve the quality of recycled products. Yet other countries use more information based policies. In Flanders (Belgium), for instance, there are several information based instruments that aim to

stimulate companies to become more aware of their material using patterns. Moreover, these programs show companies how they can become more sustainable and efficient. In the Netherlands, another approach is preferred. Within this country, the use of voluntary agreements between public and private actors is considered as a crucial part of the transition. Although some other countries also use some kind of voluntary agreements, this approach is less common (EEA,2016). So, the different European countries take different approaches to enable a transition towards a CE. These approaches differ partly due to different institutions at play in each country.

Research's question

Despite the different institutional arrangements present in the countries that want to promote a CE, the goal remains the same: the development of a CE. From a theoretical point of view, it is interesting to investigate whether the different institutional factors of these specific countries have an influence on the establishment of the CE and, if they do, which institutional factors have a positive or negative effect on the level of circularity within a country. To be able to answer the sketched puzzle then, the following question is formulated:

What is the influence of institutional factors on the transition towards a CE?

Research's goal

The goal of this research is to get more insight in the relationship between political institutions and CE. As said the assumption is often made that the contemporary political institutions are ill-equipped for the transition towards a CE. I wonder if this assumption is true. Therefore, I want to study this topic in order to help my readers address the bigger and more important question of how institutions can constrain or foster transitions. Ultimately, I hope that this study leads to a more nuanced view on the role institutions play in transitions. All in all, just arguing that institutions should be changed in a particular way does deny the institutional reality. Institutions are not created from scratch, but they are built upon old institutional arrangements (Lowndes & Roberts, 2013). If one only focusses at changing the formal institutional arrangements, one risks to oversee potential drifts into the environment, which undo the effects of these changes (Thelen, 2009; Hacker, Pierson & Thelen, 2015). To come to a more refined perspective then, three sub-questions are formulated:

- 1) Which institutional factors influence the transition towards a CE?
- 2) How can the influence of institutional factors on the transition towards a CE be explained?
- 3) How can the influence of institutional factors on transitions be conceptualized in future (research) projects?

The last question is formulated because this research does not aim to find all the answers regarding the influence of institutions on transitions. The goal is to give a more nuanced view and to stimulate others to take a similar perspective. Therefore, this paper will give suggestions on how future research models could look like. It should be noticed that this question is mostly theory-driven. This might seem to be conflicting with the more practical-driven research goal. In fact, however, the practical research goal is covered by the first two sub questions. The third question is included in this research to enable future researchers to give even more practical-driven information. Moreover, the conceptualisation can also serve a more practical goal. If practitioners are better able to conceptualize the institutions they deal with, it also enables them to change these institutions in such a way that a transition towards a CE becomes possible. After all, the first step in changing institutions is the awareness of the existing institutional arrangements. For this reason, 'research' is put between brackets in the third sub question.

Research's method

In order to answer the research question, a mixed method approach will be used. To gather more knowledge on the relative influence of institutions on the transition to a CE, the institutional settings of twenty-four European countries will be compared. This part of the research is based on a quantitative research approach. Official statistics, document analysis as well as a Web-based survey will be used to gather the data on formal as well as informal institutional arrangements for a small N multiple linear regression analysis. The results of this section will give an answer to the first sub-question. Since the small N makes a correct interpretation difficult, qualitative interviews and observations will be done to come to a better understanding of the results. Moreover, the qualitative part of the research will give an answer on the second and third sub-question. By combining the results of both the quantitative and qualitative research part, an answer will be given on the main research question.

Scientific relevance

The last few years, there has been an exponential growth of academic articles on the transition towards a CE. This paper will make a contribution to the academic debate in multiple ways. To begin with, it will critically examine the scientific definition of CE, which is recently published by Korhonen et al. (2018). The main elements of this definition are taken over by this paper. Based on the scientific definition, a measuring tool will be developed during the conduction of this research to measure the level of circularity in different EU member states. Through the conduction of a Principal Components Analysis and semi-structured interviews it will be assessed whether the different elements of the scientific CE definition can be seen as one empirical concept. As many researchers have focussed on the establishment of a CE on the micro and meso level, this research makes an attempt to measure CE on the macro level. The results will then give a better understanding of what it means to develop a CE on country level. Another scientific contribution of this research has to do with the measurement of institutions. In general, it has been emphasised that not only formal, but also informal institutions should be taken into account (Lowndes & Roberts, 2013). During this research formal and informal institutional arrangements are measured by the use of different data collection methods. The results will contribute to the search of many institutional scientists to measuring methods that make the measurement and comparison of informal institutional arrangements across different countries possible (Helmsky & Levitsky, 2004; Voigth, 2013). A third, and last, scientific contribution of this research is the linkage between political institutions and the transition towards a CE. Up to this moment, little quantitative research has been conducted on the relationship between sets of institutions and large societal changes. The focus was mainly on qualitative studies. Consequently, a lot is known on how institutions influence transitions. Less is known on the extent to which transitions are influenced by different institutional arrangements. By taking a mixed method approach, this research will give more insight into the relative influence of institutions on large societal changes (Gupta et al., 2010).

Societal relevance

This research will explore suitable institutional arrangements to be able to inform scientists, politicians and actors in society more general on the possible institutional pathway towards a more CE. For scientists in the circular economy's research field this is interesting, because little empirical evidence has been gathered on the institutional arrangements that best fit a CE. For politicians the relevance lies in the fact that the outcomes of this research will help them to make scientific-based policy interventions in order to ease the transition to a CE. And last but not least, the research will give an instrument to all other actors in society to critically assess the policies as promoted by politicians.

Reader guide

The next step in this research will be a comprehensive literature review on the CE and the influence of institutions on transitions. Thereafter, attention will be paid to the methodical issues of this research. Following that, the empirical findings will be provided. The chapter on findings will be followed by a theoretical reflection, where the findings are related to the conceptual model. After this chapter, the consequences of this research for the existing literature will be discussed. In the last chapter some conclusions and recommendations will be given.

2. The circular economy and institutional change

During the course of the introduction it has been argued that there is a relationship between the transition towards the CE and institutional arrangements. The objective of this paragraph is to examine both concepts. In order to do this, there will be a strong focus on the transition's underlying institutional system. Whereas other researchers in the field of circular economics have argued that laws, tax systems and performance indicators should be changed as soon as possible (Maitre-Ekern, 2017; Raworth, 2017; Stahel, 2016), this research will take a more critical stance based on an institutional perspective. To begin with, however, there will be a deeper outline of the CE concept.

2.1 Defining the circular economy

The interest of many countries in the CE (see figure 2) lies in the fact that this concept made a business model of being environmentally sustainable. Such a model is seen as crucial, because the contemporary linear economic system, which is based on taking-making-consuming-throwing away, overexploits many resources. With the speed especially many metals are used nowadays, there is a high chance that such materials will not be available anymore within a few years (Raworth, 2017). The problem here is not only caused by the use itself, moreover it is a consequence of the ease with which such materials are thrown away after usage. Since many countries fear that such processes will endanger their economy in the long term, the CE concept is nowadays seen as the new template for modern economies by many actors including China and the EU (Winans et al., 2017; Korhonen, Honkasalo, Seppälä, 2018). Although there are indeed shared interests in a more sustainable economy, there is no general accepted idea of how this economy should look like. Every country and every research group has his/her own definition of a CE. Consequently, the meaning of CE in itself has become rather empty and it is necessary to describe what the concept means within the context of this research. In order to do this, three main features, resource efficiency, energy efficiency and sustainability, will be discussed in the upcoming paragraphs (Korhonen et al, 2018). These features do not cover the social aspect of the CE. Although the social element is thought to be important by many advocates, for example Raworth, of the CE concept, it is left out in the upcoming discussion (Geisendorf & Pietrulla, 2017). The reason for this lies partly in the fact that it is not a strict necessity for the transition towards a CE. Moreover, including social considerations would mean that a position should be taken in a rather normative debate, which is beyond the scope of this research.

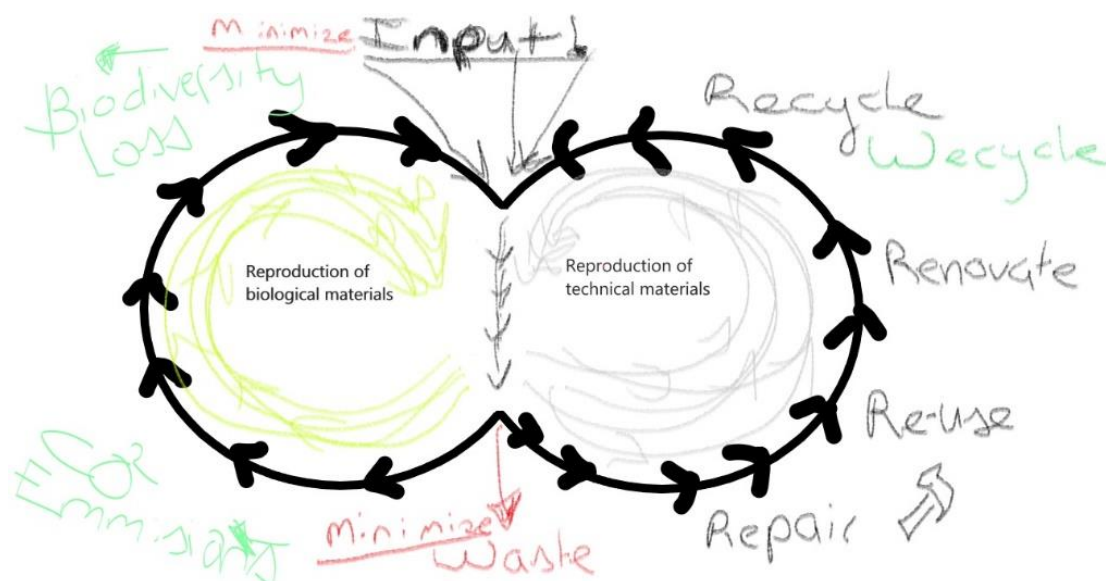


Figure 2: A representation of all circular economy's aspects

Resource efficiency

As the different CE definitions are further examined, it becomes clear that all of them include the fact that a CE should be restorative and regenerative by design and aim to reduce as well waste as resource use by letting both biological and technical minerals flow through the economy in a circular way. These circular flows should minimize the act of throwing materials and products away after using them. Instead these products and materials are repaired, reused, renovated or recycled in order to make them useful again (Korhonen et al., 2018).

Energy efficiency

This is not all. Another facet underlined by many researchers refers to the usage of energy in a CE. To begin with, the use of all bio and fossil fuels is regarded as wasteful, because such materials are burned during the energy making process and are, consequently, useless afterwards (Vercalsteren, Christis & van Hoof, 2018). So, the ideal energy production is largely based on renewable energy sources. The aspect of energy usage does, however, not only refer to the necessary transition towards solar panels and wind turbines. The basic elements of the CE, repairing, reuse, renovating, and recycling, require energy. If one aims to be fully circular, this could lead to unsustainable levels of energy consumption because in each circular flow little amounts of materials will leak out. The tracking, finding and recovering of these leaked out resources will be a journey without end and will cost a disproportional amount of energy. Since renewable energy resources are not infinitely accessible and other energy sources are non-circular, a full CE is, at least for now, not feasible. Nevertheless, there is a lot of room for improvement. In the task of making the economy more circular, it is important to consider the needed energy for each circular loop that is created. The most energy efficient loops should be chosen. Efficiency can in this context be defined as the amount of saved resources divided by the amount of energy needed (Korhonen et al., 2018) In general, scientists underline that reusing and repairing are relatively energy effective circular flows, whereas recycling and renovating cost more energy (Raworth, 2017).

Sustainability

A third and final aspect of the CE is the fact that it aims for sustainable development, which refers to lowering the impact of the economy on the earth (Geisendorf & Pietrulla, 2017). Although the main driver for CE is indeed the wish to reduce the ecological footprint of the economy, the footprint is not automatically reduced with the establishment of a CE. The two CE's features discussed in the last two paragraphs were focussed on the efficiency of resource and energy use. Yet, a very efficient CE can still impose severe pressure on the earth's ecosystems (Korhonen et al., 2018). Biodiversity loss, for example, is partly caused by deforestation. The use of wood is, however, argued to be highly circular due to the fact that trees will grow back in a reasonable amount of time. This is, of course, true. Unfortunately, the whole eco-infrastructure in a forest can be destroyed in the time span between cutting down all the trees and the growth of new ones (Stahel, 2016). Sustainability is in this regard fundamentally different from circular efficiency. It refers to the planetary boundaries and the fact that a sustainable economy does not exceed such boundaries (Korhonen et al., 2018). Rockström et al. (2009) have identified nine boundaries of our planet. It is beyond the scope of this research to deeply examine all boundaries, so only the most important conclusion will be discussed. The result of Rockström's research underlines that the boundaries regarding climate change, biodiversity's loss and biochemical flows are currently over exceeded. Those excesses are at the moment the most important threats for the earth's functioning. It, hereby, should be noticed that biochemical flows have a direct influence on as well climate change as biodiversity's loss (Rockström et al., 2009). The rest of this

research will therefore only take into account climate change and biodiversity's loss as a way to assess a CE's sustainability.

The discussion of above, regarding the three CE elements, can be summarized by the following conceptualization of a CE:

an economy that aims to reduce the input of primary resources and the output of waste by using energy efficient biological and technical feedback loops and renewable energy resources in order to decrease its impact on the earth, especially in regard to climate change and the loss of biodiversity.

2.2 An institutional perspective

As already mentioned before, many researchers have reasoned that the transformation from a linear economy to a CE can only be accomplished if politicians change the existing institutions (Raworth, 2017; Stahel, 2016). It is important to illustrate this with an example. The Dutch national government has set the goal of a 100% CE in 2050, but changes in the measurement of the economy, the raising of taxes, and regulations are not done on large scale by now. Lintsen, et al. (2018) argue that this can lead to a policy that *"is very 'cuddly', but lacks vigour"* (Lintsen, et al., 2018: 456). Such arguments, however, do not take into account the institutional complexity of large societal transitions. From a political perspective it is impossible to change all political institutions, e.g. laws, written contracts, practices, norms and values from the one day to the other. Therefore, changes will occur according to the principle of institutional bricolage:

Seldom are institutions created from scratch. Most often they are the outcomes of the recombination and reshuffling of pre-existing components or other institutional materials that happen to be at hand and that, even when depleted, can serve new purposes.
(Lowndes & Roberts, 2013: 180)

So, in transition towards a more CE institutions are not created from scratch, rather they are built upon old political institutions that are still focussed on a more linear economic model (Thelen, 2009). Within this context, it is important to understand how change comes about. The institutional literature makes a difference between design-based approaches and evolutionary ones. According to the design-based approach, institutional change comes about through actors who deliberately change institutions in order to reach a certain goal (Kingston & Caballero, 2009). The evolutionary process model, on the other hand, underlines that institutions periodically emerge. They can emerge randomly or through deliberate design. Moreover, it is underlined by this model that any new institution should compete with other already existing institutions (Mathews & Tan, 2011). In many real-world processes institutions develop itself based on both deliberate design and unintentional developments (Kingston & Caballero, 2009). To understand the dynamics of this process, it is important to go back to the heart of institutionalism, where one can find one of the field's most highly debated topics: the fact whether agency or structure is the driving factor for institutional change. Some scientists, for example Thelen, argue that agents are the crucial factor, because all institutions, even the ones that are strongly embedded in our contemporary system, are dependent on actors for their maintenance, defence, revision, and rediscovery due to the fact that institutions only exist through the actions of individuals. Consequently, actors have always the opportunity to deliberately change these institutions (Lowndes & Roberts, 2013; Thelen, 2009). Other academics, for instance Sabatier, argue that one should look at institutions to explain institutional change, because actors will act according to the logic of appropriateness. This view is based on the new institutionalism, which is explained by March & Olson (1996) in the following way:

Institutions constitute and legitimize political actors and provide them with consistent behaviour rules, conceptions of reality, standards of assessment, affective ties, and endowments, and thereby the capacity for purposeful action. Along the way political institutions create rules regulating the possession and the use of political rights and resources (March & Olsen, 1996: 249)

This implies that actors are constrained in their actions by the knowledge of what is appropriate, which tells them the practices they should follow in any given situation (Lowndes & Roberts, 2013). From this perspective, whether institutional change comes about or not depends on the degree to which institutions allow and encourage actors to change them (Gupta et al., 2010).

In this research the emphasis will be on explaining how the transition to a CE is influenced by institutions, to be more precise by political institutions. Such a position is taken, because a successful transition requires all individual actors in a society, e.g. the government, businesses, households, to change their habits (Raworth, 2017). In this regard, it is useful to look at the institutions at play during the transition period (March & Olsen, 2008). As it was emphasised in this thesis' introduction that governments across countries take different approaches to encourage the transition towards a CE, it is especially interesting to look at the political institutions at stake. This implies that the general notion of institutions is from now on narrowed down to institutions that explicitly imply the making of policies and the implementation of policies (Rothstein, 1996). Such political institutions can be expected to constrain and enable outcomes of any effort taken to change the societal system (March & Olsen, 2008; Gupta et al, 2010). These institutions do not cover only formal regulations or other formal arrangements. Informal institutions, e.g. norms, values and practices, are argued to be at least as important for shaping political behaviour and outcomes. They have the power to shape the performance of formal institutions in important and often unexpected ways (Helmke & Levitsky, 2004). It is, therefore, necessary to consider formal rules and informal practices alongside each other (Lowndes & Roberts, 2013).

One of the major issues left is the one of how to precisely define and categorize political institutions. In the introduction political institutions were defined in the following way: formal and informal procedures, routines, norms and conventions. Although the definition is certainly the one that is the most appropriate in the context of this research, it is still too broad and too vague to work with. Moreover, it does not give a good and precise categorization, because the formal and informal parts of institutional arrangements are often highly intertwined (Lowndes & Roberts, 2013; Thelen, 2009; Helmke & Levitsky, 2004). So, a more precise focus is necessary that fits this research's goal. The actual aim of this research is, as one speaks in institutional terms, to explain institutional change by the existence of political institutions (Gupta et al, 2010). Or, in other words, the research is about the political institutions' capacity to govern and their ability to intervene in societal processes in order to realize a collective goal <e.g. the transition to a CE> (Buuren et al., 2014). After all, political institutions' nature is to make laws, to implement laws, to make exceptions, and to enforce laws. Hereby, the strength of political institutions is not only the successful implementation and enforcement of rules, although these are certainly important elements. An even more important element is the one of making laws that fit the changing environment of the political institutions. Moreover, political institutional arrangements can be used to influence the environment in such a way as is perceived preferable (Rothstein, 1996). In this notion, we can speak of institutional engineering. That is by making laws and organizing the organizational structure of the government, the government can try to reach a certain outcome. As we perceive political institutions in such a way, it implies that political institutions could be seen as the governance's capacity to foster change (Buuren et al., 2014; Rothstein & Stolle, 2002), within this research the change from a linear economy to a circular one. Five types of

this kind of governance capacity can be distinguished: regulatory, organizational, resource, collaborative, and learning. For this model is explicitly chosen, because it focusses on the particular role the government can play in enabling transitions (Buuren et al., 2014). Other models that are available, for example Gupta et al. (2010), focus more on enabling the adaptive capacity of a society as a whole. The model of Gupta et al.'s model is more descriptive in the sense that they assess institutions and then give a value to the adaptive capacity. So, it describes the existing situation, but does not make a clear connection with the outcome of the adaptive capacity (Gupta et al., 2010). In the work of Buuren et al. (2014), this connection is more clear. Therefore, the upcoming paragraphs will further examine the five capacities as defined by Buuren et al. (2014).

Regulatory capacity

The regulatory capacity refers to the presence of legal provisions¹ (Buuren et al., 2014). Legal provisions include legislation, regulations, taxes and subsidies. Such provisions can promote or hamper institutional change (Maitre-Ekern, 2017). As we zoom in at the tax system, for example, it is commonly agreed upon that this institution should subsidize good and tax bad behaviour in order to foster a transition (Stahel, 2016). What is good and what is bad behaviour depends on one's perspective and the transition's aim. In the context of the CE good behaviour is, on the one hand, often defined as behaviour that stimulates the reparation, reuse, renovation, and recycling of goods. On the other hand, bad behaviour is argued to create waste or resource inefficiency (Maitre-Ekern, 2017).

Beside the tax system also laws and regulations are argued to be important for major societal transitions. This influence can come about in multiple ways. First of all, regulations can differ in scope: they can cover all economic sectors in a country, or focus on some specific ones; they can cover all aspects of a transition, or they can only cover certain aspects (Maitre-Ekern, 2017). This last notion calls for some further explanation, therefore, the transition towards a CE is taken as an example. To foster the transition many countries have formulated laws. In the formulation of these laws some countries only focussed on waste management, other countries also included energy efficiency and the use of renewable energy resources, another group of countries covered all above-defined CE elements in the regulatory framework (EEA, 2016). In order to be effective and to not create wrong incentives, regulations should cover all sectors and all aspects related to an aimed transition (Maitre-Ekern, 2017). A last point that can be made regarding legislation is related to the fact that it can be very concrete, delving into precise details, or rather vague, promoting, for example, "just and reasonable" practices in the public interest and for the common welfare. Vague legislation hinders central, purposeful control on the implementation process (Railey, 2014).

Organizational capacity

The organizational capacity, by which is meant the allocation of responsibility to implement policies to public and/ or private organizations and the presence of leadership, is argued to be important as well (Buuren et al., 2014). The reason for this lies in the fact that the effect of regulations is not only influenced by what is written on paper. The enforcement level, which is highly influenced by existing practices in public organizations, does also have a significant influence on the effect of legislation (Nagelhout et al., 2012). Although bureaucrats, the driving work-force of public organizations, are expected to implement the whole policy program as it has been formulated by politicians, they often only pick the 'feasible' elements to ease the implementation of the program. What is feasible strongly depends on the existing <informal> procedures within the public administration. Another issue

¹ It should be noted that Buuren et al. (2014) also count the decision making procedure as a regulatory capacity. In this research the decision making procedure is left out because it is an informal practice that cannot be measured in the specific context of CE.

regarding the implementation is the given level of priority. If a policy is considered to be unimportant, the effects easily water down (Peters, 2010). In this regard, one crucial factor is the presence of overlapping measures and back-up systems that are in place to ensure the implementation. This means that the implementation should not be organized cost effective. Rather it should focus on the implementation's quality (Gupta et al., 2010).

On top of what is discussed in the previous paragraphs, the presence of leadership is also considered a key aspect of organizational capacity (Buuren et al., 2014). For this reason, institutions should foster visionary, entrepreneurial and collaborative leadership. Concretely this means that there should be room for long-term visions, room for leaders, who stimulate actions and undertakings <leadership by example>, and room for leaders, who encourage collaboration between different actors (Gupta et al, 2010).

Resources

The resources available to governmental organizations, including policy instruments and financial resources, are of the utmost importance. Large transitions cost money, because additional effort must be given by existing organizations to change the dominant practices. Furthermore, governmental organizations need resources to guarantee the implementation of new regulatory measures (Buuren et al., 2014). In this regard, not only the availability of financial resources to support policy measures, but also the at hand expertise, knowledge and human labour are important (Gupta et al., 2010). After all, governmental organizations need resources in order to enable the successful implementation of laws, regulations, and other policies. If there is not enough money or human capital available, this could endanger the implementation of regulations and the effectiveness of agencies that control whether regulations are applied by other actors in society (Kam & Wilms, 2014).

Collaborative capacity

The collaborative capacity, referring to the ability to ensure collaborative action between actors on different administrative levels and policy domains and in public and private domains, is assumed to influence institutional change as well (Buuren et al., 2014). This kind of capacity can be defined in the following way:

“A governing arrangement where one or more public agencies engage non-state stakeholders in a collective decision-making process that is formal, consensus-orientated and deliberative and that aims to make or implement public policy or manage public programs or assets” (Ansell & Gash, 2008).

The importance of this capacity lies in the fact that collaborative arrangements create institutional spaces for new narratives and new visions. The existing rationalities can be broken up and new ways of thinking have the chance to establish. Such processes are crucial to enable institutional change (Barnes et al., 2018). To foster the collaborative capacity then it is especially urgent that such arrangements involve different actors, different levels and different <economic> sectors (Gupta et al., 2010). Furthermore, the collaborative arrangement should have a degree of authority in order to be able to enforce the implementation of the made agreements. By the same token, arrangements should stimulate actors to think beyond their existing frames and problem definitions and should lead to dissipative behaviour. Last but not least, arrangements should have a comprehensive agenda, which includes short-term and long-term topics (Buuren, Boons & Teisman, 2012).

Learning capacity

The learning capacity, which entails the ability to monitor, evaluate and improve governance actions, is the last governance capacity argued to effect the likelihood of institutional change (Buuren et al, 2014). The ability to monitor heavily relies on the availability of good indicators, which offer the opportunity to assess the development of a transition. In addition, indicators give the possibility to compare different countries, regions or sectors. There are different kinds of indicators: public and binding or private and voluntary (Senn, 2017). Whatever kind of indicator is taken, the indicator in itself is meaningless when people, politicians and administrators do not believe in it or act upon it (Noordegraaf, 2008). So for an indicator to work effectively, the indicator should be considered as important.

As a meaningful indicator is found, the next step is to evaluate the indicator and to improve governance actions (Buuren et al., 2014). Thereby, the ability of institutional patterns to learn from past experiences and improve their routines <single loop learning> and changes in the assumptions underlying institutional patterns <double loop learning> are important. For organizations to come to such learning experiences it is crucial that a minimum level of trust is present. Therefore, there should be institutional patterns that promote mutual respect and trust (Gupta et al.,2010).

2.3 A conceptual model

Up to now, different governmental institutional capacities that could foster transitions and the CE's characteristics have been described. Both concepts were discussed separately. As it is the goal of this research to determine the influence of institutional factors on the transition towards a CE, both concepts are put together in one conceptual model. The to-be-explained variable in this model is the transition towards the CE. CE can in this context be seen as the institutional change. The five institutional factors that could foster institutional change are: regulatory capacity, organizational capacity, resources, collaborative capacity, and learning capacity. These are the explaining variables in this research. One can summarize the findings in the following conceptual model (figure 3). Of course, reality is more complicated as the presented model. Institutions have no direct influence on the transition, instead, they influence the actions of individuals and make in such a way a transition possible. If the institutions are created in such a way that they lead to a transition towards a CE, it means that they successfully influence behaviour. As individual behaviour is not influenced, it means that the political institutions were not able to foster a transition. Individual behaviour is thus a central spill between the five institutional capacities and an effective transition (Lowndes & Roberts, 2013). However, the measurement of individual behaviour is beyond this research' scope. Consequently, behaviour is not included in the conceptual model. This does, however, not imply that individual behaviour is unimportant. Rather, it could be seen as a crucial spill between the government capacity and the transition. The argument for the exclusion then lies in the argument that political institutions can be seen as the government's capacity to force change in individuals' behaviour in order to facilitate a transition. The effects of the changed behaviour should then be visible, as one measures the transition towards a CE. By measuring the effects of the changed behaviour, it becomes unnecessary to measure the behaviour itself.

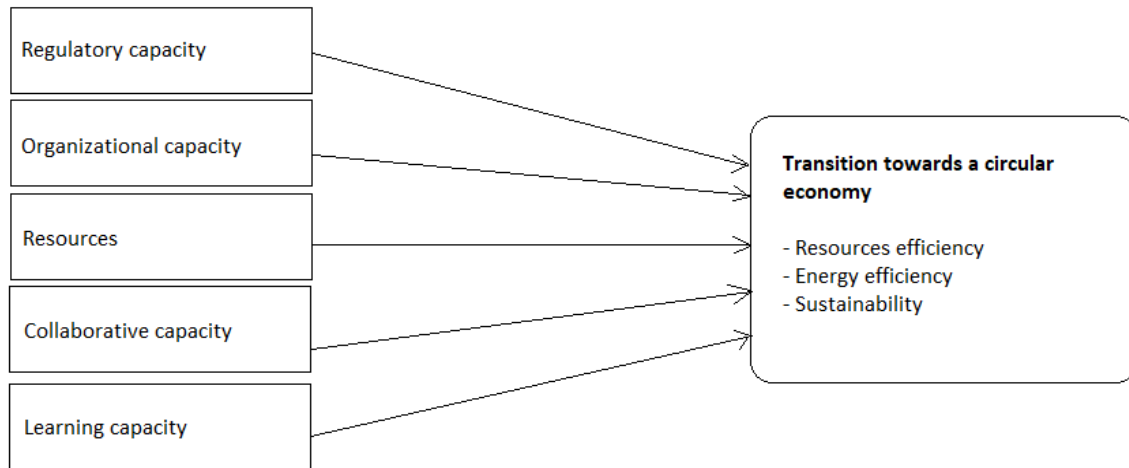


Figure 3: Conceptual model

As one can see, the transition towards a CE is divided in three sub categories: resource efficiency, energy efficiency, and sustainability. Those three elements can be seen as crucial parts of the CE. Consequently, they should all be taken into account to be able to say something about the transition towards a CE. During the introduction it was mentioned that on a macro level CE has not been measured up to now. Measurement methods that exist only focus on the resource efficiency (Vercauteren et al., 2018). Due to this fact, it is not possible to come to one measurement method for the CE without looking at the empiric reality. It should be researched whether the three CE elements have the same underlying construct and can, therefore, be taken together (Bryman, 2012).

A last and vital issue that remains to be solved is how one can measure the three CE elements in the notion of a transition. A transition implies that there is a movement from one situation to another situation (Lowndes & Roberts, 2013; Thelen, 2009; Campos, 2000; Gupta et al., 2010). Measuring such a movement is, however, extremely difficult because institutional frameworks do change very slowly (Campos, 2000; Thelen, 2009). A complicating factor is the research's aim to compare different countries with each other, which implies that a measurement method should be chosen that makes the comparison between countries possible (Campos, 2000). Only measuring the transition's movement, would deny the initial institutional differences between countries (Ranci & Pavolini, 2013). Within such a context, an option that is often used is measuring the presence of the transition's aim (Campos, 2000). So, the aim of the transition as described in this research is the establishment of a CE. Accordingly, the presence of resource efficiency, energy efficiency, and sustainability will be measured in the context of this research.

3. Methodology

To come to a better understanding of the role institutions play in the transition towards a CE, this research will use a mixed method approach. There are three particular reasons for the choice of this approach. First of all, the quantitative part enables a comparison between countries in such a way that the influence of institutional settings on the transition towards a CE can be determined. A problem with the quantitative analysis is, however, that it does not give any understanding of how institutions work. In other words, it does not give researchers, practitioners, and politicians deeper know-how of how they can adjust the institutional framework in their country to one promoting the CE. The qualitative part of this research focuses then on explaining, why and how institutions influence CE. A second reason for the mixed method approach is the measurement of institutional factors that are included in the regression analysis. To measure the formal institutions, document analysis and official statistics will be used. A lot of formal laws, regulations, and taxes exist. The view of experts is of great help to determine which ones are relevant to include in the regression analysis. To measure the informal institutional arrangements a survey is developed for this research. The results of the interviews can also give suggestions on how to improve the conceptual model and the survey for further research projects. A third, and last reason, for the mixed method approach stems from the desire to measure CE. Up to now, the right measurement method of CE on a macro level has not been found (Vercalsteren et al., 2018). An attempt will be made during this research. It is valuable to compare the results of the official statistics with the insights of experts in the CE field to get a better comprehension of good measurement methods.

A more precise explanation of the methodology will be given in the rest of this chapter. The operationalization of the conceptual model's concepts will be a first step in the outline of the methodology. Thereafter, the quantitative and qualitative data collection methods will be examined. In the end of this chapter, attention will be paid to issues regarding the reliability and validity of this research.

3.1 Operationalization

To operationalize the conceptual model's concepts: circular economy, regulatory capacity, organizational capacity, resources, collaborative capacity and learning capacity, multiple-indicator measures are used. This means that each concept is divided into multiple sub-concepts. For this method is chosen because there are potential problems with the reliance on single-indicator measures. First of all, the possibility exists that a single indicator will incorrectly classify many cases. To measure resources, for example, one could only look at the financial resources, but in the transition towards a CE financial resources might not be the problem. Expertise and knowledge might be far more important. Only looking at financial resources would then misclassify many cases. Secondly, one indicator may capture only a portion of the underlying concept or be too general. As an illustration, we could look at the learning capacity. One could define the learning capacity as the ability to monitor the progress. This would imply that only a portion of the learning capacity is measured because knowing what is going on does not automatically lead to improved performances. Learning capacity is then the ability to monitor and the ability to improve performances. A last and final advantage of a multiple-indicator is that with such an indicator much finer distinctions can be made between different cases (countries). In table 1 the exact operationalization of the different concepts can be found. An even more extended version can be found in Appendix 1. In this last version, one can also find the different values for the indicators and the used data sources. To ensure the construct validity of the operationalization, the identified indicators and values for each concept are based on the work of well-

established researchers in the field of institutional change and the field of circular economy (Bryman, 2012).

Table 1: Operationalization of concepts

Concept	Definition	Sub concept	Indicator
Circular economy	<i>An economy that aims to reduce the input of primary resources and the output of waste by using energy efficient biological and technical feedback loops and renewable energy resources in order to decrease its impact on the earth, especially in regard to climate change and the loss of biodiversity.</i>	Resource efficiency	- The amount of recycled waste related to the amount of raw materials used per capita
		Energy efficiency	- The share of renewable energy sources related to the primary energy supply per capita
		Sustainability	- The biodiversity index as defined by Yale University related to the CO ₂ -equivalent emissions per capita
Regulatory capacity	<i>Formal legal provisions</i>	Tax system	- The extent to which the circular economy is promoted by the tax system
		Laws and regulations	- The extent to which the circular economy is promoted by laws and regulations - The laws and regulations are clearly formulated according to the respondent
Organizational capacity	<i>Allocation of responsible public and / or private organizations</i>	Allocation of responsibility	- The structure for implementing the policy is clear for the respondent
		Priority	- Level of priority given to implementing circular economy policies
		Leadership	- Level of leadership regarding the circular economy according to the respondent
Resources	<i>Availability of financial and human resources</i>	Financial	- There is enough money available to implement the legislation according to the respondent
		Human resources	- There are enough human resources available to implement the legislation according to the respondent
Collaborative capacity	<i>Ability to ensure collaborative action in public and private domains</i>	Presence	- A collaborative arrangement is present that supports the establishment of a circular economy
		Involvement	- The actors that are involved in the collaborative arrangement
		Structure	- The structure of the collaborative arrangement
Learning capacity		Monitor	- There is an indicator available that measures the circular economy

*Capacity to monitor,
evaluate and improve
policy program*

Evaluation and
improvement

- The indicator is used to evaluate
and improve the policy program

In regard to the operationalization as presented above, a few notions should be made. First of all, it should be noticed that the measurement of the regulatory capacity is largely based on formal institutions. As it was the goal of this research to also measure informal institutions, this might be seen as contradictory. However, the earth of regulatory capacity is rather formal because laws, policies and tax systems are almost always formally organized. However, the regulatory capacity does not have any function without the other four governmental capacities. Laws are, after all, just pieces of paper. They get their meaning through the implementation. For the four capacities that involve the implementation and enforcement of the regulations, also informal institutions are measured. All in all, both formal and informal institutions are taken into account.

Another notion should be made regarding the evaluation and improvement of the policy program. Earlier, it was noticed that this involves single and double loop learning. One might ask, how this is measured. To measure this issue, two questions are included in the survey (for more information on the construction of the survey, see page 17 and 18). It was asked to respondents whether indicators are used to improve existing practices and procedures (single loop learning) and whether indicators are used to change existing policies and regulations in more effective ones (double loop learning).

3.2 Quantitative analysis

To determine the influence of institutional factors on the transition towards a CE, a small N quantitative regression analysis is conducted. For a small N is chosen, because such an analysis allows to not only look at formal institutions, but also to begin with identifying patterns of informal institutional effects, formal – informal institutional interaction, and informal institutional change (Helmke & Levitsky, 2004). Although a small N regression analysis gives the important advantage of enabling informal institutions' measurement, it also has a downside. It is often argued that small N regression analyses have high chances on biased results. A research of Uyl & Steel (2007) underlines that a regression analysis from fifty cases onwards is possible, but some additional requirements should be taken into account. Meaning that the data set should fulfil all the eight assumptions of multiple linear regression and that additional attention should be paid to eventual outliers (Uyl & Steel, 2007) These requirements will be discussed later on.

In total 31 European countries were selected to take part in this research: all EU countries plus Norway, Iceland, and Switzerland. The last three mentioned countries are selected as well because they are all part of the EU's policy program to promote the CE (EU, 2019). In order to conduct the research, data is gathered in multiple ways. Beneath a short description will be given of the different data collection methods and the construction of scales included in the regression analysis.

Data collection methods

To be able to conduct the linear regression analysis, data is gathered from three data sources: document analysis, official statistics, and a conducted survey. For these three sources is chosen because it enables the measurement of formal as well as informal institutional arrangements (Lowndes & Roberts, 2013).

Document analysis

Data regarding the formal regulations will be collected through document analysis (Gupta et al., 2010). With these data the formal part of the concept 'regulatory capacity' is measured. The data sources for

the document analysis are a report of the EEA and a report of Ecopreneur. The EEA report, which was published in 2016, describes the legal framework regarding the transition towards a CE for each European country (EEA, 2016). The Ecopreneur report presents country profiles for all European member states. In this report the legal provisions per country are described as well as the circular performance of each country (Ecopreneur, 2019). From both reports the most important regulatory arrangements are taken into consideration. These arrangements are: the availability of a roadmap report on the transition towards a CE, the availability of a green public procurement legislation, the number of producer responsibility schemes.

Official statistics

To determine the level of circularity within a country and to measure the influence of the tax system, official statistics are used. Used data sources are Eurostat, the OECD and the Yale biodiversity index. Eurostat is used to determine the resource and energy efficiency as well as the CO₂-equivalent emissions in the EU countries. Since some data for Iceland was missing in this database, OECD statistics are used to determine the recycling rate in Iceland. It should be noticed that the Eurostat and OECD data are comparable in regard to this variable. The Yale biodiversity index is used to determine the level of biodiversity in a country. This index is preferred, because it compares the biodiversity in a country compared to the original habitat. In this way it compensates for natural differences between countries in regard to biodiversity (Wendling et al., 2018)

Surveys

Data regarding the practices in the transition towards a CE will be collected through a Web-based survey (see appendix 2) conducted in April, May and June 2019. The questions' formulation is based on the concepts as identified in the operationalization (Appendix 1). In total 34 questions were asked. A couple of questions covered the country of origin, the organization level and department for which the respondent works. These questions were included to determine whether the response was valid. Furthermore, statements were given to determine the level of organizational capacity, resources, collaborative capacity and learning capacity. It should be noticed that these questions are not based on earlier conducted surveys. Consequently, a pre-test is conducted to ensure the validity of the survey. During the pre-test random respondents were asked, how they interpreted the questions and whether the meaning of all questions were clear to them. After the pre-test some questions are reformulated to make them clearer.

Translation

The survey is drawn up in English, but to increase the response rate the survey is translated in three languages: German, Dutch and Italian². The fact that the survey is translated into multiple languages is expected to have a positive impact on the number of responses, but the translation process can endanger the reliability of the survey. It might be that the questions and answer possibilities in one language are slightly different from the questions and answer possibilities in another language. This would be an obstacle for the reliability of the measured concepts and could, therefore, lead to biased results. In order to tackle this problem, the quality of all translations is checked by a mother tongue speaker (Italian, Dutch or German) who has a good understanding of the English language. Moreover, the Italian and German translations are checked by two Master students who study foreign languages. The first one is specialised in German – Italian and English – Italian translations. The other one studies German language and culture. After the translation of the surveys, the same pre-test is conducted for

² Due to the short time frame that was given to conduct this research, it was not possible to translate the survey into any other relevant languages.

the translated versions of the survey as for the original English version. After these final pre-tests the survey is spread among the target group.

Data collection

The respondents work for agencies involved in the transition to a CE in one of the 31 above mentioned European countries. To contact the relevant agencies multiple methods were taken into account. First of all, a research of the European Energy Agency is used in which agencies of different countries were asked to share their thoughts on the CE. Thereby, an accurate overview is given of the relevant agencies for the transition in each country (EEA, 2016). The relevant agencies are contacted by e-mail

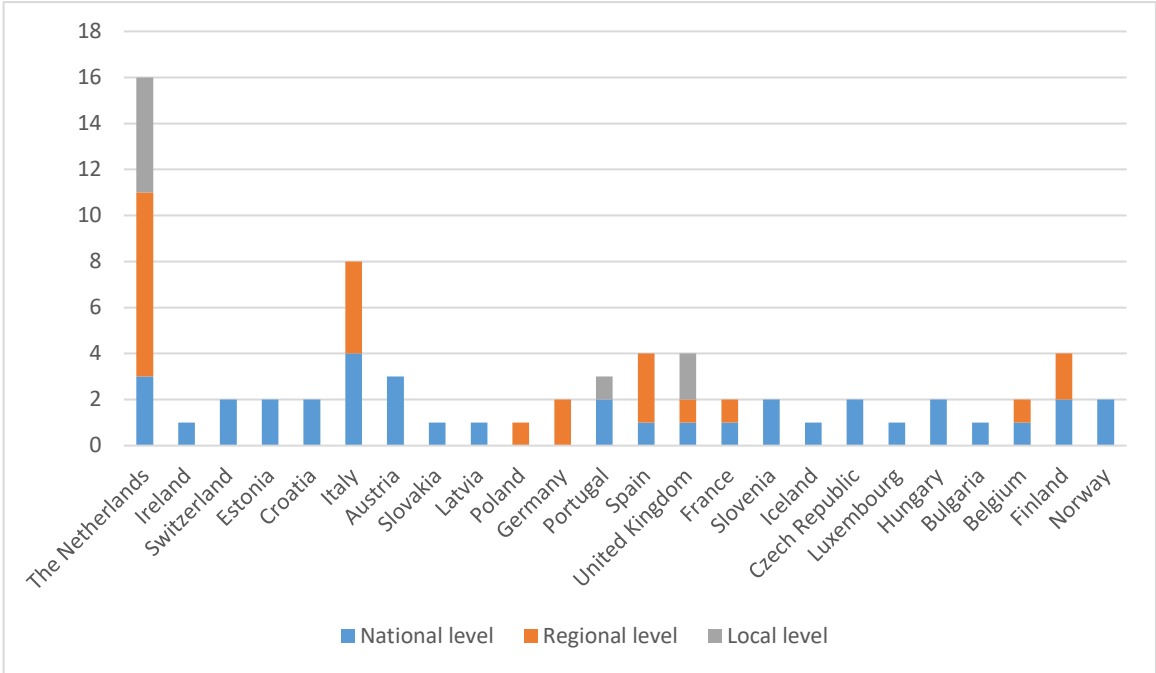


Figure 4: Responses by country and level of activity

with the request to fill in the survey. Two weeks after the first e-mail a reminder e-mail was sent. Another two weeks later, a call was made to the agencies that still had not filled out the survey. Secondly, the survey was distributed on a conference on CE in the Netherlands. At this conference mainly bureaucrats of provinces and municipalities were present. Thirdly, EMAS contact persons were contacted to fill out the survey. EMAS is the Eco-management and Audit Scheme of the EU. One of the tasks of the contact persons of this network is to monitor the development of a CE in their country and to inform the EU on the development (EMAS, 2019). The contact persons were invited to take part in this research through an email. One week later a reminder was send. After another week, calls were made to all contact persons. In some cases, the contact person was not involved in the transition towards a CE, but they gave me the contact dates of the people that did work on this topic. The contact person of Greece explained that he did not know anyone to fill in the survey, because CE was according to him a very complicated concept. In some other countries, there were language barriers that prevented respondents to fill out the survey. The contact person in Denmark explained that he did not want to participate in student surveys. Lastly, web-based research was done on the involvement of governmental agencies across Europe in the transition towards a CE. Organizations or individuals that are active in the transition were contacted by email or phone. All in all, 69 respondents from 24 different countries filled out the survey. The other seven countries are excluded from this research.

In figure 4, one can see the distribution of respondents across the participating countries and the level on which the respondents were actively involved in the transition towards a CE. As one can

see the responses are unequally divided among countries. The Netherlands has the highest response rate (16). This is partly because the survey was distributed on a conference held in the Netherlands, where 6 people filled out the survey. Another factor of influence might have been that the survey was also available in Dutch. Consequently, there was no language barrier for Dutch respondents to fill out the survey. The same is true for Italian respondents (8), who could fill out the survey in Italian. Although the survey was also available in German, a similar effect did not occur in Germany. In fact, it was really hard to find German respondents that were willing to fill out the survey. In the end there were no actors that were willing to fill out the survey on the national level, but two actors active in a regional organization filled out the survey. The respondents from Austria and Switzerland also filled out the survey in German. All the other respondents filled out the English version of the survey. Also among these countries there is a difference in response rates. In some countries, e.g. Spain, the U.K. and Finland, it was relatively easy to find potential respondents and the respondents were relatively accessible. In other countries <Ireland, Slovakia, Poland, Iceland, Luxembourg and Bulgaria>, it was very hard to find potential respondents. This has partly to do with language barriers (especially in Poland). Many phone calls are made, but people that picked up the phone could barely speak English. Another issue was that within these countries it was harder to find people that were involved in the transition towards a CE. In Ireland, only one person has been found that was involved in the transition towards a CE. All other persons that were contacted said that this person was the expert and forwarded me to her. In the case of Bulgaria, it was hard to find possible contact persons, because all documents and websites were only available in Bulgarian. In the end only one possible contact person was found. This person did fill out the survey.

3.3 Qualitative analysis

To be able to interpret the results of the small N quantitative multiple linear regression analysis, to get insight in the regulatory capacity, to reflect on CE as a concept and to make some suggestions for further research qualitative interviews and observations are conducted. For both data collection methods, a short description is given below.

Interviews

In order to get a deeper understanding of the institutions at work in a CE, interviews were held with several actors involved in the transition, by which is meant that actors were explicitly active in the promotion of the CE within their own organization or among other organizations. The interviewees worked for very different organizations and on different levels. The thing that they had in common is, however, a clear vision on the importance of the transition towards a CE and on the way to enable this transition. The aim of these interviews is to get a better understanding of the informal rules like norms and values and implementation challenges (Bryman, 2012; Gupta et al., 2010). Moreover, it gives the opportunity to better interpret the results of the small N quantitative study and to make some suggestions for further research. To conduct the interviews a question list was prepared. There are five groups of questions, one group for every governance capacity (see Appendix 3). Each group of questions starts with a warming-up question and ends with a concluding one. Both questions aim to broaden the scope of this research and control for any aspects missed during the operationalization of this research. The questions will be open with possible follow-up questions to elucidate the specific nature of the answer especially in relation to the definitions of the capacity. The questions did not entail technical language (Gupta et al., 2010). All interviews were recorded and put into a transcript. Afterwards the relevant quotes were chosen and translated into English. These translations are not literal, but take into account the difference between English and Dutch language use. Moreover, it is taken into consideration that the interviewees used speech language, which is different from writing language. As the translation process was finished, the different respondents were asked whether they

agreed with the translation. To ensure the academic quality of this research, the original versions of the different quotes can be found in appendix 4.

Table 2: Conducted interviews

Respondent	Working for	Level	Involvement with CE
1	A research institute	European	Doing research on the transition towards a CE
2	Member of the city council in a Dutch Municipality	Local	Promoting the CE in the municipality
3	A government funded non-profit organization	National	Promoting the CE among firms
4	Dutch government	National	Trainee CE
5	Dutch government	National	Policy advisor
6	A bank	National	Research on the CE
7	A lobby organization	European	Expert CE

In total seven people with various backgrounds were interviewed (see table 2). As one can see, there was a strong focus on the Netherlands. The reason for this stems from a more practical ground. Due to the fact that this study was conducted in the Netherlands, it was easier to come in touch with professionals living in the Netherlands. One interview was conducted with a researcher working for a European Research institute. This interview was conducted through skype. By interviewing only seven respondents, it is not assumed that these respondents are giving a good representation the situation in Europe or even only in the Netherlands. The aim of the interviews is to get a deeper insight in the role institutions play in the transition. Taking this into consideration, a good representation might be less relevant.

Observations

Along conducting the interviews, two observations are done. These observations are done at one conference with CE as the main topic and a Hackaton with the aim to come with circular solutions for the province of Gelderland (The Netherlands). A description of the type of conferences and the gathered data is given in table 3. During the Cinderella conference, CE experts of eight European countries were present to discuss the development of a circular building sector. Through attending this conference, the perspectives of seven countries outside the Netherlands on the establishment of a CE are added to the qualitative findings.

Table 3: Observations

Observation	Name conference/hackaton	Who was involved	Type of data
1	Hackaton for the province of Gelderland	The province of Gelderland and members of a consultancy agency	Notes
2	Cinderella	Conference on promoting the CE in the construction sector in seven European member states	Notes and a transcripts of some recordings

3.4 Reliability & Validity

In the light of the research's mixed method approach, additional attention should be paid to the different quality indicators: reliability, internal validity, and external validity. Some notions regarding

these topics have already been made in the course of the previous paragraphs, but the upcoming section will pay special attention to them.

Reliability

Reliability assessment is necessary to determine whether the findings in this research are repeatable. To be repeatable, the findings should be consistent. Within this notion the findings reliable for both the quantitative and qualitative part of this research. The reliability of the quantitative part of this research is assured by conducting a principal component analysis (PCA) and the calculation of Cronbach Alpha scores for the different measured concepts. These tests are of crucial importance because multiple indicator measures have been used to measure each conceptual model's concept. Consequently, it is necessary to assess the internal consistency reliability. Moreover, the questions for the survey were constructed for the purpose of this research. By using a PCA and Cronbach Alpha, the internal reliability of the quantitative part can be assured (Bryman, 2012). The results of both tests can be found in the findings chapter of this research.

The interview's reliability should be considered as well. Since all the interviews were conducted by the same interviewer, issues with the inter-interviewer reliability do not occur. To assure the intra-interviewer reliability, a topic list has been established. In this way, it was assured that the same topics were discussed with every respondent (Bryman, 2012). It should be noted that, since the different respondents had various backgrounds, it was not possible to ask the exact same questions to every respondent. This could be thought to undermine the reliability. In the next paragraph, it will be explained that the different backgrounds of the interviewees have a positive effect on the internal validity of the research. The lower reliability is, therefore, taken for granted.

Internal validity

A next issue to assess is the research's internal validity, which means whether the used operationalization really measures what it is supposed to. In general, it can be said that the operationalization is based on a well-established theoretical framework. This is supposed to have a positive impact on the internal validity. Moreover, multiple indicator measurements are used to come to a finer distinction between the different cases. Such measurements are in general seen as an important condition for construct validity (Bryman, 2012).

To increase the internal validity of the surveys, some people were asked to reflect on how they interpreted the survey questions. It was, thereafter, analysed whether this interpretation is in line with the theoretical framework of this research. Afterwards, some questions were slightly adjusted. In this way troublesome wording is avoided as well. Another issue with the internal validity has to do with the translation of the surveys. In the previous section, multiple ways are discussed to ensure that the translated surveys measure the same construct as the original English survey.

To assess the internal validity of the quantitative outcome, seven experts are interviewed to reflect on the relationship between institutions and the CE. The questions that are asked to the interviewees are similar to the ones asked in the surveys. The results of the interviews are especially important to determine the construct validity. Due to the fact that the interviewees had different backgrounds a fuller view could be obtained on the relationship between institutions and the CE. Based on these results, improvements for future surveys as well as on the measurement of the transition towards a CE are suggested. So, the focus of the interviews is primarily on suggesting improvements for the survey. In such a way the research contributes to the establishment of a measurement method of formal as well as informal institutions with a high internal validity.

External validity

By making a comparison between twenty-four different countries, the results of the quantitative part of this research are valid for these twenty-four countries. The external reliability of the surveys is negatively influenced by the differences in response rates for the twenty-four different countries. In some countries the response rate was only one. Positively, one could say that the surveys were filled out by experts in the field of CE. One can expect that these experts are well aware of the institutional setting within their country. Nonetheless, the huge differences in response rates can be seen as a threat to the external reliability. Within the small time frame of this research, it was, however, not possible to ensure high response rates in each country. The external reliability of the qualitative part is also limited because mostly Dutch experts were interviewed. Interviewing experts that are active on different levels (European, national, local), has a positive influence on the external reliability. The two observations are important in this regard as well. Especially the Cinderella conference, added the perspectives of other European countries. All in all, the external validity is a limitation of this research (Bryman, 2012)

4. Findings

In the previous chapter, a description is given of the different variables, the operationalization of these variables and the data collection methods. In the upcoming paragraph, attention will be given to the quantitative statistics. One of the aims of this research is to conduct a small N multiple linear regression analysis, to determine the influence of institutions on the transition towards a CE. For now, the focus will be on this quantitative part. Later on, the quantitative results will be connected with the qualitative ones. The special attention on the quantitative data is necessary, because several steps must be taken before an actual regression analysis can be conducted.

4.1 Quantitative models

As described earlier, a lot of data was gathered from different sources. Furthermore, the questions of the survey were not used before. Instead, they were created for the purpose of this research. These two characteristics of this research impose a possible threat on the internal reliability. Consequently, it is crucial to conduct additional statistical tests to ensure the reliability of the measured concepts. To check whether some variables are measuring the same underlying construct, a PCA was run on all gathered statistics: official stats, document analysis, and questionnaire. It should be noticed that the N of this study (69) is relatively low to conduct a PCA, because the sample size is much lower as the ideal of 150. Research of Sapnas (2004) did show that a sample size from 55 onwards is sufficient to conduct a PCA (Sapnas, 2004).

The PCA that has been conducted had a Kaiser-Meyer-Olkin (KMO) measure of 0,706. Considering the fact that this value is ideally between 0,9 and 1, this value is relatively low. According to Kaiser, the founding father of the KMO, a KMO of 0,7 can be seen as middling. This means that, even though 0,7 is not very high, it can still be seen as acceptable (Kaiser, 1974). This PCA revealed five components that had eigenvalues greater than one, meaning that five elements have been discovered that form the statistical basis for the regression analysis. The used rotation method is Promax with Kaiser Normalization. This method was used to improve the PCA's interpretability. In table 4, the results of the PCA is displayed. Note that coefficients smaller as 0,3 are not displayed in this table.

Table 4: Results PCA

	Components				
	Collaborative capacity	Organizational capacity	Learning capacity	Resources	Circular economy
Collaborative arrangement- Agenda	,971				
Collaborative arrangement- Authority	,967				
Collaborative arrangement - Frames	,953				
Leadership – new policies		,904			
Leadership – collaborative arrangement		,774			
Long term visions		,744			
Political support		,776			
Improvement procedures			,920		
Improvement routines			,834		
Establishment trust			,633		
Resources – expertise				,944	
Resources – knowledge				,861	
Sustainability					,976
Resource efficiency					,546

Before to continue with the regression analysis, it is important to look at some interesting observations that occurred during the conduction of the PCA. Hereby, a specific link will be made with the operationalization as given in table 1.

The first point of interest is the fact that the three sub-concepts, which should measure CE did not turn out to be one factor in the PCA. Therefore, it was not possible to operationalize CE as was done in table 1. Although sustainability and resource efficiency turned out to be one concept in the PCA, they could not be taken together. Cronbach’s Alpha was only 0,217. Due to the fact that CE has weak internal reliability, it is determined to run three different regression analyses. One analysis for each sub-concept of CE.

The results of the PCA showed that the measurement methods that were assigned to measure the regulatory capacity did not fit the model. Therefore, it was determined to leave this component out of the regression analysis. This is in contrast with the operationalization as given in table 1, where the regulatory capacity was considered to be one of the main elements to explain the transition

towards a CE. During the description of the results in the next section, a reflection on this fact will be given.

To determine the organizational capacity of a country, eleven statements were included in the survey. The respondents had five answer possibilities: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. As shown in table 1, the eleven statements were divided into three subcategories: responsibility structure, priority level, and leadership. The results of the PCA showed that the three statements for leadership and one statement on the level of priority given to implementing CE policies <political support for the CE policies> could be seen as one component. The four statements were taken together as the concept of organizational capacity. This differs from the operationalization (table 1) in the sense that only one element is taken into account during the rest of this research instead of three sub-concepts for organizational capacity. To determine the reliability of this concept, a Cronbach Alpha test was conducted. Cronbach's alpha test gave a value of 0,828, which is substantially higher as the minimum required 0,7. The Cronbach would not increase if one of the concepts was left out. All in all, the concept has a high level of internal consistency.

The survey was also used to determine the level of resources. To measure the available resources in a country, four statements were given to respondents. Again there were five answer possibilities varying from strongly disagree to strongly agree. One statement covered the amount of available financial resources, another statement covered the availability of human labour forces. The other two statements covered the available expertise and knowledge. These last two statements turned out to be one concept according to the PCA. The Cronbach of these components was 0,774. So, also for resources the final operationalization is different as the one given in table 1. Financial resources and the availability of human labour forces are both left out.

To measure the collaborative capacity three sub-indicators are identified in table 1: presence, involvement, and structure. The presence was measured by asking the respondents whether a collaborative arrangement was used by the respondent's organisation. To measure involvement, respondents were asked to give the number of respondents involved in the collaborative capacity. During the process of distributing the surveys, it became clear to me that many respondents did not exactly know how many people were involved in the collaborative arrangement. Many people did not fill in this particular question. Therefore, it is decided to leave involvement out of the PCA. To measure the structure of the collaborative agreement, three statements with five answer possibilities (strongly disagree - strongly agree) were given. Respondents that did say earlier that a collaborative arrangement was not present, did not fill in these statements. For these respondents, a score of 1 (strongly disagree) was given. The three statements on the structure of the collaborative arrangement turned out to be one factor according to the PCA. The Cronbach value of these three items was 0,97. This value could not be increased with leaving one of the three items out.

Last but not least, the learning capacity was measured. To measure learning capacity, two sub-indicators were used as identified in table 1: The availability of a good indicator and the ability to improve performances. During the interviews, however, it became clear that no good indicators are available at the moment. Therefore, it was decided to leave the statement on good indicators out of the analysis. The factor analysis showed that three of the four statements that were asked regarding the improvement could be seen as one component. The Cronbach of these three items was 0,724. By leaving the establishment of trust out of the final component, the Cronbach increased to 0,760.

Regression analyses

As stated in the previous part, three regression analyses will be run. The explaining variables will be the same for the three models: organizational capacity, resources, collaborative capacity, and learning

capacity. The dependent variables differ. For the first model the dependent variable is resource efficiency, for the second model the to be explained variable is energy efficiency, and for the third model the level of sustainability is explained. The three models can be written down in the following way:

Model 1: Resource efficiency = β_1 *Organizational capacity + β_2 *Resources + β_3 * Collaborative capacity + β_4 * Learning capacity

Model 2: Energy efficiency = β_1 *Organizational capacity + β_2 *Resources + β_3 * Collaborative capacity + β_4 * Learning capacity

Model 3: Sustainability = β_1 *Organizational capacity + β_2 *Resources + β_3 * Collaborative capacity + β_4 * Learning capacity

Before these regression analyses were run, several additional tests have been conducted to assess whether the models fit all assumptions for multiple linear regression analysis. The testing of these eight assumptions is very important due to the small N (Steel & Uys, 2007). The first two assumptions cover the measurement of variables, which should be continuous. The three depending variables are indeed measured at a continuous level (1-100). The four independent variables are the division of the sum of concepts measured at an ordinal level. Therefore, these variables can also be treated as continuous. So, the first two assumptions are met.

To test the other six assumptions various tests are conducted in SPSS. To assess the third assumption, the independence of residuals, the Durban-Watson statistic is used. For the first model, the statistic had a value of 1,848, for the second model the value was 2,537 and for the third model the statistic had a value of 2,172. Ideally, the values of this statistic are between 1.5 and 2.5. Although the second model has a value that is slightly higher, the value can still be seen as adequate. All in all the values mean that there was independence of residuals. For the fourth assumption, a linear relationship between the dependent and independent variables, partial regression plots and a plot of studentized residuals against predicted values are used. The assumption was met for the three models. The fifth assumption, homoscedasticity, was also met for all the three models. This assumption implies that the residuals are equal for all values of the predicted dependent variable. To assess this assumption a visual inspection of a plot of studentized residuals versus unstandardized predicted values was used. The absence of multicollinearity is the sixth assumption. Multicollinearity was not found in any of the three models, as assessed by tolerance values greater than 0.1 (Hair et al., 2014). The seventh assumption is the absence of outliers, highly leverage points and highly influential points. To test this assumption studentized deleted residuals, leverage values and Cook's distance were computed for all three models. Thereafter, it was checked whether there were no studentized deleted residuals greater than +/- 3 standard deviations, no leverage values greater than 0.2 and values Cook's distance above 1. For the first and third model, these assumptions were no problem. Although a standard deviation was found of 3,2 for the first model and a leverage point of 0,21 for both models, these values were still considered to be reasonable. For the second model, a more significant problem occurred. A studentized deleted residual was found of 23. This case was deleted from the model, but only from that specific one. For all models, the eighth assumption, the one of normality, was met, as assessed by a Q-Q Plot. After it was clear that all consumptions are met for the three models, the three regression analyses were run. In table 5 the results of the three models can be found.

Table 5: Results regression analyses

	Model 1 Resource efficiency	Model 2 Energy efficiency	Model 3 Sustainability
Organizational capacity	-,264*	-,173	,236
Resources	-,260*	-,043	,004
Collaborative capacity	,005	-0,54	,017
Learning capacity	-,319*	,137	-,042
R ²	,327	,049	,058

* = statistical significant

For the second and third model no significant results were found. The R² for both models is also relatively low with respectively 0,049 and 0,058. For the first model, almost all coefficients are significant. The R² (.327) is also significantly higher as for the other two models meaning that almost a third of the total variance of resource efficiency can be explained by the four explaining variables. In this model only collaborative capacity is not significant. The coefficients of the other variables, are all negative, meaning that the higher countries score on organizational capacity, resources, or learning capacity, the less they score on resource efficiency.

4.2 Circular economy

As the results of the regression analyses are given in the previous paragraph, the next step in this research is connecting the results of the research's quantitative part with the qualitative findings. To fully understand the upcoming paragraphs, it is important to know that a particular structure will be used. Within this section, the concept of CE will be discussed. After this discussion, the influence of each of the institutional factors on the transition towards a CE will be explored. So, the results are discussed in a thematic order: CE, regulatory capacity, and so on. For this structure is chosen, because it enables the interpretation as well as comparison of the qualitative and quantitative findings of this research (Bryman, 2012).

The results of the PCA and the Cronbach Alpha test show that sustainability, energy efficiency and resource efficiency cannot be seen as a single concept. This is remarkable because the CE, as described in the theoretical part of this research, contains all these three elements. To get a better understanding of this result, two different issues will be discussed in this section. To begin with, the individual country scores on sustainability, energy efficiency and resource efficiency will be explored. This is one of the main steps in understanding the concept CE. Thereafter, the outcomes of interviews are used to reflect on the CE as a concept.

In figure 5, one can see the individual country scores of the twenty-four countries involved in this research on sustainability, energy efficiency and resource efficiency. It should be noticed that the score of Switzerland on energy efficiency is left out of this graph. This does not mean that this score is unknown, but that it is remarkably high (95). Including this score in the graph would make it more difficult to interpret the other country scores. As one can see in this graph there is no clear relationship between the three aspects. Some countries that score rather good on resource efficiency, score not so well on energy efficiency. In addition, the individual country scores on sustainability are always higher as the scores on resource efficiency.

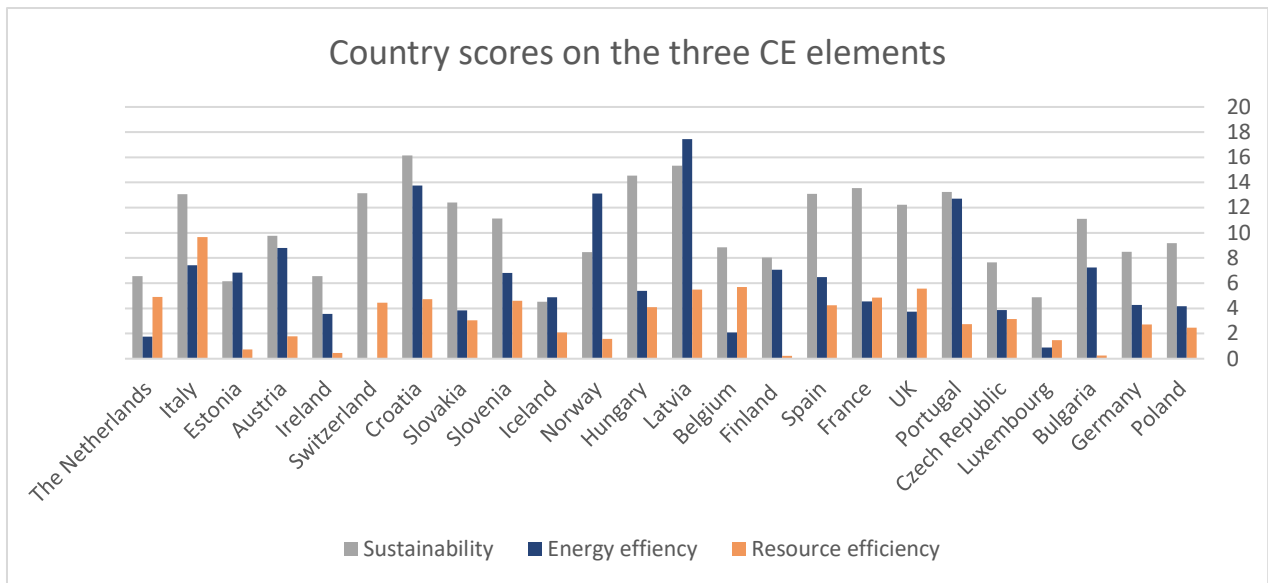


Figure 5: Country scores on the three CE elements

On the whole, figure 5 does not give any indication for the idea that the different elements of the CE are conceptually one concept. To determine to what extent the concepts are correlated with each other, Pearson's correlation coefficient has been calculated. Sustainability is positively correlated with energy efficiency (.309) and resource efficiency (.400). Both correlations are statistically significant at the 0,01 level. Although the correlation values are not very high, they are positive meaning that there is a relation between the concepts. Interestingly, resource efficiency and energy efficiency are not correlated with each other. The coefficient had a value of $-.013$, which is practically zero. This correlation was not significant. Apparently, there is no correlation between how countries score on energy efficiency and how they score on resource efficiency. So, the results of the statistical analysis clearly deny that CE can be seen as a unified concept.

A remaining inquiry is whether this result stems from the fact that the transition towards a CE has just been started, or the fact that CE is just not one unified concept. During the conduction of the interviews all respondents were asked to reflect on the CE concept. In the course of conducting the interviews it became clear that the meaning of CE is not the same thing for all respondents. Some of them conceptualized CE as an umbrella concept. The following two quotes clearly express the thoughts of one of the Dutch respondents on CE.

R5: *At the same time, the switch was made in the EU, the EU was talking a lot about resource efficiency And then the EU made the move towards CE, which is much more a holistic term: It also includes the planet, the environment and the economy.*

On energy efficiency as part of the CE concept:

The choice we have made is to treat them <CE and resource efficiency> separately from each other, but of course you cannot see them separately from each other. However, when you connect them two things happen. The very complex concept energy transition and the even more complex concept CE will be linked together with no one remembering what is going on. That is the first aspect. The second one is that we are not so good (certainly not then, but still not today), we cannot properly calculate the CO₂ effects of raw material flows. ... So we really did that then, we really thought about it <combining the two transitions>. I also had a colleague who did the energy transition, I do the circular program, .. and I said it is just much wiser to keep it apart. The transitions also have a different time frame. The energy transition, which is

already well under way when it comes to transition and the transition towards a CE, which is only on a few percent.

So, the view of the above mentioned respondent does fit the CE concept, as defined in this research, quite well. According to this respondent CE is more than just resource efficiency. It also contains sustainability. Later on the respondent explained that the goal of the transition to a CE is to make sure that there is a prosperous economy all over the world, which is in balance with the capacities of the planet. To reach this goal in the light of an ever increasing world population and standard of welfare, the only option available is to use resources more efficiently. So, the goal is to develop a sustainable economy by the means of resource efficiency. In the second quote, the respondent made some interesting remarks on the role of energy efficiency in the CE debate. To fully understand the second quote, it is important to give some background information on the Dutch situation. In the Netherlands there are two national transition agendas: one on the CE transition and one on the energy transition. As this respondent explains, the fact that there are two agendas does not mean that the two transitions are not related to each other. In fact, the respondent clearly acknowledges that the two transitions are interconnected. In the end the conclusion of the Ministries was that the complexity of both transitions does make it impossible to treat them as one transition. This well-considered decision is made for two reasons: taking the two transitions together would mean that no-one knows what he/she is doing anymore, and the energy transition is in another phase of the transition as the circular one. Taking both transitions together could then mean that the energy transition is slowed down.

It should be taken into account that this deliberate decision was made by the Ministries of the Dutch national government. They were aware of the fact that resource efficiency and energy efficiency are two sides of the same coin in regard to lowering the impact of the economy on the earth, but this decision was not without consequences. By making the decision to treat the two aspects differently, the Ministries also formed the narrative of the CE. All other respondents in the Netherlands that reflected on the CE, only underlined the importance of resource efficiency not of energy efficiency. For them the energy transition and the CE transition were not necessarily connected. The two quotes below are the answers of two Dutch respondents on the question what CE means:

R4: Using materials as high-quality as possible so that you have as few residual flows as possible, you just use them all. And an economy in which everything is actually used continuously without creating waste.

R3: This is an economy in which raw materials are used to the maximum and products retain their value for as long as possible.

The issue of the lack of integration between CE <resource efficiency> policies and energy efficiency policies is not only at stake in the Netherlands. During the Cinderella conference a conference call was made with a socio-economic analyst of the European Commission, Antonio Paparella. Mr. Paparella mentioned that, in general, resource efficiency policies are not well connected with policies on energy efficiency. He also mentioned that the European Commission is working on proposals to further integrate the two policy fields.

The discussion above was about the Dutch situation and the situation at the EU level. As this research has a broader focus than just the Dutch case, it is important to look at the main driver for the transition towards a CE in other countries. One of the respondents is active in a European lobby organization, which tries to promote the CE among European organizations and European member states. Hereby, it is essential to keep in mind that the CE policy is in fact a policy program initiated by the EU. Be that as it may, the successful implementation of the program depends on the efforts of

individual member states to actively support the transition. It was asked to the respondent which incentives motivated countries to actively promote the CE. The respondent answered in the following way:

R7: The Member States differ greatly in this respect. Some Member States, such as Poland, have relatively little interest in the environment. It is, therefore, impossible to give an unambiguous answer to this question. The EU has become a driving force on Member States to deal better with the environment. More important, however, is that things have only just started to move forward since the economic value has also clearly come into play. It is not just for the environment; it is also good for your economy in the long term. That really has got, slowly but surely, a growing number of Member States on board of the circular economy agenda. Added to this is the recent public concern for climate change among European citizens. We have been emphasising the economic importance of CE since 2013. This is starting to succeed, and we are continuing to do so in the Member States. At European level, we are now once again emphasising climate interests. We did not emphasise this for many years, because it only created resistance. Then they said, 'I do not believe in climate change at all, so I do not believe in circular either.' There are so many other reasons to become circular.

According to this respondent, environmental concerns – sustainability – are not important in every country. In some countries, like Poland, the sustainability part is not considered a main issue. The interest of these countries is much more in the economic gains that come along with the more efficient use of resources. In fact, building a narrative on the CE in which it is clearly stated that CE is also good for the environment can be enough for countries to not take CE seriously. Apparently, the desire for a sustainable economy is not the driving force in the transition to the CE in many countries. In general, the financial gains of treating resources more efficient are considered to be far more important. The respondent states that this was also true for the Netherlands:

R7: The Netherlands, the Dutch government was the first one to acknowledge that CE is good for the economy and then they became advocates. First there was resistance from the governing parties, but at a certain point the VVD and CDA came on board. They since acknowledge that CE is good for jobs, CE generates employment and profits, CE is just good for the economy.

This quote underlines the fact that the sustainability aspect is not the most important consideration for countries to make a transition towards a CE. In some countries it is not even considered as a part of the CE. In other countries it is seen as a nice side effect of the transition. Organizations at the European level are in general more interested in the sustainability part of the CE, especially in the notion of preventing climate change. The EU functions in this sense as a guardian of the environment. It remains unclear how big the influence of the EU in this regard is.

Taking everything into consideration, it appears that CE is not one concept. In the everyday practice, CE is mainly interpreted as resource efficiency. Even though energy efficiency can be seen as a sibling of resource efficiency, they are treated differently in the world of politics. A possible reason for this is the fact that taking the two concepts together is difficult. In some countries sustainability is also part of the CE narrative, in other countries it is not. In general, the aim to create a sustainable economy does not seem to be the main reason for countries to aim for a transition towards a CE. Financial and economic reasons are by all accounts more important. For this reason, CE will be interpreted as resource efficiency in the rest of the analysis. For the time being sustainability and energy efficiency will be left out the discourse, to return the discussion part of this research, where a reflection will be given on the future of the CE concept.

4.3 Regulatory capacity

As the conceptualization of the CE is comprehensively discussed above, the next step in this research is to deliberate about the influence of the different institutional capacities on the level of circularity within a country. It has already been mentioned that the influence of the regulatory capacity <taxes, laws and regulations> was not taken into consideration during the regression analyses. The reason for this lies not in the fact that the regulatory capacity has not been measured, rather it stems from the fact that the regulatory capacity was not one element according to the PCA. The PCA result leads to two questions that will be discussed in the upcoming passages. The first question is why regulatory capacity did not turn out to be one component during the PCA. The second question is whether this does also mean that regulatory capacity does not matter.

During the interviews and observations several institutional capacities were mentioned that could influence the transition towards a CE. First, the regulatory arrangements will be discussed, afterwards attention will be paid to the tax system. In the course of discussing laws and regulations with the several respondents, the following regulatory arrangements were often mentioned: the availability of a roadmap in which a country describes the country's institutional pathway towards a CE, the availability of Green Public Procurement regulations, and the presence of producer responsibility schemes, which make the producer responsible for a certain product after the consumer finished using it. All these arrangements were mentioned by multiple respondents. Nonetheless, the arrangements were not found to be a significant factor in the PCA. The question is why? It is hard to come with a definite answer on this question, but some insights of the respondents are valuable:

R7: For CE as a whole, but to be honest, there is not as much legislation in place yet. Much has been done and strategy papers written... there are only a few pieces of legislation, but there is more to come.

R5: Well, there was not such a high degree of concreteness in the coalition agreements, but legislation that is up to the national government to think of. And so there are a lot of subjects where a follow-up step is needed to make it < the coalition agreement > more concrete.

R1: There are a number of aspects, which will translate into policy, but also into behaviour, in instruments that are being developed, otherwise ... you're going to make some progress in the end, but ... it will not work.

As one can see, the three respondents quoted above refer to the fact that legislation is still in development. Even the legislation that is already there, is still not optimal. This is underlined by the following quote:

R7: EPR <Public responsibility schemes> is a far from perfect system at the moment, in fact there is still much to be improved, but it is the best we have and it is already working. For this reason, it is a very important policy measure, it is a proven policy for products generating a lot of waste and a lot is known about how it can be improved.

Another remark was given on the Green Public Procurement legislation. One of the countries that already uses Green Public Procurement is The Netherlands. During the Cinderella conference, a CEO working for Duravermeer <a Dutch building company> replied on this fact in the following way:

In none of the governmental tenders <of the Dutch government> there is a request for a circular building. You do not get points for being circular. Moreover, there is no financial support. The government does not have budget for circular buildings ... If you do it well you can have the same costs, but the risks are larger for building circular.

All in all, the present regulatory arrangements that should promote the CE do not seem to be a very well-developed system. First of all, the regulation that is in place does not work optimally. Secondly, there are not so many regulatory arrangements to promote the CE. In countries where laws already are in place, the legislative arrangements are only focussed on certain aspects. This is also underlined by the results of the PCA. That legislation is not a unified concept at the moment does, however, not mean that it is not an important element in the transition. All respondents mentioned that it is important to change existing regulatory arrangements in order to make CE a success. Some of them even said that the CE is likely to fail if better legislative arrangements will not be made. Especially interesting in this regard are the different attitudes between countries. During the Cinderella conference it became clear that many attending countries <Poland, Italy, Slovakia and Spain> had a strong regulatory focus. According to them it is crucial to change regulatory arrangements before CE can work. A lady from Spain mentioned that it is obliged in Spain to separate waste, but it is not obliged to reuse or recycle waste. Consequently, waste is first separated, but only to be put together in the waste incineration plant afterwards. Since the Spanish national government does not want to change the existing legislation, the lady asked if the EU could make additional rules. Another remark came from Slovenian respondents. They mentioned that in their country, there is no end of lifetime legislation. This limits the recycle rate, because companies face high additional costs when they want to recycle. It is much cheaper to just throw waste away. The representatives from the Netherlands had a different view on the regulation matter. According to them, changing legislation is not the most important step to be taken, instead the focus should be on the establishment of collaborative arrangements between public and private partners. The Dutch representatives motivated their position with the following argument. The danger of setting hard regulations is that the companies do everything to fulfil the rules, but they are not triggered to do something more. If the collective goal is to become as circular as possible, companies are triggered to do as much as they can. One of the Dutch representatives mentioned, however, that this does not make regulations useless, because there are always companies that are not willing to participate in voluntary agreements. To force these companies to become more circular, regulatory arrangements can be very useful. So, in general the qualitative results underline the importance of regulatory arrangements for the transition.

Not only regulations are important for the transition. Changing the existing tax system is seen as one of the crucial steps in the transition towards a CE. During this research the taxes were measured by the total environmental taxes in a country, which include taxes on waste, the use of energy, greenhouse gas emissions, and other environmental related taxes. The calculation of this environmental tax rate was done by Eurostat. As already mentioned, taxes did not turn out to be one concept in the PCA. A possible explanation for this fact is that the environmental tax rate was not such a good instrument, because different kinds of taxes were combined into one rate. As a consequence, the institutional difference between countries diminished in the process of making the instrument. Alternative measure systems were, unfortunately, not available. Probably, the qualitative part of this research can give more insight in the importance of the tax system.

The several interviewees were asked to reflect on the importance of changing the tax system for the transition towards a CE. Although everyone agreed that changing the tax system might be a crucial step, the reactions were totally different. One respondent, had the opinion that changing the tax system is the most important step to be taken in the transition towards a CE:

R7: The tax system should be fundamentally reformed. That is the most important thing. After all, what a Dutch historian Bregman recently said on the stage in Davos: "Taxes, taxes, taxes. All the rest is bullshit in my opinion." And this is in line with the core message of Ecopreneur in recent presentations: "Pricing, pricing, pricing". I keep saying that. ... It is almost always

cheaper to buy a new one than to have something repaired... So the second point is that the costs on labour must be greatly reduced. So tax on labour should be reduced, maybe to zero. No more income tax, no more VAT on services provided. And instead, high taxes on the use of raw materials and certainly on the use of raw materials that are new and certainly if they also cause a high environmental impact. So you have to look at the external costs of all products and services and then calculate the true price and make it mandatory on the market.

The above quoted respondent has the opinion that all problems regarding the transition towards a CE can be solved by using the right tax instruments. To solve all these problems, the tax system should be turned upside-down to make it in favour of a CE. A respondent of the Dutch national government has a different perspective on this matter:

R5: Well, conceptually, that is absolutely right, but the question is whether you can do that politically. And how? It was only recently that the government decided to introduce CO₂ levies after all. That is an important step in this direction. Why? How are you going to do that? When you start implementing CO₂ levies, linear products will also become more expensive as circular products. So you are going to influence the market. Conceptually that is great to do, but you would be a mother on welfare and not be able to make ends meet. You already have to knock on the door of the food bank and then again you will have to spend more money <because of the new taxes>. That is not what you want either. ... I think the solution is more to think in chains. Well, now we are going to come up with a number of measures for plastics also in the area of taxation, which will help. I think that this is more promising than saying that we are going to spread a tax blanket over our country. ... Of course, you want stable tax revenues. And what you actually want is to use taxation to steer behaviour. This is very logical, but if you succeed in doing so you get less tax revenue. So you have to do all kinds of compensation measures for that. Because yes, I get my salary as well, and your educational institution also gets the money from tax money. And I am not going to accept that next year I am going to get 20% less salary because there is less income.

So, although changing the taxation system sounds really promising it might be too complicated to do so. Taxation is not only there to steer behaviour; it has other important roles as well. If you want to change the taxation system, you should make sure that the weaker people in the society are not disadvantaged disproportionately. Moreover, countries want to have a stable tax income. The fear exists that adjusting the tax system in such a way that it promotes the CE could endanger the stability of income for the state. The argument is that if the new tax system becomes a success, the state will not be able to pay its bills anymore. Consequently, it might be unfeasible to make major changes in the tax system. Instead countries should look at specific chains, like the plastics or the construction sector, and make a set of proper institutional arrangements for each sector. These arrangements could then cover laws as well as taxes. As we link this idea to the theoretical part of this research we can speak of regulations that cover all aspects of the transition in a specific sector. For each sector a different regulatory framework should then be established. The importance of making arrangements sector by sector is also underlined by respondent 1:

R1: But if you really look at the future at scenarios that are effectively considered by different groups then you will also often see, and that is logical, that you will really start working per sector ... and, of course, it is useful to combine certain things with each other, but - and then you have to have a certain overview - I think with very specific objectives for a very specific sector.

Up to now, the clear formulation of laws and regulations has not been discussed. This element was left out due to the lack of regulatory arrangements in general. Still the question was asked to interviewees whether the already existing laws were clearly formulated. One of the respondents answered that the formulation was in general relatively vague, but that this can also be seen as a positive aspect. There is still a lot of experimentation going on regarding the CE. Very strict rules could, at least for now, be an obstacle for future circular experiments.

Taking everything into consideration, laws and taxes are not important for the level of circularity in a country at the moment. This mainly has to do with the fact that taxes and regulations are still in development. Although some arrangements already exist, these arrangements are not very effective at the moment. The most promising approach seems to be the development of institutional arrangements including laws and taxes per sector.

4.4 Organizational capacity

The results of the regression analysis showed that the level of organizational capacity has a negative effect on the resource efficiency in a country. This is remarkable, because one would expect that organizational capacity has a positive influence on the CE in a country. For what reason is it then that the regression analysis gives the opposite result? This is the main topic that will be discussed in this section, but first some reflections will be given on the measurement of organizational capacity during the regression analysis.

To measure the organizational capacity eleven statements were included in the survey. The statements covered the responsibility structure for implementing laws, the priority given to the CE, and the level of leadership in regard to the transition towards a CE. During the PCA, three statements on leadership and one on the level of priority given <the level of political support> turned out to be one element. This element was labelled organizational capacity and put as one element in the regression analyses. Consequently, the seven other statements were not taken into consideration. A possible problem with this decision is that it could imply the incorrect measurement of organizational capacity. Leaving some elements that are important according to the literature out, could lead to biased results. So, did the element organizational capacity in the regression analysis really measure the concept organizational capacity? To answer this question, it is important to take a look at the results of the interviews. All respondents were asked to reflect on the different elements of organizational capacity as defined in the literature.

The first element that was discussed was the responsibility structure. In their reflection on this item, the respondents mentioned the following things:

R3: Good question. I do not know very well. The question is whether, in a transition, you should be able to answer that question at all. There should not be one party that is responsible for this <the transition>, because they are, of course, responsible all parties together. That may also be an answer to your question.

R4: Well, the Ministry of Transport, Public Works and Water Management actually has a governing role. They are the ones who control it. They are not the ones who have to implement it all, because the Ministry of the Interior and Kingdom Relations, or the Ministry of the Interior .. or the Ministry of Agriculture, Nature and Fisheries, which are all responsible for one of the transition agendas ... so they are stimulated to take control of such a transition agenda in this way. And the Ministry of Transport, Public Works and Water Management is the one who monitors, overviews and directs the process.

Respondent 5 mentioned that there are five different transition agendas in the Netherlands. The responsibility for each agenda lies in the hands of a different ministry. The responsibility for the entire programme lies at the Ministry of Transport, Public Works and Water Management. The interviewee also gave an explicit example, where the responsibility structure might seem to be unclear. In the Netherlands, the Ministry of Transport, Public Works and Water Management is responsible for the CE program as a whole. The other Ministries are responsible for parts of the transition. As the Parliament wants to hold a Minister responsible for the execution of the CE program for the agriculture sector, the Minister of Transport, Public Works and Water Management is responsible for the general set up of the program. The Minister of Agriculture is responsible for the content of the program. So, the question is who is responsible if something goes wrong in the implementation phase. One could find this problematic, but one can also look at this potential conflict from another angle. The transition towards a CE takes a government-wide approach. As the same respondent underlines:

R5: If you say that we are going to approach things on a government-wide basis, then you also have a government-wide responsibility.

All in all, the responsibility structure in the Netherlands lies in the hands of multiple ministries and Ministers. Sometimes this might lead to an unclear responsibility structure, but the positive side is that there is a government-wide approach. The presence of a clear responsibility structure can then be interpreted in multiple ways. Positively it can be interpreted as the presence of clear responsibility schemes. A clear responsibility structure can also be interpreted as the fact that only one specific department is responsible for the interpretation of all CE policies, but managing an entire transition from one department is an impossible task. Moreover, as respondent 3 pointed out, a clear responsibility structure might be less relevant in the notion of a transition.

Another issue that was covered in the surveys is the level of priority given to the CE. In total six statements regarding this issue were given. First, it should be mentioned that most of these statements covered the implementation of legislation. As explained in the previous section, most regulatory arrangements are still in development. Implementing rules that are not yet developed is conceptually difficult. This could partly explain the fact that many statements on the implementation of laws did not turn out to be one concept in the PCA. Only political support for CE policies turned out to be a part of organizational capacity. The importance of this element was also pointed out by all interviewees. They argued that political support has a positive effect on the implementation and is a crucial element for making a success of the transition towards a CE. Respondent 5 explained it in the following way:

R5: They were in the coalition agreement, two sentences ..., those sentences are roughly: "The cabinet finds CE important" and "Will commit to a market for circular raw materials"³. That is

³ In the coalition agreement of Rutte II (2012) the following sentence was included on the CE: *"The Cabinet aims for a circular economy and wants to create a (European) market to promote sustainable raw materials and reuse of scarce materials."* In the coalition agreement of Rutte III (2017) the following two sentences were included: *"As part of the climate challenge, the agreements from the government-wide programme circular economy and the transition agendas from the Raw Materials Agreement will be implemented. In doing so, the government will submit additional emphasis on the development and dissemination of knowledge and best practices."*, and *"The government is also taking inventory of the bottlenecks in regulation, supervision and enforcement of sustainable development that can possibly be solved."* The respondent refers in the first part of his answer to the coalition agreement of Rutte II, in the second part he continues to speak about the coalition agreement of Rutte III. Note that the respondent made a small error in his explanation. He states that there were two sentences in Rutte II's coalition agreement on the CE. This is not true. There was only one sentence, but the content is similar to what the respondent underlines. The rest of the explanation is in line with the content of the coalition agreement.

a very limited scope, but that was enough reason -everything in the coalition agreement is being implemented- to get to work on it. ... So it has been decided that the CE is, of course, a much broader concept than the climate task. The government has, however, chosen to see it as part of the climate task for the time being... The moment you say it is part of the climate task you do have the energy that is currently on the climate task plus the people who are available for it and the resources that are available for it. That is why you also put it on CE. After all, the CE also contributes to the climate challenge. That is the first choice made by the government. Pretty nice. That means that you can hitch a ride with everything that happens on climate. And it < the coalition agreement > also states that the transition agendas will be implemented. That is, of course, a very exciting one because we were working on the implementation programmes at that time. So, it is also very good that it is therefore structural government policy. CDA, VVD, CU and D66 are saying that they are going to implement this together. And all actions related to the implementation of laws and regulations. You have to take it into account, these are things that go through the Council of Ministers. You have to have sufficient support for this in the Second Chamber and in the cabinet. And that is what you get, because it is in the coalition agreement.

Other Dutch respondents were more critical regarding the level of political support for the CE policy. They did not deny the fact that there was political support, but they argued that there could be more political support. So, political support is considered to be very important for the implementation of CE policies in the Netherlands. At least at the moment, because all the policies should still be approved by the national government. Respondent 1 and 7 both pointed out that the support of political actors is very important to get the CE running in a country. Taking everything into consideration, political support seems to be one of the main pillars of organizational capacity. The other statements regarding organizational capacity are less relevant at the moment because the policies are still in development. More interesting in this regard, might be the second sentence of the coalition agreement of Rutte III:

“The government is also taking inventory of the bottlenecks in regulation, supervision and enforcement of sustainable development that can possibly be solved.”

So, the given priority to the implementation of CE legislation is the active inventory of bottlenecks in regulations, supervision and enforcement. In this regard, it should be mentioned that this sentence is a part of the formal coalition agreement. It does not give any insight in what actually happens in this regard. Therefore, conclusions cannot be drawn regarding this aspect. It is, however, an interesting point to take into consideration for the improvement of the survey.

A third element of organizational capacity is leadership. All statements on leadership that were included in the survey, turned out to be one concept during the PCA (together with political support). Most interviewees underlined the importance of leadership. However, the respondents also pointed out that leadership should be spread across the different organizational departments in order to make CE work. If leadership is only present on one place, this could have an adverse effect, because everyone else can sit still and wait for the leaders to do something. One of the respondents is working for a Dutch bank that received a price for its activities regarding the transition towards the CE. The respondent was asked, what made this bank so special. The respondent answered in the following way:

R6: And in addition, it is really embraced by many employees but also really by the top of the organization.

So, it is important that the leadership regarding the transition towards a CE is really embraced by multiple levels of an organization. This element was lacking in the operationalization of leadership

in the survey. In the discussion more attention will be paid to a better operationalization of the leadership concept. Nonetheless, the measurement of the organizational capacity as used during the regression analyses is in line with the organizational capacity's elements considered to be important by the interviewees.

As mentioned earlier, the regression analysis showed that organizational capacity has a negative influence on resource efficiency. Before taking the results of the regression analysis for granted, it is important to look at the history of the CE policy framework. This framework was developed by the EU from 2014 onwards. The CE policies in European countries were developed in the years that followed. This does not only mean that most CE policies are relatively new, it also implies that the organizational capacity that is established to make the transition towards a CE only came up relatively recently. The measurement of resource efficiency uses, on the contrary, a relative timeless notion. The amount of waste recycled and the use of primary resources per capita, is not something that one can easily be changed within a few years. Of course, one can make progress, but it is unlikely that a country does not recycle its waste at all in 2014 and then establishes a 100% recycle rate within a few year time. The results should then be interpreted in another way. During one of the interviews, one of the respondents mentioned the following:

R7: Certainly in a country that is careless with the environment, there is even more money to be made with it. A great deal of value is being destroyed that can be saved.

Accordingly, countries that have a low level of resource efficiency have more incentives to make the transition towards a CE work, because the possible financial gains are much higher than for countries that already have a high level of resource efficiency. So, the results of the regression analysis show that countries with higher financial incentives to make the transition towards a CE, put more organizational effort in the transition. As this is true for organizational capacity, this might also be true for resources and learning capacity.

4.5 Resources

Like for the organizational capacity, also resources turned out to have a negative effect on the level of circularity within a country. In this section it will be analysed whether the same explanation can be used for the level of organizational capacity. Before this question can be answered, it is necessary to understand the way resources are measured in this research. To measure the level of resources available for the implementation of policies regarding the circular economy, four statements were included in the survey. The first statement stated that sufficient financial resources were available, the second and third statement claimed that plenty of knowledge / expertise were at hand, and the fourth statement supposed enough human labour. For all of the four statements, the respondents had five answer possibilities ranging from strongly disagree to strongly agree. During the PCA the statements on expertise and knowledge turned out to be one component. Consequently, the statement on the amount of financial resources and the amount human labour available were left out of the regression analyses. In the course of conducting the interviews, the different respondents were asked to reflect on the available resources for the CE transition. Firstly, it was asked whether there were enough financial resources at hand. One of the respondents works for a Dutch municipality. Recently, this municipality decided to support the transition towards a CE by using Green Public Procurement for the municipal tendering processes. I asked the respondent whether additional financial resources were accessible for the most circular building company. The respondent answered in the following way:

R2: Well, that <financial> space is tiny. Actually, I do not think that there is any space.

Researcher: *So in the end it <the contract> goes back to the cheapest bidder?*

R2: *Well, that is not entirely true. You can certainly earn points in a public tender. And that can mean that if we give more weight to circularity in the programme of requirements, then it does not have to go to the cheapest. That is not to say that it necessarily goes to the cheapest. It depends on the severity of your requirements. So, what we could do as counsel is telling the municipality: "We want you to make the point that circularity is a major factor in the weighting of the selection."*

Researcher: *Is that happening right now?*

R2: *No, I do not think so.*

One might reason that building in a circular way does not necessarily cost additional money, so that the lack of additional financial space is not a big deal. However, one has to keep in mind the earlier mentioned response of Duravermeer:

In none of the governmental tenders <of the Dutch government> there is a request for a circular building. You do not get points for being circular. Moreover, there is no financial support. The government does not have budget for circular buildings ... If you do it well you can have the same costs, but the risks are larger for building circular.

If building companies do it well, they do have the same costs when they build in a circular way. However, the risks for building circular are higher. So, building companies have little incentives to build in a circular way if there is no additional money available. The lack of money is not only an issue in this municipality, it is also an issue at Rijkswaterstaat – the largest construction contractor of the Netherlands-. As stated by one of the respondents:

R4: *Look, it is really in such an experimental phase now. ..there is money for that .. to experiment. I do not know if there is enough money for everything, but I have not heard yet that things cannot be done, because there is no money. In terms of experiments, in the regular projects people often say, I have no money at all for sustainability, whether that is CE or energy measures so to speak.*

At Rijkswaterstaat there is money available for circular experiments, but only for these experiments. In the regular tendering processes, additional money is not available. The shortage of money is not a problem for every organization. The Dutch national government does have enough financial resources for the transition, but also here some remarks can be made. One of the respondents mentioned that there were enough financial resources, but that there was not enough manpower to optimally use the financial space. Another respondent, who is active in a project that promotes the CE among companies, mentioned that there are generally spoken enough financial resources, however, he pointed at another issue:

R3: *But we now have funding again until the end of this year and then the question of how we exist financially begins. This is also stated in the government's response, and it is a good thing that the project will do it until 2023, but the money is not there yet. That is a bit vague. I find that very unfortunate and that does get in our way, because we simply enter into relationships with partners, also internationally, and they ask us: 'We enter into a three-year plan, because we will not do this for one year.' And we cannot really say more than we have the intention to do so ...but we do not yet have any money from the first of January. That is, in fact, simply dramatic.*

As this respondent point out, the funding for the program is based on an annual cycle. This annual cycle gets in the way of projects that take longer as one year. All in all, the stories of the

interviewees point at the fact that the available financial resources can form an important obstacle in the transition towards a CE.

The second resource-related topic discussed with the respondents, was the level of expertise and knowledge available to foster the CE. The interviewees did in general point out that these two elements were not a main issue in the transition. Of course knowledge and expertise were considered to be important, but all the respondents explained that people could gain the knowledge and expertise relatively fast. As one of the respondents stated:

R5: Policy officers who make policy, they are generally very smart. I have colleagues who came in half a year ago, who did not know much about CE and who are now simply incredibly good.

Another topic that was discussed in the course of the interviews was the available human labour. The respondents had different view on this topic. One respondent called the lack of enough colleagues one of the major obstacles in the transition. Another respondent stated that there were more than enough colleagues available. It seems that the available human labour really differs from organization to organization. This is, however, not the main aspect of the available human labour the respondents pointed out. It was emphasized that CE should become a part of the normal working progresses and not stay in one department. As the responsibility for implementing the CE stays in one department, CE can be ignored by the rest of the organization. Only by making the CE a part of the normal working progress, a transition towards a CE can be made. This means that all employees within an organization are aware of the CE concept and support the transition towards a CE through their daily activities.

All in all, it can be said that the elements that are according to the respondents the most crucial for the transition – the available financial resources and the available human labour -, are not taken into consideration in the regression analyses. The elements that are taken into account –knowledge and expertise- can be obtained relatively easily. In the regression analysis, knowledge and expertise were negatively correlated with the level of resource efficiency. As for the organizational capacity we can speak of different time frames. Knowledge and expertise on the CE can be obtained within the time frame of one year, resource efficiency is characterized by the fact that it cannot easily be improved within a few year time. So, countries that have a low level of resource efficiency put more effort in gaining knowledge and expertise to foster in this way the transition towards a CE.

4.6 Collaborative capacity

Collaborative capacity does not have a significant effect on the level of resource efficiency according to the regression analysis. In this paragraph, it will be questioned whether this result means that collaborative capacity is not important for the transition. Thereby, attention will also be paid to the way collaborative capacity was measured during this research. For this reflection the results of the interviews will be used. In the course of conducting the interviews, the different respondents were asked to reflect on the influence of collaborative capacity on the transition towards a CE. Hereby, it should be noticed that the majority of the respondents talked about the Dutch situation. This is especially relevant for collaborative capacity, because voluntary agreements between private and public actors are used very often in the Dutch context. In other countries such agreements are used less often (EEA,2016). Despite this fact, the views of the respondents give valuable insight in the positive and negative aspects of using collaborative capacity to foster the transition towards a CE.

Before a reflection can be given, it is important to understand the way collaborative capacity was measured during the survey. In the survey three topics related to the collaborative capacity were covered: presence, involvement, and structure. The first topic was the presence of a collaborative

agreement. The respondents were asked whether a collaborative arrangement is present and how often meetings are held. The second item is the involvement of businesses, NGOs and governmental agencies in the collaborative agreement. Respondents were asked to fill in the number of organizations that are present in the collaborative arrangement. Unfortunately, many respondents found it hard to answer this question and, consequently, the results of these questions are left out of the regression analysis. The third covered topic is the structure of the collaborative arrangement, which includes the level of authority of the agreement, the extent to which the collaborative arrangement stimulates actors to think beyond existing frames and problem definitions, and the arrangement's agenda. In the PCA, the three statements on the structure of the collaborative arrangement turned out to be one element. For respondents who stated that a collaborative arrangement was not present, a value of one was given to the three statements. In this way, the statements on the structure and presence of collaborative capacity were taken together.

While conducting the interviews, all the three elements of collaborative capacity were discussed. As it was asked the respondents whether one collaborative arrangement is present to support the transition towards a CE, most respondents came up with multiple examples. In the Netherlands, there is not one collaborative arrangement, there are plenty. Collaborative arrangements are present on the local level, the regional level, the national level, and on the European level. Five of the most important collaborative arrangements in the Netherlands are the five transition agendas. For each sector in the Netherlands, for example plastics or construction, a transition agenda has been formulated. To formulate the transition agendas, the Dutch national government invited businesses, NGOs and local governments. The different transition agendas led to the raw materials agreement. One of the respondents gave a reflection on this agreement. After the decision of the national government to make the transition towards a CE, they wanted to involve the rest of the society:

R5: So, now we <the government> have to involve the rest of society <in the transition>. That is what we did with the raw materials agreement. ... Hundreds of parties were very interested in taking part, but it is difficult to start talking or consulting with hundred parties. So, we asked a number of umbrella organisations to act as coordinators. This was followed by what we now call the drafting parties of the raw materials agreement. They are the large social parties, they are the trade unions, they are the local governments, and they are the environmental movement and the national government. They have said together that we now have that program <the raw materials agreement>, that program we are going to implement. That means <we should decide> what needs to be done and that we will also decide who will do what in those actions that need to be done in order to speed up the transition. Well, that has been terribly complicated to do, so it has taken some time.

As is underlined by the respondent above, many parties were interested in taking part in the collaborative arrangement that led to the formulation of the raw materials agreement. Unfortunately, it turned out to be impossible to talk to all interested parties. Therefore, umbrella organizations were used. Such organizations represent the interests of a group of organizations, for instance all the industrial firms. Including such structures, can make it unclear how many organizations are actually involved in the collaborative arrangement. Does one only count the umbrella organization, or also all the organizations represented by the umbrella organization? After all, the umbrella organization does speak on behalf of the firms it represents. This was not the only obstacle to get insight in the number of involved organizations, interviewees found it difficult to reflect on the number of organizations present when they themselves were not actually involved in the collaborative agreement. One of the respondents mentioned that her department was involved in many collaborative arrangements, but

she was not responsible for these arrangements. Consequently, she could not tell me anything about the involvement or the structure of the collaborative arrangement.

So it seems that the involvement of different parties in the collaborative arrangement is a difficult topic to measure. It is not the only issues that makes it hard to measure the collaborative capacity within a country. Another critical point that occurred during the conduction of the interviews is that collaborative arrangements can be formed in different settings with different goals. One of the respondents mentioned a network between national government agencies:

R1: The fact is that we have a network..., which includes all the countries of the European Union on the one hand, but also countries in addition, which are members of the agency itself. And we are watching, we are also observing, what is happening there. How they react to a package that is being published on the CE. We organise meetings with them in order to exchange information, first of all, and also to have discussions in order to help them a little further. So that they can also learn from each other.

Another respondent mentioned the collaboration between multiple municipalities with some private actors in order to manage the waste streams in the region and the collaboration with the local university. Yet, another interviewee talked about a national collaborative arrangement that aimed to make national transition agendas and policies. So, collaborative arrangements are available in all shapes and sizes. Difference can occur in the kind of actors involved, the amount of actors involved, the goal of the collaborative arrangement, the frequency of meetings and the duration of the arrangement. Taking all these differences into account, it is hard to judge what is a collaborative arrangement and what is not. The judgement of what is a collaborative arrangement and what is not, should not be left over to the respondents of surveys and or interviews as was done during this research because this could lead to unreliable results. If all the possible respondents have another definition of collaborative capacity, the results of the survey will not be very reliable (Bryman, 2012).

A last element that was covered during the interviews was the structure of collaborative arrangements. The questions were differently formulated as during the survey. This has to do with the fact that respondents had pointed out that multiple collaborative arrangements were present. Since the structure for each collaborative arrangement can be different, the questions were more focussed on the general usefulness of collaborative arrangements for the government to manage a transition. Beneath some of the reflections of the different respondents are given:

R3: But I think that is in the Netherlands, but I do believe that it is true, it is mainly poldering⁴. So often I find that polders are too slow for things that are simple, we should not always use them. Sometimes you can manage things a bit more from the government..., but I think that transitions need to be poldered. Otherwise it will not work.

R7: A very good example of public-private partnership, where you create a kind of “circular hub”, is the Netherlands, where all companies that want something <with CE> are served with assistance, such as Circo training; municipalities as well, they can use the circular procurement academy, they can get a training for circular procurement; we have communities of practice, there are “cafes”. We recommend this to all countries, because what we see is that this creates successful examples that also make stakeholders and the government enthusiastic about circular <economy>.

⁴ The respondent refers to the Dutch “Poldermodel”, by which he means the Dutch model for consensus-decision making.

Both respondents underline that collaborative arrangements are crucial for the transition. They do, however, point at different reasons. The first respondent points at the fact that collaborative arrangements are crucial to involve multiple parties <not only the government, but also businesses and other actors in society> in the transition towards a CE. The second respondent underlines that collaborative arrangements are also important to enthruse the government for the transition towards a CE. All in all, the results of the interviews underline the importance of the collaborative capacity for mayor transitions. On the Cinderela conference it was added that by the use of multiple voluntary agreements between public and private organizations, a hub can be created that positively stimulates the government and local enterprises to make additional efforts in the transition towards a CE. All in all, it seems that the measurement of the collaborative capacity in the survey was not very adequate. The reality of this capacity turns out to be more complicated than assumed during the construction of the survey. In the discussion part of this research some suggestions will be made regarding measuring this capacity in future research projects.

4.7 Learning capacity

Learning capacity as measured in the quantitative part of this research had a significant negative effect on the level of resource efficiency in a country. In this section some reflections will be made on how one can interpret the results of the regression analysis.

In the survey six statements were included regarding the learning capacity. Two statements covered the available instruments to measure the progress made in the transition towards a CE. The four other statements were about the capacity of the departments to improve routines and procedures. Three of these statements turned out to be one element in the PCA. In the end the statement on improving routines and the statement on improving procedures were taken together and put as one element “learning capacity” in the three regression analyses.

During the qualitative interviews and observations, it became immediately clear that learning capacity and CE have a difficult relationship with each other. All interviewees underlined that good indicators to measure the progress of the transition towards a CE are still not available. During the Hackaton, a policy officer said that his department had really good indicators. It was asked to this person whether his department had any positive influence on the transition. The policy officer answered that he did not know this, because his department does not have access the right data in order to calculate the indicator. Apparently an indicator was present, but it was not possible to effectively use the indicator. An interviewee said that he hopes to have an indicator by the end of 2019. Another respondent made the following comment:

R5: I once got the assignment to think of only ten indicators. Ten indicators to measure the speed of transition. And we could not carry out this assignment because the transition is too complex to reduce to ten indicators. At least we cannot think of a solid set yet. But we decided to make a start and let it grow.

Another respondent argued that the available data on resource efficiency does already give quite a good image on how countries are doing in regard to circularity.⁵ However, he pointed out that this is data available on country level, not on the level of individual product chains. On this level less information is available. The available data is not the only issue that complicates the search to a good indicator. One of the respondents mentioned the following:

⁵ This respondent defined the CE as resource efficiency

R5: So you have to think of ... a suitable indicator to turn on, but of course this is more difficult to do in a circular way. You can at least say that burning recyclable waste may be a bad idea. So how much recyclable waste you burn, how much you dump, that is already a good indicator. It is, however, quite difficult how you are going to deal with that.

As underlined by this respondent, a suitable indicator is an indicator that can be influenced. For CE it is still considered to be difficult for governments to find an indicator that they can actively influence. All in all, it can be concluded that indicators are still in development. Indicators that have not been found yet cannot be considered as important for the improvement of routines and procedures. Nevertheless, the ability of countries to improve their routines and procedures was found to be one element that negatively influences resource efficiency. It remains unclear on what information these departments improve their routines and procedures. In any case it is not on the basis of a well-constructed CE indicator. It seems to be then that countries that are in general better able to improve their routines and procedures have a lower score on resource efficiency. The lack of valuable CE indicators makes it difficult to get a more precise meaning of this result for the transition towards a CE. Therefore, a better conceptualization of the learning capacity will be given at the end of this research.

5. Analysis

In the previous chapter, the quantitative and qualitative results of this research have been given. The aim of this mixed method study is to investigate the empirical reality of the CE concept and the influence of political institutions on the transition towards a CE. Through the analysis of the findings presented in chapter 4, this chapter intends to evaluate the research's conceptual model. This step is crucial to be able to answer the research question.

The conceptual model of this research stated that the transition towards a CE is influenced by five institutional factors: regulatory capacity, organizational capacity, resources, collaborative capacity, and learning capacity. To measure the transition towards a CE, three elements were taken into consideration: resource efficiency, energy efficiency and sustainability. Within this chapter, first, attention will be paid to the measurement of the CE. Thereafter, attention will be paid to the influence of the measurement methods chosen during the operationalization on the results. Last, but not least, the influence of institutional factors on the establishment of a CE will be addressed.

5.1 Circular economy as a concept

The results of the PCA, Cronbach's alpha and Pearson's correlation coefficient show that the scientific definition of the CE cannot be seen as one empirical concept. According to the PCA sustainability and resource efficiency were one concept, but the Cronbach's alpha was only 0,217, which means that the two aspects are not the same concept. Pearson's correlation coefficient underlines these results. Although sustainability is correlated with resource efficiency as well as energy efficiency, energy efficiency is not correlated with resource efficiency. These results are remarkable because the three concepts are considered to be important elements of the CE by many scientists. Consequently, they were considered to be one concept in the research's conceptual model. Within this model, it was underlined that we are talking about a transition towards a CE. Many researchers, practitioners, and politicians have argued that the real transition towards a CE should still begin. This could mean that, although the three elements are not related at the moment, they can be potentially related in the future. To research this matter, the results of the interviews are used.

Overall, the results of the interviews show that CE in the reality of politics is mainly interpreted as resource efficiency. In the Netherlands, energy efficiency is generally considered to be another type of transition: the energy transition. The CE transition and energy transition are then approached separately. From a theoretical stance this is problematic because options that are as well resource as energy efficient are not actively promoted among actors in society. The possibility exists that the two transitions work alongside each other. In other words: it could be that actors in society do not have any incentive to choose for the most energy efficient circular feedback loops.

The relationship between resource efficiency and sustainability also remains unclear. In some countries, CE is coupled to the narrative of a more sustainable economy, in other countries it is not. Hereby, it should be said that making sustainability part of the CE narrative does not automatically lead to a more sustainable economy. Creating a narrative is not a magical fix. During the interviews it was also underlined that the main reason for making a transition towards a CE consists of financial considerations. In general, it is assumed that creating a CE can be good for the economy and a growing GDP. This idea is a potential threat for the sustainability effect of the CE (Zink et al, 2018). The literature underlines that although a growing GDP is not necessarily in conflict with the scientific definition of the CE, the philosophies behind the two concepts are tensed with each other. CE, on the one hand, assumes that you can create wealth by making things last, GDP, on the other hand, is about the creation of a financial flow of goods and services transactions. To create such a flow, goods should not

last forever, but they should be replaced on a regular basis (Stahel, 2016; Raworth, 2017; Lintsen et al., 2018). Assessing economic growth as one of the most important goals of the transition towards a CE is based on a belief that GDP is a good indicator of welfare. The belief is widespread among politicians and citizens, who often think that a growing economy will increase loans and employment chances. Consequently, the GDP is often used as a core indicator to judge the economy of a country (Van den Bergh, 2009). If politicians and practitioners consider economic growth <an increasing GDP> as very important, this will almost certainly hurt the sustainability aspect of the CE due to the fact that the philosophies have a tensed relationship (Geisendorf & Pietrulla, 2018; Zink & Geyer, 2017).

All in all, it can be concluded that CE is not only not an empirical concept at the moment, but it is also unlikely to be an empirical reality in the upcoming few years. Within the contemporary political discourse, the main focus is on the economic value that can be gained from the efficient use of resources. As the scientific definition underlines the importance of resource efficiency, energy efficiency, and sustainability, the three elements will be considered separately in the rest of the analysis. This is in contrast with the suggestion of the conceptual model in which the three elements were considered to be one element. In the discussion part of this research attention will be paid to the future of the scientific CE concept.

5.2 The influence of institutions on the establishment of a CE

It might be expected from the theoretical section of this research that the five institutional capacities have positive influence on the establishment of the CE. The regression analyses showed that organizational capacity, resources, collaborative capacity, and learning capacity did not have a significant effect on the level of sustainability and energy efficiency within a country. It is explained in the previous section that CE is mainly interpreted as resource efficiency in the political context. From this perspective, it is logical that the five institutional capacities were not related with neither energy efficiency nor sustainability. Therefore, the focus of this section will be on resource efficiency.

Organizational capacity, resources, and learning capacity were even negatively correlated with resource efficiency. This, however, does not mean that those capacities have a negative influence on the transition towards a CE. The results derived from the semi-structured interviews are of great help to explain these negative correlations. One of the respondents explained that the measurement of resource efficiency is relatively stable, meaning that it is difficult for countries to improve their score within a few year time. We can in this context speak of a path dependent process (Unruh, 2000). To measure the institutional arrangements in countries, on the other hand, statements were given like: *“There is a high level of political support for the implementation of the CE policy.”*, and *“Within the existing policy framework there is room for a long-term vision regarding the CE.”* Since the CE programs are relatively young, the answers of respondents are unlikely to be based on a long historical background. It is more likely that the answers are based on experiences of the recent past. During the interviews, it became clear that the answers of the interviewees were also based on the likely support of the government in the future. As a matter of fact, when respondents were asked about policy arrangements, they often answered in the future tense. This could also have been true for the respondents of the survey. If everything is taken into account, the measurement of institutional arrangements was not based on lagging indicators. Instead, it was based on indicators that take the recent past and near future into consideration. It is conceptually difficult to use such indicators to explain indicators that are largely influenced by events in the past.

Countries with a low score on resource efficiency spoil a lot of resources and, consequently, money. One of the interviewees stated that for such countries the potential (financial) gains of a transition towards a CE are much higher. Within this context, the results of the regression analysis can

be interpreted in the following way: countries that have a low score on resource efficiency have a higher score on organizational capacity, which is measured as the political support for the CE and leadership in regard to the establishment of CE policies and arrangements. Apparently, these countries have a wish to become more resource efficient. Countries that have a lower level of resource efficiency also put more effort in the establishment of knowledge and expertise on the transition towards a CE. The negative relationship between learning capacity and resource efficiency is less easily explained. Countries with a lower score on resource efficiency have a higher score on the ability to improve their procedures and routines. Due to the fact that there are no good CE indicators present at the moment, the interpretation of this result is difficult.

All in all, the relationship as proposed in the conceptual model, where the institutional capacities in a country explains the presence of a CE, is not found. Energy efficiency and sustainability are not a part of the CE in the macro-level empiric world. A relationship between resource efficiency and some of the institutional capacities has been found, but the direction of explanation is the other way around. Resource efficiency explains the presence of the available organizational capacity and resources. As said, this negative relationship can be explained by the way resource efficiency was measured. For the learning capacity, the correct interpretation is more difficult. In the discussion part of this research additional attention will be paid to the used measurement methods. A relationship between resource efficiency and collaborative capacity has not been found. The regulatory capacity was not taken into account during the regression analyses. The next section will pay additional attention to these two capacities.

5.3 Conceptual considerations regarding the influence of institutions on transitions

The fact that the five capacities did not have a positive effect on the level of circularity in a country, does not mean that institutional settings are not important for the transition towards a CE. The importance of the different institutional arrangements is underlined by the different interviewees, but the same interviewees also mentioned another issue: it is not only the availability of the institutional capacities that matters. Even more important is the way these institutional capacities are used to influence other actors in society. After all, the government cannot make a country circular on its own. The necessity of cooperation by other actors in society was underlined by all interviewees. The respondent, who is working for the European research institute, mentioned that this is by far the biggest obstacle for the transition towards a CE. To assure the cooperation of other actors in society, the government should create a framework through which companies and other actors are supported to make the transition. In the upcoming section, attention will be paid to the consequences of this interviewees' observation for the conceptual model.

As the respondents were asked which groups in society are crucial for the transition, they mentioned the following groups: businesses, consumers, and financial institutions. Influencing businesses is considered to be important because they are the producers. To make the economy circular, the producers should produce in another way. They should not only use recycled products to make their products, but they should also change the way they design their products. Products should be designed in such a way that they can be repaired and re-used. For such a major shift in the production methods, active support from the government is necessary, according to the respondents of this research. Hereby, the use of laws, taxes, and voluntary agreements are considered to be the crucial ingredients. During the Cinderella conference, it was underlined that the collaborative capacity should be used to support and motivate the frontrunners in society. This could be done by creating a hub, where financial institutions, different business, and the government use a wide diversity of

voluntary agreements in order to make the next step towards a CE. The use of these capacities can be seen as a pulling factor. It was underlined that approximately 10% of the organizations in a society can be seen as frontrunners. 80% of the organizations will eventually follow the leading group. The other 10% are the laggards, those are the ones that do not want to change the existing working habits. According to some experts present at the Cinderella conference, laws and taxes can be used to force the laggards to take part in the transition. Empirical evidence shows that the use of taxes can indeed be a crucial pushing factor in the transition (Correljé & Verbong, 2004). The importance of taxes was also underlined by respondent 7, who referred to the following quote: *"All we should discuss is taxes, the rest is bullshit"*. In the course of the Cinderella conference, it was, however, underlined that the regulatory capacity can only be used as a pushing factor. Of equal importance is the use of pulling factors to create a coalition of the willing that work together in a transition hub. The exact combination of institutional and collaborative instruments taken to influence companies might differ from country to country, from sector to sector.

It is not only important to influence businesses as a government. Consumers are the most crucial factor in the transition towards a CE. If this group will change its consumption habits towards a more circular pattern, businesses will automatically move towards this direction as well. The importance of influencing consumers was underlined by all respondents. For businesses, the client is king. The respondents argued that consumers could be influenced by the establishment of laws and price mechanisms. One of the respondents pointed towards a quite recent regulation, which prohibited that plastic bags are given for free to consumers in the supermarket or other shops. This piece of regulation turned out to be very efficient. Price mechanisms are considered to be also important by the different interviewees. According to them, taxes and subsidies should play a crucial role in convincing consumers to make a shift to more sustainable products. The different respondents of this research underlined that the use of voluntary agreements is less usable to convince individual consumers to buy circular products. As it is already too time-consuming for governments to invite a few hundred companies around the table, it can be considered to be an impossible task to reach consumers in this way. However, it is not true that the government can only use taxes and laws to influence consumers. Informing people and the development of a circular narrative is important as well. It was asked to one of the respondents what is the major obstacle in the transition towards a CE. The interviewee answered that for her the biggest obstacle is to inform her neighbour about what she is doing. A lot of people are not yet aware of the fact that the concept CE even exists. If people are not aware of the existence of a circular economy program, how are they supposed to act upon it? The importance of creating a narrative for citizens on the importance of the transition towards a CE was not only underlined by this respondent. It came back as a crucial element in all the interviews. Another interviewee said that it is important to show citizens an action perspective in which it should be underlined that the CE can save them money. Therefore, this research suggests adding one other regulatory capacity to the five institutional capacities as defined by Van Buuren et al. (2014): the government's capacity to influence the way we think. By framing an issue, the government can influence the way people conceptualize or think about an issue. The story as communicated by politicians and other government officials sets the lines along which people think about particular matters. This narrative capacity is also of importance for societal transition because one of a transition's main characteristics is that everyone is influenced by it. All respondents underlined that a transition towards a CE will not succeed if consumers do not change their habits. The narrative capacity can then also be used to try to influence people's behaviour (Chong & Druckman, 2007).

The last mentioned sector is the financial sector. Although this sector was not discussed during all the interviews, it was thought to be of crucial importance according to some actors, because financial institutions are the ones that finance companies. Companies that make the transition towards

a CE need money to finance their new business methods. The financial sector plays a crucial role in financing these companies. As for businesses, the government can use its regulatory capacity and collaborative capacity to influence this group.

The fact that organizational capacity, resources, and learning capacity are not mentioned in the previous discussion, does not make them less important. The different interviewees also underlined the importance of these capacities, but they did not bring them into account with one of the societal actors. These capacities can then be seen as the capacities of the government itself. They are just not directly used to influence other actors in society. Based on the above-mentioned considerations, the future conceptual model for the influence of the six governmental capacities on a transition can be conceptualized in the following way:

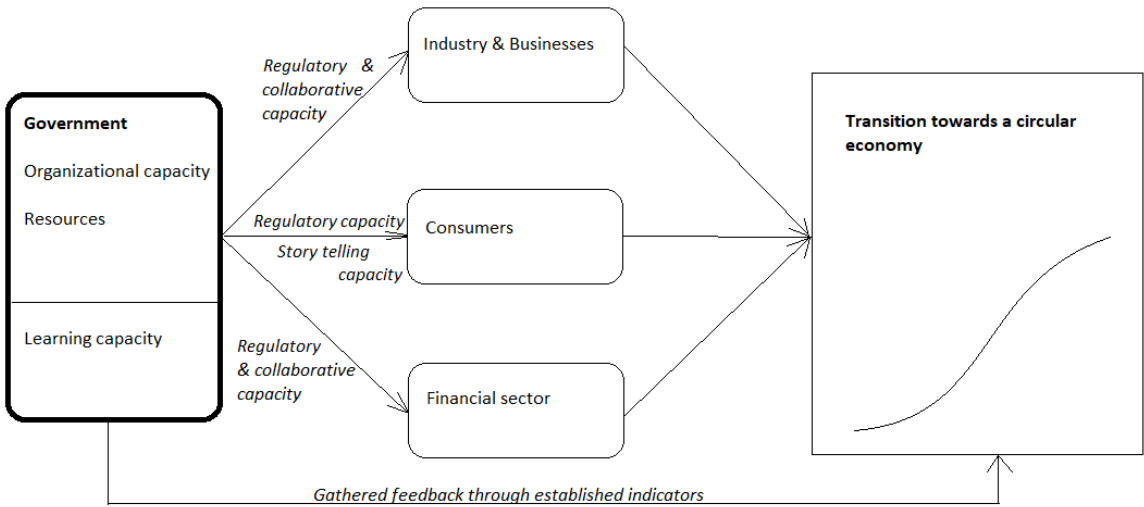


Figure 6: A new conceptual model

To fully understand the above presented model, some additional explanation is necessary. As one can see, the government itself has three capacities: organizational capacity, resources, and learning capacity. The organizational capacity covers the way the implementation of policies is organized by the government. The resources cover the available financial and human resources to governmental organizations to fulfil its tasks. Taxes and subsidies are not included in this capacity. Instead, the capacity is about whether there are enough civil servants available to fulfil tasks, whether the civil servants have enough expertise, and whether there are enough financial resources available to let the governmental organization function properly. The learning capacity refers to the way governmental organizations receive feedback on the policies’ effect(s) and the way they use this feedback to improve existing policies. All these capacities can be called intra-governmental capacities. They cover the strength of the bureaucratic system itself. The government also has institutional capacities to influence the businesses, financial institutions and consumers. The regulatory capacity covers the regulations, taxes and subsidies. These can influence the behaviour of other actors in society through financial incentives or regulatory frames. Collaborative capacity covers the direct contact between governmental organizations, businesses, and the financial sector. By this is especially meant voluntary agreements between the government and a third party. Narrative capacity refers to the way the government frames issues regarding the transition. Hereby, it is about the amount of information a government provides regarding a transition and how this information is presented. Is the transition presented as an opportunity, as a necessary evil, or as a possibility. All in all, these last three capacities

can be used by the government to communicate a message to the rest of society. We can thus speak of communicating-capacities.

6. Discussion

In the previous section, the findings of this results have been confronted with the research's conceptual model. A new conceptual model has been established based on the results of this research. The aim of this chapter is to go even a step further in the interpretation of the results. In the upcoming paragraphs, some implications of this research for the literature and future research projects will be discussed. First of all, attention will be paid to the future CE concept. Thereafter, attention will be paid to the used set of indicators.

6.1 The future of the CE concept

The results of both the quantitative and the qualitative part of this research showed that the three scientific elements of the CE: resource efficiency, energy efficiency, and sustainability cannot be seen as a concept. To understand this curious fact then, it is important to go back to the philosophy of science. The definition of the scientific CE concept is based on theoretical based research projects (Korhonen et al., 2018). In fact, none of the mentioned research projects actually tried to measure the scientific CE definition on the macro level. Macro-scale measurement methods that are proposed by researchers, only focus on resource efficiency (Vercalsteren et al., 2018). So, the scientific CE definition is a concept based on reason. Hume would say that it is a description of how it is ought to be. The PCA and other results show that there is a gap between how CE researchers describe the ideal CE and the reality of CE on the ground. All in all, we can speak of a classical ought-is distinction (Dooremalen, De Regt & Schouten, 2010). What could then be the future of the concept?

In the daily political discourse, CE is interpreted as resource efficiency. Still, academics underline the fact that CE is more than just the efficient use of resources (Korhonen et al., 2018; Stahel, 2016; Raworth, 2017; Lintsen et al., 2018). The connection of both views might seem to be far away. As we talk about the future of the scientific CE concept, the most promising perspective is to see the concept as an ideal type. Just like the bureaucracy of Weber is an ideal type. Although Weber's bureaucracy does not exist in the real world, the idea of his bureaucracy has been of great influence during the last centuries. The same can be true for CE. What we see around us is theory-laden. The knowledge of the existence of an ideal CE, can influence the actions of many actors (Dooremalen, et al., 2010). Seeing the CE as an ideal type also means that there is no strict necessity of measuring it as one concept. Instead, multiple indicators can be used by researchers to reflect on the level of circularity within a country: resource efficiency, energy efficiency, and sustainability (Korhonen et al., 2018). This critical assessment is important to come closer to the CE ideal. Without taking a critical stance, it is likely that the CE's sustainability aspect will be overshadowed by desires for economic gain (Zink & Geyer, 2017).

6.2 Leading and lagging indicators

Even though the negative relationship between resource efficiency and the three institutional capacities (organizational capacity, resources, and learning capacity) can be explained, it is one of the most striking results of this research. Therefore, it is interesting to take a deeper look at the influence of the measurement methods on the results of this research. As argued, the level of resource efficiency in a country is relatively stable over time. How countries score on resource efficiency has much to do with their recycling history and the historical consumption level of primary resources per capita. Or in other words, the linear economy can also be considered as an institutional arrangement. The measurement of energy efficiency and sustainability is also based on measurement methods that are sensitive to a country's historical background. Consequently, the indicators used in this research can be defined as lagging indicators meaning that they are susceptible to a path-dependent process of

historical developments (Hinze, Turman & Wehle, 2009; Muchiri et al., 2011; Unruh, 2000) It was also argued that the surveys measure a relatively recent phenomenon: institutional capacities that are related to the transition towards a CE. Since these policies are all relatively new, the answers of the survey respondents are most likely based on experiences from the recent past. Also a quite recent development was used to try to explain a concept with deep historical roots. Can it then be concluded that the use of surveys is inappropriate to measure the influence of institutional arrangements on transitions? The answer is no. Surveys can be used for measuring institutional arrangements in order to explain leading indicators.

As countries try to contribute to the transition towards a CE, the use of lagging indicators can be seen as less relevant. What is interesting in a transition is not how countries performed in the past, it is the performance of countries in the future (Raworth, 2017). Thus, the use of leading indicators, which focus on prospective performances, would be more interesting (Muchiri et al., 2011). Two suggestions for such indicators are made during the conduction of the interviews. One of the interviewees mentioned that it would be great to know how much waste has been prevented by the circular program. Another respondent mentioned the reduction in the CO₂-equivalent emissions caused by the CE program. Of course, there are many more potential leading indicators. It is up to further research to think about such indicators for the CE.

7. Conclusion

'The institutional pathway towards a circular economy', reads the title of this thesis. This particular title was deliberately chosen. The aim of this report is to inform researchers, politicians, and practitioners in the field of the CE about the possible institutional arrangements that could foster the transition towards a CE. In order to be able to give such advice, a mixed method research was conducted. Taking a mixed methods approach proved to be beneficial because the complexity of the transition towards a CE and the institutional reality cannot be grasped by only quantitative or qualitative findings. More specifically, quantitative regression analyses and qualitative interviews were conducted to examine how the transition towards a CE is influenced by institutional arrangements. In this study, the interviews were used to interpret the findings of the regression analyses and to come with suggestions for a better operationalization of the quantitative survey in future research projects. In this sense, the interviews were a valuable contribution to the results of the regression analyses.

The quantitative part of this research has proved that the three elements of the scientific CE definition – resource efficiency, energy efficiency, and sustainability – can currently not be seen as one construct in the macro-identical reality. However, one could argue that this has to do with the fact that the transition towards a CE is still at the beginning stage. The results of the semi-structured interviews suggest that it is unlikely that CE can be seen as one construct anytime soon. Resource efficiency, energy efficiency, and sustainability are not seen as one reality in the world of politics. This result is regarded as an important finding for the future of the scientific CE concept on the macro level. CE is not an empirical entity. The suggestion of this research is to see the CE as an ideal type. However, further research should be conducted on the way CE can play a role in science as an ideal type.

Within the introduction of the research, one main question and three sub-questions have been established. The three sub-questions were:

- 1) Which institutional factors influence the transition towards a CE?
- 2) How can the influence of institutional factors on the transition towards a CE be explained?
- 3) How can the influence of institutional factors on transitions be conceptualized in future (research) projects?

The results of this research do not give an answer of the first sub-question. Considering the fact that politicians mainly consider CE as resource efficiency, it is not surprising that there was no relationship between the institutional capacities and resource efficiency or sustainability. When the results of the regression analyses were displayed on the computer screen for the first time, I was a bit surprised by the negative relationship between organizational capacity, resources, and learning capacity and resource efficiency. The qualitative findings have been of huge value to correctly interpret the results of this quantitative outcome. The use of lagging indicators to measure the CE, which is a very path-dependent process, in combination with the use of indicators, which assess the recent past and near future, to assess the institutional capacities, explains the negative relationship between the three institutional capacities and resource efficiency. As a consequence of this measuring method, the first sub-question cannot be answered. The answer on the second sub-question is then that the found correlation between institutional factors and resource efficiency can be explained by the specific combination of indicators. Using this specific combination of indicators can be considered as a limitation of this research.

Quantitative statistics showed that the different CE elements are not positively influenced by political institutions. As mentioned, this has largely to do with the sensitivity of the CE's measurement method to highly path-dependent processes (Unruh, 2000). The measurement of institutions, in this

case, was more based on quit recent developments in regulatory arrangements that should promote the CE. Nevertheless, the different interviewees underlined that institutional structures do matter. Many argued that the existing institutional structures should change, because a transition cannot take place within the existing institutional framework. However, institutions are not changed easily. In this sense, existing institutions can create a lock-in and in this way hinder any attempt to change the existing situation (Unruh, 2000). It should be noticed that the institutions that can create such a lock-in are not necessarily covered by the five institutional capacities as used during this research. Within this research the focus was on political institutions. Other institutions that could play a role are institutions of a more economic order. For example, the way the economy in a country is organized.

As the previous argument is taken into consideration, the answer on the third sub-question is twofold. For future research, it is suggested to concentrate on leading indicators instead of lagging indicators to measure the progress made in the transition. The reason for this lies in the fact that transitions are focussed on the future, not on history. In addition, the qualitative results have led to a new conceptual model for future research on the relationship between institutions and societal transitions. The government does not have a direct effect on the transition, but should use its institutional capacities to influence businesses, consumers, and financial institutions to make a transition. It has to be kept in mind that the interviews were mainly held with Dutch respondents. This can be seen as a major limitation of this research. To come to an even more complete operationalization of institutional arrangements, the conduction of in-depth interviews with professionals from other countries is suggested.

This study can be seen as a first step to increase the understanding of the relative influence of institutions on transitions. The main question was: *“What is the influence of institutional factors on the transition towards a CE?”* No definite answers have been found. All of the interviewees underlined the importance of institutional settings, but it remains unclear what the exact influence of institutional factors is. Despite this fact, changing the existing institutional arrangements is seen as a crucial step in the transition towards a CE. The main result of this research for the field of institutionalism is then a fuller conceptual model to research the relationship between transitions and institutional arrangements. More research remains to be done.

The recommendation for politicians and other practitioners who are involved in the transition towards a CE is twofold. First of all, they should critically reflect on what they want to reach with a transition towards a CE. The Dutch government states that it wants to reach a *“100 % circular economy in 2050”*. Writing such statements down without clearly defining the aim of the transition, does not necessarily lead to a CE. As many governments mainly focus on resource efficiency, this does not lead to a more sustainable economy. This can, of course, be a deliberate political choice, but should be taken into account. Furthermore, politicians should think about the way they use their institutional capacities to influence other actors in society. Governments cannot accomplish a transition on their own. The support of consumers, businesses, and financial institutions is necessary. It is underlined that governments should in this regard use a combination of narrative capacity, collaborative capacity, and laws/taxes. Furthermore, it is important that the government itself has organizational capacity, resources, and learning capacity.

8. Reflections

In the chapter above the conclusions of this research are presented. In this section, a reflection will be provided. First, a general reflection will be given regarding the research method. Thereafter, special attention will be given to the quantitative measurement of institutions. One of the aims of this research was, after all, to investigate the usefulness of surveys, document analysis, and official statistics to measure formal as well as informal institutional arrangements in such a way that a comparison between countries becomes possible. In the upcoming paragraphs, the main considerations are given for each capacity.

8.1 General reflections

Within this research a mixed method research was used. The quantitative part of this research did not give the results that were expected. In total, 69 responses were taken into consideration. The respondents were divided among 24 different countries. Since 31 countries were selected to take part in this research, this means that responses of seven countries were not recorded. This is one of the limitations of this research. Within the limited time scope it was, however, not possible to select more countries. For future research it is suggested to make additional efforts to take all 31 countries into consideration.

Another limitation is the huge differences in response rates across countries, which, again, has mainly to do with the limited time scope. The differences in response rates contribute to a bias in this research. The regression analyses are to a great extent influenced by Dutch and Italian responses. Future research projects should take the additional efforts to improve the response rates in all European countries. Hereby, the translation in other languages could be important. In addition, researchers should set a minimum response rate per country because one response per country, as was the case for some countries in this research, does undermine the reliability of the results (Bryman, 2012).

The interviews and observations mainly focussed on the Dutch situation. As this research was focussed on explaining the relationship between political institutions and the transition towards a CE, the lack of interviews with respondents from other countries can be seen as a constraint. This was partly compensated by attending the Cinderella conference. Future research projects should ensure the inclusion of views from more different countries. In this way an even more full view can be gained on the role that institutions play in the transition towards a CE.

8.2 Reflections regarding the quantitative measurement of institutions

The problem with the operationalization of the regulatory capacity had mainly to do with the fact that many regulatory agreements were not in place yet. Another obstacle might have been that the regulatory capacity was measured through document analyses and official statistics. In this way, the type of data differed substantially from the results of the survey. Therefore, this research suggests using the survey to measure the regulatory capacity in future research projects. A crucial element of the regulatory capacity is considered to be the development of institutional arrangements per sector. In this way, the regulations and taxes can be fine-tuned to the specific circumstances that are at stake in a sector.

During the quantitative multiple linear regression analysis, organizational capacity was measured as the presence of leadership and the amount of political support for the CE program. The importance of these elements was underlined by the different interviewees. They, however, added that leadership should not be isolated. In the course of conducting the interviews, respondents

mentioned another element that is of utmost importance for the organizational capacity: the level of integration of different governmental organizations. If all the organizations of which the government consists are going to do something ‘Circular’ without communicating with each other, the transition towards a CE could be jeopardized. A fragmented (departmental) structure can frustrate productive and innovative interactions (Teisman & Edelenbos, 2004).

In regard to the measurement of resources, it was underlined by the different interviewees that the amount and stability of financial resources are a crucial aspect of the transition. Another aspect of importance is the fact that there should be enough employees to support the transition. In this regard, it is important that everyone within an organization actively contributes to the transition.

Collaborative capacity, as measured in this research, turned out to be inaccurate. During the interviews, it was suggested that multiple collaborative arrangements can be present simultaneously. Therefore, the measurement of this capacity should be altered significantly. The focus should be on the type of organizations that are a part of voluntary agreements between public and private actors. In general, it was underlined by the different experts that the collaborative capacity should lead to a hub, where governmental and private organizations support each other to make the next step in the transition towards a CE.

In regard to the learning capacity, it became clear that good indicators on the transition towards a CE are still lacking. Consequently, it was difficult to interpret the results of this capacity in the course of this research. During one of the interviews, it was mentioned by a respondent that it is important that a feedback loop is created between enterprises and the government. In this way, the government can get direct feedback on the effects of its policies.

In the last section, it was suggested that the narrative capacity should be added to the five governmental capacities to foster change. More research is necessary to come to a full operationalization of this capacity. In table 6 some suggestions are made based on the research of Eshuis & Klijn (2012).

In the previous paragraphs, various suggestions have been made for the improvement of the operationalization of the six institutional capacities. Based on these suggestions some alterations to the survey are suggested. In the 6 table, one can see a number of questions of future surveys. The questions are formulated in such a way that becomes possible to research the influence of institutional capacities on a to-be-defined transition <transition Y>. The suggested answer possibilities for all statements is a five-point scale from strongly disagree to strongly agree.

Table 6: Suggested questions for further research

Institutional arrangement	Sub-indicator	Possible future survey questions
Regulatory capacity		There are laws in place that stimulate sector X to support transition Y
		There are taxes in place that stimulate sector X to support transition Y
Organizational capacity		The transition Y is embraced by all the departments in my organization
		Everyone in my organization is aware of the importance of the transition Y
		There is a high level of political support for the transition towards Y

		<p>Within the existing policy framework, there is room for a long-term vision regarding transition Y</p> <p>Within the existing policy framework, there are leaders that advocate for policies and actions regarding transition Y</p> <p>Within the existing policy framework, there are leaders who encourage collaboration between different actors</p> <p>Transition Y is a project that is supported by multiple governmental organizations</p> <p>Transition Y is a government-wide project</p> <p>Different departments that are involved in the transition actively communicate with each other on next steps that should be taken</p>
Resources	Financial resources	<p>There are enough financial resources available to foster the transition Y</p> <p>The provision of financial resources available to foster the transition Y is stable</p>
	Human resources	<p>Everyone in my organization is aware of the meaning of transition Y</p> <p>Everyone in my organization supports transition Y through his/her daily activities</p> <p>Everyone in my organization actively supports transition Y</p> <p>There is enough knowledge available to support transition Y</p> <p>There is enough experience available to support transition Y</p>
Collaborative capacity	Presence	<p>Voluntary agreements between public and private actors are used to support transition Y</p> <p>The use of voluntary agreements between public and private actors is a crucial element of transition Y</p> <p>The use of voluntary agreements between public and private actors stimulates my organization to put more effort in transition Y</p>
	Involvement	<p>The most prominent companies are part of voluntary agreements between public and private actors to stimulate transition Y</p> <p>The most prominent environmental organizations are part of voluntary agreements between public and private actors to stimulate the transition Y</p> <p>Financial institutions are part of voluntary agreements between public and private actors to stimulate transition Y</p>
	Structure	<p>A hub is created where governmental organizations and private actors stimulate each other to make major steps in transition Y</p> <p>A hub is created where private and public actors stimulate each other to think beyond existing problem as well as solution frames</p>
Learning capacity	Indicator	<p>There is an indicator that measures the progress made in the transition</p> <p>The used indicator is considered to be important</p> <p>The government is aware of the main problems that companies encounter in transition Y</p>
	Improvement	<p>Feedback on the contemporary institutional system of leading companies in transition Y is taken into account to improve the existing policies</p> <p>Feedback of research organizations is taken into account to improve the existing policies</p>
Narrative capacity		<p>The government uses narrative to inform the society on the importance of transition Y</p>

The government actively promotes transition Y among its citizens
The government actively defends transition Y in the media
The government uses the media to inform the society on the
importance of transition Y

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Appendix I: Concepts, indicators, values and data sources

Concepts	Indicators	Values	Data source
Circular economy	<p>Resource efficiency 1.0 The country is resource efficient</p> <p>Energy efficiency 1.1 The country fosters energy efficiency</p> <p>Sustainability 1.2 The country is sustainable</p>	<p>1.0: $\frac{\text{Renewed or recycled materials}}{\text{Use of raw materials pro capita}}$</p> <p>1.1: $\frac{\text{Share of renewable energy resources}}{\text{Total Primary Energy Supply pro capita}}$</p> <p>1.2: $\frac{\text{Biodiversity index}}{\text{CO}^2\text{emissions pro capita}}$</p>	<p>1.0: Eurostat</p> <p>1.1: Eurostat</p> <p>1.2: Eurostat & Yale's Environmental Performance Index</p>
Regulatory capacity <i>Legal provisions</i>	<p>Tax system & formal legislations 2.0 Extended Producer Responsibility</p> <p>2.1 Green Public Procurement</p> <p>2.2 Environmental tax (Balke et al., 2017)</p> <p>2.3 Availability of a Circular Road Map</p> <p>Laws & Regulations 2.4 The amount of sectors (e.g. agriculture/ industrial/energy/ services) covered by CE laws and regulations</p> <p>2.5 Elements of the transition (waste/ energy/ sustainability) towards a CE covered by laws and regulations</p> <p>2.6 Formulation of legislation</p>	<p>2.0: Number of schemes</p> <p>2.1: 1= present, 0 = not present</p> <p>2.2: tax revenue per capita</p> <p>2.3: 1 = present, 0 = not present</p> <p>2.4: 1 = all 2 = two sectors covered 3= 1 sector covered 4= no sector covered</p> <p>2.5: 1 = all elements are covered 2 = two elements are covered 3= one element is covered 4= no elements are covered</p> <p>2.6: 1 = all objectives are clear, 2 = most objectives are clear, but one objective is unclear, 3 = two/ three objectives are unclear, 4 = four/ five objectives are unclear, 5 = more as five objectives are unclear</p>	<p>2.0: Document analysis Ecopreneur</p> <p>2.1: Document analysis EEA</p> <p>2.2 Eurostat</p> <p>2.3 Document analysis Ecopreneur</p> <p>2.4: Document analysis / Interview / Survey</p> <p>2.5: Document analysis / Interview / Survey</p> <p>2.6: Interview</p>
Organizational capacity <i>Allocation of responsible public and / or private organizations</i>	<p>Allocation of responsibility 3.0 The responsibility structure for implementing the policy is clear</p> <p>3.1 Implementation covers all CE aspects as formulated in the national policies</p> <p>Level of priority 3.2 The implementation</p>	<p>3.0: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>3.1: 1 = all elements are covered 2 = two elements are covered 3= 1 element is covered 4= no elements are covered</p> <p>3.2: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p>	<p>3.0: Survey / Interview</p> <p>3.1: Survey / Interview</p> <p>3.2: Survey / Interview</p> <p>3.3: Survey / Interview</p> <p>3.4: Survey / Interview</p> <p>3.5: Survey / Interview</p>

	<p>process is based upon an aim to foster the CE</p> <p>3.3 The implementation process is based upon the duty to implement formal laws</p> <p>3.4 The implementation of the CE policies is very important</p> <p>3.5 There is a high level of political support for the implementation of the CE policy</p> <p>3.6 There are multiple mechanisms in place to ensure the implementation</p> <p>3.7 The policy is implemented very cost effective</p> <p>3.8 Relative importance of the transitions towards a CE</p> <p>Leadership</p> <p>3.9 Within the existing policy framework there is room for a long-term vision regarding the CE</p> <p>3.10 Within the existing policy framework there is room for leaders that stimulate actions and undertakings</p> <p>3.11 Within the existing policy framework there is room for leaders, who encourage collaboration between different actors</p>	<p>3.3: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>3.4: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>3.5: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>3.6: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>3.7: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>3.8: State what is the most important and the second most important issue for your department (1) Safety issues, (2) Economic growth, (3) Transition towards the CE, (4) Health issues, (5)</p> <p>3.9: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>3.10: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>3.11: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p>	<p>3.6: Survey / Interview</p> <p>3.7: Survey / Interview</p> <p>3.8: Survey / Interview</p> <p>3.9: Survey / Interview</p> <p>3.10: Survey / Interview</p> <p>3.11: Survey / Interview</p>
<p>Resources</p> <p><i>Availability of financial and human resources</i></p>	<p>Financial</p> <p>4.0 There are enough financial resources available to implement the policy</p> <p>Human resources</p> <p>4.1 At hand expertise is available to foster implementation of the CE policy</p>	<p>4.0: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>4.1: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>4.2: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p>	<p>4.0: Survey / Interview</p> <p>4.1: Survey / Interview</p> <p>4.2: Survey / Interview</p> <p>4.3: Survey / Interview</p>

	<p>4.2 At hand knowledge is available to foster implementation of the CE policy</p> <p>4.3 At hand human labour is available to foster implementation of the CE policy</p>	<p>4.3: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p>	
<p>Collaborative capacity</p> <p><i>Ability to ensure collaborative action in public and private domains</i></p>	<p>Presence</p> <p>5.0 There is a collaboration structure between multiple actors to foster the implementation of the CE</p> <p>5.1: Meetings with other actors in the collaboration structure are hold</p> <p>Involvement</p> <p>5.2 The collaboration involves other national government departments</p> <p>5.3 The collaboration involves private companies</p> <p>5.4 The collaboration involves NGO's</p> <p>Structure</p> <p>5.5 The arrangement has some authority</p> <p>5.6 The arrangement stimulates actors to think beyond existing problem and solution frames</p> <p>5.7 The arrangement has agenda with as well long-term and short-term topics</p>	<p>5.0: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>5.1: 1 = daily, 2 = one time a week, 3 = once a month, 4 = once a year, 5 = never</p> <p>5.2: Amount of these actors present</p> <p>5.3: Amount of these actors present</p> <p>5.4: Amount of these actors present</p> <p>5.5: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>5.6: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>5.7: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p>	<p>5.0: Survey / Interview</p> <p>5.1: Survey / Interview</p> <p>5.2: Survey / Interview</p> <p>5.3: Survey / Interview</p> <p>5.4: Survey / Interview</p> <p>5.5: Survey / Interview</p> <p>5.6: Survey / Interview</p> <p>5.7: Survey / Interview</p>
<p>Learning capacity</p> <p><i>Capacity to monitor, evaluate and improve policy program</i></p>	<p>Monitor</p> <p>6.0 There is an instrument available that measures all elements of the CE</p> <p>6.1 The CE indicator in use is considered to be important</p> <p>6.2 The indicator in use is more important than</p>	<p>6.0: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>6.1: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>6.2: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p>	<p>6.0: Survey / Interview</p> <p>6.1: Survey / Interview</p> <p>6.2: Survey / Interview</p> <p>6.3: Survey / Interview</p>

	<p>other indicators (such as GDP)</p> <p>Improve</p> <p>6.3 There is single loop learning</p> <p>6.4 There is double loop learning</p> <p>6.5 Institutional patterns promote trust</p>	<p>6.3: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>6.4: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p> <p>6.5: 1 = strongly agree, 2 = agree, 3 = neither agree or disagree, 4 = disagree, 5 = strongly disagree</p>	<p>6.4: Survey / Interview</p> <p>6.5: Survey / Interview</p>
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Appendix II: Survey

Dear respondent,

First of all, thank you for agreeing to take part in this study. Through this brief survey, you will help us to gain more knowledge on useful practices and procedures fostering the transition from a linear to a circular economy. Your department has been selected because of its role in the implementation of policies regarding the circular economy, energy efficiency, resource efficiency, or sustainability. The participation in this questionnaire is voluntary and all answers you provide will be kept with the strictest confidentiality. The data are anonymised and analysed at an aggregate level.

This survey is conducted for a master's thesis in the research field of public administration at the Erasmus University. In case you have any questions or suggestions regarding the survey, please call Christa de Ruyter at +31 6 57 39 79 62 or email me at 507234fr@student.eur.nl.

With kind regards,

Christa de Ruyter

General questions

In which country is the department you are working for located?

In which department are you working?

Circular economy

One could define the circular economy in the following way:

An economy that aims to reduce the input of primary resources and the output of waste by using energy efficient biological and technical feedback loops and renewable energy resources in order to decrease its impact on the earth, especially in regard to climate change and the loss of biodiversity.

Which parts of the above given definition are applicable in the country in which you are working?

Regulatory capacity

The following questions are about the legal framework within your country. When answering these questions, check all the boxes that apply.

The laws and regulations in your country cover:

- Aims to reduce waste
- Aims to increase resource efficiency
- Aims to foster the transition towards renewable energy resources
- Aims to increase energy efficiency

- Aims to reduce CO₂ and other greenhouse gasses
- Aims to protect biodiversity
- None of the above

Which of the following sectors are covered by laws and regulations regarding the circular economy?

- Agricultural sector
- Industrial sector
- Energy sector
- Services sector
- None of the above

Organizational capacity

Below there are some statements regarding the implementation of legislation. From this point, the term 'circular economy' will also refer to resource and energy efficiency policies, as stated in the previously mentioned definition. Please indicate your level of agreement for each of the following statements.

The responsibility structure for implementing the policies regarding the circular economy is clear

SA A U D SD

All the national policies regarding the circular economy are being implemented to the fullest extent

SA A U D SD

The implementation process is based on the aim to foster a circular economy

SA A U D SD

The implementation process is based on the duty to implement formal laws

SA A U D SD

The implementation of the circular economy policies is of utmost importance to the country

SA A U D SD

There is a high level of political support for the implementation of the circular economy policy

SA A U D SD

There are various systems in place to ensure the implementation of policies regarding the circular economy

SA A U D SD

The policies regarding the circular economy are implemented in a cost effective way

SA A U D SD

Within the existing policy framework, there is room for a long-term vision regarding the circular economy

SA A U D SD

Within the existing policy framework, there are leaders that advocate for policies and actions regarding the movement toward a circular economy

SA A U D SD

Within the existing policy framework, there are leaders who encourage collaboration between different actors

SA A U D SD

Rate these statements in order of priority with 1,2 ...6 with 1 being the highest priority.

___ Safety issues

___ Economic growth

___ Transition towards the CE

___ Health issues

___ Quality of life

___ Equality issues

Resources

The statements below are about the available resources for the implementation of circular economy policies. Please indicate your level of agreement for each of the following statements.

There are enough financial resources available to implement the policies regarding the circular economy

SA A U D SD

At hand expertise is available to foster implementation of the circular economy policies

SA A U D SD

At hand knowledge is available to foster implementation of the circular economy policies

SA A U D SD

At hand human labour is available to foster implementation of the circular economy policies

SA A U D SD

Collaborative capacity

The following questions and statements are about the ability to foster collective action. The following term 'collaborative agreement' means:

"A governing arrangement where one or more public agencies engage non-state stakeholders in a collective decision-making process that is formal, consensus-orientated and deliberative and that aims to make or implement public policy or manage public programs or assets" (Ansell & Gash, 2008).

There is a collaborative arrangement between multiple actors to foster the implementation of the policies promoting a circular economy

SA A U D SD

Meetings with other actors in the collaboration structure are held

- At least daily
- At least once a week
- At least once a month
- At least once a year
- Never

The collaborative arrangement involves other national government departments

Number of involved actors ___

The collaborative arrangement involves private companies

Number of involved actors ___

The collaborative arrangement involves NGO's

Number of involved actors ___

Other actors that are involved in the collaborative arrangement

The collaborative arrangement has some authority.

SA A U D SD

The collaborative arrangement stimulates actors to think beyond existing problem and solution frames.

SA A U D SD

The collaborative arrangement has an agenda covering long-term as well as short-term issues.

SA A U D SD

Policy monitoring

The questions and statements below are about the indicators of your department to help the development towards a circular economy. As already noted earlier on in this survey the definition of a circular economy is:

An economy that aims to reduce the input of primary resources and the output of waste by using energy efficient biological and technical feedback loops and renewable energy resources in order to decrease its impact on the earth, especially in regard to climate change and the loss of biodiversity.

There is (are) an instrument(s) available that measures all elements of the circular economy

SA A U D SD

The instrument(s) that best captures the circular economy is (are) considered to be important

SA A U D SD

In my department we learn from past experiences and improve our routines based on these experiences

SA A U D SD

In my department we change our assumptions and procedures based on past experiences

SA A U D SD

In my department the establishment of trust is considered to be very important

SA A U D SD

In my department doubts regarding the transition towards a circular economy are discussed

SA A U D SD

Write down the three most important indicators within your department in order of importance.

Appendix III: Topic list for the interviews

Dear Sir/Madam,

First of all, thank you for agreeing to take part in this research. Through this interview, you will help us to gain more knowledge on useful practices and procedures fostering a transition from a linear to a circular economy. Your department has been selected because its role in the implementation of policies regarding the circular economy, energy efficiency, resource efficiency, or sustainability.

This interview is conducted for a master thesis in the research field of public administration at Erasmus university. In case you have any questions or suggestions regarding the interview feel free to interrupt me.

Topic list

Topic	Questions
<i>Circular economy</i>	<p>Opening question: How would you define the circular economy?</p> <p>Elements that should be covered:</p> <ul style="list-style-type: none"> - Resource efficiency - Energy efficiency - Sustainability (CO₂ emissions & biodiversity)
<i>Regulatory capacity</i>	<p>Opening question: How is the circular economy in your country promoted by laws and regulations?</p> <p>Elements that should be covered:</p> <ul style="list-style-type: none"> - Do policies in your country cover the efficient use of resources - Do policies in your country cover minimalizing waste - Do policies in your country cover changing consumption habits - Do policies in your country cover the efficient use of energy - Do policies in your country cover the transition towards an energy system based on renewable energies - Do policies in your country cover sustainability - The amount of sectors covered in laws and regulations (also taxes and subsidies) <ul style="list-style-type: none"> o Consumers o Industry o Financial sector - Are the laws and regulations clearly formulated <p>Closing question: Are there any other aspects of the laws and regulations that should be taken into consideration?</p>
<i>Organizational capacity</i>	<p>Opening question: How is the implementation of laws and regulations organized in your country?</p> <p>Elements that should be covered:</p> <ul style="list-style-type: none"> - Allocation of responsibility (clear?/ are all laws implemented?) - Level of priority (is the implementation of the CE policy important relative to other policies that have to be implemented) - Leadership (long-term vision/ stimulation of actions and undertakings/ encouragement of collaboration among actors) <p>Closing question: Are there any other aspects of the implementation procedure that should be taken into consideration?</p>
<i>Resources</i>	<p>Opening question: What resources are available to implement laws and regulations?</p> <p>Elements that should be covered:</p>

	<ul style="list-style-type: none"> - Financial instruments - Policy instruments (expertise/ knowledge/ human labour)
<i>Collaborative capacity</i>	<p>Open question: To what extent is your country able to foster collaborative capacity?</p> <p>Elements that should be covered:</p> <ul style="list-style-type: none"> - Collaborative arrangement (who is involved/ frequency of meetings) <ul style="list-style-type: none"> o People from the financial sector > what is their role? o People from the industry > what is their role? - Structure (authority/ thinking beyond existing problem definitions and solutions/ agenda with long-term and short-term topics) <p>Closing question: Are there any other things regarding the collaborative arrangements that should be taken into consideration?</p>
<i>Learning capacity</i>	<p>Open question: Are there indicators available to measure the transition towards a circular economy?</p> <p>Elements that should be covered:</p> <ul style="list-style-type: none"> - Indicator (available/ considered to be important) - Improving (indicator is used to improve routines/ indicator is used to reformulate policies and policy aims/ trust within the organization) <p>Closing question: Are there any other things regarding the learning capacity that should be taken into consideration?</p>

Appendix IV: The original quotes

It has been mentioned that the quotes of the interviews were not literally translated during this research. In the upcoming paragraph, the original version of the different quotes will be displayed. The quotes are given in the order of use during this research.

Quotes on the circular economy

R5: In dezelfde tijd is in Europa de switch gemaakt, Europa had het heel erg over resource efficiency, wat nu natuurlijk heel erg eh .. term is. En Europa heeft toen de slag gemaakt naar CE, wat veel meer een holistische term is, waarbij ook wel de planeet, het milieu zitten erin. Maar ook welvaart, welzijn. Zegmaar dan heb je het al gauw over economische zaken.

And regarding the energy transition:

De keuze die we gemaakt hebben is, die los van elkaar te behandelen, maar je kan ze natuurlijk niet los van elkaar zien. Maar als je ze aan elkaar verbindt, dan gebeuren er twee dingen. Het eerste is dat je het hele complexe begrip klimaattransitie, energietransitie en het nog veel complexere begrip CE aan elkaar gaat verbinden, waarbij niemand meer weet wat er aan de hand is. Dat is het eerste aspect. En het tweede is. Dat we nog niet zo goed, zeker toen niet, maar nu nog steeds niet, goed kunnen rekenen wat de CO2 effecten zijn van grondstofstromen. Natuurlijk kunnen we daar, sommige dingen. We weten best wel dat als je klei gaat verhitten en je maakt er cement van, dat dat een bepaalde CO2 effecten heeft. Maar in zijn algemeenheid is dat nog best wel moeilijk. Dus we hebben dat toen echt, we hebben daar echt over nagedacht. Ik had ook een collega, die de energietransitie, eh ik doe het circulaire programma, hij deed het klimaatprogramma. En ik zeg dit is gewoon veel verstandiger om het uit elkaar te houden. Er zit ook een ander tempo in. De energietransitie, die is al een heel eind op weg, als het gaat over transitie en circulair, daar zijn we pas op een paar procent van de transitie.

R4: Maar het zo hoogwaardig mogelijk gebruiken van materialen zodat je min mogelijk restromen eigenlijk hebt, die gebruik je gewoon allemaal en een economie waarin alles eigenlijk continu wordt gebruikt zonder dat je afval creëert.

R3: Dat is een economie waarin grondstoffen maximaal worden benut en producten hun waarde zolang mogelijk behouden.

R7: De lidstaten verschillen daar heel sterk in. Sommige lidstaten zoals Polen, hebben heel weinig op met milieu. Dus je kunt daar niet een eenduidig antwoord op geven. Het is wel zo, dat als je kijkt naar Europa, dan is het wel. Altijd wel, .. heeft Europa een aansturende kracht op lidstaten om beter met het milieu om te gaan. In die zin, is men best wel milieubewust. In de EC en wat er uitkomt. Dat is echt wel de drijfveer. Maar belangrijker is dat het pas is gaan lopen, sinds ook de economische waarde duidelijk waarde. Het is niet alleen voor het milieu. Het is ook goed voor je economie op lange termijn. Dat heeft echt de lidstaten, langzamerhand, een aantal lidstaten aan boord gekregen. Daar komt nu nog bij, dat je nu opeens een enorme zorg hebt voor klimaatverandering. Dat we tot 2013 bezig waren met het economisch belang van CE te benadrukken. Dat begint ergens te lukken, maar in lidstaten blijven we dat doen. Op Europees niveau, benadrukken we nu weer opnieuw klimaatbelangen. Zeg maar. Nadat we dat heel wat jaren onder de tafel hebben geschoffeld, omdat het alleen maar weerstand opleverde. Dan zeiden ze, ik geloof helemaal niet in klimaatverandering. Dus ik geloof ook niet in circulair. Er zijn zoveel andere redenen om circulair te worden.

R7ç En dat raden we eigenlijk alle landen aan, want wat we zien is dat daardoor de regering ook enthousiast wordt over circulair. Nederland, de Nederlandse regering was de eerste dat CE goed is voor de economie. En toen zijn ze voorstander geworden. Eerst was er weerstand bij de regeringspartijen. Maar op een gegeven moment zijn VVD, VOSW, en CDA omgegaan. Van goh, dit is goed voor banen. Dit levert werkgelegenheid, omzet op. Dit is gewoon goed voor de economie.

Quotes on regulatory capacity

R7: Voor CE helemaal, maar er is eerlijk gezegd nog niet zoveel wetgeving voor. Er is veel gedaan en strategiestukken geschreven. Maar de enige echte wetgeving, er zijn een paar stukken wetgeving. Maar er zit meer aan te komen

R5: Nou, die mate van concreetheid was er niet, en dat kan ook eigenlijk niet, want dat kun je wel in een groepje bedenken, maar ja wetgeving dat moet het Rijk bedenken.

R1: En ehm ook daar zijn een aantal aspecten, dat gaat zich vertalen in beleid, maar ook in gedrag, ehm in instrumenten die ontwikkeld worden, ehm governance. Dat zijn aspecten, die echt wel die transitie moeten ondersteunen, anders ga je het plaatsen, dan ga je uiteindelijk wel een stukje vooruit geraken, maar zonder die twee aspecten dan gaat het niet lukken.

R7: EPR is nu niet zo'n goed systeem eigenlijk, er moet nog veel aan verbeterd worden. Maar het is het beste wat we hebben en het werkt al, dus in die zin is het al een heel goed systeem, het is er in ieder geval.

R7: Het belastingstelsel moet eigenlijk gewoon op de kop. Dat is het belangrijkste. Want wat een Nederlandse historicus pas op het podium in Davos zei. Ehm. Wat zei hij ook al weer. Iets van: 'Everything you discuss are taxes, all the rest is bullshit'. En eigenlijk is dat wel waar. Want mijn boodschap de laatste weken, maanden, is als ik presentaties geef: Pricing, pricing, pricing. Ik zeg dat steeds. Als u, als ik wil dat u iets onthoudt van mijn presentatie dan is het pricing, pricing, pricing. En dat begint, dat onthouden mensen dan. En dan nog een paar keer herhaald, dan blijft dat hangen. Dus dat begint aan te komen. Wat het punt is, mensen, sommige meer dan andere, willen wel duurzaam inkopen en leven. 6% wil dat wel, in Duitsland misschien 12% wil dat wel. Een veel groter percentage, in ieder geval 60%, zou het op zich wel leuk vinden als het allemaal wat duurzamer was. Een groot percentage is ondertussen bezorgd over het klimaat, maar dat verandert het aankoopgedrag van mensen helemaal niet. De meeste mensen, en dan bedoel ik echt 90% , 95% van de mensen koopt gewoon op andere gronden in. Emotioneel. Mensen kopen emotioneel in. En je kan is gaan nadenken, hoe verander ik consumentengedrag, want dat bepaalt wat er op de markt wordt gebracht. Maar het punt is, het werkt gewoon allemaal niet zo. Als je een campagne houdt, dan gaan mensen niet zoveel anders kopen. De prijs is gewoon heel bepalend voor wat mensen kopen. Een emotioneel ding ook. Iedereen koopt in op de prijs. Alleen een handje vol idealisten koopt hele dure dingen terwijl ze weinig geld hebben. Een handje vol. Dus daar, dat is gewoon al meer dan 40 jaar zo, daar verandert niemand meer iets aan. ; Ja, dat is ook al heel lang zo. Het heeft niet zoveel effect. Omdat je daarmee eigenlijk alle reparaties goedkoper maakt. Dan krijg je geen, concretie tussen twee overigens verder identieke producten/ diensten. Maar het is wel heel goed, dat het er is. Het verlaagt in ieder geval de kosten van een reparatie. Maar nog steeds zijn die kosten nog veelste hoog. Het is bijna altijd goedkoper om een nieuwe te kopen dan om iets te laten repareren. ; recies, dus het tweede punt is dat de kosten op arbeid moeten enorm omlaag. Dus belasting op arbeid omlaag. Misschien wel op 0. Geen inkomsten belasting meer, geen BTW op geleverde diensten. En in plaats daarvan, hoge belasting op het gebruik van grondstoffen en zeker op het gebruik van, van eh grondstoffen die nieuw zijn. En zeker als die ook nog veel vervuiling

opleveren. Dus je moet kijken naar de externe kosten van alle producten en diensten. En dan de true price berekenen en die verplicht stellen op de markt.

R5: Nou conceptueel is dat helemaal juist, maar de vraag is of je dat eh, eh, politiek voor elkaar krijgt. En hoe? Nou pas recentelijk heeft het kabinet besloten om toch CO2 heffingen te gaan doen. Dat is een belangrijke stap hierin. Waarom. Hoe ga je dat dan doen. Op het moment dat je CO2 heffingen gaat doorvoeren, dan zullen lineaire producten ook duurder worden als circulaire producten. Dus je gaat markt beïnvloeden. Conceptueel is dat geweldig om dat te doen. Maar je zou maar bijstandsmoeder zijn en de eindjes niet rond krijgen en bij voedselbank moeten aankloppen en dan ook nog is een keer duurder geld moeten, meer geld moeten uitgeven. Dat is ook niet wat je wilt. Dus dat is heel makkelijk om te zeggen ..Ik trek veel landen door, althans toen ik nog in functie was. Ja dank je de koekoek, je moet wel de burger meenemen. En die moet het ook kunnen betalen. En dat is hartstikke ingewikkeld. Ik denk dat de oplossing meer zit om segmentarisch te denken in ketens. Van eh, oké, nou gaan we voor kunststoffen bedenken, een aantal maatregelen bedenken, ook richting fiscaliteit, die helpen. Ik denk dat dat kansrijker is, dan dat je over de breedte gaat zeggen, we gaan een fiscaal deken over ons land uitspreiden. Want wat je ook niet wilt, dat is een ander aspect dat mensen vaak vergeten. Je wilt natuurlijk stabiele belastinginkomsten hebben. En wat je eigenlijk wilt, met belasting ga je gedrag sturen, dat is heel logisch, maar als dat lukt, dan krijg je minder belastinginkomsten, dus daar moet je allerlei compensatiemaatregelen voor doen. Want ja, mijn salaris krijg ik ook, en jouw onderwijsinstelling krijgt het geld ook vanuit belastinggeld. En ik ga niet accepteren dat ik volgend jaar 20% minder salaris ga krijgen omdat er minder inkomsten zijn.

R1: Maar als je echt naar toekomstbeelden, naar scenario's, die door verschillende groepen effectief waar over nagedacht wordt, dan ga je ook wel vaak zien en dat is ook logisch dat je echt per sector gaat gaan werken. Dat je gaat kijken naar de energiesector, transportsector, naar wonen, naar de voedingssector en dan moet je toch wel zeer specifiek op dat niveau gaan kijken. En uiteraard heeft het dan nut om bepaalde dingen met elkaar te combineren, maar, en dan moet je wel een bepaald overzicht hebben, maar dan denk ik met zeer specifieke doelstellingen voor een zeer specifieke sector.

Quotes on the organizational capacity

R3: Goede vraag. Ehm, dat weet ik niet zo goed. De vraag is of je bij een transitie, die vraag überhaupt moet willen kunnen beantwoorden. Er moet niet één partij zijn, die daarvoor verantwoordelijk is, want dat zijn natuurlijk allemaal partijen samen. Dat is ook een antwoord misschien op jouw vraag.

R4: Nou het ministerie van I&W heeft eigenlijk een regierol. Zij zijn de gene, die het aansturen. Ze zijn niet degene, die het allemaal moeten uitvoeren, want het ministerie van EZK, of het ministerie van binnenlandse zaken hebben ook, die zijn bijvoorbeeld, of LNV, Landbouw en Natuur en Visserij, die zijn allemaal verantwoordelijk voor één van die transitieagenda's van Bouw, binnenlandse zaken, van LNV heeft biomassa en voedsel, dus die worden gestimuleerd om zo, om de regie te nemen op één zo'n transitieagenda. En het ministerie van I&W, is degene die dat overzicht bewaakt en het proces aanstuurt.

R5: Als je zegt we gaan het rijksbreed aanpakken, dan heb je ook een rijksbrede verantwoordelijkheid.

R5: Ehm, dat waren in het regeerakkoord, twee zinnnetjes geworden, die heb je misschien wel gezien, en die zinnnetjes die zijn ongeveer: "Het kabinet CE belangrijk" en "Gaat voor inzetten voor een markt

voor circulaire grondstoffen". Eh, dat is een hele beperkte scoop, maar dat was wel genoeg reden om, alles in het regeerakkoord dat wordt uitgevoerd, om daarmee aan de slag te gaan ...

Dus er is gekozen he CE is natuurlijk een concept dat veel breder is als de klimaatopgave, maar het kabinet heeft ervoor gekozen om CE voorlopig te zien als onderdeel van de klimaatopgave. Niet dat dat het enige is. Maar op het moment dat je dat zegt heb je wel de energie die nu zit op de klimaatopgave plus die mensen die ervoor beschikbaar zijn en de middelen die ervoor beschikbaar zijn. Die zet je dus ook op CE, omdat CE ook bijdraagt aan de klimaatopgave. Dat, dat is de eerste keuze die het kabinet gemaakt heeft. Best wel fijn. Dat betekent namelijk dat je mee kan liften met eh alles wat er gebeurt op klimaat. En verder staat er in dat de transitieagenda's uit gaan voeren. Dat is natuurlijk een hele spannende, want we waren toen bezig om die uitvoeringsprogramma's te maken, maar het kabinet had al besloten wat er ook uitkomt, we gaan het in ieder geval uitvoeren. Dus het is ook heel fijn dat het daarmee structureel kabinetsbeleid is. Waarbij CDA, VVD, CU en D66 zeggen, dit gaan wij met elkaar uitvoeren. En alle acties, die te maken hebben met het doorvoeren naar wet- en regelgeving. Je moet er rekening mee houden, dat zijn dingen die gaan via de ministerraad. Daar moet je voldoende draagvlak voor hebben in de Tweede Kamer en in het kabinet. En dat heb je daarmee, want het staat in het regeerakkoord.

R6: En daarnaast is het echt ook omarmt door heel veel werknemers maar ook wel echt door de top van de organisatie.

R7: Zeker in een land dat er zo slordig mee omgaat zoals (een land), dan is er nog meer geld mee te verdienen. Er wordt heel veel waarde vernietigd.

Quotes on resources

R2: Nou die ruimte is superklein. Ik denk eigenlijk dat die ruimte er niet is.

Researcher: Dus uiteindelijk gaat het toch weer naar de goedkoopste bidder.

R2: Nou, dat is niet helemaal waar. Je kan zeker bij een openbare aanbesteding punten verdienen. En dat kan betekenen, dat als wij in het programma van eisen circulariteit meer weging geven, dan hoeft het niet naar de goedkoopste te gaan. Dat is niet dat het persé naar de goedkoopste gaat. Het is afhankelijk van de zwaarte van je eisen. Dus, wat wij als raad zouden kunnen doen. Is van gemeente, wij willen dat je het punt circulariteit zwaar aanzet in de weging van de selectie.

Researcher: Gebeurt dat dan op dit moment?

R2: Nee, volgens mij niet.

R4: Kijk het is nu echt in zo'n experimentfase. En daar zijn wel ehm, daar is wel geld voor. Omdat te experimenteren. Ik weet niet of er voor alles genoeg geld is, maar ik heb nu nog niet gehoord dat het, dat dingen niet kunnen, omdat er geen geld is. ; Qua experimenten, in de reguliere projecten zeggen mensen wel vaak, ik heb helemaal geen geld voor duurzaamheid of dat nu CE is of energie, ehm, maatregelen zeg maar.

R3: Maar we hebben nu weer financiering tot het eind van dit jaar en daarna begint de vraag hoe we bestaan financieel. Dat staat ook in de kabinetsreactie, keurig dat CIRCO tot 2023 zal het wel doen, maar het geld is er nog niet. Een beetje vaag gaat dat. Dat vind ik wel heel jammerlijk en dat zit ons wel in de weg. Want wij gaan gewoon relaties met partners aan ook internationaal, die vragen ook aan ons gaan we een drie jarenplan aan, want voor 1 jaar doen we dit niet. En wij kunnen eigenlijk niet meer zeggen dan we hebben die intentie om dat inderdaad te doen. .. maar wij hebben nog geen geld vanaf 1 januari. Dat is eigenlijk gewoon dramatisch, maar dat krijg je niet anders.

R5: Beleidsambtenaren die beleid maken eh, die zijn over het algemeen reteslim. Zeg maar. Ik heb collega's die een half jaar geleden binnen zijn komen huppelen, die niet zoveel wisten van CE. En die nu gewoon ontzettend goed zijn.

Quotes on collaborative capacity

R5: Dus nou moeten we de rest van de maatschappij betrekken. Dat hebben we gedaan met het grondstoffen akkoord. Dat is, een halfjaar daarna afgesloten. Nou daar waren honderden partijen erg geïnteresseerd om mee te doen, maar het is wel moeilijk om met 100 partijen te gaan praten of overleggen. Dus toen hebben we een aantal koepels gevraagd om daar coördinerend in op te treden. Dat gevolgd is wat we nu noemen, de opstellende partijen van het grondstoffenakkoord. Dat zijn de grote maatschappelijke partijen, dat zijn de vakbonden, dat zijn de .., dat zijn de decentrale overheden, en dat is de milieubeweging en het Rijk. Die hebben met elkaar gezegd, nou we hebben nu dat programma, dat programma gaan we uitvoeren. Dat betekent wat er moet gebeuren en dat we ook gaan bepalen wie wat gaat doen in die acties die moeten gebeuren om die transitie te versnellen. Nou dat is vreselijk ingewikkeld geweest om dat te doen, dat heeft dus ook een tijd geduurd.

R1: Wel onderzoek, het is zo dat wij een netwerk hebben. Het EI netwerk, waarbij enerzijds alle landen van de Europese unie in zitten. Maar ook landen daarnaast, die lid zijn van het agentschap op zich. En wij kijken, wij observeren ook wel wat daar gebeurt. Hoe zij reageren op een pakket dat uitgebracht wordt rond de CE. Wij organiseren vergaderingen met hen om ten eerste informatie uit te wisselen, ook om discussies te hebben om hen een stukje verder te helpen. Zodat ze ook van elkaar kunnen leren.

R3: Maar ik denk dat is in Nederland, maar ik geloof wel dat juist, het is voornamelijk polderen. Dus vaak vind ik polderen te traag voor dingen die simpel zijn, we moeten niet altijd polderen gebruiken. Soms kan je dingen best wel wat directiever aansturen vanuit de overheid, vind ik. Maar ik vind transities, die moeten volgens mij juist gepolderd worden. Anders lukt dat niet.

R7: Een heel goed voorbeeld van publiek-private samenwerking, waarbij je een soort hub creëert in Nederland, waarbij alle bedrijven, die iets willen bedient worden met cursussen met een circotraining. Gemeentes ook, die kunnen via de circular procurement academy, die kunnen een training krijgen voor circulair inkopen. Dus communities of practice, er zijn café's. En dat raden we eigenlijk alle landen aan, want wat we zien is dat daardoor de regering ook enthousiast wordt over circulair. Nederland, de Nederlandse regering was de eerste dat CE goed is voor de economie. En toen zijn ze voorstander geworden. Eerst was er weerstand bij de regeringspartijen. Maar op een gegeven moment zijn VVD, VOSW, en CDA omgegaan. Van goh, dit is goed voor banen. Dit levert werkgelegenheid, omzet op. Dit is gewoon goed voor de economie. Sindsdien zijn die stakeholders voor circulair. En dat willen we in andere landen ook bereiken.

Quotes on learning capacity

R5: Ik heb ooit de opdracht gekregen van bedenk maar 10 indicatoren. En dan gaan we dat doen. En de opdracht hebben we gewoon .. uitgevoerd. Dat gaat hem niet worden, dat lukt niet. Dan krijg je 10 indicatoren, althans die kunnen we nu niet bedenken.

R5: Eh, maar de indicatoren, die er zijn. Dat zijn niet de knoppen waar je aan kan draaien . Dus dat is moeilijk. Dat geldt ook voor de energietransitie. Daar heb je CO2 als indicator, maar daar kan je niet aan draaien. Althans niet echt. Dus je moet dingen daarvoor bedenken, bijvoorbeeld verduurzaming van energie, die wel een geschikte indicator zijn om aan te draaien. Maar circulair is dat natuurlijk

moeilijker. He je kunt in ieder geval zeggen, afval verbranden is misschien een slecht idee. Dus hoeveel afval je verbrand, hoeveel je stort, dat is al een slechte indicator. Maar hoe je daar aan gaat draaien dat is best wel moeilijk.