

## Analysis of circular public procurement: challenges and solutions



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### ABSTRACT

*The current linear economy needs to change in order to allow future generations to meet their needs. A sustainable alternative to the linear economy is the circular economy. One way to accelerate the circular economy is by implementing circularity into the procurement activities of public organizations. However, this could cause some challenges. Therefore, this thesis aims to identify the relating challenges municipalities in Friesland face in order to let the engineering and consultancy firm Royal HaskoningDHV better advise those municipalities in the future. Results from semi-structured interviews among stakeholders working at Frisian municipalities indicate divergent challenges, ranging from challenges relating to collaboration to a lack of vision and ambition. This thesis comes with five recommendations, like the sharing of best practices in order to create enthusiasm. Future research could build on this by also including other stakeholders, like market players to get a more comprehensive overview of the challenges.*

## INTRODUCTION

Everything we use requires resources from our planet. However, many of our resources are finite (Weetman, 2016). If there is no change in the current linear economy, depletion of natural resources and other problems concerning the triple bottom line will increase in the near future (Farooque, Huisingh, Qu, Thürer, & Zhang, 2019; Olabi, 2019). Therefore, it is evident that the current “take, make, and dispose” economy needs to change in order to ensure the ability of future generations to meet their needs. (Dalhammar, Lindahl, Milios, & Öhgren, 2019; Farooque et al., 2019; Haas, Heinz, Krausmann, & Wiedenhofer, 2015).

An alternative view to the linear economy is the concept of circularity. The circular economy is, in contrast to the linear economy, about closing loops (Stahel, 2016). This concept was already developed in the early 1980s and it is becoming increasingly popular among different kinds of stakeholders nowadays (Farooque et al., 2019; Haas et al., 2015; Lacy, Long, & Spindler, 2020; Lozano, & Witjes, 2016). The aim of the circular economy is to use resources in the most efficient way. This entails the reusing, repairing, redesigning and/or remanufacturing of resources, which reduces the need for new raw materials and helps to minimize waste (GEO6, 2019).

One approach to accelerate the circular economy, is by implementing circularity into the procurement activities of governmental organizations (European Commission, 2017). This is also known as circular public procurement. The implementation of circular public procurement is possible for all governments, like municipalities, as all governmental organizations are buyers of goods and services (Ervin, 2017). The European purchase activities of products, services and works amount to approximately 1800 billion euros, which is equivalent to 14% of the European gross domestic product. The Dutch government only procures around 73 billion euros worth of those goods and services (PIANOo, 2020a). Thus, it is fruitful to implement circularity in this field. Additionally, by implementing sustainable practices like circular public procurement, governmental organizations act as role models. So, the implementation of circular procurement by governmental organizations can foster more sustainable practices in the future (Parikka-Alhola, 2008).

Thence, the ambition of the Dutch government is to become circular in the year 2050 (Rijksoverheid, 2020). Besides that, some Frisian municipalities have signed the ambition document from Circulair Friesland (2020a), where they agreed upon procuring 10 % of their products in a circular manner in the year 2020. They also agreed upon buying circular street furniture and fossil free vehicles only (Circulair Friesland, 2020a).

However, despite the advantages over the linear economy, the concept of the circular

economy also has its challenges (Bigano, & Zotti, 2019; Haas et al., 2015; Olabi, 2019; Stahel, 2016). These challenges are impeding the achievement of the ambitions of both the Dutch government and the Frisian municipalities. One challenge is for example the lack of precise definitions and criteria for assessing measures around circularity (Haas et al., 2015). Bigano and Zotti (2019) also state that the concept of the circular economy is still unclear. This leads to a slow implementation of circular practices, like circular public procurement. Which all lead to the circular economy gaining slow traction as a whole (Alhola, Busch, Ryding, & Salmenperä, 2019; Stahel, 2016).

Therefore, Royal HaskoningDHV, which is an independent and international orientated engineering and project management consultancy firm (RHDHV, 2020a) and which is at the core of this research, wants to identify possible challenges Frisian municipalities face in relation to circular procurement. This identification is desired in order to be able to effectively advise those municipalities in the future. This will help to achieve the set ambitions and to stimulate and accelerate the implementation of the circular economy in the future.

Hence, the aim of this research is to identify the possible challenges Frisian municipalities face in relation to circular procurement in order to let Royal HaskoningDHV better advise and stimulate those municipalities in the future. To achieve this aim, the following research question is developed: “*Which challenges do municipalities in Friesland face in relation to circular procurement and how can these challenges be overcome?*”. This question is answered by reviewing the existing literature around circularity and procurement and by conducting semi-structured interviews among the sustainability and procurement officers working for Frisian municipalities and by interviewing one expert in the field of the circular economy.

The structure of this thesis is as follows. In the next section the theoretical framework is presented, where the concept of the circular economy and the concept of public and circular public procurement and its challenges will be discussed. Subsequently, in the method section, the used method for the data gathering process and the methods for analyzing the data will be described. Also, an overview of the interviewees is given and confidentiality related matters are explained. Thereon, the results from the data gathering and data analyzing process are discussed. This is followed by recommendations for Royal HaskoningDHV and with implications for research. Thereafter, a discussion on this research and ideas for future research are given.

## THEORY

### **Sustainability and the circular economy**

Sustainable development was first defined in the Brundtland (1987: 43) report as: “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”. Sustainable development is, perhaps, one of the most trending topics of the twenty-first century (Patzelt, & Shepherd, 2011). Sustainable development, or sustainability in general, targets social, environmental and economic needs, which is also known as the triple bottom line (TBL). The concept of the TBL was originally proposed by John Elkington (1998). He stated that not only financial performance is a measure for success, but also the broader impact on the economy, environment and the society in which a certain organization operate. The TBL entails the essence of sustainability, which is the impact of an organization’s activities on the outside world (Savitz, & Weber, 2014).

More recently the concept of the circular economy has been proposed. The circular economy entails a plethora of different aspects of the concept of sustainable development and the TBL. It is for example about the transformation of waste into new resources (Lozano, & Witjes, 2016). Besides that, according to Stahel (2019), it entails the reprocessing of goods and materials, which saves energy, while at the same time reduces resource consumption and waste. Additionally, the circular economy is according to Clement and Sönnichsen (2020) regenerative and restorative and it operates on renewable energy. It further also tries to maintain the resources at the highest value possible and it addresses the United Nations Sustainable Development Goals, which indicates that it encourages sustainable development as well (Clement, & Sönnichsen, 2020). Besides the benefits for the environment, the circular economy can also create new employment opportunities and business growth (Aminoff, Antikainen, Bocken, Dahlbo, Manninen, & Koskela, 2018). The circular economy can for example increase the disposable income of households by 3000 euros/year (EllenMacarthur Foundation, 2020).

However, the fact that there are so many different perceptions and viewpoints formulated, which are stemming from different scientist, professionals, governmental bodies and international institutions (Ncibi, & Sillanpaa, 2019), results in a lot of unclarities and confusion around the concept of the circular economy (Hekkert, Kirchherr, & Reike, 2017). There is for example unclarity about how the circular economy can promote social equity and a lack in understanding in how the circular economy can be implemented (Olabi, 2019). Also, Stahel (2016) state that there is a lack of familiarity with the concept and therefore a fear of the unknown. Besides that, a challenge according to Ncibi and Sillanpaa (2019) is the multidimensionality of the concept of the circular economy and the fact that the definition

depends on who is defining it. This all leads to the circular economy gaining slow traction as a whole (Stahel, 2016).

Despite all the different definitions and viewpoints, this thesis applies the definition given by Hekkert et al. (2017), as it is based on 114 other definitions and as it includes both aspects of sustainable development and the triple bottom line. According to Hekkert et al. (2017:229), the circular economy is: *“an economic system that replaces the ‘end-of-life’ concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation and beyond), with the aim to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations. It is enabled by novel business models and responsible consumers”*.

### **Public procurement in and for a circular economy**

Public procurement is according to Flanagan and Uyarra (2010: 632) defined as: *“the acquisition of goods and services by the government or public sector organizations”*. All governmental organizations are buyers of goods and services (Ervin, 2017). The Dutch government only procures around 73 billion euros worth of those goods and services (PIANOo, 2020a). However, a governmental organization cannot simply buy its goods and services on the market. In order to be allowed to procure, the public procurer has to apply to certain rules and regulations in order to comply to the general principles of objectivity, transparency, equality, non-discrimination and proportionality (PIANOo, 2020c).

The process of public procurement occurs through tendering and it involves in general four phases: 1) the organization phase, 2) the preparation phase, 3) the tendering procedure phase and 4) the purchase order execution phase (PIANOo, 2020c). Each phase is briefly described below based on Lozano and Witjes (2016) and on the Dutch Public Procurement Expertise Centre from the ministry of economic affairs and climate, which is also known as PIANOo (2020c). The first phase is, according to Lozano and Witjes (2016) and PIANOo (2020c), the *organization phase*. This phase is about the organization of purchasing within the organization. This phase is not about the tendering itself, but about how procurement is organized within a certain organization, like a municipality. Some organizations have a procurement department with employees who have knowledge of the market, whereas other small organizations have to collaborate in order to gain that knowledge. The first phase is followed by the *preparation phase*. This phase is about the orientation on what the public

organization intends to buy, it entails aspects such as an orientation on the market and a purchasing strategy. It also includes the determination on which procurement procedure must be followed and it is about the choice on which award criterion will be used. After the preparation phase, the actual tendering starts. This third phase is called the *tendering procedure phase*. During this phase the public organization places an assignment on the market according to a certain (European) procedure. The organization can choose a certain procedure and it determines which parties may make an offer. The organization awards the contract to the tenderer whose tender best meets the set requirements and wishes, which were set by the public organization during the preparation phase (Lozano, & Witjes, 2016; PIANOo, 2020c). According to the EU purchasing directives (European Union, 2014), the public organization has two options for awarding the tenders: ‘the lowest price’ or ‘the most economically advantageous tender’. In the case for the most economically advantageous tender extra criteria can be included, such as environmental characteristics. After the tendering is done, the last phase starts. The last phase is the *purchase order execution phase*. This phase is a phase where the public organization monitors if all the requirements are being met. During this phase there is no possibility to make any changes to the contract anymore (PIANOo, 2020c).

The Dutch government has to apply to the European guidelines when the total price of a tender is above a certain threshold. The national rules and procedures apply if the total costs of an assignment is below a certain threshold (PIANOo, 2020f). The Dutch rules and procedures are described in the public procurement law from 2012 (Minister van Economische Zaken, 2012). The public procurement law applies to all public contracts in the Netherlands (PIANOo, 2020d).

There are plenty of different sustainable options in relation to public procurement. The Dutch Public Procurement Expertise Centre defines the sustainable procurement options as socially responsible procurement, also known as MVI (PIANOo, 2020g). This includes options such as biobased purchasing, environmental friendly purchasing, innovation oriented purchasing, etcetera. (PIANOo, 2020g). So, there are different options in relation to MVI. This thesis is focused on one aspect of MVI, namely, circular public procurement.

As stated in the introduction, the Dutch government has the ambition to be circular in 2050 (Rijksoverheid, 2020). Additionally, the Frisian municipalities have signed the ambition document of Circulair Friesland (2020a), with the aim to become Europe’s most circular region in 2025. Circular public procurement is seen as the main driver to achieve this aim (European Commission, 2017). Besides that, circular public procurement also increases the demand for sustainable products and will therefore lead to even more sustainable practices in the future

(Parikka-Alhola, 2008). Therefore, the Frisian municipalities agreed upon the following three ambitions: 1) to procure 10 % of their physical products in a circular manner in the year 2020, 2) to buy circular street furniture only and 3) to buy fossil free vehicles only, when changing the vehicle fleet (Circulair Friesland, 2020a). To help those municipalities to achieve the ambitions, a core group was created. The core group consists of Circulair Friesland, the province of Friesland and the municipality of Leeuwarden. This core group initiated the so called ‘circulaire koplopers programma’ (circular procurement academy), in which the municipalities can participate to exchange knowledge and best practices to learn from each other about circular procurement (Circulair Friesland, 2020b).

According to the European Commission (2017), there are three levels to take into account when implementing circular public procurement. These levels are: 1) the systems level, 2) the supplier level and 3) the product level. The *systems level* is about the different types of contracts around circularity. Because for circular public procurement you will need other business models (Stahel, 2016). One model is for example based upon supplier take-back agreements (European Commission, 2017). All the different circular business models can, according to Stahel (2016), be divided into two groups: the models that foster reuse and extend service life and the models that turn old goods into new resources with the help of recycling. The *supplier level* is about how the supplier can ensure circularity in order to comply to the set circular procurement criteria. This entails aspects such as designing a product in such a way that it can be easily disassembled. The *product level* is about the product itself. It entails aspects such as the possibility to identify the used materials in the product (European Commission, 2017).

However, according to Clement and Sönnichsen (2020), there is no clear definition on circular public procurement yet. The basis of circular public procurement refers to the possibilities of procurers for promoting the general principles of the circular economy (Alhola et al., 2019). For the sake of this research, the definition given by the Dutch Public Procurement Expertise Centre from the ministry of economic affairs and climate is used. According to PIANO (2020b), circular public procurement is: “*a process that enables the purchasing party to ensure that, at the end of their service life or useful life, products or materials will be re-used effectively in a new cycle, where the products and materials crucially retain their quality and value.*”

### **Challenges in relation to circular public procurement**

Based on the analysis above, it can be stated that circular public procurement could face a plethora of barriers. Some barriers in relation to circular public procurement are according to Clement and Sönnichsen (2020), the perception that circular products involves higher prices, which prevents the application of it. Also, the extent to which a procurer or an organization believes in the benefits of acting sustainable is of influence (Clement, & Sönnichsen, 2020; Dylan, & Jolien, 2019). This is possibly influenced by aspects such as behavior control, organizational stress, legal barriers and the existence of funding or knowledge (Clement, & Sönnichsen, 2020). There could also be a lack of environmental criteria in the tendering procedure or a lack of collaboration with the market (Alhola et al., 2019; Clement, & Sönnichsen, 2020; Edler, Garcia-Estevez, Geourghiou, Uyarra, & Yeow, 2014; Edler, Geourghiou, Uyarra, & Yeow, 2013), whereas collaboration is especially important (Lozano, & Witjes, 2016). Also, the occurrence of over simplistic goals and unintended consequences exist (Haynes, Murray, & Skene, 2017). Additionally, it could be hard to compare circular tenders (Dalhammar et al., 2019). Also, according to Daddi, Frey, Iraldo and Testa (2012), it is even necessary to first enhance certain characteristics to be able to procure in a circular manner.

Thus, circular public procurement could have a lot of diverse challenges. Clement and Sönnichsen (2020) classified the influential aspects based on organizational aspects, individual behavior and related practices and the availability of operational tools. So, circular public procurement entails much more than only following the European procedures. Circular public procurement is, according to PIANOo (2020e), not only a procurement policy, but rather an organizational one. It concerns the entire process of commissioning. It is an essential part of the mission and vision of a certain organization. It is for example not only the purchasing department that is responsible, it entails the whole organization. Thus, it is important to have support within the whole organization (PIANOo, 2020e).

The aim of this research is to identify the specific challenges municipalities in Friesland face in relation to circular procurement in order to come up with suitable. Specifically, this research is focused on the challenges perceived by the different stakeholders working at those Frisian municipalities. Those stakeholders are divided into two groups, which will be described in the next section.



## METHOD

### Case description

The organization which lies at the core of this research is Royal HaskoningDHV. Royal HaskoningDHV is an engineering and a consultancy firm and recognizes the complexity of sustainability issues associated with biodiversity, air, water, land, climate change, health and safety, cultural heritage, resettlement, employment and human rights (RHDHV, 2020b). Royal HaskoningDHV also recognizes the challenges relating to circular public procurement. Royal HaskoningDHV employs over 6000 people on projects in over 140 countries and has the vision to 'enhance society together'. Royal HaskoningDHV is especially focused on delivering added value for society, while they are at the same time addressing the challenges those societies face. They show leadership in sustainable development and innovation with the aim to create a more sustainable society in the future (RHDHV, 2020a).

For this research the Frisian municipalities are classified in three types: 1) a municipality which is a member of the core group and which is involved in the circular procurement academy; 2) A municipality which is not a member of the core group, but which is involved in the circular procurement academy and 3) a municipality which is neither a member of the core group nor involved in the circular procurement academy. This distinction is made as those municipalities have different knowledge levels and experiences in relation to circularity, which will help to find all the different challenges. Within those municipalities the stakeholders who are involved in the procurement procedure and the stakeholders who have sustainability related jobs are interviewed. These stakeholders are chosen as they are involved in the process of circular procurement or are influenced by the existing procurement policies. Therefore, these stakeholders will probably have information about the faced challenges. This will result in a comprehensive overview of the different challenges perceived by those different stakeholders. Additionally, one expert in the field of the circular economy working at Royal HaskoningDHV is interviewed. The expert is interviewed in order to gain more knowledge around the concept of circularity and the process of circular and normal public procurement. An overview of the conducted interviews can be seen in Table 1 below.

Table 1: Interviewees overview

Organization	Member of core group	Involved in circular procurement academy	Function	Duration
Leeuwarden	Yes	Yes	Senior advisor Procurement	53:26 min
Leeuwarden	Yes	Yes	Advisor economic affairs and the circular economy	40:02 min
Smallingerland	No	Yes	Facility procurer	37:18 min
Smallingerland	No	Yes	Sustainability driver	41:50 min
Weststellingwerf	No	No	Advisor Procurement	50:41 min
Weststellingwerf	No	No	Quartermaster climate and sustainability	44:42 min
Royal HaskoningDHV	N/A	N/A	Advisor/expert circular economy	46:25 min

## Data and Methods

In order to answer the research question: “Which challenges do municipalities in Friesland face in relation to circular procurement and how can these challenges be overcome?”, a qualitative method is adopted. This is done as a qualitative method can be used in order to establish an in depth understanding of attitudes and behaviors (Watson, 2018). Besides that, a qualitative method can be used to identify the perspective of organizational members (Lapan, Quartaroli, & Riemer, 2012). This is the case for this research as the aim is to identify the perceived challenges by the stakeholders working at the Frisian municipalities.

For this research a semi-structured interview approach is used (See appendix A for the interview guide). This is chosen as this type of interview has the advantage of dynamic probing, which gives the opportunity to investigate the explained challenges by the interviewees further. Besides that, this type of interviewing is proven to be useful for investigating certain topics with potential momentous issues and for topics where there is a need of freedom in order to identify interesting outcomes (Hatry, Newcomer, & Wholey, 2015), which is the case for this research. Beforehand, a consent form (see appendix B) was sent to inform the participants about the purpose, risks, benefits and confidentiality related matters of this research. Also, permission for recording the interviews was asked. The interviewees had the possibility to withdraw from the research at any time. Besides that, for confidentiality reasons the interviewees are only represented with their job title and with the name of the municipality.

The interview questions are developed based upon the literature review and divided into several topics. First, questions about the individual and the organizational perspectives on sustainability and circularity were asked. This is done in order to get to know the personal view of the interviewees and in order to get to know the organizational view on this topic, which were found of influence during the literature review. To identify the individual perspective, questions were asked about for example the vision of the interviewees on sustainability in general, this includes questions such as how sustainability is visual in the everyday life of the interviewees. For identifying the organizational perspective questions were asked about the ambition and the vision of the municipality itself, this involved questions such as what the current ambitions are and how the municipality is working on those ambitions. Besides that, the definition of circularity and circular procurement was asked, as the different definitions were found as a challenge during the literature review. The second main topic is more focused on the challenges as defined by the interviewees. These questions were developed in order to identify and check for the other challenges found during the literature review and in order to find other challenges which were not found during the literature review. This includes questions such as what the current circular procurement projects are and how this was experienced. But it also includes questions such as what the experience of the interviewee is in relation to collaboration between the stakeholders within the municipality, or what the experience of the interviewee is in relation to the rules and regulations around circular procurement. The last topic is about the solutions to those problems. This was asked in order to develop effective recommendations for Royal HaskoningDHV. This includes questions such as what the interviewee thinks is useful to make the next step.

### **Data analysis**

After the interviews were conducted, the recorded interviews were transcribed. The transcribing process was followed by the coding process. The coding process was performed in the program Atlas.ti version 8 (Lester, & Paulus 2016). The process of coding is iterative, it consists of multiple stages in order to make the data suitable for evaluation and analysis (Hahn, 2008). First, open coding or level 1 coding was applied, which entails the highlighting of important aspects of the data. This helps to make the data more manageable and focused (Hahn, 2008). After that, axial coding or level 2 coding was applied, here connections between the open codes were made. This means that multiple level 1 codes were connected to one level 2 code (Hahn, 2008). After that, the process of selective coding or level 3 coding started. During this step the core categories were identified (Hahn, 2008). The end result of the coding process

were different coding trees of each conducted interview. These coding trees were combined based upon overarching challenges and themes, which resulted in a data structure. The codes in the data structure were translated from Dutch into English. After the coding process, conclusions relating to existing literature and relating to the main question of this thesis were drawn. Also, recommendations were made based on the results.

## RESULTS

### **Organizational and individual aspects**

During the literature review it became clear that organizational and individual aspects and perspectives are of influence when implementing circular procurement. Therefore, this part will highlight the most interesting organizational and individual aspects per municipality, including the ambitions, circular projects, perspective of the interviewees in relation to circularity and other relating results.

The municipality of Smallerland is quite keen on circularity. The municipality has created and implemented the roadmap sustainable Smallerland in the year 2016. In this roadmap they created ambitions for a number of themes such as: energy, mobility, food and health, use of space, living environment and waste and raw materials. These themes are translated into three main topics: the energy transition, climate adaptation and the circular economy. The municipality is currently busy with a reorganization for which they are also planning to do a pilot around the procurement of circular furniture for the municipality itself. Interestingly, both interviewees explained that the municipality was also already involved in some other circular procurement projects, but these were not officially classified as being circular. Additionally, both interviewees explained that they did work with the topic of sustainability and circularity before. This is because both interviewees explained that they are intrinsically motivated.

The municipality of Weststellingwerf is working with the national ambitions in relation to circularity. The sustainability officer of the municipality explained that this was a conscious choice: *“(...) but it was said half way through the year, like, yes we just want to do, we don't want a vision, we don't want a new overarching policy.”* However, despite the nonexistence of an specific vision, the procurement officer explained that they do have some examples of circular procurement, like the reuse of a sports floor and the procurement of wooden street furniture. Also, both interviewed employees explained that they are intrinsically motivated. They both believe that sustainability and thus circularity is important and they both are also

keeping sustainability in mind in their private time. The interviewees further explained that they would like to be involved in the circular procurement academy, but there is just no room for it. Furthermore, the municipality does its procurement activities together with two other municipalities, the municipality of Opsterland and the municipality of Ooststellingwerf. Those three municipalities all have different ambitions, but the procurement officer explained that the procurement policy is harmonized and focused on MVI.

The municipality of Leeuwarden is quite focused on sustainability and circularity. The municipality is a member of the core group and involved in the circular procurement academy. Besides this, they also created a more holistic vision of becoming Europe's most favorable region in relation to the development of the circular economy. These ambitions are also translated within the organization. The municipality of Leeuwarden has for example created a circular economy team, where people from different departments within the organization are involved in. This team helps to make circular procurement more common within the municipality. The interviewees both explained that they see circular procurement as a positive development, causing them to see the challenges not as problems but as opportunities. Some examples of their circular procurement activities are the procurement of a circular sidewalk and a project where mushrooms are grown on coffee grounds, which can then be used again for consumption. Additionally, the sustainability officer explained that they also did some circular procurement projects before, which were not officially seen as being circular. Besides that, both interviewees explained that they are intrinsically motivated, meaning that they take sustainability into account in their everyday decisions.

### **Definition of circularity and circular procurement**

One challenge in relation to circular procurement is the vast amount of definitions. Therefore, this part will highlight the main aspects of the definitions in relation to circular procurement which are used in the different municipalities.

The definition of circular procurement used by the municipality of Smallingerland is according to both interviewees more focused upon materials and resources and on the closing of material loops. This also includes the non-existence of waste, the recycling of materials and also aspects like the idea of less is more. The interviewees both agreed that the circular economy is much more than materials and resources. However, the municipality chose to focus only on the material and resources aspect when talking about circular procurement. This is done in order to make it more effective and understandable, as the sustainability officer explained: *“It is also a conscious choice, in order to actually make it a bit smaller, but to be able to pay extra*

*attention to it.”.*

When asking about the definition of circular procurement, the interviewees of the municipality of Weststellingwerf explained that they personally define circularity based upon aspects like materials, resources, value retention, recyclability and waste prevention. However, the procurement officer explained that the municipality did not define circular procurement specifically. They wish to work with the definition given by PIANOo, but this is not officially established yet.

The definition of the circular economy according to the interviewees from the municipality of Leeuwarden is based on material aspects, sustainable energy and aspects such as biodiversity, health, culture and the phenomenon of seeing money as a mean instead of a goal. However, for circular public procurement, the municipality decided to focus more on the material and energy aspects. However, it seems that they still take the other aspects into account, as the sustainability officer explained: *“The focus is on materials and energy. A number of questions are asked [in relation to circular procurement]: is it better? Does it emit less CO<sub>2</sub> than the current alternative and what materials did you use? Are they indeed more sustainable and can you proof this? You must be able to proof that it does not damage biodiversity, the quality of water, that kind of things.”*

The expert from Royal HaskoningDHV was also asked about the definition of circular procurement. According to the expert the circular economy is originally based upon the Cradle to Cradle concept as defined by Braungart and McDonough (2002). This concept consist of three principles: 1) the understanding of waste as food, 2) the use of renewable energies and 3) the support of diversity. The expert explained that the first two principles: the understanding of waste as food and the use of renewable energies are more practical and therefore easier to implement in contrast to the third principle about the support of diversity.

### **Challenges as defined by the interviewees**

This section will highlight the most interesting challenges found during the interviews. The challenges are specific for the described municipality unless otherwise stated.

The challenges according to the sustainability officer of the municipality of Smallerland are firstly, the extra time, the extra money and the extra effort needed in order to implement circular procurement. The sustainability officer also explained that some compare circular procurement with the common way of procurement. This comparison strengthens the issue with money, as for circular procurement you will need a new kind of financial model because it cost initially more money. Furthermore, a challenge according to the procurement

officer are the complexities around the procurement procedures, as they can make circular procurement even more complicated. The procurement officer explained that the procurement procedures are already complex in itself, whereas circular procurement is making it even more sophisticated. Therefore, the procurement officer really believes that a checklist for procuring in a circular manner could be of great help. This also includes things such as information about writing the assignment for the market in an innovative way in order to stimulate the market to develop the circular products. This is also endorsed by the sustainability officer, who believes that not everything is already available on the market yet. Furthermore, the procurement officer explained that the municipality of Smallerland has a decentralized procurement, which can sometimes cause challenges in collaboration. This is the case because a decentralized procurement leads to unclarity about all the running procurement projects within the municipality, which blocks effective collaboration.

The most important challenges according to the sustainability officer of the municipality of Weststellingwerf are the lack of budget and a lack of ambition and vision. This lack leads to a kind of vicious circle, as in order to gain knowledge around this topic you have to invest, but for requesting budget you will need a vision/framework. However, this vision is not developed because of the lack of knowledge, as the sustainability officer explained: *“You actually have to invest first to know what you don't know and what you want to know, but to do that [investing] you actually need some kind of framework, but you can't actually set that up yet.”* The lack of vision also blocks effective collaboration, as there is no clear base to work from. It results in a kind of deadlock, as the sustainability officer explained. Besides that, the procurement officer especially mentioned that there also had been some cutbacks. This makes it hard to invest time and money in this topic. Thus, circular procurement does not have priority yet within the municipality. During the interview with the sustainability officer it further became clear that the non-existence of a specific definition of circular procurement can also create a challenge, as it makes it hard to make decisions about which materials can be used for a certain project. Additionally, the procurement officer explained that the content of circular procurement is complex, meaning that you cannot simply do it as a side activity.

The challenges according to the interviewees of the municipality of Leeuwarden are most importantly the process of making circular procurement the common way in the whole organization and the collaboration between the departments within the organization, as some workers in for example the civil engineering sector are sometimes more traditional. However, the municipality of Leeuwarden is trying to overcome this challenge by the creation of an internal circular economy team. This team is working on making the concept of circular

procurement common within the whole organization. They do this by meeting regularly and by for example making an overview of the already existing projects where they can perhaps include circularity in. Besides this, a challenge according to the sustainability officer revolve around the stimulation of the market. It is sometimes hard to help the market to develop the circular products. However, they already work on this by having tight contact with the companies around Leeuwarden. For the rest, both the interviewees explained that they do not define the challenges around circular procurement as a bad thing, but they rather see them as opportunities. This is probably also influenced by the fact that Leeuwarden is a capital municipality, which for example means that there is more budget available to make steps.

Besides the aforementioned challenges, the expert from Royal HaskoningDHV also explained some important elements and solutions to possible challenges in relation to circular procurement to keep in mind. Those are most importantly the importance of a positive mindset, the possibility of creating scale in order to receive more budget, the importance of collaboration and integration within the organization, the importance of a clear definition and the importance of knowledge about the fact that not everything is possible yet, as that will prevent disappointments and a negative mindset.

## **DISCUSSION**

The aim of this paper is to identify the different challenges municipalities in Friesland face in relation to circular public procurement. To return to the main question of this thesis: *‘Which challenges do municipalities in Friesland face in relation to circular procurement and how can these challenges be overcome?’*, appendix C provides the data structure with an overview of all the found challenges during the interviews. The challenges are: 1) relating to a lack of time and money, 2) relating to a lack of ambition and vision, 3) relating to the market, 4) relating to the complexity of the concept, 5) relating to the complexity of the rules and regulations, 6) relating to the fact that circular procurement is different and new and 7) relating to the difficulties in relation to the collaboration between the stakeholders involved and 8) relating to difficulties in the integration of circular procurement within the whole organization. As can be seen, the found challenges are very divergent. This divergence is probably the result of the chosen municipalities, as some municipalities have high ambitions and priorities, whereas others have less.



## **Practical implications**

The identification of challenges will help to come up with suitable solutions. The solutions to the aforementioned challenges are divided in five recommendations, meaning that some of the recommendations will help to solve multiple challenges.

This first recommendation will help solve the challenges relating to 1) a lack of time and money and 2) a lack of ambition and vision. As time and money is seen as a challenge, it is needful to make circular procurement priority. This will prevent cutbacks and will probably lead to more room to work with circular procurement. To do this, it is encouraged to transfer information about the advantages and importance of circular procurement in order to let circular procurement become priority and to let people see it as an opportunity rather than a challenge. To cause this, the information should be transferred to 1) the stakeholders involved in the making of policies, in order to encourage to make circular procurement priority and to create a more specific vision and 2) the stakeholders involved in the procurement process, in order to stimulate the putting of circular procurement into practice. This can be done by the sharing of best practices and the starting of small pilots, in order to let the stakeholders experience the benefits. Besides this, the priority making process will probably also stimulate the creation of a specific vision, which is also needful as a specific vision functions as a foundation from where one can work further. Additionally, the transfer of positive information is also an important step to make a sustainability related problem everyone's concern (Bhattacharya, 2018), which helps to solve the related challenges.

This second recommendation will help solve the challenges relating to 1) a lack of time and money and 3) the market. As time and money is a challenge, it is further also encouraged to collaborate with other procuring parties in order to receive more budget. This is encouraged as large investors are also thinking big. Therefore, it is useful to collaborate with different parties in for example the three provinces in the North of the Netherlands. This can be done by connecting the already existing parties, like Circular Friesland from Friesland, NICE (Northern Innovation Lab for the Circular Economy) from the province of Drenthe and the so called Groningse circulaire beweging (Groningse circular movement) from the province of Groningen. This collaboration possibly will create finance flows and developments in the market, which also solves the challenge in relation to the market. The organization SNN can perhaps be helpful in achieving this, as this organization provides grants with the aim to stimulate, facilitate and connect ambitions in the North of the Netherlands (SNN, 2020). Of course for doing this, one should manage to get every municipality connected with the different

organizations. This can be a challenge due to the cut backs and the lack of priority in some municipalities. Therefore, it is first also needed to adhere to point one about the need of priority making.

This third recommendation will help solve the challenge relating to 4) the complexity of the concept. As circular procurement is experienced as being complex, it is needful to decrease its complexity. This can firstly be done by the creation of a specific definition. The definition of the circular economy which is used in this thesis is very broad and comprehensive. When working with circularity in practice, like circular public procurement, it seems to be smart to define the concept in a more tangible and practical way. Some municipalities are consciously focusing on aspects of circularity, like the materials or the energy aspect. Thus, it seems to be smart to make the definition less comprehensive by focusing on parts of the definition, as it will prevent confusion around the implementation of circular public procurement and it will decrease its complexity. Also, by only focusing on parts of the definition you will also help to prevent disappointments when something is not possible yet. Thus, the creation of a specific definition together with the taking into account that not everything is possible yet, will be a good step towards making circular public procurement less complex.

This fourth recommendation will solve the challenges in relation to 5) the complexity of the rules and regulations, 3) the market and 6) the challenge that circular procurement is different and new. Besides the challenge in relation to the complexity of the concept described in recommendation three, there is also a challenge in relation to the complexity of the procurement rules and regulation. The complex concept of circular procurement together with the complex procurement rules and procedures make it all even more sophisticated. Therefore, there is a need of information and knowledge around procuring. This is especially the case for municipalities who are lacking a tendering advisor, like the municipality of Smallerland. Hence, it is encouraged to support those municipalities with knowledge. This entails knowledge about the market, about the possibilities around circular products and about how a procurement procedure can be written in an effective way in order to stimulate the market to develop the not already available circular products, which will also help to solve the challenge in relation to the market. The support with knowledge of the mentioned subjects is also endorsed by Daddi et al. (2012), who state that the training of technical, legal and financial skills is essential for circular public procurement. In addition, this recommendation will also help to solve the challenge in relation to circular procurement being different and new, as the transferred knowledge will help to get used to the differences between normal and circular procurement.

This fifth recommendation will help solve the challenges relating to 7) the collaboration

between the stakeholders involved and 8) relating to the integration of circular procurement within the whole organization and 3) the market. For circular procurement to be successful different stakeholders have to collaborate, both within the organization and with the market. This also includes stakeholders who are not yet enthusiastic about circular public procurement. Therefore, it seems to be a good step to develop an internal project team, like the municipality of Leeuwarden has done. By meeting regularly with this team, you will meet the other stakeholders and get an overview of what is going on and where the challenges are. This together with the creation of an overview of the already existing projects, you will have an overview of opportunities from where you can make the next step and where ongoing feedback can be provided. This providing of ongoing feedback is, according to Bhattacharya (2018), also a necessary step in order to solve sustainability related challenges. Additionally, the project team can also help to transfer the knowledge in order to make the other stakeholders enthusiastic as well, as described in the first recommendation.

### **Theoretical implications**

Altogether, the theoretical implications of this research to circular economy literature is twofold. First, the interviewed municipalities were classified based upon the involvement in the circular procurement academy and based upon being a member of the core group. Based on the found challenges one could conclude that the municipalities involved in the circular procurement academy face slightly different challenges than the municipality that is not. Besides this, the municipality which is also a member of the core group faces notable fewer challenges. Therefore, it seems that the circular procurement academy, where knowledge and best practices are shared, has an influence on the challenges in relation to circular procurement. Second, during the interviews it became clear that circular public procurement is more like a process. The seeing of circular procurement as a process is also endorsed by Weetman (2016). An important step in this process is probably the creation of a clear and specific vision, as the nonexistence of a clear and specific vision could lead to a deadlock as described by the sustainability officer from the municipality of Weststellingwerf.

### **Limitations and future research**

Although this research has found several challenges defined by the procurement officers and the sustainability officers, one key stakeholder was not interviewed due to time issues. This stakeholder is the project manager, who works with the circular products. During the interviews it became clear that the interviewees believed that the project manager also has a vital role, but

in another part of the process. Therefore, the exclusion of this stakeholder in this research can be seen as a limitation. Future research on this topic should therefore also include the project manager. Besides the project manager, stakeholders from outside the municipalities, such as market players and the national government, are also not interviewed. It could be interesting for future research to also interview these players in order to also take their viewpoint into account, as those stakeholders are also seen as important (Lozano, & Witjes, 2016). Additionally, the sample can be seen as a limitation. This is because there is only one municipality included that is not involved in the circular procurement academy, in contrast to the two other municipalities that are involved. It is therefore interesting for future research to also interview the other municipalities in Friesland in order to get a more comprehensive overview of the existing challenges. Besides that, it could be interesting to interview municipalities outside Friesland to see if there are any differences. Additionally, each municipality faced slightly different challenges. This difference in challenges is probably caused by the fact that each municipality is different, based upon organizational aspects, individual behavior and related practices and the availability of operational tools, as Clement and Sönnichsen (2020) classified. This may have a linkage to ecosystem theory, which explains that there are different entrepreneurial ecosystems consisting of a unique interconnection of elements. This creates different challenges for the actors embedded in that ecosystem. These entrepreneurial ecosystems consist of domains like: culture, policies and leadership, finance, human capital, markets, supports (Isenberg, 2011). As the found challenges in this thesis seems to correspond with the domains from ecosystem theory, future research could build on this by integrating ecosystems theory with circular economy theory. This will be of added value as the knowledge from ecosystem theory about solving challenges in relation to the domains can possibly be combined to find solutions for the challenges in relation to circular procurement in the same domains. For example solutions in relation to a lack of innovative employees or a lack of governmental support as described by Cohen (2006). Finally, as it seems that circular procurement is more like a process, circular economy research could build further on this by investigating the specific steps in the process of enhancing circular procurement. This is useful in order to find suitable solutions for the different challenges occurring during the different phases in the process.

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## APPENDIX

### APPENDIX A: Interview guide

Interviewer: Mike van der Kaap

Interviewee:

Organization interviewee:

E-mail address Interviewee:

Phone number interviewee:

Supervisor: drs. J. (Hans) van Polen

University of Groningen Campus Fryslân.

Date interview:

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*[I am conducting research about the challenges in relation to circular procurement. The questions are divided into 3 main topics. This involves firstly your individual perspective on sustainability and circular procurement, thereafter the perspective of your organization on those topics and lastly I have some questions about the challenges in relation to circular procurement together with the corresponding solutions.]*

#### **General**

Q1: Can you introduce yourself?

Q2: What is your function?

#### **Individual perspective on circularity**

Q3: What is the meaning of sustainability according to you?

Q4: How is it shown in your everyday life?

#### **Definition**

[Explanation that there are a lot of different definitions in relation to circularity and circular procurement]

Q5: What is the definition of circularity according to you?

Q6: How would you define circular procurement?

Q7: Does your municipality have a specific definition of circular procurement? If so, which one?

*[In my research I made a distinction between three different municipalities. A municipality that is involved in the circular procurement academy of circular Friesland and who is a member of the core group. A municipality that is involved in the circular procurement academy, but which is not a member of the core group and a municipality that is not involved and not a member. By making this distinction I am able to identify different challenges due to the difference in experience and knowledge levels of the municipalities. Now I have some questions in relation to this division.]*

#### **Organizational perspective on circularity**

Q8: Is there an ambition in relation to circularity for your organization. If so, what is the ambition?

Q9: Do you know the ambition in relation to circularity on a national level (het Rijk)? And on the provincial level / Circulair Friesland?

*[all Frisian local governments signed the ambition document from Circulair Friesland, where they agreed upon the following aspects: procuring 10 % of their products in a circular way in the year 2020, using circular street furniture only, when replacing within the vehicle fleet, only focus on vehicles based on non-fossil fuels.]*

Q10: Hearing those goals, what is your initial reaction?

Q11: Do they correspond with your organizations goals?

Q12: Who is according to you responsible for implementing circular goals in relation to procurement within your organization? Why do you think that?

### **Challenges**

Q13: What is your experience with working with circular procurement?

Q14: Did you experience challenges in relation to circular procurement/can you think of challenges in relation to circular procurement, what are/were they?

*[If no, then probe the challenges found in the literature:*

*→ Challenges relating to the organization itself (lack of collaboration, lack of vision, too small etc.)*

*→ Challenges relating to personal beliefs (lack of belief in circularity, lack of understanding, lack of courage etc.)*

*→ Challenges stemming from external factors (the market, rules and regulations, no operational tools etc.)]*

Q15: How did you overcome these challenges?

Q16: What do you need to overcome these challenges?

### **Other**

Q17: How do you think consultancy firms, like Royal HaskoningDHV, can help you with the implementation of circularity into the procurement process for your municipality?

Q18: Did you miss anything during this interview what you would like to discuss further?

## **APPENDIX B: Consent form**

### **1 Purpose of the study**

Dear sir/madam name,

You are being asked to take part in the research about the challenges around circular procurement as part of a thesis delivered within the master program Sustainable Entrepreneurship at Campus Fryslân of the University of Groningen. Before you participate in this study, it is important that you understand why the research is being done and what it will involve. Please read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information.

The purpose of this study is to create theoretical and practical value on the challenges different stakeholders involved in circular public procurement in Frisian municipalities face. The research is aimed to answer the following research question: *“Which challenges do municipalities in Friesland face in relation to circular procurement and how can these challenges be overcome?”*.

### **2 Study procedures**

By participating in this study, you agree to take part in the following activities:

- i) Reading the informed consent
- ii) Active participation in the scheduled interview

By participating in the interview, you agree that the conducted interview is recorded, transcribed and analyzed. The interview will take approximately 30-60 minutes.

### **3 Risks**

There are no risks involved in this research. You may decline to answer any or all questions and you may terminate your involvement at any time if you choose.

### **4 Benefits**

There will be no direct benefits provided for participating in this research. You are able to receive the final results of the investigated topic when the project is completed.

### **5 Confidentiality**

Your responses to this interview will be anonymous. For the purpose of this study the interview will be recorded, transcribed and analyzed. Recording and transcription will not be

used for any other purpose besides conducting this study. Every effort will be made by the researcher to preserve your confidentiality including the following:

Assigning code names/numbers for participants that will be used.

Keeping notes, interview transcriptions, and any other identifying participant information in a folder in the personal possession of the researcher.

A thesis will be written based on your information. This will include a short description of your function and the name of the municipality. Your personal details will not be published.

## **6 Voluntary participation**

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign this consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

## **7 Consent**

I have read and I understand the provided information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I voluntarily agree to take part in this study.

Participant's signature \_\_\_\_\_ Date \_\_\_\_\_

Investigator's signature \_\_\_\_\_ Date \_\_\_\_\_

## **8 Supervising professor**

Supervisor name: drs. J. (Hans) van Polen

Organization: University of Groningen, Campus Fryslan

E-mail address: j.van.polen@rug.nl

**9 Details Interviewee**

Interviewee name:

Organization:

E-mail address:

**10 Details student**

Student name: Mike van der Kaap

E-mail address: [m.van.der.kaap@student.rug.nl](mailto:m.van.der.kaap@student.rug.nl)

## APPENDIX C: Data structures with the found challenges

