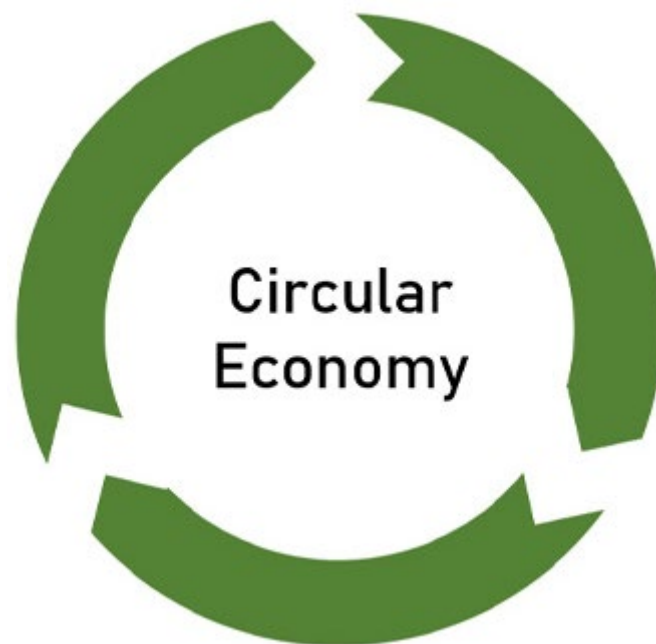


An Analysis of Bottlenecks in Municipality-SME Interactions during the Circular Transition at the Dutch Local Level



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**BUITEN
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Preface

I am proud to present my master's thesis on the bottlenecks in the collaboration between municipalities and SMEs in the transition to a circular economy. Over the past few months, I have researched this topic with great dedication and enthusiasm, in combination with my internship at Bureau Buitenklank, as part of the Master's specialisation in Sustainable Economies and Cooperations at Radboud University. It has been an educational and challenging journey that would not have been possible without the support of various people involved.

First of all, I would like to thank my internship supervisor, Eric Spies from Bureau Buitenklank. Thanks to the educational projects he allowed me to participate in and his constant availability, he helped me move forward with my thesis at crucial moments. His enthusiasm and broad professional knowledge were a major source of inspiration. I would also like to thank all my colleagues at Bureau Buitenklank for their support and for giving me valuable insight into working within an organisation.

I would also like to thank my thesis supervisor, Duncan, for his dedicated support. He was always available, provided valuable feedback and, even when things became challenging, knew how to help me get back on track. I would definitely recommend him as a thesis supervisor.

Furthermore, I would like to thank all the people who took part in the interviews and survey for giving up their time and sharing their insights. Without their contributions, this research would not have been possible.

Overall, it was an intensive, educational and challenging period. I am grateful for the experience I gained, and I am proud of what I achieved.

Abstract

The circular economy (CE) has existed in the Netherlands for a few years, with the aim of achieving 100% circularity by 2050. This national objective means that municipalities and small and medium-sized enterprises (SMEs) must determine how to implement the CE at a local level. This thesis examines the obstacles to the collaboration between municipalities and SMEs in the Dutch transition to a circular economy. First, it considers the issues faced by municipalities. This is followed by an analysis of the issues faced by SMEs and the problems in the interaction between the two. The research was conducted through 14 semi-structured interviews and a qualitative survey. The analysis combined the Policy Arrangement Approach, outlining the context and content of the CE transition, with the Collaborative Governance framework, capturing the interaction between municipalities and SMEs in the process. The results reveal five dominant bottlenecks: fragmented networks, subsidies and governance; a lack of direction and leadership; a gap between policy and practice; the participation of only a select group; and cultural bottlenecks involving linear routines, risk aversion and mutual prejudices. It is recommended that CE be embedded in policy and organisation, proven practices be adopted and scaled up, chain cooperation and market security be guaranteed, and knowledge be shared systematically.

Key words:

Circular economy – Municipalities – SMEs – Bottlenecks – Policy Arrangement Approach – Collaborative Governance Framework

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1. Introduction

1.1. Research problem

The transition to a circular economy (CE) is an essential response to urgent societal challenges. Under the current economic model, raw materials are extracted, products are manufactured and used and then disposed of. This 'take-make-consume-waste' model causes serious ecological and social problems, including a potential future shortage of natural resources, increasing waste production, and contributing to CO₂ emissions (IRP, 2020). It is estimated that over 100 billion tonnes of raw materials are extracted each year, yet only 7.2% of these are reused within the economic system (Circle Economy, 2023). Furthermore, the quantity of raw materials extracted is projected to rise to approximately 184 billion tonnes by 2050, while the proportion of materials being recycled has been declining in recent years (Circle Economy, 2023). The global ecological footprint has grown from less than one planet in 1961 to approximately 1.7 Earths in 2024 (Global Footprint Network, 2024). Therefore, the linear system is no longer sustainable and economic growth cannot be separated from negative ecological impact. This makes the transition to a circular economy necessary.

The concept of the CE is very popular among both scientists and policymakers. However, several definitions are used. An analysis of 114 definitions defined CE as follows: 'A circular economy describes an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes, thus operating at the micro level, meso level and macro level, with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity and social equity, to the benefit of current and future generations' (Kirchherr et al., 2017 pp.224-225). Therefore, the circular economy offers an alternative that focuses on closing cycles, extending product life and reducing waste.

The concept of the circular economy emerged in the late 1970s and has grown in popularity ever since (EMF, 2013). The first concrete steps towards a European CE strategy were taken in 2014 with the publication of the European Commission's policy document 'Towards a circular economy' (European Commission, 2014). The following year, the European Commission launched the EU Circular Economy Action Plan, announcing specific measures to promote recycling, stimulate eco-design, and strengthen markets for secondary raw materials (European Commission, 2015). In 2019, this policy was expanded further to become part of the European Green Deal (European Commission, 2019). The CE has become one of the core components of the EU's sustainability policy and is positioned as a necessary condition for achieving climate neutrality by 2050. In addition to its ecological benefits, the European Commission expects implementation to lead to a 0.5% increase in GDP and the creation of more than 700,000 new jobs by 2030 (European Commission, 2020). The circular economy has therefore come to play an increasingly important role in European sustainability policy.

CE is also an important policy issue in the Netherlands. In fact, the government has announced its ambition to become fully circular by 2050, setting an interim target to reduce primary raw material use by 50% by 2030 (Government of the Netherlands, 2016). The Netherlands Circular in 2050 programme supported this target, with the government drawing up concrete transition agendas for sectors such as construction, biomass and food, plastics, manufacturing, and consumer goods (Government of the Netherlands, 2016). To achieve this, the national government has formulated four key principles: reducing raw material use; substituting raw

materials; extending product life; and high-quality processing. However, despite these ambitious targets and implementation agenda, the implementation of the circular economy in the Netherlands remains a complex issue.

In the Dutch context, municipalities and SMEs play a crucial role in the transition to a circular economy locally. As inspirers and networkers, municipalities ensure that national objectives are aligned with the local context (VNG, 2024a). They also facilitate, connect and drive local cooperation between businesses, knowledge institutions and citizens (Valkokari et al., 2024). However, due to variations in size, resources and knowledge, municipalities have differing capacities to effectively support circular initiatives (Campbell-Johnston et al., 2019). This makes municipalities an important player in the implementation of the circular economy.

In addition to municipalities, the 1.5 million SMEs play an indispensable role in the transition to a circular economy (CBS, 2024). These innovative companies are developing circular business models and investing in reuse, recycling, and sustainable production processes (EMF, 2013). In a circular economy, close cooperation between public and private parties is inevitable, because regulation, financing and infrastructure must go hand in hand with innovation. This is where the policy instruments of municipalities and the business practices of companies intersect, and where synergy can arise or, conversely, resistance can occur.

Implementing the circular economy in the Netherlands may encounter various barriers. Several studies have already examined these barriers (Kirchherr et al., 2018; Skene, 2018; Bajare et al., 2025; Rizos et al., 2016; Campbell-Johnston et al., 2019). A report on the progress of the transition is also drawn up every two years specifically for the Dutch context (Hanemaaijer et al., 2025). However, the interaction between municipalities and businesses is often underexposed, despite being crucial for successful local implementation. This research combines the Policy Arrangement Approach (PAA) and the Collaborative Governance Framework (CGF) to identify contextual and process-related barriers, and will be substantiated empirically through interviews and a qualitative survey. This research therefore focuses on the relationship between municipalities and SMEs in the Netherlands, aiming to gain insight into the specific barriers that hinder collaboration.

1.2. Research objective and research questions

This study aims to identify bottlenecks in the implementation of the circular economy by municipalities and SMEs in the Netherlands. The ultimate aim is to formulate possible recommendations by identifying, organising and explaining these bottlenecks. This research will be conducted using qualitative methods based on the Policy Arrangement Approach (PAA) and the Collaborative Governance Framework (CGF). These analytical frameworks are linked and will form the basis of the analysis. Qualitative data will be collected through interviews and a qualitative survey. The main research question is as follows:

‘What are the bottlenecks in the relationship between municipalities and SMEs in the transition to a circular economy?’

Furthermore, a number of sub-questions will be addressed to help answer the main question.

- R1: *What bottlenecks do municipalities experience when working with SMEs to implement circular initiatives?*
- R2: *What bottlenecks do SMEs experience when working with municipalities to implement circular initiatives?*

1.3. Social relevance

Understanding bottlenecks in municipality-SME cooperation is crucial for the circular transition. Through licensing, waste management, spatial planning and network facilitation, municipalities directly set local preconditions for circular initiatives (Government of the Netherlands, n.d.). Furthermore, SMEs account for 60% of the added value of the business sector in the Dutch economy and play a crucial role in developing and applying circular innovations (Nederlands Comité voor Ondernemerschap, 2019). Effective cooperation between municipalities and SMEs is therefore necessary to shape the circular economy at a local level.

Despite targets of a fully circular economy by 2050 and a 50% cut in primary raw-material use by 2030, the Netherlands still derives only ~4% of GDP from CE (Government of the Netherlands, 2016; CBS, n.d.). Empirical research in three Dutch cities, Amsterdam, Utrecht and Den Haag, revealed various concrete drivers, including circular procurement, zoning plans, and knowledge exchange (Campbell-Johnston et al., 2019). Drivers have therefore been identified for municipalities, but these have not yet led to a higher share of circular GDP. Barriers also play a role among SMEs. One study showed that cultural barriers, such as hesitant corporate cultures, hinder the transition to a CE (Kirchherr et al., 2018). Companies are hesitant to get started with the circular economy, and this attitude will need to change.

This research can contribute to improving the implementation of circular initiatives locally by identifying municipalities-SMEs bottlenecks. Once these have been clearly identified, policies can be applied more efficiently and targeted more effectively, thereby accelerating the division of tasks and standard procedures. Furthermore, as the majority of companies in the Netherlands are SMEs, solutions will have a direct impact on the scaling up of the circular economy (CBS, 2024). Higher local reuse and recycling cut waste, strengthen material security, save municipalities and SMEs time and money, and support job creation and broader prosperity for citizens (CBS, n.d.).

1.4. Scientific relevance

This study makes three scientific contributions. Firstly, it identifies the bottlenecks that arise between municipalities and SMEs when implementing the circular economy. While much research has already been done on the barriers to implementing the circular economy in general (Kirchherr et al., 2018; Skene, 2018). Previous studies have also broken down the barriers by type of organisation, such as a municipality or SME, but also by sector, such as the construction sector (Bajare et al., 2025; Rizos et al., 2016; Campbell-Johnston et al., 2019). However, the interaction between municipalities and SMEs at a local level has not been widely studied.

Secondly, the PAA and the CGF are used to establish a theoretical link that has only been applied to a limited extent in CE research. While the PAA focuses on structural dimensions, the CGF focuses more on process-related dynamics (Arts, Leroy & Van Tatenhove, 2006; Ansell & Gash, 2008). Combining these two approaches enables the analysis of collaborative dynamics between the two actors in the circular economy policy domain.

Thirdly, this research fills a gap in empirical knowledge about how local interactions between public and private organisations influence the implementation of CE in the Dutch context. Although the Netherlands has set ambitious goals, progress has been limited to date (Hanemaaijer et al., 2025). Examining these interactions and identifying where bottlenecks arise provides valuable empirical insights that can be used as scientific evidence to address these issues.

2. Literature review and theoretical framework

2.1. Literature review

2.1.1. The development of the circular economy concept

The circular economy has its origins in various sources that emerged in the second half of the 20th century. However, there is no consensus on who founded the circular economy, with many complementary approaches emerging simultaneously (Milios, 2018). As early as 1966, the economist Kenneth Boulding described 'Spaceship Earth', in which humanity had to learn to live within planetary boundaries (Boulding, 1966). This concept was further developed in a report for the EU which outlined the initial characteristics of the circular economy (Reday-Mulvey & Stahel, 1977). The authors introduced the concepts of closed-loop and performance economies within the industrial economy. They argued that extending the life of products through reuse, repair and remanufacturing would not only benefit the environment but also create new business models and local employment (Stahel, 1982). The focus was therefore on preserving products and keeping materials in use for as long as possible, rather than replacing them. However, several authors attribute the concept of the circular economy to Pearce and Turner (Geissdoerfer, 2017). They described how natural resources influence the economy, defining sustainable development as maximising the net benefits of economic development while preserving the quality and services of natural resources for the future.

Parallel to this, the concept of industrial ecology emerged. The aim of this concept is to transform the traditional industrial system into an integrated industrial ecosystem, where industries collaborate to minimise waste and promote reuse (Frosch & Gallopoulos, 1989). Industrial ecology therefore emphasises closed material flows and industrial cooperation to prevent waste and wastefulness, one of the principles of CE (Ghisellini et al., 2016). Soon after, approaches that challenged the linear 'take-make-dispose' model began to emerge. A notable example is the Cradle to Cradle concept (McDonough & Braungart, 2002). The authors argue that products should be designed so that all materials can serve as 'nutrients' after use. They distinguish between two cycles: a biological cycle, in which materials return to nature, and a technological cycle, in which materials are reused indefinitely without loss of quality. The 'waste equals food' design concept aimed to demonstrate that economic growth and ecological responsibility can go hand in hand, which is in line with the ideas of CE.

The term 'circular economy' became increasingly prominent in the mid-2000s. This was evident when China first incorporated circular economy into policy documents in 2009 (Shen & Qi, 2012). The CE was defined as the integration of the reduction, reuse and recycling of goods during their production, exchange and consumption (Skene, 2018). However, the application of the circular economy in China differs from that in other countries. China follows its national political strategy of a top-down approach, while for the EU, US and Japan, CE is often an instrument for bringing about bottom-up environmental change (Milios, 2018; Ghisellini et al., 2016). In a top-down approach, the government steers CE policy through legislation, regulation, standard-setting, subsidies, and public procurement policy. In contrast, a bottom-up approach focuses on grassroots initiatives by, for example, citizens or SMEs. This involves experimenting with new business models and collaborations to develop the circular economy. A combination of top-down guidance and a bottom-up approach will probably be necessary to achieve a sustainable transition, of which implementing the CE is one example (Cramer, 2022).

In Europe, the concept came onto the agenda through reports and other initiatives from, for example, the Ellen MacArthur Foundation, which published the report 'Towards a Circular Economy' in 2013 (EMF, 2013). Interest within the EU grew, and in 2015 the EU launched the EU Circular Economy Action Plan. Four years later, in 2019, this became part of the European Green Deal, with the aim of achieving a climate-neutral Europe by 2050 (European Commission, 2015; European Commission, 2019). Interest in scientific literature also increased explosively from around 2015 onwards, as reflected by the significant rise in peer-reviewed articles published (Kirchherr et al., 2017).

Within the development of the circular economy, different definitions and interpretations emerge regarding which activities and processes belong to it. The R principles, also known as the R ladder, are used to clarify this. These vary from 3R and 5R to 9R (Ghisellini et al., 2016; Kirchherr et al., 2017). The R ladder is a tool for identifying different strategies within the circular economy. The strategies are ranked according to their degree of circularity, from the highest level of preventing raw material use (R0) to the lowest level of recovering energy or raw materials, often through incineration (R9) (Reike et al., 2018). The basis was laid with Reduce-Reuse-Recycle principles for waste management, but was later expanded as a sustainability concept to the R9 framework (Potting et al, 2017). This study uses the R9 definition. The strategies can be divided into three categories. The first category (R0–R2) focuses on smarter product use and production and includes 'Refuse', 'Rethink' and 'Reduce'. This category is mainly focused on preventing raw material use and waste at source. The second category (R3-R7) comprises Reuse, Repair, Refurbish, Remanufacture and Repurpose, and the primary goal here is to extend the life of products and components. These strategies prevent and delay materials from becoming waste by keeping products in use for longer. Finally, Recycle and Recover (R8 and R9) fall under the meaningful use of materials when a material becomes waste. This allows you to still extract raw materials or energy from the material and reduce primary raw material extraction.

2.1.2. The roles of municipalities and SMEs in the circular transition

Municipalities and SMEs play different roles in the transition to a circular economy. To achieve the national ambitions of 100% circularity by 2050 and a 50% reduction in primary abiotic raw materials by 2030, contributions will be required not only from the central government, but also from local authorities. 75% of Dutch authorities have adopted this objective, with 50% already incorporating it into their circular policy (Rood & Mul, 2022). While SMEs are not directly obligated to transition to a circular economy, legal pressure is increasing in specific sectors, making it difficult to avoid. To clarify the roles of municipalities and SMEs, these are discussed separately below.

Role of municipalities

Firstly, the municipality has a policy-making and regulatory role. In the field of spatial planning, municipalities have various regulatory and planning instruments at their disposal. They manage the physical living environment through the environmental plan adopted by the municipal council (Section 2.4 Omgevingswet). This gives municipalities the authority to reserve or designate space for circular activities. In doing so, municipalities may adopt the guidelines of the National Circular Economy Programme when drafting municipal coalition agreements, programme plans and programme budgets (Government of the Netherlands, 2023). Furthermore, many activities require an environmental permit, meaning both public and private activities must be approved by the municipality first (Section 5.1(1) Omgevingswet). These

statutory tasks establish municipalities as the regulatory organisations that can facilitate the transition to a circular economy.

Secondly, municipalities have an executive role. Local authorities have a duty of care for the collection of household waste (Section 10.21(1) Wet Milieubeheer). This makes them responsible for weekly collection and, where possible, circular processing of household waste. In most municipalities, waste collection is organised publicly, but municipalities remain primarily responsible even when it is outsourced (VNG, 2025b). They also act as supervisors and enforcers of waste separation compliance. They do this by offering the option to deliver waste streams separately, which contributes to recycling (Section 10.21(1) Wet Milieubeheer). By processing waste in a circular manner, municipalities can contribute to the bottom two steps of the R ladder (R8 and R9), but instead attempt to reuse it in a higher-quality way. Furthermore, as ‘launching customers’, municipalities can implement their own procurement policy by purchasing and tendering in a circular manner (PIANOo, n.d.a). This enables higher levels of the R ladder to be reached through smarter product use and more sustainable materials. The procurement volume in the Netherlands was estimated at 116.2 billion euros in 2024, of which municipalities procured more than 40 billion (Significant Synergy, 2024; VNG, 2025a). This presents an opportunity for municipalities to purchase or tender projects in a circular manner, for example in civil engineering or housing construction. Around 80% of municipalities with circular policies cite this as one of their most frequently undertaken activities (Rood & Mul, 2022).

Thirdly, municipalities often play a coordinating role. They bring together different levels of government, businesses, knowledge institutions, and citizens. They also organise knowledge sharing and awareness-raising activities among these parties in the field of the circular economy (VNG, 2024b). Comparative research in Amsterdam, Utrecht and Den Haag indicates that capacity building and knowledge exchange are among the most important municipal instruments (Campbell-Johnston et al., 2019). Furthermore, the government should connect, inform and coordinate through stakeholder engagement (OECD, 2020). This includes different levels of government (multi-level governance), the private sector and civil society. Locally, municipalities play a key role by providing information on the costs, benefits, challenges and opportunities of the circular economy to increase support, trust and acceptance (OECD, 2020). As many stakeholders have different objectives, it is important for municipalities to motivate them by creating the right incentives and preconditions for setting common goals.

Role of SMEs

Firstly, SMEs play an important role in innovating and developing circular business models. They are smaller and less bureaucratically organised than large companies. This agility enables them to experiment more quickly with circular solutions and promote their implementation (Pape et al., 2025). Furthermore, companies, including SMEs, are developing design and business model strategies for the transition to a circular economy. It appears that companies are using three complementary strategies, slowing, closing and narrowing to achieve circularity in their business models (Bocken et al., 2016). In this context, ‘slowing’ involves extending the product’s lifespan by adapting its design to make it more suitable for maintenance and repair. ‘Closing’ refers to recovering used raw materials to create new products. Finally ‘narrowing’, involves using raw materials efficiently to reduce the amount required per product.

Secondly, SMEs are important chain partners and make CE operational. SMEs account for more than 99% of companies in the Netherlands and play a major role in scaling up CE (CBS, 2024). SMEs possess crucial knowledge and expertise, and because they are regionally anchored, they

have a better understanding of their customers' needs and preferences. This increases the likelihood of innovative circular products and services that meet demand. SMEs also play a connecting role, bringing chain partners together and setting up new collaborations. One example of this is the 'breakthrough projects' of the Versnellingshuis, which form new circular chains with frontrunners (Versnellingshuis, n.d.).

2.1.3. Barriers in the transition to a circular economy

This section provides an overview of the main barriers to implementing the circular economy in the business sector and in government that have been identified in scientific literature and policy documents to date.

Firstly, cultural barriers and a lack of urgency have been identified within municipalities and SMEs. Local authorities and SMEs have different visions, priorities, and working cultures. Within companies, a linear mindset often prevails, focusing on short-term profit maximisation with limited attention given to cyclical principles (Campbell-Johnston et al., 2019). The CE has also not yet been widely embraced due to a lack of urgency and interest among consumers (Mont et al., 2017). This creates a hesitant corporate culture in which the CE often remains limited and subordinate to a company's financial interests (Kirchherr et al., 2018). Furthermore, there is a lack of urgency and shared vision of the circular economy within municipalities because the CE often does not correspond with other major challenges in the Netherlands, such as housing construction and the energy transition, which reduces resources and attention for CE (Hanemaaijer et al., 2025). Therefore, it seems that neither party has the CE high on their list of priorities, which is causing the transition to stall.

Another obstacle is the lack of effective cooperation and networking between municipalities and SMEs within the circular economy. In practice, the connection between governments and companies often appears inadequate. Municipalities tend to operate on a local and sectoral basis, while companies operate in broader chains that are spread across the globe (Newsholme et al., 2022). These different scales for implementing CE create obstacles. Furthermore, it seems that in both small businesses and municipalities, only one person or a small team is usually responsible for implementing CE (Dagilienė et al., 2021). This results in a fragmented approach, dependency, and limited effectiveness. Furthermore, municipalities vary greatly in their ambitions and capacities for CE, which limits knowledge sharing and makes it difficult to establish joint initiatives (Campbell-Johnston et al., 2019). SMEs also experience difficulties setting up cross-organisational cooperation (Guldmann & Huulgaard, 2020). Research shows that more than half of the SMEs surveyed identified a lack of support from their supply and demand networks as the biggest barrier to transitioning to a circular economy (Rizos et al., 2016).

A common bottleneck is the existence of conflicting and the lack of supportive legislation and regulations. Environmental damage is not adequately priced, and existing legislation mainly supports linear business models (Hanemaaijer et al., 2025). This creates an uneven playing field that favours linear models and hinders circular innovations. Furthermore, there is a lack of legislation and regulations that could encourage municipalities to implement these sometimes unpopular measures (SME, 2023). SMEs also highlight the absence of concrete, coherent and strict legislation and policy, which prevents them from integrating circular solutions into their operations (Rizos et al., 2016). In fact, many circular companies are actively calling for the intensification of circular policy (Beumer & Havekort, 2022).

The implementation of circular cycles is hindered by various financial and economic barriers at municipal and company levels. Municipalities often have limited budgets and relatively little capacity to purchase circularly or finance circular business initiatives themselves, simply because they lack the necessary resources (SME, 2023). However, businesses also struggle to finance CE business models (Campbell-Johnston et al., 2019). Research into barriers to circular business models among SMEs shows that more than half of those surveyed indicated that obtaining capital was problematic (Rizos et al., 2016). The high initial investment costs often associated with CE business models make it difficult to obtain start-up capital (Rizos et al., 2015). There are several reasons for this. Firstly, SMEs find it difficult to obtain bank financing for circular business cases because they do not yet have a proven track record. Banks base their risk models on historical data, and this is often lacking for this new form of business operation (Hanemaaijer et al., 2025). Circular companies are also considered riskier by banks due to the high initial investment costs and financial returns will be spread over a longer period (Van Ginkel et al., 2024). In addition to attracting capital, circular business models compete with linear ones (Van Ginkel et al., 2024). Demand and supply for circular products lag behind, and labour costs are high, making circular products expensive (Hanemaaijer et al., 2025; Beumer & Haverkort, 2022). Despite these barriers, limited financing for business models does not appear to be one of the most urgent barriers to CE implementation (Kirchherr et al., 2018).

A barrier to implementing the circular economy in municipalities and businesses is a lack of knowledge and understanding of the concept. For municipalities, this results in limited expertise in circular design principles and suitable technology applications, as well as a lack of knowledge about useful materials (Campbell-Johnston et al., 2019). In fact, the main bottlenecks for municipalities lie in the exploratory phase of the circular transition. The handling of critical raw materials is largely limited by knowledge barriers (Valkokari et al., 2025). Knowledge gaps are also widespread among SMEs. They experience a lack of technical knowledge when implementing the transition, as well as the high administrative burden that comes with it (Rizos et al., 2016). This may be because many SMEs do not fully understand the concept of the circular economy or recognise its benefits (Rizos et al., 2015). SMEs are also often too small to assign more than one employee to be responsible for the transition, and this person may lack the knowledge and skills required to develop this further (Hanemaaijer et al., 2025). However, technology itself does not appear to be seen as a barrier (Kirchherr et al., 2018). This study argues that technological limitations are rarely the biggest barrier to circular implementation.

2.2. Theoretical framework

A theoretical framework will be used to answer the central question. For this purpose, the Policy Arrangement Approach (PAA) will be combined with the Collaborative Governance Framework (GCF). The barriers described in Section 2.1.3 remain broad and abstract. To examine them empirically, a framework is needed to make them operationally measurable. It has therefore been decided to combine the PAA and the GCF for this purpose.

The PAA structures the context and content of the research via four dimensions: actors; resources and power; rules of the game; and discourses. The research has a broad scope, which entails complexity. The PAA is therefore useful in that it enables the complex CE transition to be structured clearly. It helps to reduce the complex subject to a comprehensible overview of the situation. This clarifies which stakeholders are involved, and how they use resources, rules and narratives when making choices about implementing the circular economy. The CGF focuses on the process conditions of a public-private partnership, considering how the starting conditions, institutional design, and facilitative leadership influence the collaborative process. This enables

us to identify where the public-private partnership between municipalities and SMEs is stalling or progressing. This is valuable because the research aims to identify bottlenecks in this interaction locally. Together, the PAA and the CGF provide a coherent framework for identifying bottlenecks and formulating potential solutions. It therefore offers contextual clarity via the PAA and, via CGF, provides the process mechanisms through which bottlenecks can be identified and explained. Furthermore, the dimensions and indicators of the two frameworks can easily be linked, and both frameworks allow for multidimensionality. The two approaches are explained below. This is followed by an explanation of the operationalisation and conceptual model.

2.2.1. Policy Arrangement Approach

The PAA was developed to understand stability and change in environmental policy, but it applies to other domains as well (Arts, Leroy & van Tatenhove, 2006). It comprises three interconnected concepts: institutionalisation, policy arrangements and political modernisation. This study primarily focuses on the policy arrangement and its four dimensions, as these offer a concrete way to map actor interaction. A *policy arrangement* is a temporary balance in the organisation and content of a policy area (Arts, Leroy & van Tatenhove, 2006).

The PAA defines a policy domain as being shaped by organisation and content: substantive elements such as principles, goals and measures are inseparable from organisational elements such as tasks, powers and procedures (Van Tatenhove, Arts & Leroy, 2000). Four dimensions are distinguished for analytical purposes: actors; resources and power; rules of the game; and discourses (Lieverink, 2006; Van Eerd, Wiering & Dieperink, 2014). Actors, resources and power belong to the organisational side, while discourses, and some rules, relate to the substantive aspect. These dimensions are first outlined in general terms and then applied to the research.

Actors and coalitions are central to any policy arrangement. These actors, whether individuals or organisations, are involved in policymaking and they often form policy coalitions, which are groups of actors who share a common vision or interpretation of policy discourses, and who sometimes also have access to similar resources (Arts & van Tatenhove, 2004). Different coalitions can exist within a single organization, because actors can interpret discourses differently. Coalitions are dynamic, relations range from flexible to tense, and external shock events can shift beliefs and restructure policy relationships (Wiering, Liefferink & Crabbé, 2017). Changes in the policy field can lead to new coalitions being formed by existing or new actors. This may resolve the bottlenecks in cooperation described in the literature above. The degree of influence that coalitions have depends on their position within the network, their relationships with other actors and the resources at their disposal (Van Eerd, Wiering & Dieperink, 2014). In this study, the two most important actors are municipalities and SMEs.

The *resources and power* dimension focuses on how power is distributed through access to and use of resources among actors or coalitions (Arts, Leroy & Van Tatenhove, 2006). Here, power refers to the ability to influence policy outcomes by using resources such as money, knowledge, and skills. Actors are often interdependent in this regard, as not all parties have the same resources or access to them (Van Eerd, Wiering & Dieperink, 2014). The availability of resources or the access to decision-making processes determines an actor's position of power within a policy arrangement (Van Tatenhove, Arts & Leroy, 2000). The literature review revealed that municipalities and SMEs lack the knowledge and financial capacity necessary for the implementation of the circular economy.

The *rules of the game* refer to the formal and informal procedures that determine how policies are made and implemented (Arts & van Tatenhove, 2004). They indicate which behaviours and

processes are considered legitimate within a policy field. Not only do rules structure the policy process, they also limit the scope of actors' actions. Formal rules are set out in legislation and regulations, such as licensing procedures and established standards. Policy rules and instruments enable actors to exercise their power and establish frameworks (Van Tatenhove, Arts & Leroy, 2000). Political preferences and contextual factors can also influence the regulatory framework (Van Eerd, Wiering & Dieperink, 2014). However, they also influence the discourse dimension. Ultimately, it is the rules that determine the frames within which actors operate and attempt to influence policy. The lack of clear legislation and regulations was identified as one of the bottlenecks in the current literature.

Discourses are interpretive frameworks used by actors to give meaning to policy issues. They consist of stories, ideas, and concepts that are used to explain social or physical phenomena (Veenman, Liefferink & Arts, 2009). For example, a policy discourse reflects the desired relationship between the government, the market and society, thereby influencing policy direction (Arts, Leroy & van Tatenhove, 2006). At a second level, they concern problem definitions and solutions. Different actors may interpret a policy problem differently. Depending on their interpretation, actors will choose different policy strategies and goals (Arts, Leroy & van Tatenhove, 2006). These strategic choices influence which policy options are considered legitimate and how the policy arrangement develops. For instance, the circular economy may be perceived as either an opportunity or an obstacle, leading to different policy strategies. This dimension closely coincides with the cultural bottleneck identified in the literature.

The PAA provides an analytical framework for understanding how circular economy policy emerges, by focusing on four interconnected dimensions. This approach enables the institutional context of key actors, municipalities and SMEs to be mapped out. It also helps to explain how power, rules and dominant discourses can hinder interaction between these actors, thereby exposing structural barriers. Figure 1 visually represents the interconnectedness of these dimensions.

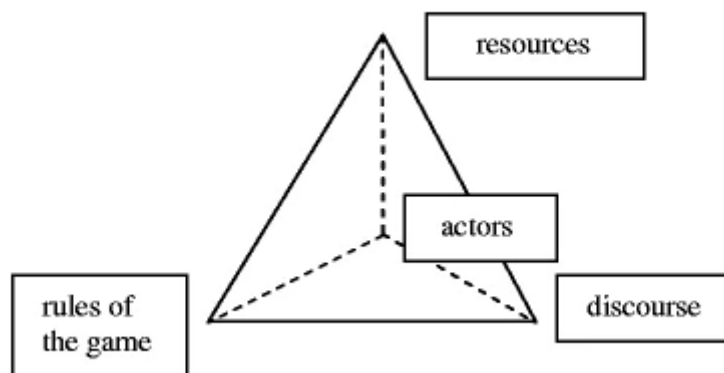


Figure 1: Tetrahedron four dimensions (Liefferink, 2006)

2.2.2. Collaborative Governance Framework

Collaborative governance is a form of governance in which public and private stakeholders come together in forums to make decisions based on consensus (Ansell & Gash, 2008). It can be defined as 'a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs

or assets' (Ansell & Gash, 2008, p. 544). This framework comprises four broad variables: starting conditions, institutional design, facilitative leadership and the collaborative process itself. The collaborative process is considered the core of the model, with the other three categories representing crucial contributions to or context for this process (Ansell & Gash, 2008). Furthermore, the goal of this process is to achieve shared outcomes. The CGF is therefore an analytical toolbox that helps to explain when and how collaboration is promising and where tension and power play a role in the process. It also helps to identify moments at which management can make adjustments. The four variables are explained in more detail below:

The *starting conditions* are the circumstances present at the beginning of the collaboration that can influence the collaboration between stakeholders (Ansell & Gash, 2008). These are divided into three variables: Firstly, there are power/resource imbalances. These are situations in which stakeholders lack the necessary resources, knowledge, organisational capacity or legitimacy to participate effectively in decision-making processes or to engage with other stakeholders on an equal footing. Secondly, there are incentives to participate. As participation in the process is voluntary, it is important to encourage stakeholders and demonstrate the value of their involvement. Thirdly, there is the history of antagonism and cooperation. This refers to the history of collaborations between stakeholders and the degree of conflict that occurred during these collaborations.

Facilitative leadership involves connecting interests and mediating conflicts to bring stakeholders together and guide them through challenging moments in the process (Ansell & Gash, 2008). Good leadership can therefore contribute to mutual trust and the establishment of clear rules (Vangen & Huxham, 2003). Furthermore, strong leadership can ensure that the interests of weaker stakeholders are represented, thereby reducing the imbalance of power between them and more powerful stakeholders (Ozawa, 1993).

The *institutional design* covers the rules and structure of the collaboration process. Firstly, clear ground rules ensure that the process is fair, equal and open for all stakeholders. Furthermore, transparent processes and clear decision-making procedures enable all those involved to develop a sense of ownership. This all leads to inclusive participation (Ansell & Gash, 2008; Murdock et al., 2005). Broad participation must be actively pursued, as exclusion is one of the main causes of failure.

At the core of the model is the *collaborative process* itself, which is divided into a cycle of five stages (Ansell & Gash, 2008). First, there is face-to-face dialogue. This involves direct dialogue between stakeholders to build mutual trust and a shared understanding. The second variable is trust-building. As well as negotiation, the collaborative process involves building trust between stakeholders (Murdock et al., 2005). If there were forms of antagonism (contradictions) at the outset, trust-building would play the most prominent role in the collaborative process. Thirdly, there is commitment to the process. This refers to the degree of involvement of the stakeholders. Involvement that is too weak, particularly at the highest levels, can lead to problems (Yaffee & Wondolleck, 2003). Fourthly is shared understanding, whereby stakeholders create a joint mission or goal to be achieved (Ansell & Gash, 2008). Finally, intermediate outcomes. These are the smaller outcomes achieved during the collaborative process that can lead to greater success. Once the five-step cycle has been completed, this should lead to shared outcomes. The framework is shown in Figure 2.

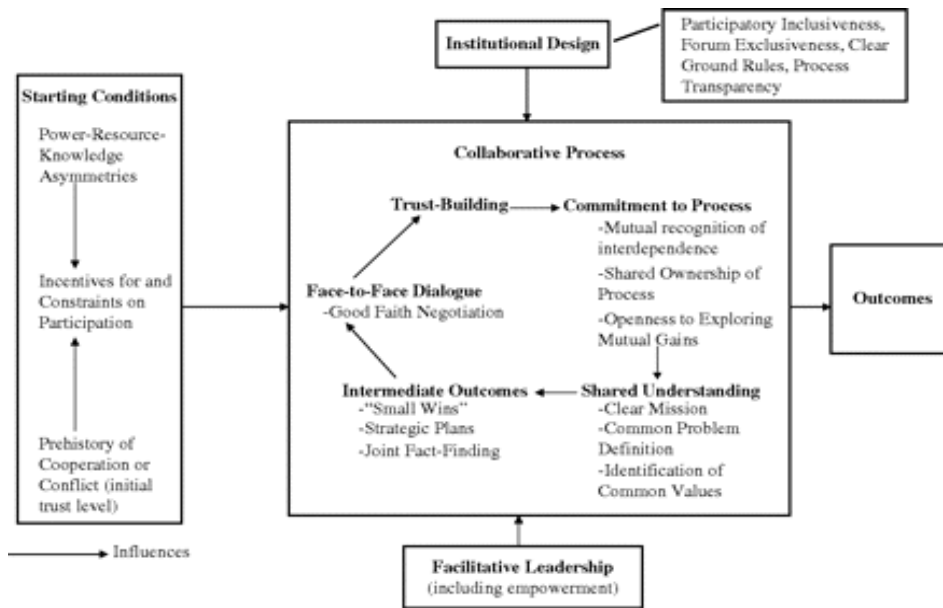


Figure 2: The Collaborative Governance Framework (Ansell & Gash, 2008)

2.3. Operationalisation and conceptual model

The PAA and CGF will serve as the basis for conducting the analysis and answering the research question. The PAA was developed to identify stability and changes within environmental policy; the circular economy is an example of this (Arts, Leroy & Van Tatenhove, 2006). Changes during implementation affect all PAA dimensions, enabling the systematic mapping of the structural context of barriers to the circular economy. Therefore, the PAA is useful for mapping the context of the circular transition in SMEs and municipalities. The CGF will also be useful for investigating the main question. As the main question explicitly focuses on the relationship between municipalities and SMEs, a public and private actor, a model that analyses this collaboration as a process is useful. Linking these two frameworks offers a complementary perspective on the research question. The PAA will help map institutional stability or changes, and the CGF will complement this by showing how the collaboration and interaction will proceed. This will make it easier to place the identified bottlenecks in context and then analyse them using the CGF.

To perform the analysis, the bottlenecks identified in Section 2.1.3 were linked to the dimensions of the PAA in Section 2.2.1. These interconnected dimensions provide the contextual basis for analysing these bottlenecks in the CGF. This was done as follows:

- Resources and power: financial and knowledge bottlenecks;
- Firstly, resources and power relate to starting conditions and facilitative leadership. Strong or unevenly distributed resources and positions of power can influence these conditions. Leadership can also mitigate or exploit these differences by deploying power and resources. Actors and coalitions: network and cooperation bottlenecks; Secondly, actors and coalitions are related to facilitative leadership and institutional design. The composition of the table and the coalitions formed depend on the leadership that activates the parties and establishes connections. The institutional design determines who makes decisions and provides coalitions with a clear playing field.
- Rules of the game: legal and regulatory bottlenecks;

- Thirdly, the rules of the game are linked to the starting conditions and the institutional design. Existing laws and regulations are laid down in the institutional design and provide the starting point within which frameworks can be worked. Discourses: culture and urgency bottlenecks. Finally, the discourse dimension is linked to the starting conditions and the collaborative process. The dominant discourses form the starting frame that influences factors such as the willingness to participate. The collaborative process is also based on mutual trust and a shared understanding derived from existing discourses about the circular economy.

Ultimately, the bottlenecks described in the CGF lead to outcomes. These are opportunities or solutions in the circular transition. Figure 3 provides a visual representation of the concept and the associated relationships between the PAA and GCF.

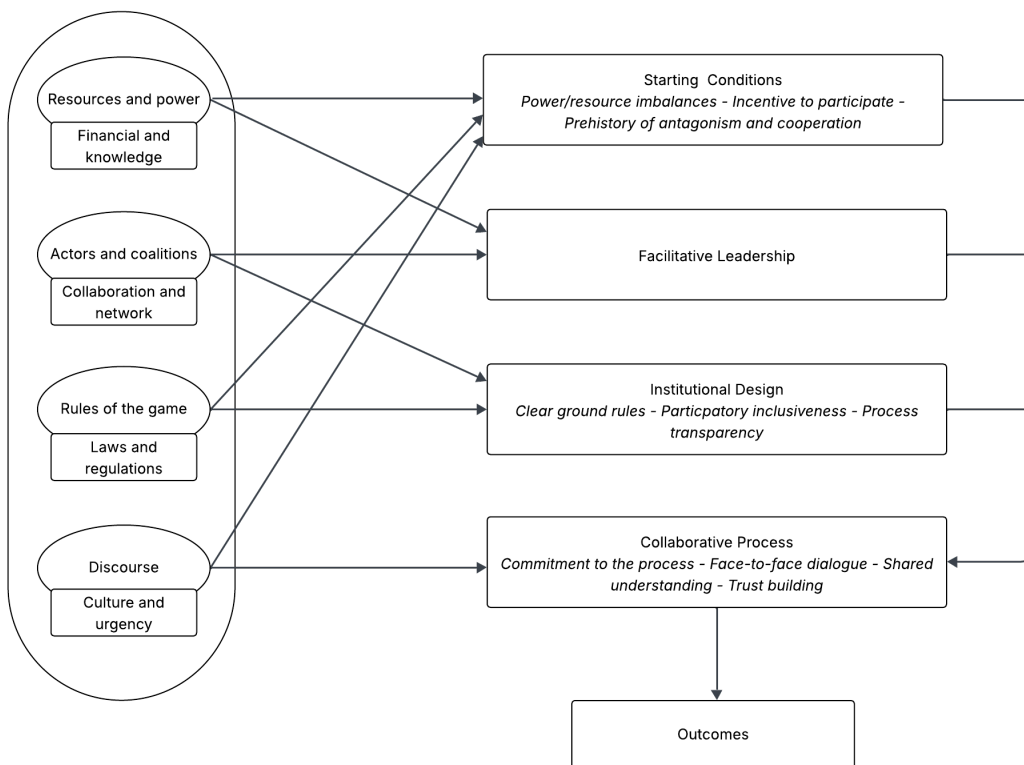


Figure 3: Conceptual Model

3. Method

3.1. Research strategy

This study of the bottlenecks in the implementation of the circular economy by municipalities and SMEs uses qualitative data for explanation and analysis. The unit of analysis is the municipal and SME interaction process through which bottlenecks arise. The study boundary covers the Dutch context at a local level with SMEs and municipalities as the key stakeholders. The study first describes the current situation, based on recent and past developments in the circular economy in the Netherlands among municipalities and SMEs. It aims to identify and explain the bottlenecks that arise in the interaction between these actors. The two key actors in the research, municipalities and SMEs, are also externally assessed by involving other stakeholders in the research. To address the research question, two qualitative research methods were employed:

- Semi-structured interviews
- Qualitative survey

A purposive sampling method with a maximum variation approach was used for data collection to capture a broad picture. This sampling strategy deliberately selects respondents who differ in role, scale, and perspective in order to cover a wide range of experiences and to identify both recurring patterns and context-specific differences (Palinkas et al., 2015). This meant that the examination included not only the most important stakeholders, but also other stakeholders involved in the CE who collaborate with or are connected to SMEs and/or municipalities.

The study applies triangulation to strengthen credibility internal consistency. This involves combining multiple perspectives so that findings from different sources can support, contradict or enrich each other, with the aim of forming a robust picture of municipal-SME interaction. (Denzin & Lincoln, 2024). This study used method triangulation, applying various qualitative methods such as interviews, qualitative survey and document analysis. Source triangulation was also employed by involving multiple stakeholders, including municipalities, SMEs and other relevant participants in the CE network, in order to verify and contextualise interpretations.

Furthermore, the research is deductively designed, which will later be expanded inductively. The design begins with two complementary frameworks, the PAA and CGF, but within these frameworks, space is left to add data-driven insights to the results and link them back to theory during the research. A theoretical generalisation is also intended, whereby the results are transferred to comparable contexts via theory. However, this will be challenging due to the scope of my research, and issues with validity and reliability may arise.

3.2. Research philosophy

This study uses a post-positivist research approach. Post-positivism is a scientific philosophy that builds on, but also deviates from, classical positivism. While positivism is based on objective, certain knowledge obtained through accurate observation, post-positivism argues that all knowledge is provisional and that reality can never be fully understood objectively (Creswell & Poth, 2018). According to this philosophy, reality exists, but human intellectual abilities only permit partial observation of it, meaning that it cannot be fully understood (Guba & Lincoln, 1994). Due to the different values and structures within public and private organisations, it may be difficult to gain a complete and objective view of how the transition to a

circular economy works and where the bottlenecks are. A post-positivist approach is therefore appropriate, as it allows for the consideration of different perspectives in CE. A critically realistic ontological perspective is appropriate here because reality can only be measured incompletely, as the context and processes within the circular economy can be diverse and provisional. The respondents and I, as researchers, also have our own values, cultures and beliefs, which may introduce a degree of bias. However, despite these differences, we strive for explanatory generalisation to accurately outline patterns of bottlenecks, using triangulation.

3.3. Research method & data collection

As outlined above, this study employed two qualitative research methods: semi-structured interviews and a qualitative surveys. These methods will be discussed below. Policy documents from the national government, provinces and municipalities were consulted for contextual background only and were not treated as primary data sources. Data collection was based on purposive sampling with a maximum variation approach. Respondents were deliberately selected from among various stakeholders involved in the circular economy and in collaboration between municipalities and SMEs. Through this broad stakeholder sample, maximum variation in perspectives was sought, based on role and influence, as well as scale (local, regional and national). This makes it possible to identify both shared bottlenecks and differences between actors. Furthermore, my internship network and the network of my supervisor were used in the research to facilitate contact with respondents who were sometimes difficult to reach. Data collection took place from early April to late July 2025. The survey and interviews were conducted in parallel.

Semi-structured interviews

The study will use semi-structured interviews. This method was chosen because it enables specific topics to be addressed while giving respondents the freedom to express their opinions, allowing the interview to progress naturally (Van Thiel, 2014). It is also useful because it enables the inclusion of respondents who are directly involved in implementing the circular economy.

The subject is highly context-dependent, and semi-structured interviews offer the flexibility required to understand that context. Furthermore, this research aims to identify the mechanisms and patterns behind bottlenecks in the CE, for which semi-structured interviews provide the necessary explanatory depth. Semi-structured interviews also allow for the exploration of differences in power relations, role distribution and mutual trust between actors. These factors are generally insufficiently visible in a survey, but they play an important role in the interaction between municipalities and SMEs. To provide guidance during data collection, a general interview guide was created and adapted to each respondent's context. The interview guide is structured as follows. First, the respondent's definition of the circular economy, its current situation and context are outlined. Then, questions were asked about the five bottlenecks identified in the literature, which were linked to a dimension of the PAA, and the extent to which these influence the organisation of the actor. Furthermore, there was an opportunity to elaborate on other bottlenecks that were not directly addressed in the interview guide.

In addition to my internship network, a snowball effect was used to recruit new respondents via interviewees when compiling the sample. This approach can may lead to selection bias, homogeneity of responses, and overrepresentation of well-connected individuals (Handcock & Gile, 2011). However, attempts have been made to reduce this by determining a research target group in advance and not always using these referrals. Furthermore, respondents were only

selected if they had a direct connection with one or both of the main actors, and therefore an external perspective on the bottlenecks in the connection between municipalities and SMEs. The target group was deliberately chosen to be broad in order to be able to externally verify the data provided by the most important actors. The interviews were conducted online in Dutch, lasted between 30 and 60 minutes, were recorded, and have been fully transcribed.

Fourteen interviews were conducted until information saturation was reached and sufficient empirical data had been collected for the analysis (Table 1). First, SMEs (three times) and municipalities (two times), as these are the main actors in the study. Other levels of government were also interviewed, including the province (two times) and the national government (two times). These two levels of government also have an important role in the transition to CE and can collaborate with SMEs and municipalities. Other involved actors included a private waste processor, a public waste processor, a consultancy firm and the Vereniging van Nederlandse Gemeenten (VNG). A conscious decision was made to include waste processors in my target group because they play an important role in the processing of materials and are responsible for waste processing through the municipalities. I also selected a consultancy firm that works in a public-private partnership in CE and therefore has insight into the issues that arise in the connection between municipalities and SMEs. The VNG was included too, as it has extensive knowledge of how municipalities handle CE.

Respondents were selected using a maximum-variance approach with purposive sampling, after which candidates were targeted for each dimension through existing contact networks and limited snowball recruitment. While this approach aims to achieve a broad range of perspectives and comparability between groups, it is not statistically representative. Potential sources of bias include self-selection and network bias due to referrals. These risks were mitigated by using multiple, independent starting points in the recruitment process and actively seeking to diversify the pool of candidates.

Table 1: Interview respondents

Name of interviewee	Respondent	Date	Location	Function
Brent Boerkamp	R1	18-04-2025	Online	Founder, CirQWood (SME)
Imke Okkerman	R2	26-05-2025	Online	Circular Economy Advisor, Government of the Netherlands
Bouwe Meijer	R3	26-05-2025	Online	Policy Officer, Ministry of Housing and Spatial Planning
Marieke van de Graaf	R4	28-05-2025	Online	Senior advisor spatial strategy and policy development, province of Zuid-Holland
Dick van Veelen	R5	02-06-2025	Online	General Manager, Meijs Ingenieurs (SME)
Pleun Mekkering	R6	04-06-2025	Online	Policy Advisor Circular Economy, municipality of Arnhem
Lisette van Heijningen	R7	05-06-2025	Online	Project Leader Circular Economy, municipality of Hoeksche Waard
Lucas Hulligie	R8	06-06-2025	Online	Co-founder, BOXO (SME)
Arend van de Beek	R9	12-06-2025	Online	Circularity Program Manager, Lagemaat B.V. (SME)
Ferdinand Talens	R10	12-06-2025	Online	Sustainability and Circular Economy Advisor, Flux Partners consulting
Coraline Noordzij	R11	12-06-2025	Online	Project Manager, GP Groot (private waste management and recycling)
Walter Brouwer	R12	18-06-2025	Online	CEO, Avri (public intermunicipal waste management and recycling)
Jessica Broeders	R13	20-06-2025	Online	Circular Economy Transitionmaker, province of Zuid-Holland
Wieke van der Zouwen	R14	30-06-2025	Online	Circular Economy Process Advisor, The association of Netherlands Municipalities (Vereniging Nederlandse Gemeente, VNG)

Qualitative survey

A qualitative survey was conducted to support the semi-structured interviews. The survey was designed to collect both qualitative and quantitative data. The purpose of the survey was to collect statistical data in addition to qualitative data. This was attempted using a Qualtrics survey (see Appendix 17). Respondents were asked to indicate on a Likert scale whether they ‘strongly disagreed’, ‘disagreed’, were ‘neutral’, ‘agreed’, or ‘strongly agreed’ with the statements. Each question also offered the option to provide an open explanation.

The survey was intended for the two main stakeholders, and respondents could indicate which organisation they belonged to. This made it possible to distinguish clearly between public (municipalities) and private (SMEs) stakeholders. The PPA's dimensions were used as the theoretical basis for designing the survey questions. These were supplemented with questions about the categories of the CGF. Current literature on the five identified bottlenecks also informed the drafting of the survey. Initially, a representative sample of around 100 respondents was sought, split roughly equally between 50 SMEs and 50 municipalities. This would enable

statistical analysis of the data and allow the empirical findings from the interviews to be statistically tested, thereby increasing credibility through method triangulation.

Due to the limited target group (policy officers, aldermen, deputies of governments, and persons in charge of the circular branch or general management of SMEs), the survey was only completed 21 times, despite the large number of personal emails requesting participation in the study. (sixteen municipalities, four SMEs, and one other) (Table 2). Consequently, only qualitative data was used for the survey and quantitative data was interpreted qualitatively, without statistical analysis. Nevertheless, the survey responses provided a better and broader picture of the bottlenecks in the circular economy because this survey was easier to complete, which meant that fewer involved respondents were included in my sample, resulting in a more complete sample.

Table 2: Survey respondents

Survey	Organisation	Name/location	Size of municipality
S1	Municipality	Utrecht	Large
S2	Multinational	Peikko Benelux	-
S3	SME	Hertog Recreatiebouw	-
S4	SME	VeluwsBospark	-
S5	Municipality	Apeldoorn	Large
S6	SME	Vakantiepark Ackersate	-
S7	SME	VeluwsBospark	-
S8	Municipality	Amersfoort	Large
S9	Municipality	Amersfoort	Large
S10	Municipality	Vijfheerenlanden	Medium
S11	Municipality	Tilburg	Large
S12	Municipality	Geldrop-Mierlo	Small
S13	Municipality	Harderwijk	Small
S14	Municipality	Zeist	Medium
S15	Municipality	Stichtse Vecht	Large
S16	Municipality	Oss	Medium
S17	Municipality	Veldhoven	Small
S18	Municipality	Veenendaal	Medium
S19	Municipality	Rheden	Small
S20	Municipality	Boxtel	Small
S21	Municipality	Utrecht	Large

3.4. Data analysis

The analysis was conducted using two theoretical frameworks, with the dimensions of the PAA and the categories from the CGF serving as the starting point. Specifically, a predefined codebook was created based on the PAA and CGF, and the material was reviewed in two analytical stages. Furthermore, a deductive coding method was initially employed, beginning with the two theoretical frameworks and then allowing for a more inductive approach to incorporate data-driven insights during the coding and analysis process (Saunders et al., 2019). First, the material was reviewed with PAA codes to outline the context in the results chapter, and then with CGF codes to identify the bottlenecks and process mechanisms. When context-

specific elements or bottlenecks arose that did not fit well within the existing main codes, new codes were created and linked to one of the two frameworks. A hybrid coding strategy was therefore used and fits within the research philosophy of post-positivism. Furthermore, all interviews and the qualitative survey were analysed using the Atlas.ti programme.

3.5. Validity and reliability of the research

Validity refers to the extent to which a study measures what it is intended to measure (Van Thiel, 2014). This can be divided into internal and external validity. Internal validity refers to the degree of confidence in the reliability of the tested causal relationship and its independence from other factors or variables. External validity refers to the generalisability of the study, or the applicability of the results to other contexts (Denzin & Lincoln, 2024). An attempt was made to improve validity by using triangulation. Firstly, methodological triangulation was employed by conducting a qualitative survey in addition to the semi-structured interviews. This allows the two methods to complement and verify each other, thereby increasing internal validity. Furthermore, source triangulation was employed by interviewing additional actors who could provide nuance and confirm or contradict the findings. This external review was conducted to test whether the findings also held up outside of the core actors. A code book based on the theory was also drawn up in advance, providing a certain structure and consistency in the analysis and making it possible to systematically identify the patterns and mechanisms behind the bottlenecks. Reliability is enhanced by standardising the research methodology, consistently following the semi-structured interview guide and creating an accurate survey, ensuring consistency and repeatability. The interview guide was prepared in advance and kept as consistent as possible. The survey was also checked and tested in advance by the supervisor and several interns from the organisation. This was done to ensure the survey was clear, free of errors and an appropriate length.

4. Analysis and results

This chapter analyses the empirical findings that are based on semi-structured interviews and a qualitative survey. Two theoretical frameworks, the PAA and the CGF, which are described in sections 2.2.1 and 2.2.2, are used for the analytical classification. First, the policy arrangement is analysed using the four dimensions of the PAA: actors and coalitions, resources and power, rules of the game and discourses. This analysis outlines the context systematically and thus forms the starting point for further interpretation of the research results. The PAA analysis is then deepened by applying the CGF to clarify the bottlenecks in the circular economy. The four elements of the GCF are starting conditions, institutional design, facilitative leadership, and collaborative processes. Relating the CGF elements to the PAA's dimensions creates an integrated approach that reveals the structural and process-related aspects of collaboration between municipalities and SMEs. This clarifies the bottlenecks in the connection between SMEs and municipalities.

4.1. The Policy Arrangement

4.1.1. Actors and coalitions

This first section maps the study's actors. First, the two most important actors, municipalities and SMEs, are discussed. Next, the other actors influencing the circular economy in the Netherlands that are also involved in this study are presented: the national government, the provinces, the European Union, waste processors, knowledge institutions, environmental services, Vereniging van Nederlandse Gemeenten (VNG), banks and consultancies. The various partnerships (coalitions) between these actors, as well as their respective roles in the circular economy, are described. While citizens also play a role in the circular economy, they are not considered in this study.

Municipalities

Firstly, municipalities can influence the physical living environment through environmental plans and permits, thereby creating space for circular activities (Section 2.4. and 5.1.(1) Omgevingswet). Municipalities are also responsible for waste collection and encourage circular processing (Section 10.21(1) Omgevingswet). Furthermore, 90% of municipalities have incorporated circularity into their own policies, or are in the process of doing, and 75% have adopted the national government's goal of achieving a 100% circular economy by 2050 (RHDHV, 2022). Consequently, municipalities have set out their ambitions locally and committed to implementing them. However, many local authorities, including municipalities, appear to struggle to develop targeted circular programmes involving specific projects (RHDHV, 2022).

Secondly, municipalities play a key role in putting circularity into practice. As major purchasers and tendering authorities, they can set a good example by carrying out circular public tendering. They can also organise their own internal operations in a circular manner, map the local circular economy using data and monitoring, and support initiatives and pilots. Many municipalities recognise that, as major local purchasers, they can set an example in a large proportion of procurement and tendering projects. Respondent R7 from the municipality of Hoeksche Waard recognises this too, stating: *'We can set the new standard for what you demand from the market.'* The survey (S9) also includes the following statement from a municipality: *'As a local government, we can encourage and facilitate to ensure that entrepreneurs are well informed, and we can also regulate as a purchaser.'*

Thirdly, as coordinating authorities, municipalities focus on organising cooperation, knowledge sharing and stakeholder involvement between other authorities, companies, knowledge institutions and citizens. This strengthens support and coordination in the circular transition. Many municipalities are trying to take on this facilitating and, or coordinating role in the circular economy. They also often want to set a good example and encourage other parties to do the same. Respondent R7, for example, indicates that they want to lead by example as a municipality: *'We are actually the driving force here, the driving force.'* It is also a lot of *'mission work'*, says respondent R6 from the municipality of Arnhem, to ensure that everyone really does it. Respondent R11 from the waste processing company GP Groot confirms that some municipalities are taking on a good facilitating role. This mainly involves setting up partnerships between various parties in the chain to facilitate knowledge exchange. Respondent R10 considers this important too, but feels it is sometimes inadequately reflected. They would like to see municipalities take on a more facilitating and driving role to bring the right market parties together and make knowledge easily available within municipalities.

There are significant differences between municipalities in terms of population size, capacity and effort. Consequently, some municipalities are able to make faster progress due to having more time, personnel, and financial resources at their disposal. Some municipalities even have an alderman responsible for the circular economy (R13). However, many municipalities indicate that they do not yet feel the urgency, nor do they have the resources, to be at the forefront of the transition. For example, several municipalities indicated in the survey (S14, S16) that they are *'not a pioneer but a good follower'* and that *'it is not yet considered very important, not even by the municipal council'*. It is clear that municipalities vary greatly, ranging from frontrunners with dedicated teams to those where circularity plays only a minor role, if any.

As an overarching organisation, the VNG supports municipalities in the circular economy. For example, R14 shows that the VNG ensures municipalities are well represented at a national level, and vice versa. The VNG also brings municipalities together to share knowledge and collaborate on circularity initiatives. A collaboration has already been established at administrative level, with 320 policy officers from a variety of different governments participating (R14).

SMEs

SMEs play a vital role in the circular economy. In the Netherlands more than 99 per cent of businesses are SMEs, making them the backbone of the economy (CBS, 2024). Due to their size and position in the supply chain, SMEs have unique opportunities to implement the principles of the circular economy and thus accelerate its scaling up. SMEs are familiar with the local context, tend to be less bureaucratic than large companies and can therefore respond more quickly to changing circumstances (Pape et al., 2025). Furthermore, SMEs possess the knowledge and skills to develop innovative solutions and initiate new collaborations. However, this potential has hardly been exploited to date. While the number of circular companies grew by 7.9% between 2020 and 2022, their share of the Dutch economy has declined from 4.0% in 2016 to 3.6% in 2022 (Herrewijnen & Jutte, 2022).

SMEs are characterised by their adoption of innovative solutions to implement the circular economy into practice. The interviews revealed that several companies have adopted fully or partially circular business models. Motivation plays a significant role in this. While many entrepreneurs are intrinsically driven to contribute to sustainability, they also emphasise that circularity must be economically viable. R7 from the municipality of Hoeksche Waard sums this up: *'They are entrepreneurs. They need to see that it will benefit them. If that is not clear, then it*

remains a difficult subject. And that is logical. SMEs therefore view circularity differently to the government. While circular ambitions have mainly been imposed by the government so far, companies operate primarily at the intersection of social ambition and economic feasibility. Their intrinsic motivation makes them want to tackle this social issue, but ultimately it is often the financial component that determines whether initiatives actually get off the ground.

SMEs also play an important role as chain partners and connectors in the transition to a circular economy. The circular economy can only succeed if companies, governments and other organisations collaborate to establish new supply chains. SMEs are often the organisations that process materials, develop innovative applications and enter into partnerships with other actors. The interviews revealed that factors such as relationship management and the supply chain are important when setting up a collaborative chain (R5, R6, R7). Respondent R7 from the municipality of Hoeksche Waard emphasises that collaboration is going well for them: *‘But that is also due to strong relationship management.’* It is therefore important that relationships are good. When collaboration goes well, *‘SME deals’* and other collaborations arise, in which multiple parties join forces and financing becomes available (R13). R5, the general manager of Meijs Ingenieurs, also mentioned that the national government has asked them to conduct research and share relevant knowledge. SMEs therefore play an important role in knowledge development and sharing.

Province, the Dutch central government and Europe

In the Netherlands, the province plays a key role in linking municipalities and the national government in the circular economy. They translate national frameworks and objectives into a regional context, but have their own responsibility in this regard (Government of the Netherlands, 2023). They achieve this by drafting policies, programmes and memoranda relevant to their own province. According to R10 of consultancy firm Flux Partners, they also have a driving and leading role in bringing municipalities together as a higher authority and, for example, imposing additional requirements. R13 of the Province of South Holland emphasises that the province has a large network that can be mobilised to support municipalities or companies facing challenges. The province also has instruments such as subsidies and licensing at its disposal, and is responsible for monitoring and evaluating progress in municipalities. The interviews revealed several collaborations in which the province plays a leading role (R4, R13). These were mainly viewed positively and considered valuable.

The national government plays a key role in the circular economy in the Netherlands. It is responsible for circular economy transition policies and is accountable to the House of Representatives (Government of the Netherlands, 2023). The national government can support this transition by establishing legal and regulatory frameworks and offering financial incentives, such as subsidies. Circular policy is embedded in the National Circular Economy Programme 2023–2030 (Government of the Netherlands, 2023). This programme outlines all the key value chains, measures and policy instruments for implementing the transition. The circular economy theme is the responsibility of the Ministry of Infrastructure and Water Management. Sub-programmes have been set up under this theme, for example for housing, and these are divided among other ministries (R2 & R3). Therefore, the government has a leading role in the transition to a circular economy in the Netherlands.

Thirdly, the European Union. The EU’s Circular Economy Action Plan was introduced in 2015 and became part of the European Green Deal in 2019 (European Commission, 2015; European Commission, 2019). Consequently, the implementation of CE has become one of the Green Deal’s core pillars. In this way, the EU determines the direction in which states must move, with

European directives having to be transposed into national legislation. The EU also ensures harmonisation within the European market and monitors its member states' progress in the field of the circular economy. In the Dutch local context, the EU therefore plays a key role in establishing frameworks for the circular economy. This involves legislation and regulations relating to product design, extending product life, waste processing and other circular economy issues. The aim is to achieve a circular and climate-neutral Europe by 2050.

Other Actors

Waste processors play a key role in the circular economy by recovering raw materials from waste streams, thereby forming a vital link between waste collection and new production processes. They also operate within legal frameworks that influence the circular economy and reuse, such as the Landelijk Afvalbeheerplan (LAP3) and, soon, the Circulair Materialenplan (CMP). While municipalities are responsible for waste processing, they can outsource this task. This means that in the Netherlands, there are both public and private waste processors. Environmental services (omgevingsdienst) formally contribute through their licensing, supervisory, and enforcement tasks (Government of the Netherlands, 2024). Knowledge institutions play a supporting role in developing knowledge about the circular economy. Other actors can use them to gather knowledge, or they can be actively involved in sharing knowledge themselves. Banks play a key role in financing circular projects. Consultancy firms act as connectors, guiding actors in the practical implementation of circularity.

Coalitions

In recent years, many progressive municipalities and provinces have formed coalitions to strengthen collaboration across the supply chain. This is often done to share knowledge and connect different parts of the chain in order to initiate the circular transition. One important policy coalition that almost all stakeholders mention is circular deals. These are cooperation agreements between governments, companies and other organisations, aimed at accelerating the transition to a circular economy. In these deals, the parties voluntarily agree to collaborate to try out and expand circular initiatives, without any immediate legislation or regulation. Some of the national and local deals that were mentioned in the interviews were: Circulaire Deal Secundaire Bouwmaterialen, Regio Deal Zuid-Hollandse Delta and Green Deal Gelderse poort (R5, R7 and R6). Circular deals can help to identify obstacles to the implementation of policies in the circular economy. Other partnerships have also emerged. According to R13 of the Province of South Holland, *'there were so many initiatives that they were competing with each other'*. This led to the creation of the Groene Hart Circulair platform, which connects and facilitates circular initiatives. R10 from consultancy firm Flux Partners helped draw up a circular covenant, which greatly helped bring municipalities together. Furthermore, knowledge networks for information exchange are the policy instrument most commonly used by local authorities (RHDHV, 2022). One example is the permanent working group established by the VNG, consisting of around fifty policy officers and aldermen, which meets once every two months (R14).

4.1.2. Resources and power

The second section of the results will focus on the resources and power within the policy framework. This will cover both the availability of resources and the possibility of mobilising them. Based on the theory, three categories emerged: money, knowledge and skills.

Money

Financial resources determine who can lead the way and who has to slow down during the transition. SMEs can contribute by investing in circular business models and innovations. Municipalities can stimulate this process by issuing subsidies or by spending a large proportion of their procurement budget on the circular economy. The size of the municipality and political preferences play a role in this. For example, R13 states that larger municipalities are pioneering. R6 from Arnhem points out that funding is limited, with the government providing little money and the burden often falling on municipalities, who are not in a strong financial position. R14 from the VNG also acknowledges the pressure on municipal budgets and refers to the '*ravine year*'. Another respondent to the survey emphasises the upcoming ravine year of 2026, when municipal funds will decline (S5). R14 and R6 even argue that these tight budgets will spell the end for the circular economy, with municipalities, especially small ones, stopping their participation.

The costs of the linear and circular economies differ fundamentally. The linear model dominates our society, meaning that many linear products are cheaper than circular products due to economies of scale. R3 argues that competing with existing high-volume markets makes it difficult to achieve the same prices. R3 sees that only a few biobased products, such as rock wool, can compete in terms of price. R9 of Lagemaat B.V. notes that higher transition costs are now the norm, but that circular projects are ultimately cheaper. Costs must be factored in, including dismantling, certification and storage. However, circular products save on landfill costs (R5), for example. Furthermore, external costs are not included in the linear economy's pricing. Waste processing costs are passed on to the taxpayer, but this is avoided in the circular economy. This is referred to in the interviews as: '*the polluter does not pay.*' (R14). The circular economy also has a different business model in which residual value plays a greater role. While the linear economy often writes off goods at zero value, the circular economy applies a return price when reselling or reusing them.

Knowledge

Knowledge, particularly the absence of it, plays a significant role in the transition to a circular economy. This knowledge may relate to legislation and regulations, technological development, or data and monitoring. Knowledge institutions, consultancies and leading parties can help to distribute and develop knowledge in the circular economy. Consequently, frontrunners in the circular economy are also encouraged to share their expertise. Meijs Ingenieurs (R5), a company specialising in circular demolition, is asked by governments to explore topics on which they have a great deal of knowledge. 'If we have knowledge of a phenomenon, we are increasingly being asked to conduct real research on the topic.' This suggests that knowledge is often fragmented, with only a few parties possessing it. There are also major differences in capacity and personnel, meaning that municipalities and companies do not have the opportunity to acquire this knowledge. Therefore, sharing knowledge and bringing municipalities and businesses together in networks is important, and this is one of the things that the VNG is committed to (R14). This makes it easier for municipalities and businesses to connect with each other and access external knowledge within their networks. Knowledge is therefore a key requirement for scaling up the circular economy.

Skills

In order to implement the circular economy, certain skills are required within your organisation. The capacity and expertise of your staff can play a significant part in achieving this. In municipalities, political preferences and the associated financial scope are important factors in

determining how many staff will be assigned to circularity initiatives. Some municipalities have limited budgets and full-time equivalents (FTEs) for circularity, meaning they have to prioritise (R7, S13). SMEs also have to make difficult staffing choices.

4.1.3. Rules of the game

This third section discusses the rules of the game. These determine the scope within which actors can operate in order to set the circular economy in motion. The section is divided into two paragraphs: legislation and regulations, and policy rules and instruments.

Laws and regulations

The circular economy is a broad theme that affects all levels and sectors of society. Consequently, a large number of laws and regulations influence its implementation. The most important of these that affect the local context are described briefly below. These include both European and Dutch legislation.

The European Green Deal is an overarching policy plan for achieving climate neutrality in the EU by 2050 (European Commission, 2019). The Green Deal incorporates the core theme of the circular economy, outlined in the Circular Economy Action Plan (European Commission, 2020). This legislative agenda aims to make products more circular. Other laws and regulations are also included in the action plan. Important laws in the local context include the EU Taxonomy, the Single-Use Plastics Directive (SUP), the Energy Efficiency Directive (EED) and the Corporate Sustainability Reporting Directive (CSRD). The EU Taxonomy is a classification system that determines which economic activities are environmentally sustainable and allows them to be labelled as ‘environmentally sustainable investments’ (Circulaw, n.d.). The SUP addresses the environmental impact of single-use plastics by banning certain products, changing product designs and setting targets for the separate collection of bottles and minimum recycled content. Examples of this include the bans on straws and plastic cotton buds. The EED prioritises energy savings, setting a binding EU target to reduce final energy consumption by 11.7% by 2030 compared to 2020 levels. Finally, there is the CSRD. Large listed companies must report on sustainability issues. Initially set to apply to listed SMEs in the near future, this has been postponed until the 2028 financial year (European Commission, 2025).

In the Dutch context, the Omgevingswet and the Wet Milieubeheer provide the legal basis for organising the living environment and waste processing (Section 2.4 Omgevingswet; Section 10.4(1) Wet Milieubeheer). This year, the LAP3 will be replaced by the Circular Materials Plan (CMP), which will provide a binding framework for waste and materials management and influence the granting of permits, among other things. Apart from the current LAP3, there are hardly any guidelines for municipalities that directly require them to take action with regard to the circular economy (VNG, 2024b). For instance, the Aanbestedingswet for public procurements does not include any legally binding provisions, only offering scope to incorporate CE via award criteria (PIANOo, n.d.b). Furthermore, an indirect mandatory factor has been included in the MilieuPrestatie Gebouwen (Environmental Performance of Buildings) in the building regulations. For instance, making more circular choices can result in a better MPG score (RVO, 2025). Another recently passed law is the UPV. Under the principle of Uitgebreide Producentenverantwoordelijkheid, producers are legally responsible for the waste phase of their products. This shifts costs and incentives towards producers, encouraging the design of products for reuse and recycling (Ministry of Infrastructure and Water Management, n.d.). Consequently, there is still little legal enforcement by the central government, meaning that municipalities and SMEs can freely interpret the national government’s ambitions.

Empirical evidence from interviews and a survey shows that many respondents consider these to be outdated, contradictory and obstructive. The survey reveals that restrictive laws and regulations are among the three most frequently cited obstacles. People were also generally critical in the interviews. Several respondents indicated that some laws and regulations are outdated and no longer fit with the vision for the future of the circular economy (R11 & R10). R10 and R6 also expressed concern that the tightening of existing laws, such as the BBL (Decree on Buildings and the Living Environment) and the CSRD, is being postponed. This leads to delays rather than acceleration, even though the national government plays a major role in setting these frameworks. One respondent said, *‘There are no laws or regulations at the municipal level. They all come from higher authorities’* (R12). Depending on their political preferences, municipalities are taking matters into their own hands and imposing additional requirements (R10).

Policy rules and policy instruments

The National Circular Economy Programme 2023-2030 aims to transition to a fully circular economy by 2050 (Government of the Netherlands, 2023). It brings together policies to encourage the adoption of circular practices in the Netherlands, focusing on the following sectors: biomass and food; plastics; construction; manufacturing; and consumer goods. However, while the circular economy is a guiding ambition, it is not legally binding, which complicates implementation. As there are currently no national policy rules in this area, local stakeholders are creating their own circular deals to formalise circular ambitions in section 4.1.1. Provinces and municipalities are also developing their own circular policy documents, outlining the government's ambitions at a local level.

Policy instruments are the concrete tools available to governments to translate ambitions for the circular economy into actual behaviour, and these instruments can take various forms. For example, subsidies and tariffs can be introduced to create market incentives. In the interviews, the granting of subsidies for so-called *‘breakthrough projects’* and pilots for SMEs was often mentioned as an instrument. *‘We do a lot in terms of breakthrough subsidies... We are going to try it out on a small scale until it becomes the new standard’* says R13. Sometimes these subsidies are linked to agreed policy rules, but they can also operate independently. The municipality of Arnhem, for instance, provides a subsidy of up to €10,000 to support circular initiatives (R6). Other policy instruments that emerged in the interviews include carbon certificates, assessment tools that indicate the feasibility of circular projects, and facilitating knowledge sharing through, for example, lunch lectures (R3, R6, R2). Furthermore, circular procurement and tendering are among the most obvious and powerful policy instruments with which the government can kick-start the circular economy. R7 from the municipality of Hoeksche Waard also stated this: *‘As a municipality, we are of course also a client. That makes us such an important player... Yes, we can set the new standard.’* Every year, municipalities purchase approximately £40 billion worth of goods and services (VNG, 2025a). Many municipalities have included this policy instrument in their sustainability programmes and budgets, aiming to set a positive example.

Furthermore, the circular economy requires space. The R4 spatial advisor for the province of South Holland also recognises this: *‘Everyone is now aware that the transition to a circular economy will require more space and a change in how space is used.’* R7 also states that, during the transition to a circular economy, companies will require twice as much space. This will lead to competition between municipalities in terms of how space is used. R4 therefore proposes collaborating with the three authorities to ensure everything fits properly into the available

space. They are doing this by collaborating at a regional level, beyond municipal boundaries, as they believe this will enable them to use space effectively (R4). Furthermore, municipalities play an important role as they are responsible for zoning and managing much of the land. However, space is limited in many places in the Netherlands, and R4 says that people need to be aware that ‘not everything is possible’ in terms of space.

4.1.4. Discourses

This section looks at dominant narratives, prejudices and assumptions around circular transition. It discusses the two main discourses in the circular economy: the circular economy as an obstacle, and the circular economy as an opportunity. It also addresses the missing discourse, where narratives and frames about the circular economy are lacking.

The circular economy as an obstacle

In this discourse, CE is positioned as being more expensive, complex and risky. The first argument often cited is that this new economy will result in higher-priced products. R13 and R9 also frequently encounter the perception that CE is more expensive in practice. Organisations such as SMEs and local authorities sometimes struggle to change their routines and habits. R5 from Meijs Ingenieurs observed that some civil servants find it challenging to try new ways of working and do not want to give companies an unfair advantage.

Furthermore, people may be used to working in a certain way and not yet recognise the need to change. There is also often a lack of knowledge about the subject, which, according to R5, leads to a lot of ‘disbelief’. Furthermore, the dominant mindset in the world is linear and fits into the capitalist system. Many processes were once conceived with throwaway culture in mind (R9). R11 also recognises the strong lobbying to maintain the linear economy, for example in relation to virgin plastics. This is reinforced by the economic view that ‘more is better’, as noted by the Government Circular Economy Advisor (R2). This respondent also believes that, to start with the circular economy, you must first change your mindset. However, companies often lack a sense of urgency on this issue, quickly shifting their focus to another equally important goal.

Politics was another frequently discussed topic in the survey, but particularly in the interviews. Many respondents criticised the current political climate surrounding sustainability and circularity. A general trend emerged from the interviews: this cabinet lacks intrinsic motivation, so obtaining funding and time for the circular economy requires luck in having a more progressive municipality. This has created a complicated situation in which Europe is taking the lead and playing a progressive role, while the national government is holding things back. At municipal and provincial levels, progress depends heavily on political choices, meaning that actors are not working together effectively. This lack of an overall vision was also reflected in the survey, in which ‘limited political motivation’ was mentioned on average, and ‘lack of vision and pace’ was identified as one of the three most important bottlenecks.

The circular economy as an opportunity

A growing number of people see the circular economy as an opportunity. The EU presents the CE as a driver for sustainable growth and jobs and as an essential factor for climate neutrality (European Commission, 2020). In the NPCE, it is also presented as an opportunity to reduce dependence on raw materials in the current climate of geopolitical unrest (Government of the Netherlands, 2023). In this context, the circular economy is not just a ‘nice to have’ but a ‘need to have’. The CE was regularly mentioned as an opportunity in interviews and surveys.

Respondents pointed out that it does not have to be more expensive, citing various examples of

circularity being more cost-effective (R9). Furthermore, some politicians also view the CE as an opportunity. At the regional and local levels, respondents sometimes express positivity regarding support from politicians. For instance, R13 and R7 indicated that their respective deputy and alderman are strong advocates of the transition.

No circular economy discourse

Furthermore, the data shows that there is often still no discourse on the circular economy. Research from 2022 showed that 31% of Dutch people did not know what the circular economy was, while only 37% were familiar with the concept and 31% had some knowledge of it (Wolf et al., 2022). It should be noted that the data is now three years old, but this phenomenon was also reflected in the interviews. For example, when I presented the main question of the research in the interview, R13 gave a striking but insightful answer: *‘That question almost assumes that everyone here wants to be involved or something. And then maybe runs into things. I think we may still be in the preliminary stage, where most companies and municipalities think: yes, we have to do something about it at some point, we have to look into it. But they are not really working on it at all.’* So, some people are simply not concerned with the circular economy, or do not know anything about it. This can possibly be explained by the phase in which the transition currently finds itself, which has a hindering effect on progress.

4.2. The Collaborative governance framework

This chapter analyses the results using the Collaborative Governance Framework (CGF). The main bottlenecks in collaboration between municipalities and SMEs in the circular economy are addressed, and these are divided into the four categories of the framework: starting conditions, institutional design, facilitative leadership, and collaborative processes. Where appropriate, connections between categories are made due to their multidimensionality.

4.2.1. Starting conditions

Incentive to participate

This section identifies two factors that influence participation in the circular transition. These relate to how urgent people perceive the transition to be and the difficulties involved in getting started.

Urgency bottleneck

Firstly, for many stakeholders, the circular economy is simply not urgent enough for them to participate. While a small group is pioneering the field, the rest are not really concerned with it. R14 of the VNG also sees this reflected in the SME sector: *‘SMEs are not concerned with municipal policy unless they encounter an acute problem.’* However, even within municipalities, *‘it is often difficult to find your place’* within the theme of circularity, according to R10. The survey also shows several cases of a lack of urgency, where competing themes are considered more important (S9, S15). People see circularity as: *‘a problem that we see somewhere, but don’t feel today... It’s not a top priority’* (R6). R6 means that a scarcity of raw materials does not yet lead to adverse effects requiring action, meaning the transition is slow and the urgency remains low. This is also reflected in other categories, such as commitment to the process, where actors procrastinate due to a lack of urgency.

Start-up and scaling up Bottleneck

Many municipalities and SMEs are still in the early stages of transition. They are exploring the topic and looking for ways to take their first steps. Local authorities often start by documenting their ambitions and policies, which form the basis for subsequent actions (S14, S16, S17). However, it is precisely this next step that proves challenging. SMEs are also looking for ways to take their first steps, sometimes asking municipalities or other levels of government for support (R2). Scaling up also remains complicated for SMEs and municipalities. R3 recognises this in the limited impact of *'nice little pilot projects... but that's really small impact compared to the objective.'* R4 and R6 are also self-critical, recognising that progress often stalls at the smaller project level and that scaling up is difficult. R9 from the Lagemaat B.V. demolition company also identifies an opportunity for scaling up in terms of impact. The respondent argues that, when demolishing a building in a circular manner, you have to tackle large flows of materials such as concrete, steel and glass. These materials contain a lot of CO₂ and make up the largest part of buildings, so tackling them would have the greatest impact.

Power and resource imbalances

This section discusses the bottlenecks concerning differences and imbalances in power relations and resources during the transition to a circular economy. The following bottlenecks were identified: business case; Sales and security of supply; knowledge; personnel; space; and power balance.

Business case bottleneck

The circular economy is unfeasible without a viable revenue model and competitive linear markets. This creates a power imbalance and limits the incentive for SMEs and municipalities to participate. According to respondents, the business case for the CE is unprofitable and price competition is challenging (R3). R10 says different financial models are needed, but banks remain hesitant. Furthermore, R14 states that some of these new investment models have payback periods of 10 or 15 years and that the most SMEs are not attracted to that kind of investment model. Nevertheless, R9 from Lagemaat B.V. says that with a circular revenue model, it is not necessary to be *'more expensive than new'*. They emphasise that this revenue model *'will only get better in the coming years'* due to raw material scarcity and CO₂ pricing. *'That means my revenue model could increase fivefold by 2027.'* Furthermore, R11 suggests that circular content could become more common if business models are fundamentally changed. However, this would require a brief period of government intervention for some companies. Nevertheless, for most SMEs, circular solutions remain expensive, with the costs often getting passed on to customers. According to one of the respondents from the survey with a small SME (S3), the customer either does not have this budget or is unwilling to allocate it for this purpose.

Sales and security of supply bottleneck

In a circular economy, sales and supply chain security are important due to new business models. If products can be reused, there must be a market for them, otherwise it is not profitable to dismantle materials. Entrepreneurs who depend on circular materials also require a secure supply chain to ensure their business model does not stagnate. This requires a smoothly running supply chain with a market for the products. R5 from Meijis Ingenieurs argues that circular demolition can only be successful if the materials can be disposed of afterwards, otherwise, the chain comes to a standstill. R10 from consultancy firm Flux Partners notes that this often goes wrong, with demand for circular materials lagging behind. R11 and R7 also acknowledge that establishing the supply chain can be challenging. Although there are sufficient raw materials that can be reused to a high standard, it can sometimes be difficult to find a new

owner for these goods. Consequently, entrepreneurs may decide not to participate, as it can be unprofitable and risky, thereby limiting the potential for scaling up.

Knowledge bottleneck

The lack of knowledge about the circular economy is a major bottleneck. The survey shows that a general lack of knowledge about the circular economy is one of the three main bottlenecks. There are significant variations in knowledge levels within municipalities and SMEs. Consultant R10 also states that knowledge of the circular economy is often lacking, particularly in small municipalities where only one person is responsible for circular issues. Where knowledge does exist, it is often limited to the basics, and specialist expertise is sought externally (S11). A lack of knowledge about legislation and regulations also frequently occurs, which makes the role of governments and SMEs unclear and can lead to a lack of leadership. For example, R13 observed that entrepreneurs struggle to obtain permits due to a lack of knowledge. R2 also notes that not all small SMEs are affiliated with branch and umbrella associations, despite these being precisely the parties that inform them about laws and regulations. Consequently, they may be completely unaware and continue to operate within an outdated legal framework, missing out on opportunities. This can also cause them to miss out on subsidy opportunities.

Furthermore, translating the circular economy into projects requires specific, context-related knowledge, which may be technical in nature. To reuse materials in a high-quality manner, complex material knowledge is required, as these materials must meet certification requirements again, for example. However, the survey shows that a lack of technological knowledge is the least frequently cited bottleneck. This may be because organisations hire this specialised knowledge externally.

Personnel bottleneck

Implementing the circular economy depends on personnel capacity and expertise. R14 (VNG) emphasises the importance of adequate staffing levels for municipal circularity, but budgets for this are limited. For example, R13 states that small municipalities are finding it difficult to appoint even one officer, with responsibilities being shared across areas such as the energy transition and other duties. Consequently, municipalities often have to prioritise what they consider important due to limited FTE resources, such as Arnhem opting out of the NPCE regional collaboration (R6, R7, S13). Furthermore, at least seven of the municipalities surveyed indicated that limited personnel capacity was causing a major bottleneck. SMEs also face a shortage of practical workers and have difficulty finding suitable personnel (R1). Moreover, SMEs rarely employ a sustainability manager solely responsible for promoting sustainability or circularity. However, this is too time-consuming and complex to do as a side hustle, leading to, for example, missing out on subsidies because they often have to provide a large amount of information, which requires considerable capacity (R2). As long as both municipalities and SMEs struggle with limited capacity and expertise, the mobilising power of the circular economy will remain small and it will be difficult to achieve upscaling.

Space bottleneck

Furthermore, the PAA has previously highlighted that the circular economy involves issues of space, requiring more of it and its being used differently (R4, R7). To achieve this, we will need to use land efficiently, as consultancy firm Flux Partners noted in R10. Land is expensive, so these costs must be recouped if it is used for storage. Space must also be found to set up a hub, for

instance, and this is very limited (R13). Other transitions, such as the energy transition, also require space, meaning they compete with each other (R10).

Power balance bottleneck

This bottleneck is multidimensional and closely related to clear ground rules. In the Netherlands, the dominant economic model is linear, meaning that laws and regulations are designed with it in mind. This ultimately leads to an imbalance of power between the linear and circular economies. Circular activities such as dismantling and repairing are labour-intensive. This makes the business case less favourable, since labour is heavily taxed while primary raw materials are not. R13 also recognises this phenomenon: *'If you don't break down the linear system and remove the incentives for it, then you're going to be competing against something you simply can't compete with.'* Other respondents emphasise this too, and would like to see taxes on labour reduced and taxes on raw materials increased. R14 states: *'If you start applying standards and impose levies on the use of virgin plastic, for example, then you create a more equal playing field.'* True pricing is therefore needed for primary materials, which is lacking in current legislation and regulations. Consequently, costs are not passed on to customers, meaning that *'the polluter does not pay'* (R14).

Prehistory of antagonism and cooperation

This section discusses bottlenecks related to previous collaborations between the parties involved, and whether these collaborations ran smoothly. There are two types of bottleneck: routines and prejudice.

Routines bottleneck

A recurring theme, particularly in public procurement, was that previous collaborations had established productive habits and routines, making people reluctant to deviate from them. This conservatism was evident in the construction industry, as noted by R9 Lagemaat B.V.: *'Construction regulations have become extremely routine.'* This is often a matter of habit and learned behaviour. R6 compares CE with the theme of inclusion *because 'people who have always done things a certain way now have to do things slightly differently.'* This is often a sticking point because it requires a cultural change among purchasers. R5 sees this reflected in many policymakers and purchasers at municipalities who are familiar with *'SMART'*. *'They say it has to be completely SMART. That's how they've always been taught and then they always refer to procurement law.'* The respondent believes that this approach to procurement should be viewed critically, and therefore favours a more open approach with broader rules and frameworks.

Prejudice bottleneck

It also emerged that municipalities and SMEs sometimes have prejudices against each other, which can hinder cooperation. According to R7 from the municipality of Hoeksche Waard, this divide is evident in the way people interact. She says that, as a municipality, you are *'always 1-0 down'* as soon as you walk into an entrepreneur's office. R7 explains that entrepreneurs often assume that civil servants are responsible for everything. For instance, if a company wants to expand but the municipality does not allow it, the municipality is blamed. Therefore, when visiting to discuss potential collaborations on CE, a certain negative prejudice has already been established. Conversely, municipalities also find it challenging to collaborate with businesses due to conflicts of interest. This issue is discussed further in the category of trust building.

4.2.2. Institutional design

Clear ground rules

This section discusses the bottlenecks relating to laws, regulations, roles and objectives, and considers the fairness and clarity of these in the transition to a circular economy. The bottlenecks that emerged are: legislation and regulation bottleneck, responsibility bottleneck, policy inconsistency bottleneck.

Legislation and regulation bottleneck

Legislation and regulations play an important role in the transition to a circular economy. However, many respondents consider them to be outdated and obstructive, as they were designed for a linear economy. It was often context-specific whether rules and frameworks needed to be tightened (R10) or whether municipalities or SMEs should be given more leeway to act independently (R5). It was also indicated that changes to these rules are primarily the responsibility of the national government, but that progress in this is slow.

Responsibility bottleneck

Section 4.1.3 describes the responsibilities of municipalities and SMEs in the circular transition. However, municipalities are finding it difficult to define their role in this process. The survey and interviews revealed that they are searching for their primary responsibility and the role they should assume at certain times. In the survey, respondent S5 stated that it is often difficult to specify *‘what municipalities are primarily responsible for.’* Respondent R6 from the municipality of Arnhem stated that they had been trying to determine the extent of their role, given that other parties are also involved in the circular economy. Respondent R7 from the municipality of Hoeksche Waard stated that it is *‘really a quest to find out what exactly you can ask of entrepreneurs.’* R13, for example, says that there is discussion about whether requirements beyond the law can be imposed and whether they are legally valid. Therefore, municipalities are still searching for the extent of their role, the associated rules and how other actors, such as SMEs, relate to these.

Policy inconsistency bottleneck

Conflicting policy objectives regularly result in conflicting policies and delays to the circular transition. R3 from the Ministry of Housing and Spatial Planning states: *‘Of course, we have many more issues to deal with... This is often why the regulations are so flexible. Everyone has to be able to participate.’* This is reflected in various issues that reduce the incentive to participate by pushing the urgency of the transition into second place. For example, space is scarce, strict nitrogen regulations apply, and there is a housing shortage in the Netherlands. Some rules have also been designed differently due to other priorities and objectives. R11, from waste processor GP Groot, provides an example of this, explaining that waste legislation is primarily designed to protect human health and the environment. Circular ambitions will therefore have to be fulfilled within these frameworks. According to R10 from consultancy firm Flux Partners, ambitions are also regularly stacked. R10 saw this, for example, in the MilieuPrestatie Gebouwen (MPG), where ambitious sustainability goals were combined, resulting in conflicting and therefore unrealistic demands. It is therefore important to prioritise policy objectives. Furthermore, several stakeholders criticised the policy set out in the coalition agreement. Firstly, R10 argued that the ambitions set out in the NPCE were not reflected in the coalition agreement. Secondly, the new STOER directive was introduced with the intention of removing unnecessary legislation and regulations. According to one respondent, many circular ambitions were considered redundant

as a result of this directive and were scrapped. This led to protests and frustration among many market parties who were ready to get started.

Participatory inclusiveness

Integrity and governance structures bottleneck

One key issue that emerged from the interviews and survey is that circularity is not yet sufficiently embedded within municipal organisations. While many municipalities support circular economy policies, implementation is often confined to one department or area of responsibility, rather than being adopted across the entire organisation. For example, in the survey, respondent S17 emphasises that circular working *'requires you to be fully familiar with it across all policy areas within the municipality. It requires an integrated approach to thinking and acting. That is currently insufficient.'* This quote illustrates that circularity is frequently treated as an isolated theme rather than a principle that permeates other policy areas. R6 from the municipality of Arnhem also outlines this problem. According to R6, responsibility often remains *'with the sustainability advisor'*, whereas the intention should be for the circular economy to *'become an integral part of the municipality'*. This demonstrates that achieving circularity within the municipal organisation often depends on individuals or teams. This creates the risk that, once key individuals leave or political priorities shift, the theme will not have a lasting impact, making it vulnerable. R8 of SME BOXO acknowledges this reliance on individuals, stating that it depends on *'which way the wind blows'* and who is in charge within the municipalities. Furthermore, scaling up will only be possible if everyone participates. R1 from the circular wood company CirQ Wood believes that implementing a circular business model from the outset generates less internal resistance among employees than having to implement circular processes alongside linear ones. However, this is challenging, as R2 points out: *'All employees in your company will also have to change their behaviour.'*

Gap between policy and practice bottleneck

The gap between policy and practice is a significant multidimensional bottleneck in the circular transition. Although policy departments produce optimistic policy documents, implementation often stalls due to caution, routines and a lack of knowledge. As R5 van Meijs Ingenieurs stated: *'I meet many good, knowledgeable, well-meaning people in government. But there's the policy-making part of a government organisation and the implementation part. And that's where it goes wrong... that bridge between the two is often where things go wrong.'* The respondent sees how, after years of preparation, policy gets stuck with a purchaser who concludes: *'They can say that, but it's not allowed.'* R12 from waste processor Avri also sees differences between policy and practice because, lower down the chain, there is a lack of knowledge and routines dominate, resulting in rigid changes.

Process transparency

This section discusses transparency and compliance with the rules in the bottleneck: enforcement.

Enforcement bottleneck

An important aspect of legislation is ensuring that these laws are enforced and complied with. However, the interviews revealed that checks are not always carried out. R1 from the circular wood company CirQ Wood also experiences opportunistic competition due to poor enforcement: *'You see that less idealistic demolition companies know that enforcement is lacking. They simply undercut the prices.'* Furthermore, R11 from waste processor GP Groot

notes that enforcement is sometimes insufficient. This is partly because frameworks are interpreted in different ways, causing some actors to use them in their own way, such as in ‘handreiking voortgezet gebruik op milieustraten’. However, environmental services sometimes have limited capacity and the organisation is decentralised, which makes enforcement difficult.

4.2.3. Facilitative leadership

Facilitating leadership plays a role in connecting actors and in taking the lead in solving problems. This can contribute to trust and inclusive participation in the process. The bottlenecks that emerged in this category were the vision bottleneck, the fragmentation bottleneck, and the frontrunners bottleneck.

Vision Bottleneck

The interviews and survey reveal a recurring theme of a lack of vision and direction. Respondents suggest that the government in particular is failing to provide sufficient direction, while SMEs need clear, standardised policy. This became apparent when new laws were suddenly scrapped, preventing SMEs from achieving their goals and leading to mistrust and delays. R14 states that *‘In general, it is of course true that companies want to have some kind of long-term vision.’* However, this is not easy in the current political climate in the Netherlands, so municipalities are taking control themselves (R10). R14 also states that there is a lack of clear governance structures and agreements on responsibilities: *‘The government must take more control to get things done.’* While the government is in a key position with the tools to provide direction and enable upscaling, it struggles in practice to create clear governance and effective coordination. Consequently, SMEs are searching for answers, as described by one respondent: *‘The lack of a common thread.’* The government could also set a good example. However, the managing director of the waste processing company Avri (R12) points out that this does not always happen in practice and states that the market will not follow if municipalities do not set a good example. The respondent observes that circular procurement involving materials from waste processing is rarely used for reuse. This is striking, given that Avri is formally owned by the eight municipalities in this region, making it easy to procure from the waste processor.

Fragmentation bottleneck

Respondents point to fragmentation in the approach to the circular economy. This hinders cooperation and makes scaling up difficult. R14 of VNG noted that support services of CE provided by organisations other than municipalities are often fragmented. *‘So you have all kinds of consultancies, networks and financiers, and they don’t all work well together yet.’* This fragmentation means that support is not always coordinated. Consequently, the large group of ‘followers’, the companies that often need this support the most, are frequently not reached. Fragmentation also plays a role in financing. R6 noted that more money is being made available for the circular economy transition than people realise, but it is fragmented across many funds, which reduces accessibility. This can potentially lead to parallel projects, missed opportunities for collaboration, and everyone reinventing the wheel. Without coordination and pooling of resources and networks, support will remain fragmented, which will directly impact the pace and scale of the circular transition.

Frontrunners bottleneck

In the CE transition the focus is often strong on so-called frontrunners. These are municipalities and companies that are already motivated to work on circularity. Respondent R14 states the

following: *'There is a small group of people who are very enthusiastic about this ... but even within the frontrunner groups, not the entire organisation is on board yet.'* This emphasises how difficult it is to get everyone on board with the transition, even among pioneering companies and policy officers. Despite this group is growing, it remains small in relation to the total number of policy officers and companies (R14). It also appears that municipalities sometimes only manage to reach the frontrunners, either because these companies show interest themselves or because municipalities consciously choose to work with motivated companies. Therefore, it seems very difficult to reach normal companies in addition to the small, enthusiastic group. This leads to large differences in the pace of these organisations. Once a more inclusive target group has been established, municipalities also look for ways to retain it, as frontrunners are more likely to feel that they have a lot to offer and little to gain (R7). There are also significant differences among SMEs. A small group of companies are taking the lead in scaling up CE and thus playing an important role. R9 of Lagemaat B.V. emphasises this, stating: *'We have started to tell our story more.'* They are encouraging other companies to join them in the transition. Having relevant knowledge plays an important role in this process: *'We are already being paid to provide support, advice and research.'* (R9) However, there are significant differences: *'Many companies, especially smaller SMEs, are not yet involved in CE.'* (S11) The circular transition is therefore currently being driven mainly by a small group of frontrunners who are using their knowledge and vision to encourage others to follow them. This bottleneck is closely related to the category of participatory inclusiveness, as attempts are being made to achieve an inclusive process, but only a small group is involved.

4.2.4. Collaborative process

Commitment to the process

This section discusses the bottlenecks that arise from the level of commitment of stakeholders to the circular transition. The three main bottlenecks are policy anchoring, perseverance and time.

Policy anchoring bottleneck

A policy framework is essential for implementing measures and instruments that can stimulate the circular economy. However, some government and semi-government bodies still lack policy, and some parties, such as housing associations, would like to participate but are unable or not allowed to do so because it is not established in their policy. R5 recognises that problems arise in circular procurement and tendering when parties want to participate but are unable to do so because it is not part of their policy. When this is anchored in organisational policy, for example through a Circular Deal, then the coverage is there to purchase circularly and *'all doors are open'*. (R5) By including circular procurement in its policy, an organisation demonstrates its commitment to the process and can translate good intentions into actions.

Perseverance bottleneck

One of the issues that arose was the perseverance of municipalities and SMEs. Despite policy documents often express large-scale ambitions, R12 from waste processor Avri sometimes notices a lack of perseverance. The respondent states that, while many municipalities indicate in their policy documents that they want to become circular and set an example in this regard, little has actually been achieved in practice. The respondent also mentions that Avri is formally part of eight municipalities in its region, which would make it easy for them to tender internally,

but this is not happening. This may be due to a lack of urgency and intrinsic willingness to embark on the circular transition.

Time bottleneck

The time factor plays a major role in the circular economy. As it involves a significant systemic change, and circularity must be integrated into all levels of society, it requires considerable time. As R6 of the municipality of Arnhem aptly put it: *'It is a long-term process.'* There are significant differences in pace between the frontrunners and non-frontrunners. This was also one of the three most frequently cited bottlenecks in the survey. According to R11, licensing procedures can also be lengthy and intensive in some cases, which can cause delays, according to the respondent. Furthermore, many municipalities and SMEs are waiting for policies or regulations from the central government, such as the national government and the EU. But then the national government said, *'We're not going to introduce stricter measures because we're waiting for Europe. But that's going to take years. So that means you're not going to reach your goal quickly either'* (R10). R10 and R6 also see hopeful improvements of existing laws being postponed, as described in 4.1.3. This procrastination leads not only to delays, but also to mistrust and risk among other stakeholders, making circular working seem riskier and affecting the incentive to participate. Circularity is therefore an entirely different way of working that requires research, funding and time. Often, this time has to be shared with another sustainability theme.

Face-to-face dialogue

Language bottleneck

The interviews revealed that there is often a language gap between the government and entrepreneurs. R13 from the Province of South Holland observed that municipalities usually have a person responsible for circularity and an account manager to contact businesses. Consequently, the sustainability team does not interact frequently with the business community. R13 therefore states: *'I have noticed that those involved in circularity do not have much contact with companies. That is a bit of a stumbling block.'* This leads to a lack of contact and mutual understanding regarding what the transition to a circular economy will entail. However, it is not only a lack of face-to-face dialogue that hinders progress; the language used in such dialogue also plays an important role. R6 recognises this and therefore employs someone in business parks *'who speaks the language of SMEs much better'*. The respondent noted that: *'My language and the language of an SME are just completely different worlds. I really work in a completely different reality to an SME.'* R14 also recognises this, saying that if you want to address the current cabinet or entrepreneurs, you have to use different framing. *'You have to talk about security of supply, new revenue models and investments.'* This approach is more effective with these organisations, meaning you can gain their support more quickly. Language is also important between companies. R9 from Lagemaat B.V. says that they regularly discuss the successful circular revenue models they use at events. The respondent also outlines a future perspective in which these models will only become more profitable. R14 also clearly sees the importance of entrepreneurs convincing other entrepreneurs: *'We know that entrepreneurs are best convinced by other entrepreneurs.'*

Shared understanding

Perception bottleneck

Another obstacle is that people often have misconceptions about the circular economy, particularly with regard to costs and feasibility, which are often due to a lack of knowledge. This

is also reflected in the discourse: CE as an obstacle. A common misconception is that the circular economy is more expensive (R13 and R5). R5 states: *'There is still a lot of disbelief because people are simply unfamiliar with it. And unfamiliarity breeds contempt.'* R9 also states that circular working can be profitable once the transition has been made. This is why organisations are trying to identify the origins of these misconceptions and inform people.

Trust building

Cultural bottleneck

One of the most common bottlenecks is the existing culture that hinders the development of a circular economy. This is reflected in both literature and empirical evidence, and is closely related to discourse surrounding CE as an obstacle. This dominant linear discourse makes the new economy seem challenging. Consequently, both municipalities and companies experience difficulties in obtaining financing from banks. R8 from BOXO states that banks still find it risky, and R4 also acknowledges that they sometimes struggle to obtain financing: *'Then the landowner says, 'You can do it, but first you have to prove that you have financing.'* The financier says, *'Yes, but you really must have that permit already,'* creating a kind of loop.'

Furthermore, R11 from waste processor GP Groot suggests that municipalities sometimes struggle to launch circular tenders: *'Sometimes it's a lack of knowledge; sometimes it's daring to do things differently, it varies.'* Municipalities often have an existing, effective tendering process, and this now has to be organised differently, which can be challenging. Municipalities also find it challenging because the prevailing culture among civil servants is: *'The municipality does not invest.'* (R6) This is often because they do not see this as part of their municipal duties, and there is a risk of a conflict of interest. R5 from Meijs Ingenieurs also reflected this: *'Let's say that governments did not want to talk to market parties very much because, oh dear, that's scary. Suppose I come into contact with commercial parties; then I might give them an advantage, and that's not allowed.'* R8 from SME BOXO also sees this recurring theme, whereby they are dismissed as scary entrepreneurs who just want to make money.

5. Conclusion

This study examined the relationship between municipalities and SMEs in the Dutch circular transition. The aim was to identify, structure and explain the bottlenecks in this relationship. The analysis used the PAA to frame the context and content theoretically, capturing the dimensions of actors, resources/power, rules and discourses. The CGF was used to frame the public-private collaboration process theoretically, dividing it into starting conditions, institutional design, facilitating leadership and collaborative process. The empirical basis consisted of 14 semi-structured interviews and a qualitative survey. First, the two sub-questions were answered and then a conclusion to the main question was formulated.

RS1: What bottlenecks do municipalities experience when working with companies to implement circular initiatives?

The results revealed significant differences in terms of resources, capacities and political preferences between municipalities, which determine the intensity of the transition within them. Furthermore, municipalities play three different roles in the circular transition: regulatory, executive and coordinating. Within these roles, three predominant bottlenecks emerged that are causing the circular transition to stall within municipalities.

Firstly, municipalities are struggling to find their role and responsibilities within the legal framework they have been given. It is proving difficult to determine exactly what they are primarily responsible for, or which policy rules and instruments are appropriate. Due to limited human and financial resources, the level of knowledge regarding regulation is still developing within municipalities. Consequently, they are searching for the boundaries within which they are permitted to operate. However, this can lead to reluctance because, while they want to provide direction, municipalities hesitate for fear of legal vulnerability and conflicts of interest when collaborating with market parties. Consequently, despite the relatively broad policy anchoring of CE within municipalities, the transition is stalling as the next step towards upscaling is not being sufficiently taken.

The second most dominant bottleneck for municipalities was policy inconsistency. Municipalities operate within a set of competing objectives, such as a lack of space, nitrogen challenges and housing pressure, which conflict with circular goals. Furthermore, many laws and policies were drawn up in the context of a linear living environment, where other pillars were more dominant. Furthermore, the national political landscape has shifted, with announced improvement measures either not being implemented or being reversed. This undermines the continuity of municipal circular policy and weakens the incentive for SMEs to participate in circular initiatives if there is a chance that policy will be reversed.

Thirdly, there is a lack of vision and direction. Leadership is lacking, particularly at the national level, leaving municipalities to decide how to approach implementation. Consequently, municipalities are filling this gap in various ways. This leads to differences between departments within municipalities and between municipalities themselves, while companies are calling for consistency, clear governance structures and long-term predictability. Good leadership also involves setting a good example. However, it has become clear that municipalities are struggling to achieve this, for example, in their own procurement policy.

RS2: What bottlenecks do SMEs experience when working with municipalities to implement circular initiatives?

SMEs account for the vast majority of companies in the Netherlands and play a key role in innovating and developing the circular economy. SMEs often have specialised product knowledge and the ability to implement the circular economy. However, three dominant bottlenecks have emerged among SMEs in this regard.

Firstly, SMEs are finding it difficult to develop circular business cases. Uncertainties in circular product sales mean that new innovations and investments by SMEs remain risky. As long as sales remain unpredictable, SMEs will struggle to grow and make their circular business models profitable. Furthermore, the supply of secondary raw materials is inconsistent in terms of quality and quantity, which can cause production processes to stall. Additionally, new business models have different payback periods, and prices are structured differently. This also affects the feasibility of new investments due to banks' reluctance to lend. Government intervention may be necessary to make the business case viable. Consequently, scaling up from pilots to larger projects remains challenging for SMEs.

The second bottleneck is the limited and stagnant cooperation within the supply chain. Circular working requires coordination with different organisations on all kinds of issues. However, establishing these chains is difficult, and mainly frontrunners among companies and municipalities participate, which limits the scale.

Thirdly, the dominance of the linear economy continues to cause an imbalance of power between linear and circular SMEs. The institutional design in the Netherlands has so far been linear, meaning legislation and regulations are disadvantageous to circular products. This is due to high labour taxes and low taxes on primary raw materials. Certain quality and safety requirements can also restrict circular products, reducing equality in the market. Furthermore, SMEs are competing with large, experienced linear industries that benefit from economies of scale and significant lobbying power to maintain the linear economy.

'What are the bottlenecks in the relationship between municipalities and SMEs in the transition to a circular economy?'

The study reveals five key findings regarding the bottlenecks in the relationship between municipalities and SMEs. Firstly, the CE is fragmented. The results showed that support networks, subsidies and governance structures operate in isolation from each other and are not well aligned. Consequently, similar initiatives are established in isolation, resulting in limited knowledge and reach among a small leading group. This creates uncertainty for both municipalities and SMEs about where to obtain knowledge and subsidies. This fragmentation means that the circular economy remains stuck in small initiatives and fails to scale up.

This is linked to the second bottleneck: a lack of direction and leadership. Previously, municipalities struggled to define their role and responsibilities, which created mistrust and uncertainty among SMEs. As direction and ambition remain unstable and ambiguous, companies face higher risks, so they keep their investments small and are hesitant to participate in the circular economy. Municipalities are trying to fill the gap left by the national government by taking control themselves. However, if the common thread between administrative layers diverges, responsibilities can be shifted between them.

A third bottleneck is the gap between policy and practice. While policy departments produce optimistic policy documents, these often become stuck in the implementation phase due to issues such as a language barrier or lack of knowledge. This is because circularity is not sufficiently embedded within municipalities and SMEs. Often, the CE theme remains with the

sustainability team, meaning that commitment to the process from the rest of the organisation remains limited. There is also a clear language gap between local authorities and SMEs. While local authorities focus on circular objectives, SMEs are primarily concerned with security of supply, new business models and returns. Furthermore, this message must be conveyed by the right people, as SMEs are more likely to be convinced by another SME than by a civil servant. However, if this does not happen, collaborations will fail due to a lack of alignment.

The fourth identified bottleneck was exclusive participation in CE. While a small group of pioneers are enthusiastically engaged in CE, the larger group of non-frontrunners only participate to a limited extent. These differences are also evident within organisations, meaning that momentum can be lost when key figures drop out. It also became apparent that, when including this broad group of non-frontrunners, it was necessary to strike a balance to ensure the continued involvement of all participants in the process. Frontrunners are a step ahead, so they share a lot of knowledge and experience but gain little in return.

The results show that culture is the final bottleneck in collaboration between SMEs and municipalities. The dominant discourse, fixed routines and prejudices all play an important role in this. The following discourse often prevails: CE is still seen as an obstacle within the organisation. Work is also carried out in a routine manner, focusing on predictability, legal sustainability, and avoiding incidents such as conflicts of interest. Consequently, municipalities in particular found it challenging to adopt a completely different approach to circular working. Previous collaborations could also leave prejudices that could affect future collaborations. In conclusion, this research identified five key bottlenecks in the relationship between municipalities and SMEs in the Netherlands: fragmentation, lack of control and leadership, the gap between policy and practice, exclusive participation and culture.

6. Discussion

6.1. Positioning results and research in light of theory

This study identified the bottlenecks that arise in the interaction between municipalities and SMEs when implementing the circular economy. Five key bottlenecks were identified based on the analysis: fragmentation; lack of control and leadership; a gap between policy and practice; a lack of inclusive cooperation; and cultural issues.

Firstly, the fragmentation of networks and policy instruments results in limited coalition building and poor mobilisation and distribution of resources among local authorities and SMEs. In the CGF, this leads to power and resource imbalances and to exclusive participation in CE. This is because the fragmentation of resources and knowledge means that municipalities and SMEs are unsure how to participate. Without clear institutional design and better ground rules, fragmentation will persist and scaling up will remain limited. Additionally, a lack of direction and leadership emerged as a recurring bottleneck. The role and responsibilities of municipalities became unclear due to a lack of guidance from the central government. This has resulted in poor facilitative leadership in the CGF and limited commitment to the collaborative process. Stronger leadership could boost confidence among municipalities and SMEs, thereby increasing their participation in the circular transition and improving the collaborative process.

A third pattern relates to the gap between policy and practice. Within the PAA, this can be linked to differences in discourse. While policy makers see the circular economy as an opportunity, those implementing it often remain stuck in the discourse of CE as an obstacle. This bottleneck can be explained by unequal starting positions, which are rooted in prejudices and routines from previous collaborations between municipalities and SMEs. A shared understanding was also found to be limited due to a language gap. The results showed that good relationship management through face-to-face dialogue can bridge this gap. Furthermore, the exclusive participation of frontrunners is characteristic of limited and exclusive coalitions within the circular transitions. In the CGF, this results in an institutional design that does not sufficiently guarantee inclusivity. Consequently, the collaborative process only involves limited actors, which may increase the differences between frontrunners and non-frontrunners. Finally, cultural differences in discourse on CE create barriers. These determine whether municipalities or SMEs participate. The dominance of the linear economy is deeply rooted in our institutional design, making it challenging to effect change. Currently, the linear economy still has more power and resources to influence the conditions for not participating in the circular economy.

The bottlenecks identified in the literature and linked to one of the PAA dimensions prior to the analysis were partly reflected in this study's results. In both cases, culture-based bottlenecks proved to be dominant. However, the mechanisms behind these cultural differences were only mentioned limited in the current literature. This study revealed that these underlying mechanisms include language barriers, prejudices, and routines between municipalities and SMEs. Furthermore, many bottlenecks appear to arise from inadequate leadership during the transition to C E. The CGF helped me to better explain these bottlenecks in terms of poor leadership.

6.2. Reflecting on research from other theoretical debates

Firstly, the thesis reveals that there is limited control and leadership in the circular economy. As described in section 2.1.1. a bottom-up approach to environmental change, such as CE, is

dominant in Europe. This gives rise to grassroots initiatives that can facilitate customisation, support and ownership. However, the results show that clarity, equal rules and a shared vision are needed due to the fragmentation of resources. This can only be achieved if strong leadership is demonstrated at a local level. At the same time, the collaborative process demonstrates that trust-building and face-to-face dialogue can enhance commitment to the process. My findings are therefore twofold. Firstly, leadership is needed to organise the starting conditions and institutional design more effectively. Secondly, CGF builds mutual trust and shared understanding, thereby increasing commitment to the process. Combining the two approaches is therefore likely to yield the best results in implementing the circular economy at a local level.

The results of the study can be used to contextualise the phase in which the circular transition currently finds itself. The X-curve of Drift illustrates this, showing the phase of social transition that the CE is currently in (Van Raak et al., 2022). During this phase, one economic model (CE) is being developed while another (the linear economy) is being phased out. However, the CE transition is still in its early stages, meaning it is currently limited to experiments and attempts to accelerate the process. This phase includes a linear economy that is still being optimised to prevent its decline. The study revealed many bottlenecks, and participation was limited; however, this is in line with the current phase of the circular economy. This was reflected in the 'no discourse', which indicates that part of the population has not yet formed an opinion about the circular economy or is unaware of what it entails. This is understandable given the stage of the transition.

6.3. Contribution to further development of theory and recommendations

The study used two theoretical frameworks that were broadly aligned with the research objective. This allowed me to interpret the context and structures using the PAA, and the process mechanisms using the CGF. First, I used the PAA to describe the context of the research topic. Then, I used the CGF to explain the bottlenecks. There was some overlap on a few points, as both frameworks are comprehensive. One example of this was the overlap between resources and power (PAA) and resource/power imbalances (CGF). Bottlenecks that came to light, such as those relating to money, knowledge and space, could be explained using both indicators. I resolved this by primarily explaining the bottlenecks from the CGF's perspective and only providing the PAA's perspective on the context. Furthermore, many bottlenecks were multidimensional, making it difficult to explain them using a CGF category. I resolved this issue by identifying the multidimensionality of the bottleneck and linking it to the analysis.

The scope of this thesis is intentionally broad to identify general bottlenecks. However, there are major differences in capacity and size between municipalities and SMEs. Further research could examine this relationship in more detail for different sectors, focusing on particular types of municipality based on size, capacity and political orientation. It would also be valuable to compare these types of municipality or SME to explain differences between sectors and capacities. Furthermore, this study focuses on bottlenecks and does not detail solutions. Examining solutions could convert bottlenecks into concrete opportunities and accelerate the implementation of CE in practice. The findings of this study could provide a basis for identifying solutions. Thirdly, follow up studies could employ other research methods. This study only used qualitative research. Conducting quantitative research using statistical analysis could test the findings of this study. Sectors or organisational capacities could also be compared again.

7. Recommendations for practice

The recommendations below are based on the findings of the study. The study aimed to identify the most important recommendations to help overcome the challenges in the relationship between municipalities and SMEs.

Firstly, it is important to incorporate the circular economy into policy. While many municipalities have done so, SME's and (semi-)government bodies often have not, causing good intentions to fall by the wayside. Therefore, it is important to embed the circular economy in organisational policy and agree on shared goals and roles. This can be achieved through circular deals or other public–private partnership agreements. This will also enable executive teams to start working and ensure that the circular economy is not just a vague ambition, but that there are frameworks within which to work.

Secondly, it is important to make the circular economy part of the entire organisation. Currently, it is not fully embedded within organisations, meaning that only a limited number of people are involved. Involve all departments within municipalities and SMEs, making it part of daily processes. Give the finance department a clear role in this. Although the CE is often the remit of the sustainability department, many decisions will be made by the finance department.

Thirdly, identify successful practices and apply them to your own context. There are plenty of proven examples, including at the public level in Friesland and at the private level at Lagemaat B.V. (Vereniging Circulair Friesland, 2025). Bring people from these examples together and learn from their practices. This way, there is no need to reinvent the wheel, and the exploration and learning processes are accelerated.

Fourthly, it is important to bridge the language gap between local authorities and SMEs. The results showed that policy officers and entrepreneurs speak completely different languages. Therefore, it is important to use the language that matters to the other party to ensure smooth cooperation. Municipalities must recognise that many SMEs operate within a linear model, prioritising security of supply, return on investment, business models and growth opportunities. Good relationship management is also important so that mutual trust can develop.

Fifthly, establish strong chain cooperation with a good supply chain. Bring the right parties together, make demand predictable and secure sales. This creates mutual trust and allows you to increase scale and make circular working economically viable.

Finally, expand knowledge sharing to eliminate any misconceptions about the circular economy. Connect the right people and facilitate exchange, for example by working with permanent working groups or circular knowledge platforms. Sharing concrete examples is useful here, as it demonstrates that the circular economy is possible in practice. This increases trust, making it easier for municipalities and SMEs to collaborate and learn from each other.

8. Limits

Although this study was conducted thoroughly, there are some limitations. Firstly, it is qualitative in nature and uses a post-positivist approach (Lincoln & Guba, 1994). This means that the value of the research lies in understanding, explanation, and analytical generalisability rather than statistical generalisability. However, the findings should not be interpreted as representative of all municipalities or SMEs. The scope of the study is the second limitation. To maintain analytical consistency, citizens were deliberately excluded despite their relevant role in the circular economy. While this choice is justifiable to prevent further broadening, it also means that some bottlenecks and possible solutions are overlooked. A third limitation stems from the subject's broad scope. The circular economy cuts across multiple policy areas, sectors and scales simultaneously. While this results in a broad range of findings, it sometimes makes context-specific interpretation less precise. The findings are therefore fairly generic, meaning that local details or sector-specific elements could not always be fully explained. Fourthly, 14 semi-structured interviews were conducted, deliberately spreading them across key actors and other stakeholders. Interviewees were recruited partly through our own network and partly through referrals from respondents. However, it also appeared that relatively more committed and enthusiastic actors participated in the study, meaning that discourses positive about the circular economy may be overrepresented in my sample. This could potentially lead to selection bias. However, an attempt was made to limit this through the qualitative survey by applying triangulation (Denzin & Lincoln, 2024). This survey lowered the threshold for participation, enabling a wider range of perspectives to be represented. As well as the two key actors, municipalities and SMEs, I was also able to shed light on the subject from other angles by involving other relevant stakeholders. A fifth limitation relates to the direction of analysis entailed by the two chosen frameworks. The analysis was set up using the PAA framework to examine the context and the CGF framework to examine the interaction between municipalities and SMEs. While this ensured consistency and a uniform method of analysis, there is a risk that phenomena are framed within PAA dimensions or CGF categories, when alternative conceptual lenses might place different emphases on the results.

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Appendix

1.1. Dutch Quotes:

4.1.1.

R7: “we kunnen de nieuwe standaard zetten voor wat je vraagt van de markt.”

S9: “Als lokale overheid kunnen we stimuleren en faciliteren om te zorgen dat ondernemers goed op de hoogte zijn en daarnaast als inkoper reguleren.”

R7: “we zijn hier eigenlijk nu de kartrekker van, de aanjager.”

S14: “geen voorloper te zijn maar een goede volger”

S16: “Het wordt nog niet heel belangrijk gevonden, ook niet door de gemeenteraad.”

R7: "Het zijn ondernemers. Ze moeten wel zien dat het hen iets gaat opleveren. En als dat niet duidelijk is, dan blijft het gewoon wel een lastig onderwerp. En dat is ook logisch."

R7: "Maar dat komt ook door dat sterke relatiebeheer."

R13: "zoveel paddenstoelen aan het oppoppen dat ze elkaar zaten te concurreren."

4.1.2.

R13: Die hebben heel veel grote teams en best wel budgetten om dat te kunnen pakken."

R14: "de vervuiler betaalt niet."

R5: "Dat als wij kennis hebben van een fenomeen, dat we ook steeds meer gevraagd worden om echt onderzoek te doen naar een onderwerp."

4.1.3.

R12: "Wetten of regels zijn er niet op gemeentelijk niveau. Die komen allemaal van hogere overheden."

R13: "We doen veel in doorbraak-subsidies ... we gaan een beetje op kleine schaal uitproberen tot dit een nieuwe standaard wordt."

R7: "We zijn natuurlijk als gemeente ook opdrachtgever. En dat maakt ons zo'n enorm belangrijke speler ... Ja, we kunnen de nieuwe standaard zetten."

R4: "Inmiddels heeft iedereen wel een beetje op z'n netvlies dat een transitie naar een circulaire economie, meer ruimte, maar ook een veranderend gebruik van de ruimte gaat vragen."

4.1.4.

R3: "Die vraag die veronderstelt bijna al dat iedereen hier wel iets mee wil ofzo. En dan misschien tegen dingen aanloopt. En ik denk dat we misschien nog bijna wel in het voorstadium zitten dat het gros van het bedrijven en ook de gemeenten denken van: ja, we moeten er wel een keer wat mee gaan doen, we moeten er een keertje naar kijken. Maar die zijn er helemaal niet echt mee bezig."

4.2.1.

R14: "Mkb-bedrijven die zijn helemaal niet bezig met het beleid van gemeenten. Tenzij ze tegen een acuut probleem aanlopen".

R10: "is het vaak ook echt een beetje vechten voor je plek"

R6: "een probleem wat we wel ergens zien maar niet vandaag voelen... Het is geen topprioriteit"

R3: "leuke pilot projectjes ... maar dat is wel echt klein bier als je het met de doelstelling vergelijkt."

R9: "niet duurder dan nieuw" ... "De komende jaren alleen maar beter wordt" ... " Nou, dat betekent dat mijn verdienmodel in 2027 vervijfvoudigt".

R2: "Soms heb je iemand die dat een beetje erbij doet, maar eigenlijk kun je het niet een beetje erbij doen ... het is eigenlijk te complex om als bijzaak op te pakken."

R13: “als je niet zorgt dat je het lineaire systeem afbreekt en de incentives daarvoor weghaalt ... dan ga je lopen opboksen tegen iets, waar je gewoon niet tegen kan concurreren.”

R14: “als je daar normering op gaat inzetten en bijvoorbeeld heffingen op het gebruik van virgin plastic zet dan wordt dat een meer equal playing field” ... “Dus de vervuiler betaalt niet.”

R9: “regelgeving in de bouw is super routineus geworden”

R6: “alle mensen die altijd al iets deden zoals ze dat gewend waren. Moeten dat nu op een iets andere manier gaan invullen.”

R5: “Die zeggen, het moet helemaal SMART zijn. Want dat is er namelijk altijd zo geleerd. En dan verwijzen ze altijd naar het aanbestedingsrecht.”

R7: “altijd 1-0 achter”

4.2.2.

S5: “waar gemeenten primair verantwoordelijk voor zijn.”

R7: “echt een zoektocht is, wat je precies kunt vragen van ondernemers?”

R3: “wij hebben natuurlijk heel veel meer borden waar we op moeten schaken ... En daardoor is vaak ook die regelgeving zo weinig streng. Omdat iedereen er ook van mee moet kunnen doen.”

S17: “vereist dat je binnen alle beleidsvelden in de gemeente daarvan doordrongen bent. Het is vereist een integraliteit in denken en doen. Dat is er nu in onvoldoende mate.”

R6: “aan de adviseur duurzaamheid hangen” ... “integraal in de gemeente gaat landen”.

R8: “hoe de vlag waait”

R2: “alle medewerkers van je bedrijf ook ander gedrag moeten gaan vertonen”

R5: “Ik kom heel veel goede, kundige, welwillende mensen bij overheden tegen. Alleen je hebt zoiets als het beleidsmakende deel van een overheidsorganisatie en het uitvoerende deel. En daar gaat het... die brug daartussen, daar gaat het vaak verkeerd.” ... “Dat kunnen zij wel zeggen, maar dat mag helemaal niet.”

R1: “Je ziet bij minder ideële slopers dat zij weten dat er niet op gehandhaafd wordt. En die duiken gewoon onder de prijzen.”

4.2.3.

R14: “Over het algemeen geldt het natuurlijk dat bedrijven die willen een soort van langetermijnvisie hebben.”

R10: : “Het Rijk moet meer regie nemen om dingen op te pakken.” ... “het gebrek aan een soort van rode draad, waar gaan we nu heen?”.

R14: “Dus je hebt allerlei soorten adviesbureaus ... netwerken, financiers en dat werkt nog niet allemaal lekker samen.”

R14: “Er is een klein groepje mensen dat daar heel enthousiast aan werkt ... Maar zelfs binnen de koplopers groepen, ook daar heb je nog niet de hele organisatie mee.”

R9: “meer op die zeepkist te zijn gaan staan.”

R9: "We worden al betaald om adviezen en onderzoeken te ondersteunen en te voeden."

S11: "Veel bedrijven, en met name het kleinere MKB, zijn nog niet of nauwelijks met CE bezig."

4.2.4.

R5: "alle poortjes open."

R6: "Het is wel een proces van de lange adem."

R10: "Maar daarin heeft de Rijksoverheid dan weer gezegd. We gaan niks strengers doen, want we wachten op Europa. Maar dat gaat nog weer jaren duren. Dus daarmee ben je ook weer niet snel genoeg bij het doel."

R13: "Ik merk dat de mensen die over circulariteit gaan, niet degenen zijn die het meeste contact hebben met bedrijven. Daar zit wel een hobbel."

R6: "die veel beter de taal spreekt van het mkb."

R6: "Mijn taal en de taal van een mkb'er is gewoon echt een andere wereld... ik werk gewoon echt in een hele andere werkelijkheid dan een mkb'er."

R14: "Je moet het over leveringszekerheid hebben, over nieuwe verdienmodellen, over investeringen"

R9: "En op het moment dat we dit vertellen en dat ik dat op het podium uitleg, dan zie je ook wel aannemers denken van ja, wacht even, ben ik nou de boot aan het missen? Of moet ik hier nu op inspringen?"

R14: "We weten, ondernemers die laten zich ten eerste het beste overtuigen door andere ondernemers."

R9: "nog veel disbelief veel ongeloof omdat men er gewoon onbekend mee is. En onbekend maakt onbemind."

R4: "Dan zegt degene die een kavel heeft, je mag wel, maar dan moet je eerst aantonen dat je financiering hebt. De financierder zegt, ja maar dan moet je wel echt die vergunning al hebben, een soort tang."

R11: "soms is het missen van kennis, soms is het durven om het anders te doen, dat wisselt."

R6: "de gemeente investeert niet."

R5: laten we zeggen dat overheden, niet zoveel met marktpartijen wilden praten, want oei oei wat eng. Want stel dat ik met commerciële partijen in contact kom, dan ben ik ze misschien een voordeeltje aan het geven en dat mag allemaal niet."