# Circular Land Tender Procedures

*A study on the perception of stakeholders in circular land tender procedures in Rotterdam en Amsterdam*

Willem Wijnen | Master Thesis Final P5 Report | TU Delft | January 2022

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# Colophon


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# Preface

This paper is the final version of my P5 report of the master thesis for Management in the Built Environment of the faculty of architecture (TU Delft). The first period of this year I have worked on this report and after a break of about three months this research was picked up again and further worked out. When I started Architecture in 2015 my dream was to become an architect and design the best buildings possible. During the bachelors my interest for complex real estate grew and I created a fascination for the social impact of these developments. In the MBE masters I found knowledge on the complexity of real estate developments and gained first insights with my future line of work. During my internship with a The Hague based real estate developer I also gained more lessons from practice. This combination has been very valuable for me. The linking of theory and practice provides an enlightening picture and allows for reflection. This combination is also used in the large number of interviews with stakeholders from public and private perspectives. The resulting insights also say something about the playing field in which I would like to engage in.

The choice of research direction follows from a personal fascination with complex projects with a sustainable character. Combining high-quality design with far-reaching sustainability is a challenge for present-day real estate professionals and therefore an interesting field of research. The call for a circular way of thinking in real estate development is growing and the research field is constantly being expanded. In many cases circularity in construction is approached from a technical point of view. Think of the material analysis by means of LCAs (Life cycle analysis). This study examines planning instruments and the specific use of circular procurement criteria in land allocation tenders. The City of Amsterdam is a forerunner in the use of these tendering criteria and plans to make use of them as standard in the future. Other cities in the Netherlands are also identifying their take on the subject of circularity of real estate developments and are forming policy on the subject. The Roadmap Circular Land Tenders has inspired me to dive into the field of circular land tenders and how this is perceived by stakeholders.

This study looks at the implementation of these planning instruments from a multi-stakeholder perspective. Actors on the public and private side have their perceptions of this tool and both insights are being explored.

The Research question that links to this new phenomenon is formulated as follows: *"What are the experiences and perceptions of the stakeholders involved with circular land tenders?"*

To answer this question a literature review and cross-case analysis will be applied. External validation will eventually take place through an expert panel review. The deliverable of this research will be insight on the working of circular land tender procedures and the perception of involved stakeholders. The eventual goal is to give recommendations for the implementation of circular land tender procedures to both public and private actors.

# Glossary

**Adaptability**: Flexibility in the functionality of a building for the users over time, referred to as the ability of a building to continually adjust the layout and structure of the space structure to adapt to changing needs.

**Award criteria:** In land tender procedures, these criteria are used to assign a value to entries in a fair manner. Think of sustainability, program and architectural appearance. By applying award criteria, a fair and thorough decision can be made about which entry wins.

**Circularity**: Circularity assumes that products of today are the raw materials for later: after use, products can be disassembled and the materials reused. Circularity thus assumes a world without waste. It is opposed to the current approach where we constantly buy, use and throw away new products, components and materials. This disposable and replacement culture has a huge impact on the earth.

**Land tender procedures:** Land tender procedures are tenders where a municipality issues a piece of land through a contest. This tender is a competition in which several real estate developers can submit a development plan for a specific site. The public party appoints award criteria in tenders such as; the land offer, architectural appearance and the program of the development. It is a private law agreement allowing public parties to ask for more than is required by law.

**Active land policy**: Active land policy means that the municipality itself is in charge of development. The municipality carries out land exploitation. To this end, the municipality usually owns the land itself (or acquires it), is the commissioning authority for making it ready for construction and residential use, and issues land to third parties in the form of individual or collective private commissioning.

**Planning instruments:** Policy tools is the collective term for tools that (local) government has to influence the built environment. By using these tools, governments can steer at different levels and ensure that there is influence on the projects.

**Calculation tools:** Circularity is a catch-all term, and each person's view on the topic also varies. To ensure that projects can still be assessed fairly in terms of circularity, there are calculation tools to express general sustainability and circularity. In the Netherlands known examples are the MPG, EPC, BREAAM and others.

# Management Summary

## Introduction

Research shows that 25% of all CO2 emission comes from the built environment and 60 % of the whole material demand as well. The transition from a linear system to a more circular situation will help to reduce these high percentages. Local governments are getting more invested in the subject of circularity and land allocation tenders are adapted to this new situation. This research focuses on the concept of circularity and researches the way this can be applied within land allocation tenders. This is needed to reach the ambitions of the government-wide program circular economy to reach a circular economy by the year 2050. Next to the fact that it uses most raw materials, the built environment uses more than one third of total energy consumed world wide, as well as being an equally important source of CO2 emission (IEA, 2020). The role of the built environment is crucial in resolving climate issues world wide and actions are needed. The current 'linear economy' stands for the linear use of materials that are mined, used and then thrown away. The counterpart of the linear model is the 'circular model', where resources are kept in use and the value is retained.

## Problem statement

To attain a transition such as to a circular economy and built environment, actions at all scales are necessary, which implies that interventions should positively contribute to the transition (Petersen & Heurkens, 2018). Governments see the problems that the linear built environment entails and are making steps in implementing circular focussed policies (Bouwma et. al, 2015). A transition, such as to a circular built environment, can only become reality when public planners work in a certain way. They should use their political power with the dynamics of real estate developments by shaping, regulating and stimulating market parties (Petersen & Heurkens, 2015). One of the new planning instruments concerning circularity are circular land tender procedures (OECD, 2020). By setting circular award criteria for land tenders, public planners ensure that they have an influence on real estate developments. Since this is a new phenomenon, almost no research has been done into this planning instrument. It is unclear whether the introduction of circular criteria raises problems and what the parties involved think about it. Heurkens et. al (2015) identifies the importance of cooperation between public and private entities. Public planners are increasingly dependent on market parties to achieve their goals. Therefore, it is important to conduct research on this new planning tool.

## Research objectives and Question

This research aims to investigate the implementation of the planning instrument circular land tender procedures.By identifying the perception of stakeholders recommendations on the further implementation of circular land tender procedures can be done.

The research objective of this research are the following:

1. Definition on current situation of land tender procedures via explorative interviews and literature review of documentation of a circular land tender.
2. An expounded literature review on policy implementation, circularity and circular real estate developments.
3. An in-depth case study analysis of two circular land tender procedures in the Netherlands.
4. Recommendations on the further implementation of circular land tenders following from cases and expert consultation.

The main question asked in this thesis is:

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*"What are the experiences and perceptions of the stakeholders involved with circular land tender procedures?*

In order to be able to answer the main question, the above sub-questions have been formulated that are answered in the different parts of the research. Exploratory interviews and a document review underlie the sub-questions. The interviews provide insight into what CLPTs entail and examine the differences between public and private parties in the field of CLTPs. The document review provides insight into how a CLPT is formulated and says something about the design of CLPTs in general.

## Methodology

The research is conducted in three different main parts. Firstly a Qualitative content analysis is introduced in which the playing field of CLTPs is researched. This analysis gives input for the literature review. When the playing field is introduced and the literature context is given, the practice is researched. In a multi case study two cases from practice are researched via in-depth interviews and case review documents. The results from previous steps are then validated by an expert panel.

## Qualitative content analysis

In the qualitative content analysis two professionals from the field of CLTPs. One from a public perspective and one from a private perspective. The cases introduced were also used to gain knowledge on qualitative tender procedures. During initial discussions with stakeholders in the field of circular land tender procedures, a number of key principles emerged. Since there is currently a lack of literature on the field of CLTPs, the qualitative content review is the basis for the research of this thesis. To get an overview of the current situation, a table was created to show what the different aspects that the research field entails.

1. **The use of CLTPs**
2. **Award criteria in Tenders**
3. **Circular criteria in CLTPs**
4. **The Realization of Projects**

## Theoretical framework

***Circularity in Real estate Developments***

During the design and development phase of a product 70% to 80% of the environmental impact of products is defined (Rocha et. al, 2016). In a rapidly developing world in which our natural resources are increasingly depleted and where the environment is being hit hard, it cannot be the case that the environmental impact or product is not taken into account. Within the linear economical philosophy products are take, make and dispose are logical next steps. It is widely acknowledged that the building industry consumes large amounts of raw materials while generating waste and emissions (Van Stijn & Gruis, 2019). By changing the design and development phase by focussing on the possibility to reuse, remake and recycle, the transition to a circular economy is made. Whether a real estate development can be considered circular depends on its own meso scale, but also highly depends on the micro level. This shows the deep interlink between the manufacturing of components and the outcome of a building. Decisions made in the macro-level can steer the development of circular real estate. This then should lead to the circular design of the meso-level, which directly corresponds to the micro-level. Pomponi & Moncaster (2016) show that circularity consists of interdisciplinary fields of research.

***Land tender procedures***

The successful implementation of planning instruments is dependent on the 'delivery capacity' of the public planner. Power, resources and expertise are identified as key elements of this capacity. When these key elements are present a public planner can successfully transform policy intentions into actual outcomes (Heurkens et. al 2015). In a market economy in which the private sector is producing developments and therefore planning outcomes, public planners need to influence market parties. This influence is based on relationships between planning and the market. The three key factors that are crucial for planners to shape markets are:

1. Planners are required to have a strong focus on defining and pursuing specified outcomes.
2. Planning instruments used, are defined by their expected impact on the market actors.
3. Planners should be equally comfortable using market language or planning language to describe what they have achieved. (Heurkens et. al, 2015)

The planning instruments available for public planners are the following:

**Shaping instruments**: "Shape decision environment of individual development actors by setting broad context for market actions and transactions."
**Regulatory instruments**: "Constrain decision environment of individual development actors by regulating or controlling market actions and transactions".
**Stimulus instruments: "**Expand the decision environment of individual development actors by facilitating market actions and transactions."
**Capacity building instruments: "**Enable development actors to operate more effectively within their decision environments and so facilitate the operation of their policy instruments."

***Circular land tender procedures***

The process of implementation of CLTPs in a city like Amsterdam can be explained using the planning instruments of Adams & Tiesdell, Heurkens et. al (2012; 2015). The municipality uses shaping instruments to shape the decision environment of real estate developers. By introducing a circular ambition for the whole of Amsterdam and its real estate developments they make clear to the market what the shaping environment is. Within the regulatory field they use contracts and agreements to secure what is intended with the tender. In that way the public authority is limiting the scope of the real estate developers autonomous action (Heurkens, 2015).

With the active land policy the municipality is able to provide property rights and the possibility of real estate development. The issuing of circular land tenders is also part of the stimulus instruments of the municipality. In the sense of using tenders, they increase the likelihood of circular buildings by rewarding in market parties. When real estate developers come up with a substantial circular bid on a tender, they are granted the possibility of developing real estate at a certain plot. Capacity building is of great importance for the implementation of a policy instrument such as CLTPs. The facilitation of better operations necessary to create the good implementation of policy instruments. Mutual respect, greater trust and willingness to work together with private parties is beneficial and desirable for the implementation of policy instruments (Heurkens et. al, 2015). That is why it is important that the perception of public and private stakeholders is researched in regard to CLTPs.

## Case studies

For the case study two cases are identified. One being in Rotterdam and one in Amsterdam. An extensive case analysis on the tender documentation and in-depth interviews with the main stakeholders gave an overview of the tender process of the cases.

Lessons learned from the COOLBASE CLTP

| Strenghts | Weaknesses |
|---|---|
| • Both Municipalities and Developers are positive about the idea that tenders are able to challenge the market additionally.<br>• Developers gain an edge over competitors.<br>• The final results of tenders are positively appreciated.<br>• Municipalities have a tool with which they can realize the ambition to become circular. | • Tenders create a strong contractual link that prevents adaptation in later stages.<br>• Some ambitions within tenders work against each other. For example, solar panels are not circular.<br>• Quality tenders cost the developer and municipality a lot of time and money, which is a waste. |
| Opportunities | Threats |

- By expanding BENG, circularity becomes more of a general standard.
- Better framing of certain specific components of circularity can challenge market participants without just being "clever" with a calculation tool.
- Market consultations can help gain insight into options and costs.

- Circular projects cost more to build and that while prices are already high for consumers.
- The stacking of ambitions is mentioned by market parties as a possible stumbling block. Municipalities, incidentally, do not always agree with this

Conclusion **SWOT - analysis CLTP of COOLBASE**

| Strenghts | Weaknesses |
|---|---|
| • Both the municipality and developers see an innovation power in the use of CLTPs.<br>• It is a concrete way to make circular goals to 2030 and 2050 understandable.<br>• Experience in circular developments gives the developer a greater chance of winning tenders in the future. | • Municipalities want to avoid any kind of unfairness so they do not allow adjustments after the award phase. According to the developer, even when it benefits the quality of the property development.<br>• Calculation tools like the MPG, EPC and BENG are becoming outdated. This is inherent in a tool as there are innovations and new requirements. |
| **Opportunities** | **Threats** |
| • More unanimity around the content of circularity would help the process. Here is also a role for the national government.<br>• When circular construction becomes a supported standard, construction costs will adjust accordingly. As a result, prices for CLTPs will decline. | • The public and private parties have completely different views when it comes to award criteria.<br>• Because the different sub-districts have a great deal of autonomy, there are major differences between tenders. Circularity as a standard is not yet in sight.<br>• There is a chance that project developers will drop out if the requirements of CLTPs become too high, especially if yields were to fall. |

SWOT - analysis CLTP of Elements

## Recommendations & Conclusion

The intensive review of literature and cases together with the expert panel led to the following possible points of improvement.

1. By working together in knowledge networks, consensus should emerge on what exactly circularity means for real estate developments. Both on financial and process moderate impact on developments.
2. In addition to tenders, a more appropriate planning tool should be sought to enable circular innovations. A good example could be a field lab. Here, barriers such as finances can in fact be put on the table much more openly.
3. The national government needs to think about how circularity will become part of the building code. The MPG and BENG are not sufficient when it comes to assessing circular principles; an addition is needed to achieve circular ambitions.
4. Better cooperation between (sub)municipalities will ensure that circular building projects are more widely supported, even among smaller municipalities.
5. Because most bidders do not win, much work and innovation is lost. A way should be found to still put this knowledge to public use. Public and private parties can learn from this and thus the knowledge is not unnecessarily wasted.

The perceptions of different stakeholders in the field of CLTPs cannot be unambiguously summarized. Public and private parties agree on the advantages of CLTPs but look differently at threats, weaknesses and possible improvements. Public and private parties depend on each other when it comes to development through CLTPs, but they have significantly different roles. This also translates to a different perception and also to a mutual distrust. The given upsides of CLTPs are widely shared between the different stakeholders. Still there are major problems to overcome. The distrused that is incorporated in the early set up contracts creates difficulties. The New Management way of thinking that is connected to tendering leaves enormous responsibilities over to the market and in a growingly complex situation, this leads to problems.

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# PART I: INTRODUCTION

# 1. Introduction

During the climate summit in Paris in 2015, the Netherlands committed itself to the climate deal with about 180 other countries. This deal binds us to the goal of not having the Earth rise to more than 2 degrees Celsius. Studies by, among others, De Wilde and Tian (2010) show that climate change also has a major impact on our built environment. Research shows that 25% of all CO2 emission comes from the built environment and 60 % of the whole material demand as well. The transition from a linear system to a more circular situation will help to reduce these high percentages. Local governments are getting more invested in the subject of circularity and land allocation tenders are adapted to this new situation. This research focuses on the concept of circularity and researches the way this can be applied within land allocation tenders. This is needed to reach the ambitions of the government-wide program circular economy to reach a circular economy by the year 2050.
The built environment uses the most raw materials of all sectors and the growing world population and increasing urbanization ensure that this problem will only increase. The construction industry is one of the most important industrial sectors for the economy, in the EU it is corresponding to 10% of the Gross Domestic Product (GDP) (European Commission, 2019). Next to the fact that it uses most raw materials, the built environment uses more than one third of total energy consumed world wide, as well as being an equally important source of CO2 emission (IEA, 2020). The role of the built environment is crucial in resolving climate issues world wide and actions are needed.

The current 'linear economy' stands for the linear use of materials that are mined, used and then thrown away. The counterpart of the linear model is the 'circular model', where resources are kept in use and the value is retained. To achieve this, products are designed to have longer lives, to be reused, remanufactured or reassembled instead of discarded. In the Netherlands it is expected that there will be a need of one million new dwellings by 2035 (abf research, 2018). Worldwide it is expected that by 2025, one billion new homes are needed (Ellen MacArthur Foundation, 2019). This need will only increase the pressure on the environment and will only deplete our natural resources more. In the existing model, this means a depletion of natural resources and an increase in global energy consumption and CO2 emissions. In order to meet the demand of the future and to do this in the right way, alternatives must be looked at to ensure that these problems are tackled. In the current economical model only 20-30% of the construction and demolition waste is recycled or reused, which is often due to poor design (Ellen MacArthur Foundation, 2013).

Chesire (2019) describes this as the disposable society that is plundering the world of precious, finite resources at an increasing rate. In many countries the waste from buildings can be seen as the largest single waste stream, which is putting more strain on the environment as fragile ecosystems are exploited. The systematic problems from the linear economy model in the built environment are: 1 ) The uniqueness of buildings and the lack of thinking about the future.

2 ) The materials are locked in the building due to the big amount of different materials and polymers melded together irretrievably. (Chesire, 2019).

## 1.1. Problem statement

To attain a transition such as to a circular economy and built environment, actions at all scales are necessary, which implies that interventions should positively contribute to the transition (Petersen & Heurkens, 2018). Real Estate development projects are important arenas where abstract circular ambitions can be transformed into concrete circular technologies. Circularity Real Estate developments can be seen as far-reaching sustainability requirements that relate to the entire cycle of the building and the materials it consists of. Therefore literature on the implementation of sustainability focused policies are an important source for the implementation of circular policies.
Governments see the problems that the linear built environment entails and are making steps in implementing circular focussed policies (Bouwma et. al, 2015). A transition, such as to a circular built environment, can only become reality when public planners work in a certain way. They should use their political power with the dynamics of real estate developments by shaping, regulating and stimulating market parties (Petersen & Heurkens, 2015). This means that the intention to get to a circular economy must be formed by policies and policy targets. Heurkens et. al (2015) emphasizes the involvement of public planners in influencing the market and show the need for interaction between public and private actors. This means that the way in which the policies are implemented is of considerable importance to guarantee their workability.

One of the new planning instruments concerning circularity are circular land tender procedures (OECD, 2020). By setting circular award criteria for land tenders, public planners ensure that they have an influence on real estate developments. Since this is a new phenomenon, almost no research has been done into this planning instrument. In Amsterdam the first steps to a standardised circular land tender procedure (CLTP) are made (Hulsebosch , 2021). The first real estate developments resulting from a circular tender are currently under construction. However, there is still a lot of uncertainty on how circular land tenders work and how they are valued by the parties involved.

Interviews and other statements from market parties show that there are currently complaints about the ‘stacking of requirements’ by public parties. (Vastgoedmarkt, 16 feb 2021, Parool 1 jul 2019, PropertyNL, 17 jul 2020). Land prices in Amsterdam are rising and there are also stricter sustainability requirements that can put real estate developments under pressure.

It is unclear whether the introduction of circular criteria raises problems and what the parties involved think about it. Heurkens et. al (2015) identifies the importance of cooperation between public and private entities. Public planners are increasingly dependent on market parties to achieve their goals. Therefore, it is important to conduct research on this new planning tool. That is why this research is focussing on the perceptions of stakeholders from public and private perspective on circular land tender procedures. The aim is to fill the gap in knowledge on CLTPs from a public & private perspective.

## 1.2. Relevance

### Scientific relevance

Circularity and its influence on the built environment is a subject that is currently commonly researched. Research initiatives such as the Circular Built Environment Hub of the TU Delft show that there is great interest from the academic world in circularity. The research field of Circular Built Environment (CBE) covers different scale levels from city to building and component and material. The public sector, private sector and society all have influence on the CBE and their impact is of major importance (Pomponi & Moncaster, 2016). Research on Circular Land Tender Procedures (CLTP) can contribute to the field of CBE policy implementation. Currently there is a lot of research on life cycle analysis' and circular construction in general, but research on the workings of circular planning instruments is lacking. Figure 1 by Joensuu et. al (2018) shows the scientific publications found with the following searching string : ("circular economy" OR "cradle to cradle") AND (building OR urban OR city OR district OR neighborhood OR construction OR infrastructure). From this figure it appears that the scientific interest in CBE is growing strongly. Yet there is little research into the implementation of planning instruments that lead to a more circular built environment. This research is aiming at filling a part of this literature gap by highlighting the planning instrument CLTP and investigating the perceptions of stakeholders.

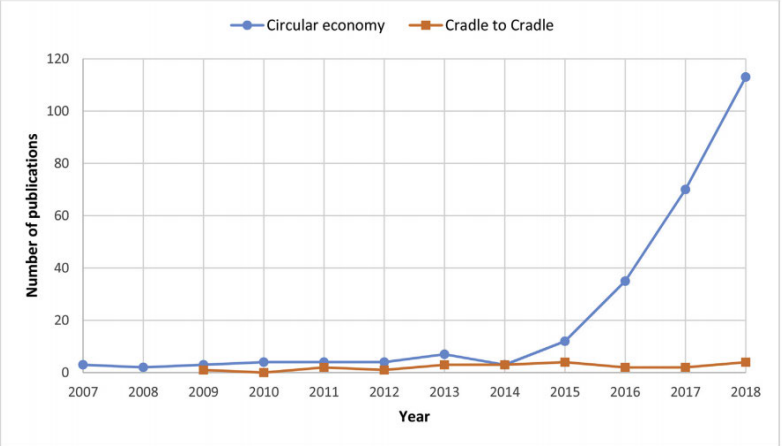


**Fig. 2.** Number of publications in the search results of this review by year.

### Societal relevance

The negative effects of greenhouse gases and waste flows as described in the introduction affect society as a whole (Ellen MacArthur Foundation, 2019). Circularity can be an important way to solve these problems. In the Netherlands tenders are a commonly used tool by municipalities to ensure market competition and real estate developments with a positive impact on the environment. Cities and its residents benefit from a pleasant living environment. To create an inclusive and high-quality living environment in urban areas, the aim is to create mixed-use urban areas that are good, accessible, green and inclusive. To achieve these ambitions, the principles of the circular economy can be used (Bouwcampus, 2018). These circular real estate developments can contribute to the climate goals of the Netherlands and can be used as pilots and showcases of circularity. Therefore research on the implementation of CLTP can influence the outcome of buildings and improve living in urban areas.

## 1.3. Research objectives

This research aims to investigate the implementation of the planning instrument circular land tender procedures. Municipalities set circular ambitions which are transformed into circular policies. Local authorities increasingly rely on market parties to implement public planning policies (Heurkens & Hobma, 2014). A strategic and effective implementation of planning instruments is needed to reach the set ambitions on circularity. The transformation from strategic intentions, such as circular ambitions, into actual outcomes is a constant challenge for policy makers (Heurkens et. al, 2015). An important aspect of getting to the actual positive outcome goes together with the ability and willingness of market parties to participate in this. In this research the objective is to find out what different public parties and market parties think about the planning instrument circular land tender procedures. By identifying the perception of stakeholders recommendations on the further implementation of circular land tender procedures can be done.
The deliverables intended in this research are the following:

5. Definition on current situation of land tender procedures via explorative interviews and literature review of documentation of a circular land tender.
6. An expounded literature review on policy implementation, circularity and circular real estate developments.
7. An in-depth case study analysis of two circular land tender procedures in the Netherlands.
8. Recommendations on the further implementation of circular land tenders following from cases and expert consultation.

## 1.4. Research question

Because circular land tender procedures (CLTPs) exist relatively short, little research has been done into the subject. The exploratory interviews show the growing importance of the procedures and that CLTPs are perceived in different ways. a number of things are still unclear and these uncertainties are a guideline for the questions posed in this thesis. The aim of this research is to gain more insight into the implementation of CLTPs and what the perceptions of the main stakeholders are on CLTPs. This will be researched via a combination of literature study, exploratieve interviews, a document review and in-depth case study analysis.

The main question asked in this thesis is:

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*"What are the experiences and perceptions of the stakeholders involved with circular land tender procedures?*

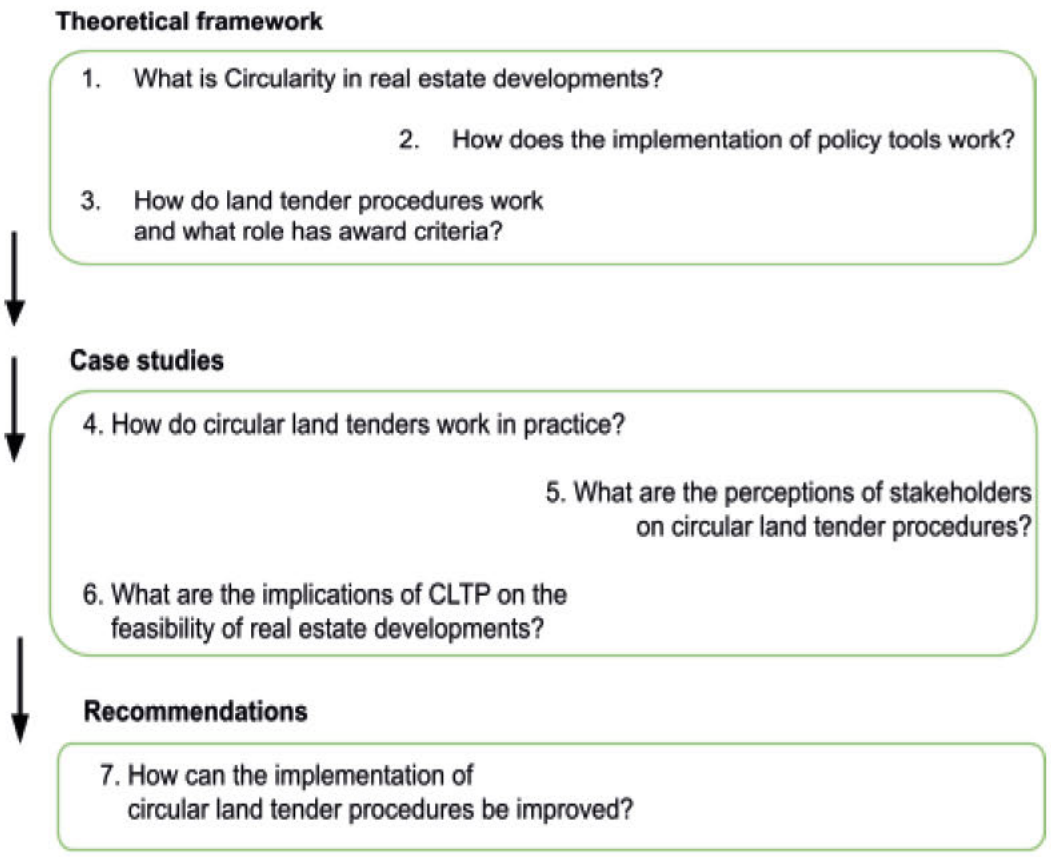


Figure 2 Research questions approach.

In order to be able to answer the main question, the above sub-questions have been formulated that are answered in the different parts of the research. Exploratory interviews and a document review underlie the sub-questions. The interviews provide insight into what CLPTs entail and examine the differences between public and private parties in the field of CLTPs. The document review provides insight into how a CLPT is formulated and says something about the design of CLPTs in general.

Then, for each research method, the questions that are feasible to answer are considered. Contributing to the substantiation of the main question is important in this regard. Bryson (2012) describes different categories of research questions corresponding to different research techniques. In the theoretical phase, the main focus is on answering descriptive questions such as: 'What is circularity in real estate developments?' In the case study of the thesis, the focus is more on evaluative questions that clarify the context. In the final recommendation phase, it asks in what ways CLPTs can be improved. This question fits into the category of developing good practice. When these questions have been addressed in the sections, a conclusion can be made in which the main question is addressed in detail.

## 1.5. Conceptual model

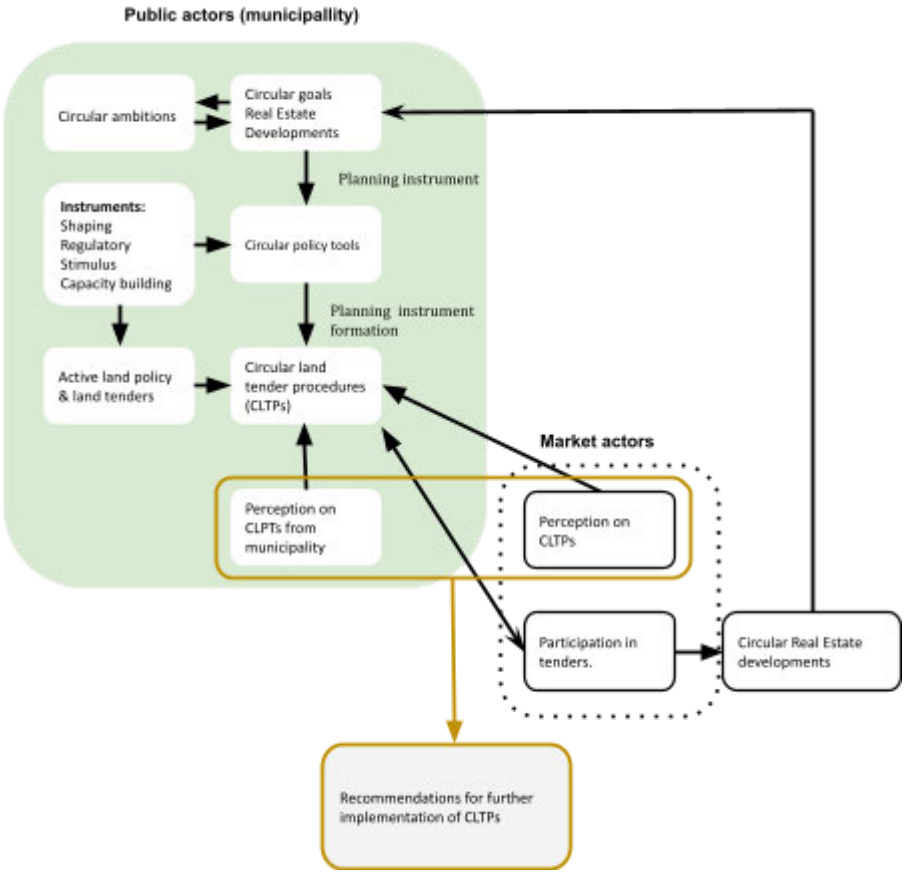


Fig. 3: Conceptual model (Own ill)

To be able to identify and explain the perceptions of different stakeholders on CLTPs, first more knowledge of concepts discussed should be introduced. Due to the growing pressure on the environment, policy makers set circular ambitions, also in the field of Real Estate developments. Via policy formation and policy instruments, a planning instrument is formated. In this case Circular Land Tender Procedures (CLTPs). Via active land policy and tenders, municipalities are able to ask real estate developers for certain criteria in their developments. Circularity is now one of these selection criteria for tenders. Market actors, being real estate developers, housing associations and their advisors, are participating in CLTPs and have a perception on it. The outcome of the CLTPs should be circular real estate developments, which is the set goal from the public planners. This research looks at the perceptions from public and private stakeholders and this will lead to more understanding and recommendations for further implementation of CLTPs.

## 1.6. Research output

The goal of this research is to get better insight in CLTPs and their workings. The second objective is to ultimately find points of recommendation for the further implementation of CLTPs.
The outcome of this research can in the end be useful for academics, policy officers of municipalities and project developers. Since the land tender procedures of the municipality of Amsterdam will be circular from the year 2023, it can contribute to knowledge about the operation and implementation of the planning instrument. In addition, perhaps other municipalities in the Netherlands and beyond can learn from the findings of this research.

## 1.7. Research design

In Figure 4 the research design with the division of research steps is visualised. The first part of this research is identifying the problem statement. Because there currently are not many papers on CLTPs, two exploratory interviews are held before the literature study is introduced. In these interviews, people from the field of CLTPs are asked about the most important factors about the planning instrument CLTP. In addition to the interviews, a document review contributes to the general knowledge of the research field and the problem statement.

After the problem formation a literary review is done from which a broader understanding on circularity, land tendering and policy formation is created. This literary research will form the theoretical bases from which the cases will be analysed. When understanding the working of the circular Built Environment and the role of circular land tendering, a next step can be made.

This second part will consist of an in-depth case analysis of the workings of circular land tendering. Two different cases in two different cities in the Netherlands are selected. The cases are real estate developments that follow from a CLTP. The holistic approach must be emphasized by taking a broad approach and speaking with different stakeholders and going in-depth in documentation and design.

From the literature review and empirical research follows the recommendations on CLTPs. These recommendations are validated by an expert panel consisting of both public and private actors in the field of CLTPs. The input of the expert panel will then be used as a feedback loop for the recommendations. After this step conclusions are made and the discussion and recommendations are formulated. The final step is a reflection on the research and the outcome of the recommendations for the further implementation of CLTPs.

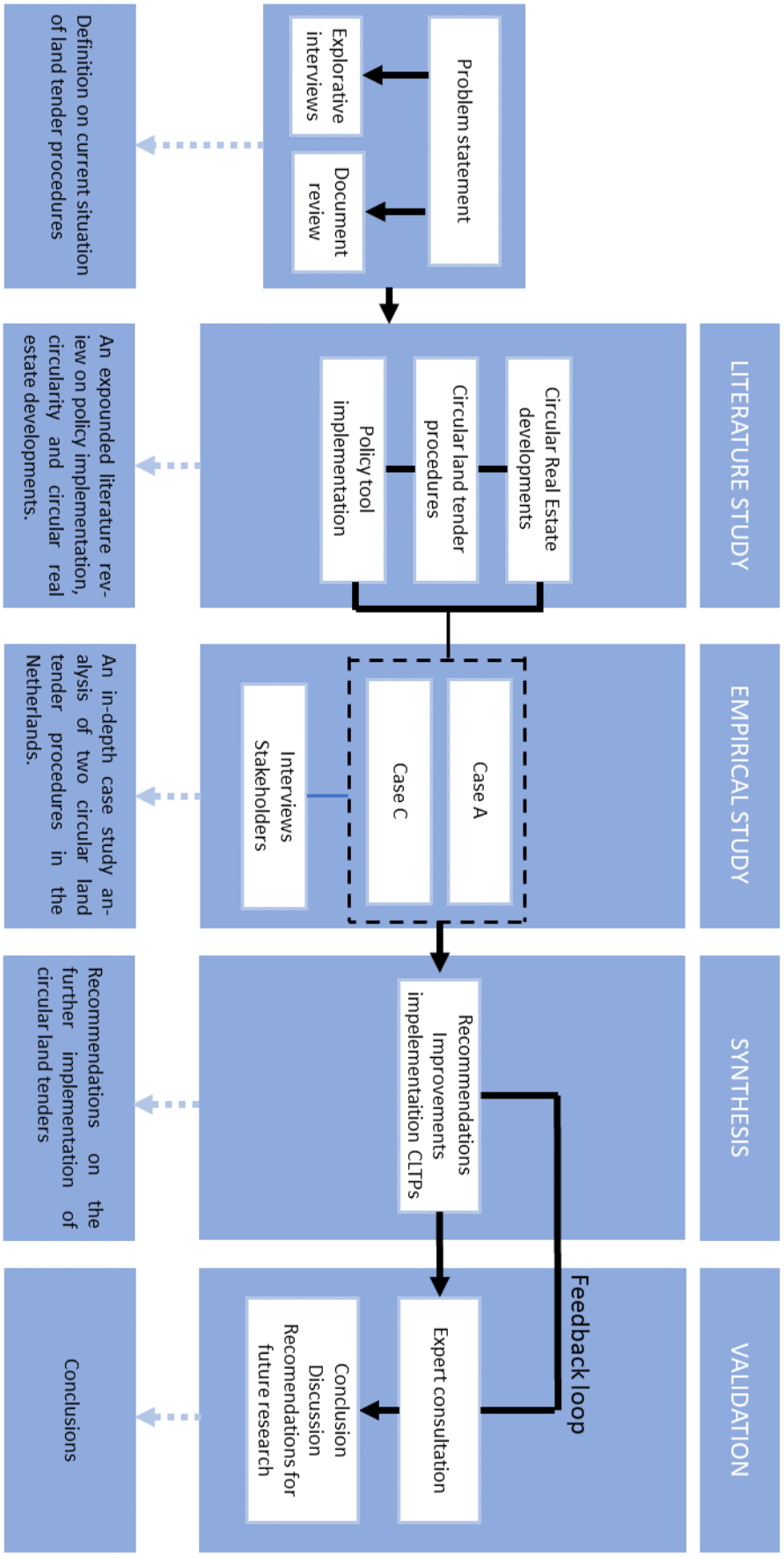


Figure 4 Research Design (own ill.)

# PART II: METHODOLOGY

# 2. Methodology

In this chapter the methodology proposed for this research is discussed. The aim of this research is to investigate the perceptions of stakeholders on CLTPs. This research is the combination between a basic and applied approach. Knowledge into the subject of circular land tendering is developed as well as the impetus for a procedure is introduced. Due to the lack of research on the topic an inductive and qualitative research approach is used (Bryson, 2012). An explorative research used in research fields with limited existing literature and is conducted to develop tools and procedures (Kumar, 2014 p.11). In this research it is the case that there is limited existing literature and the end goal is to give a plan for further implementation of CLTPs.

## 2.1. Methodological framework

In table 1 the methodological framework is shown to give insight into the methodological dimensions of this research. This framework consists of the conceptual analytical model and the used research methods and techniques. Per phase of the research the aim and the and the questions handled are summed up.

| **Concepts** | **Conceptual Analytical model** | | | | |
|---|---|---|---|---|---|
| Aim | Understand the perception of stakeholders in the field of Circular land tender procedures (CLTPs) and to give recommendations for the further implementation of CLTPs. | | | | |
| Question | "What are the experiences and perceptions of the stakeholders involved with circular land tender procedures?" | | | | |
| **Methods** | **In- depth Case Studies** | | | **Lesson drawing** | |
| Aim | Data collection, analysis and comparison | | | Empirical lessons | |
| Questions | What are the perceptions of the stakeholders in the two different cases? How did the process of the CLTP go? | | | What are the empirical lessons that can be drawn from the research on circular real estate and policy implementation? | |
| **Technique** | **Qualitative content analysis** | **Literature & document review** | **Semi-structured interviews** | **Expert panel** | **Recommendation document** |
| Aim | Practical understanding & document information | Document information | Practical experiences and process examples | Practical validation | Incites to improvement |
| Question | What is the current situation in the research area of CLTPs? How is a CLTP currently structured? | Which literature sources provide information and insight into circular real estate development and land tender procedures? | What are the experiences of practitioners from the private and public field that work with circular land tender procedures? | What are the perspectives of experts on the preliminary findings of this research? | To what extent can the implementation of CLTPs be improved in response to the outcomes of the research? |

Table 1: Methodological Framework (Own ill based on Heurkens 2012, Luijt 2019)

The scheme is divided into concepts, methods and techniques and this sequence also follows in the research process. The conceptual model shown in chapter 1.5 forms the basis for the in-depth case

studies and the literature analysis. These are the two main research methods used to collect, analyse and draw empirical lessons. The techniques shown in the scheme support the two research methods of the research. In the section the questions, objectives and methodology of every part of every part is further explained.

### 2.1.1. Concepts: Theory & Methodology

The first part is focussed on establishing the concept of research. The aim here is to get a clear picture of the research field and to draw up a conceptual model from there. First from explorative interviews, a document review and later academic literature, a definition on CLTPs is given.

**Objective:**
The objective of this research phase is to identify the research problem, the objective of the research and determining research questions. Due to a lack of existing literature the objective is to create a frame of research.
**Question:**
What is the current situation with CLTPs and how can the research field be conceptualized?
**Technique**
Explorative interviews, document review & literature review

### 2.1.2. Practices: Circular Land Tender Procedures

The second part of this research is focussing on the practice of CLTPs. Two case studies are selected in which an in-depth case study is conducted. By using case studies it is possible to understand behavioral conditions through the actor's perspective (Zainal, 2007). This is helpful in understanding how the perception of stakeholders is formed. This can later on be used to make recommendations for the further implementation of CLTPs.

**Objective:**
To get a better understanding of the process and the perception of stakeholders of CLTPs.
Question:

- How do Circular Land Tender procedures work in practice?
- What are the experiences of practitioners from the private and public field that work with circular land tender procedures?

**Methodology:**
Two in-depth case studies:

- Project analysis
- Policy document review
- Stakeholder interviews

### 2.1.3. Synthesis: Lessons & implications

In this part of the thesis the focus is on drawing lessons from the earlier steps. The data is collected, analyzed and summarized. From then it is possible to draw first conclusions on the perception of stakeholders of CLTPs. The input provided from the research steps is then validated via an expert panel. This last step contributes to establishing recommendations for further implementation of CLTPs.

**Objective:**

To draw lessons and conclusions from the earlier used methods and to verify them with a group of experts. This then leads to the establishment of recommendations for further implementation.

**Question:**

What are the key takeaways from the perceptions of stakeholders in the field of CLTPs and how can these perceptions be transformed to recommendations for further implementations.

**Methodology**

- Case based lesson drawing
- Expert panel

## 2.2. Research methods

The research method is divided into three parts that collectively answer the main and sub-questions. From a qualitative content analysis the current situation is examined, from this the starting points for the literature research arise, the literature research in turn is the basis for the cases.

### 2.2.1. Qualitative Content Analysis

Because there is currently little or no literature on circular land tenders, it is necessary to further elaborate the research field and problem statement. The selected techniques for this are exploratory interviews and a document review. This can be considered as qualitative content analysis, in which a systematic, but not rigid approach is used Bryman, 2012, p559). The goal of this phase is to become familiar with the context, document and categorizing assumptions on CLTPs. In addition, a first view is defined of the parties involved that operate within the context.

The conducted interviews are semi-structured which means that a series of questions in general form are prepared, however the sequence of these questions can vary (Bryman, 2012, p.212). In these interviews the focus was on the current field of CLTPs and how they came about. By interviewing an official from the department area development from the municipality of Amsterdam the public view was firstly framed. From private parties interviews with two real estate developers are conducted. One of them has experience participating in a CLTP and the other is very familiar with 'normal' land tenders. Based on recommendations for further research from the exploratory interviews, a document review has been added to the qualitative content analysis. The combination of these techniques contributes to a better understanding of the context.

| Name | Function | Company / Institution |
|---|---|---|
| [redacted] | Program leader sustainable area development | Municipality of Amsterdam |
| [redacted] | Real Estate developer | Building for life |

Table 2: Interviewee overview explorative interviews (Own ill)

### 2.2.1. Literature review

In the first stage of this research a literature review is done to investigate what is already known about the subject of this research. Moreover, by exploring the existing literature relevant theories, concepts, methods and strategies about the subject emerge. Furthermore, existing controversies, clashing evidence and possible unanswered research questions can be found that bring you further in identifying the goal and objectives of this research (Bryman, 2012). The output of the literature review can be used as the basis for the empirical part of this research. In this research, the literature review is focused on defining the concept of Circular Land Tender Procedures. This concept is subdivided into 1) Circular Real Estate Developments 2) Land tender procedures and policy formation 3) Circular land tender procedures. Nexto this there is also research on the overall real estate development landscape in The Netherlands, since the explorative interviews pointed to the importance of that national context.

### 2.2.3. In-depth Case studies

#### Case study selection

In this research an in-depth case study with two cases is proposed. The cases must be selected from a small group of land tenders currently being held in the Netherlands. Since a number of documents are legally protected and can only be made public after the award of a plot, tenders are selected in which a winner has already been designated by the municipality.

Since finding cases is therefore difficult, we work with two cases, rather than more. Two cases give the possibility for direct replication which benefits the research (Yin, 2003, p.53) Common conclusion can be drawn from the two cases enventough the context is different. The two cases introduced are deliberately selected in contrasting situations, being in Amsterdam and Rotterdam. Using two different cases contributes to the replication and to external validity of the research (Yin, 2003, p.54).

## Case study design

The replication approach of the two cases study is illustrated in the Case Study Method (figure X). The figure indicates that the first step is to develop a theory. In chapter 3 & 4 this theory is developed. With that theory it is possible to select cases and design the data collection protocol (Yin 2003, p.49).

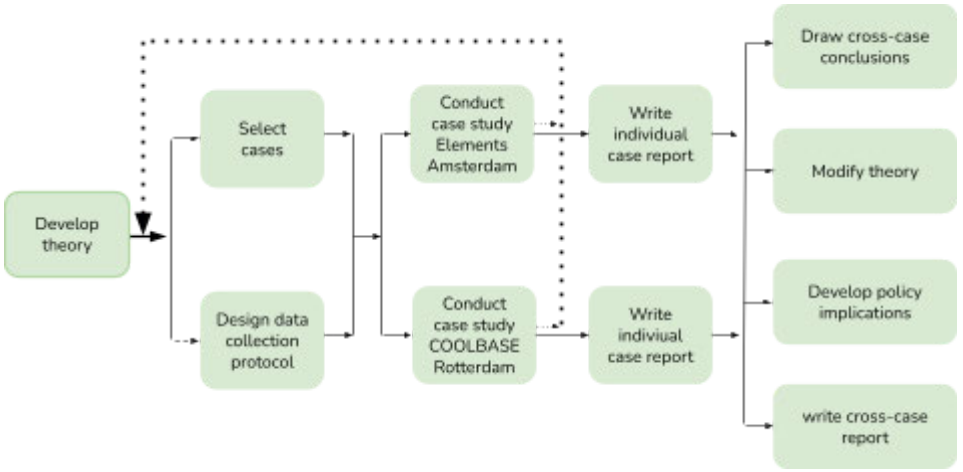


Figure 4 Case study method. based on Yin 2003, p.50

With the data collection protocol the two cases are studied. Both case studies consist of a “whole” study, in which convergent evidence is sought regarding the facts and conclusions of the case. Both case’s conclusions are then considered to be the information needing replication by the other individual case (Yin, 2003).

An important line in figure 4 is the dotted line feedback loop. This line means that information from the cases will be used as feedback for the data collection protocol. This allows lessons from cases to be replicated and mirrored with the other case. For the project analysis, information about the case is gathered by reviewing documents on the circular land tender procedure. To get a first impression of the circular ambitions of the case, municipal policy documents on sustainability and circularity are analysed. Further, multiple stakeholders are interviewed per case. At least one of these interviewees must be employed by the municipality and the others can have another role, however this interviewee must have knowledge of circularity in relation to the project.

From the developed theory 5 different selection criteria are set:

- The cases are land tender procedures
- Circularity is explicitly part of the award criteria of the tender
- The tender has already ended and a winner has been selected
- The real estate development is still in the design or construction phase, so not yet delivered
- The size and program c.q. building, public space and infrastructure should be similar to the other case

## 1. COOLBASE Rotterdam

Image 1 COOLBASE (FSD, 2019)

| | | |
|---|---|---|
| **Municipality** | [redacted] | Project Manager area development |
| **Architect** | | Senior Architect VMX |
| **Real Estate Developer** | | Director FSD |

| | |
|---|---|
| **Number of Dwellings** | 58 |
| **Selection procedure** | Restricted procedure |

Table 3 case overview COOLBASE (own work, image from FSD, 2021.)

## 2. Elements Amsterdam

Image 2 Elements

| | | |
|---|---|---|
| **Municipality** | [redacted] | Project Manager |
| **Architect** | | Director Koschuch Architects |
| **Real Estate Developer** | | Project Developer KondorWessels |

| | |
|---|---|
| **Number of Dwellings** | 72 |
| **Selection procedure** | Two stage restricted procedure |

Table 4 case overview Elements (own work, image from KondorWessels, 2021).)

### Data collection model

To be able to approach both cases a data collection model is designed (Yin, 2003). For this research two cases in the Netherlands are selected. COOLBASE in the city of Rotterdam and Elements in the city of Amsterdam. The goal for both cases is to understand the processes of the CLTPs. The insights and perceptions of stakeholders are important factors in this regard.
The goal can be expressed in the following objectives:

- Analyze both projects by gathering information about the specifications and characteristics of the tender procedure
- Get insight in the sustainable and circular substantiation of the bids
- Get insight into the circularity of the real estate developments and how and how these do or do not correspond to the principles stated in the tender documents
- Get insight into the perception of the stakeholders involved in the CLTP and translate those perceptions to concrete principles

For both cases the same type of documents are selected to analyse. Think of the more public tender documents, the circular ambitions from the municipality and an extensive case description. This documentation research is helpful because it is unobtrusive, in the sense that it is created before the research and therefore not compliant to bias. It is also a good way to go through the process up to that point. In this way progress in the process can be explained (Yin, 2003). Documentation on the other hand has the weakness that the author can be bound to a certain role and therefore can be partly biased. Next to this problem accessibility of documentation can also mean certain key takeaways are missed (Yin, 2003). Due to the weaknesses of only using documentation other sources of evidence should be added to the in-depth case analysis. Interviews with stakeholders have the strengths that they can be directly focused on the case study topics. Interviews also tend to be insightful recipients of the interview. It is therefore possible to perceive causal inferences (Yin, 2003). The combination of documentation and interviews as source of evidence will jointly contribute to building a strong case.

## 2.2.4. Expert panel

An expert panel is organised to validate the outcome of the in-depth case studies. Part of this validation is the discussion of the recommendations for further implementation that followed from the in-depth case study. In the focus group the external and internal validity of the found factors of this research are measured and discussed (Yin, 2003). In the focus group multiple individuals are interviewed during the same time. This technique of interviewing is selected because it is a way to see how different stakeholders react to each other's views. It also is a way of seeing whether there is agreement between different participants of the interview (Bryman, 2012). This is particularly interesting for this research because it is about the implementation of a planning instrument. The different stakeholders are jointly involved in the implementation of circular tenders and understanding each other's insights is important in this regard. The invited participants of the focus group are all experts within the field of circularity, land tenders and real estate developments.

The use of a focus group is common in market research and social research. Therefore, it fits well with the main question that focuses on the cooperation between public and private parties and the perception of stakeholders.

| | Name | Organisation | Job title |
|---|---|---|---|
| 1 | [redacted] | [redacted] | Policy Officer Sustainability |
| 2 | [redacted] | [redacted] | Project Manager |
| 3 | [redacted] | [redacted] | Project Developer |
| 4 | [redacted] | [redacted] | Project Developer |

Table 5: Participants Expert panel (Own ill)

# PART IV: CONTEXT ANALYSIS

# 3. Qualitative Content Analysis

*In this chapter the qualitative content analysis is constructed. Due to the lack of existing literature on the topic of circular land tender procedures, two different techniques to analyse the research context are introduced. Firstly two explorative interviews are introduced and summarized and secondly a document review of the first CLTP of the municipality of Amsterdam is introduced. The goal of this chapter is to create more insight into the subject and lay the basis for the theoretical part of the research.*

## 3.1. Explorative interviews

In this chapter the key takeaways of the explorative interviews with professionals in the field of land tender procedures is shown in a list of the 10 key takeaways of the interview. In the appendix a more extensive summary can be found.

- **Program leader sustainable area development of the Municipality of Amsterdam, Lianne Hulsenbosch.**

1. Sustainability is requested in every tender in the municipality of Amsterdam and the weight criteria is always 30%.
2. At the moment there is no specified set of criteria for sustainability or circularity, eacht tender highlights different aspects.
3. When all aspects of sustainability are tendered, market parties showed their dissatisfaction due to difficulty and high development costs.
4. The differentiation between sustainable/circular tender criteria held back innovation by market parties, because it was difficult to learn from earlier tenders.
5. Currently a standard tender text is drawn up in which there is less space for project specified sustainable/circular criteria, so more overlap between tenders is created.
6. In tenders we specify circularity into two sub-topics. 1) the MPG-score of a building 2) the flexibility of the construction.
7. The MPG-tool does not seem to work as intended. The calculation tool is too easy to manipulate. That is why a text must also be supplied containing the realization of the MPG calculation.
8. As a municipality we assume that the project developer has more knowledge on circularity than they in practice seem to have. This leads to problems during the design phase.
9. Achieving mutual interest with project developers is important, but on the other hand we want to reach our political goals, sometimes these things clash.
10. Within the civil service there are wishes to give developers a discount if they eventually actually build circularly, but there is currently no supervision on the actual construction and no political urgency to give these discounts.

- **Project developer at Building for Life Harm van der Weiden**

1. Collaboration between public and private parties is essential when transforming towards circular real estate developments.
2. The first circular tender was linked to the circular land tenders roadmap, which was a very complicated document in which concrete principles were difficult to find.
3. Because we only work in Amsterdam, we can focus on Amsterdam tenders, which gives us a head start through the knowledge we have about circularity.
4. Knowledge about circularity is difficult to find in the Netherlands, we went abroad for ideas about wood construction because they are a lot further there in some places. An organization has to invest extra to master this.
5. Amsterdam's tenders are of a much higher level than those of a city like Almere, they are more demanding and complicated to understand.
6. The first circular tender, which we won, was very focused on materials and on the reuse of construction components.
7. Whether we can develop a building in a circular manner also depends on the program that we are allowed to house in it. Social rent and medium-price rent are not profitable enough to absorb the higher construction costs of circular construction.
8. The municipality must clearly determine in advance what they consider important in a project instead of stacking all ambitions together.
9. We have now sold the circular tender that we won in 2018, it was a nice project to do, but it did not lead to a profit.
10. There are a lot of project developers who strip a plan the moment the permit is issued. There is currently little the municipality can do about this and that does not make tenders any fairer.

By introducing the explorative interviews it is possible to interpret meanings that lie beneath the surface (Bryman 2012, p. 333). In this way, a clear research framework can be outlined for the further course of the research. It appears that both the program manager of the municipality and the project developer are positive about CLTPs. The civil servant does indicate that there are still some problems in translating hard objectives into built practice. The civil servant assumes that the project developer has the in-house knowledge to be able to build circularly, while the developer indicates that this knowledge is currently scarce. Both mention the stacking of ambitions and demands in their interview, but have a different take on it. The municipality sees it as a way to achieve political goals, while the developer does not always find it appropriate. Both are convinced that collaboration is important, but it remains a game between public and private parties in which suspicion is sometimes simply necessary.

## 3.2. Document review

### Case: Plot 14-01, IJburg, Centrumeiland in Amsterdam

*To clarify the earlier described procedure a case in Amsterdam is selected. The municipality of Amsterdam has constructed a new Island at IJburg and uses land allocation tenders to allocate plots in land lease. One of these plots is 14-01 and this is the first major land tender with circular award criteria.*

Image 5: The 14-01 plot is indicated in red. (Gemeente Amsterdam, 2017)

As described in the previous chapter, the municipality places the tender on an official channel. This is done on the website www.tenderned.nl. The tender documentation consists of general documents that apply to all municipal tenders. This includes statements regarding the general statement regarding ground lease in Amsterdam and the integrity statement of the participating parties. A striking document that has been added as an appendix is the previously mentioned Road Map for Circular Land Tendering. This document is not officially part of the selection criteria but provides more insight into what is required. There are also location-specific documents that indicate the plot boundaries and clarify other site specifications.

The most important document is the selection brochure for winning this land allocation tender. As described earlier, the Municipality is free to set criteria that reasonably apply to the requested product. The document describes that many self-build plots are being realized in the area and that there is therefore a demand for rental housing. Since there is a shortage of medium-priced rent in the city, the focus is on realizing homes in this segment. Monthly rents between EUR 710.68 and EUR 971.00 are set as maximum and reference is made to 'Action plan for more medium-priced rent' (adopted by the Municipality in June 2017). Further requirements regarding dimensions etc are established.

Two external agencies, commissioned by the municipality, have written a Roadmap Circular Land Tenders (2017). This tender is in line with this Roadmap. This means that developing parties are

challenged to go further than the existing standards for sustainability (Building Decree according to European directive is EPC (Energy Performance Coefficient) 0.4, Amsterdam policy is EPC 0.15) through the award criteria that ask for both a qualitative vision on circularity as quantitative data by means of, among other things, a GPR (Building) score and MPG (Environmental Performance Buildings) calculation. With this interpretation of the 'circularity' criterion, the emphasis in this tender is on the life cycle and environmental impact of the materials used in the building. If tenderers are awarded the option, they must make a design (VO/DO) that complies with the submitted GPR, MPG and EPC score. When the building is handed over, the developing party must submit a certification report.

The selection procedure for this tender consists of a pre-selection and a final selection. The public part of the selection procedure consists of drawing up a concise vision for the real estate development. A jury consisting of municipal officials and external specialists determines which three parties will be invited for the final selection round. The selection criteria for the preselection was graded with the scores given in image X.

The entry with the best view of a part will receive 40 points, the next ones will receive 30, 20, 10 points. The rest of the registrations will receive 0 points. In the event that several parties end with the same score, circularity is decisive. For the final selection round, the three invited parties provide a more detailed vision with a sketch design. The GPR and MPG score are also assessed. In this phase, the bid for the land is also a weighted selection criterion.

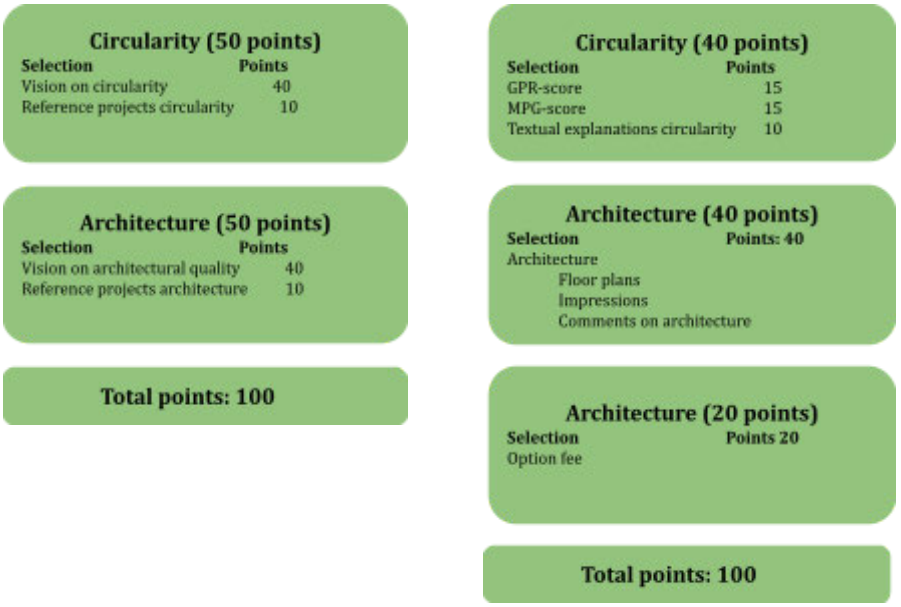


Figure 6 & 7 Weight selection scores per selection criteria for the definitive selection of Kavel 14-01 (Gemeente Amsterdam, 2017)

The points that a pre-selected tenderer scores on the award criteria form its total score. The person with the highest total score is in principle the winner of the final selection. If two or more bidders have the same highest total score, the winner will be determined by the number of points obtained

with the award criterion 'circularity'. If there is still an equa score, then the award criterion 'architectural quality' will be decisive. If the highest total score at that moment is again the same for two or more bidders, the notary will be asked to select the winner from that group by drawing lots.
The document review provided insight into the practical workings of a CLTP. This information, in combination with the exploratory interviews, lay the foundations for the further research. The most important starting points arising from this research phase are:

1) The perception of public and private parties is an important starting point for the workability of CLTPs.
2) The land tenders can be freely drawn up by the municipality and differ per project.
3) There is little control over the project when it is in the final design phase and finally built.
4) Real estate developers can experience difficulties in understanding the circular tender documents of the municipality.
5) Municipalities stack ambitions and requirements in tenders. They do not always see that as a problem, whereas a real estate developer sees it that way.

## 3.3. Conclusion

During initial discussions with stakeholders in the field of circular land tender procedures, a number of key principles emerged. Since there is currently a lack of literature on the field of CLTPs, the qualitative content review is the basis for the research of this thesis. To get an overview of the current situation, a table was created to show what the different aspects that the research field entails.

Table 6: Four components of CLTPs (Own ill)

| Component | Current situation | Importance research |
|---|---|---|
| **The use of CLTPs** | The use of CLTPs is becoming increasingly common and the City of Amsterdam aims to make every tender circular from 2023 onwards. Currently, all tenders are already 30% assessed for sustainability.<br><br>Both market participants and private parties believe that knowledge about circular construction and the costs of circular construction is insufficiently present among stakeholders. | This shows that CLPTs are assuming an increasingly important role in the tender landscape of municipal land issuance. |
| **Award criteria in tenders** | Private parties warn against "stacking requirements" which will put pressure on the feasibility of developments.<br><br>Existing award criteria for tenders include, sustainability, program, architecture, parking and site-specific factors. | CLPTs apparently also have an impact on the feasibility of projects that provide a certain market effect. |
| **Circular critiera in CLTPs** | Currently, there is no standard method for asking for circularity. This happens differently for each tender.<br><br>Calculation tools such as MPG and EPC are applied so that municipalities can compare submissions. From both the public and private side, the calculation tools are just not very popular. | There are opportunities for standardization and better appreciation of the selection method of CLPTs. |
| **The realization of projects following CLTPs** | Currently, there is little review of the actual circular quality of won tender bids. | The part after the tender phase is important for the final building, but there is apparently little municipal oversight. |

# PART III: THEORIES

# 4. Theoretical Framework

*This chapter provides the theoretical framework of this research. In this framework the basis for the research is layed. Therefore, scientific and practical literature is being reviewed to answer the sub questions formulated in 1.4.*

*In the first part of this chapter the following question will be handled: What are circular land tender procedures? To answer this question, the following three sub-questions are elaborated: 1) What are circular real estate developments? 2) What are land tender procedures? 3) What are circular criteria in land tender procedures in practice?*

## 4.1. Circularity in Real Estate Developments

*Circularity is a catch-all term that involves a wide range of facets. Some relate to materials, others to transportation or biodiversity. This chapter discusses what circularity in the built environment entails and explores real estate developments.*

### 4.1.1. From a linear economy to a circular economy

During the design and development phase of a product 70% to 80% of the environmental impact of products is defined (Rocha et. al, 2016). In a rapidly developing world in which our natural resources are increasingly depleted and where the environment is being hit hard, it cannot be the case that the environmental impact or product is not taken into account. Within the linear economical philosophy products are take, make and dispose are logical next steps. It is widely acknowledged that the building industry consumes large amounts of raw materials while generating waste and emissions (Van Stijn & Gruis, 2019). By changing the design and development phase by focussing on the possibility to reuse, remake and recycle, the transition to a circular economy is made. This can is also called ‘cradle-to-cradle' or ‘closing the loop’. In figure 2 a schematic representation of the linear and circularity production processes is depicted.

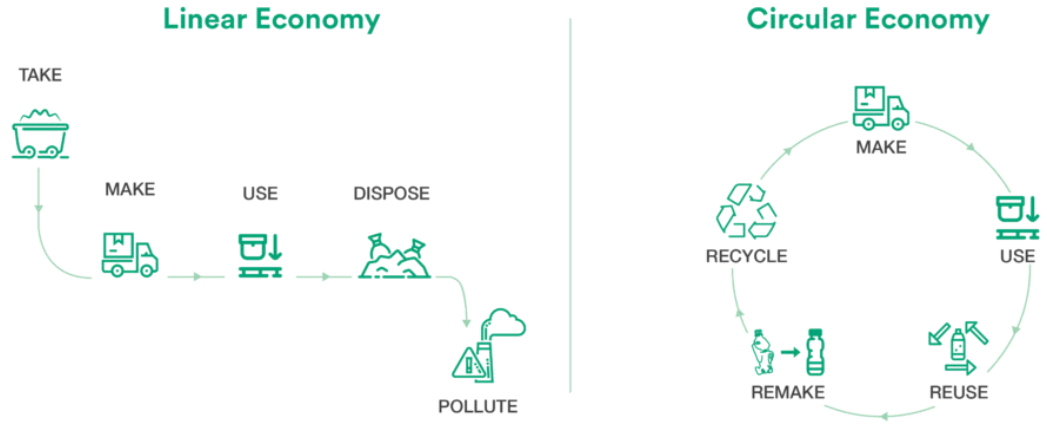


Figure 8 From a linear economy to a circular economy (RTS, 2019)

### 4.1.2. Circular Real Estate

There is a great opportunity for the built environment to contribute to the circular economy. The way we develop cities can limit the consequences of this, by designing buildings and building where we take into account a low energy and raw material consumption. Circular construction is now high on the agenda of both the government and market parties. But the actual transition takes place at a slow pace (Van Noort, 2018). The Dutch Green Building Council (2018), a collective of research institutions set the following definition on a circular building: "A building that is being developed, used and reused without natural resources unnecessarily exhausting, polluting the living environment and damaging ecosystems. Built in an economically responsible manner and contributes to the well-being of humans and animals. Here and there, now and later. Technical elements can be dismantled and reusable, biological elements can also be used to be returned to the biological cycle".


Figure 9. The 7 pillars of the circular economy (The Dutch Green city council, 2018)

### 4.1.3. The interdisciplinary field of Circularity.

Real estate developments in themselves do not benefit from the use of materials that quickly decay or break. The fact that 80% of buildings in the Western Hemisphere are older than 35 years shows that most buildings are built to last. Research shows that the lifespan of real estate lays around at least 60 - 90 years with outliers to centuries. (Pomponi & Moncaster, 2016). As Figure 3 shows, buildings can be seen as the meso-level of their environment with cities being macro-level and building components as micro-level.

Whether a real estate development can be considered circular depends on its own meso scale, but also highly depends on the micro level. This shows the deep interlink between the manufacturing of components and the outcome of a building. Decisions made in the macro-level can steer the development of circular real estate. This then should lead to the circular design of the meso-level, which directly corresponds to the micro-level. Pomponi & Moncaster (2016) show that circularity consists of interdisciplinary fields of research.

On the micro-level it consists of material studies and Life cycle analysis, on the meso-level the circular design approach is of importance and in the macro-level government policies are researched. The interdisciplinary character of circularity creates fields of overlap and interesting interfaces. In this research the macro-level is taken as a starting point of research. The municipal policy of circular land tenders is researched. At a meso-level different cases are selected which tell something about the meso- and macro-level. In the assessment of the case the micro-level analysis also plays a role in determining the degree of circularity.

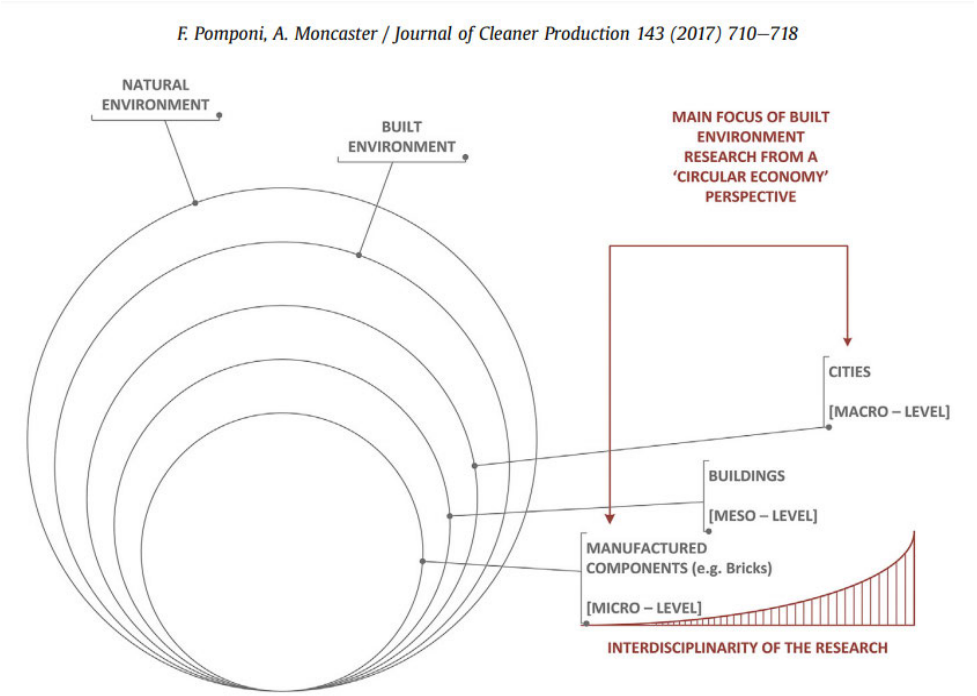


Figure 10:

### 4.1.4. Real Estate Developments

Real Estate developments tend to be complex and follow an iterative way. Due to the many stakeholders involved the process consists of many different interests. Circularity in the built environment is a holistic approach and must therefore be supported by all stakeholders. Circular thinking must form the basis for a project if it is to fulfill the promise of circularity.

Research shows that those involved believe that real estate developers play the biggest role in achieving circular real estate development (Scherer, 2019). Real estate developers therefore play a key role in development, but what are their drivers and how can they approach a process in a circular manner? Real estate developers construct, redevelop or refurbish buildings. This can be dwellings, offices, retail and leisure. They mostly consider buildings as a short term asset and their main goal is making profit. For the design and construction they rely on third parties. The real estate developers must have knowledge on circularity and see an interest in applying circularity. To move towards circular developments they should expand the scope in requests for tenders. This leads to a growing complexity of their role as a stakeholder. The World Business Council for Sustainable Development (2018) established that the way real estate developers work should really change to transform their business case from a 'linear' to a 'circular' one." They will have to become part of a collaboration with a more holistic approach, and as a joint effort to reduce CO2 emissions and the total footprint of a building.

Developers will need to use their leverage to convene these sharing platforms and to stimulate integrated design." Real estate developers' actions are influenced by certifications and benchmarks such as BREAM and WELL Building. But the problem is that they mainly apply to the high end commercial market.

In the current practice some first steps towards a circular built environment can be detected, but there still are barriers to overcome. Firstly there is culture and beliefs, the culture within companies and the existing way of working can hold back changes. Regulations also have a big effect on the implementation of the circular economy. When there is little commitment from public parties, real estate developers are not tempted to build circular. Perhaps the most important barriers are the current market mechanisms. Virgin building materials have very low pricing and circularity is scarcely considered in asset evaluation. Next to this is the upfront investment high due to innovation and integrated design costs. Technology itself takes time to develop and for some part of the process challenges have to be tackled. For instance in the waste stream separationThe last named barrier is that of a lack of specialists in the field of circular building. Scale can only be reached when the circular economy is an integral part of education. (The World Business Council for Sustainable Development, 2018)

"Buildings and infrastructure are constructed from renewable, secondary and low carbon materials. Elements of the built environment are also designed from the ground up to be adaptable to increase utilisation, as well as easily deconstructed at the end of their life to enable reuse."

Research on the CE (circular economy) is mostly focussed on short-lived manufactured products, which means that the cycles go relatively fast and products are relatively simple (Pomponi & Moncaster, 2017). Creating a circular built environment on the other hand is a highly complex process, in which knowledge gaps need to be addressed.

In this research the following components of circular developments are considered:

**PLANNING**

1. Planning compact cities – dense, mixed-use, and transit-oriented
2. Planning for local circular material flows

**DESIGNING**

1. Designing for adaptable and flexible use
2. Using collaborative design processes
3. Integrating material choices into design
4. Taking inspiration from nature

**MAKING**

1. Sourcing materials strategically
2. Building with resource-efficient construction techniques
3. Building 'buildings as material banks' (BAMB)

**ACCESSING**

1. Accessing residential space through shared-use schemes
2. Accessing commercial space through shared-use schemes
3. Increasing the use of space through design features

**OPERATING**

1. Using smart technology to run buildings effectively
2. Using product-as-a-service models for building fit-outs
3. Adapting buildings for alternative uses
4. Refurbishing buildings to run them efficiently

The main research on circularity in the Built Environment is focussing on materials life cycle analysis (LCA), but these merely focus on the technical aspect of building components. Interdisciplinary research on the development of projects and areas is lacking and the important role of real estate developers should be included. This research will focus on the implementation of circularity planning instruments and the perception of stakeholders on these instruments. For every of the above mentioned steps in the construction of circular buildings there is a decision space for real estate developers and local governments to determine the level of circularity. Since circularity is an incredibly broad concept that consists of a large number of facets, the transition to circular real estate developments and area developments is very complicated. Identifying the possibilities and setting ambitions is therefore crucial in the transition to a circular built environment.

### 4.1.5. Conclusion

The concept of circular economy is to go from a linear production process to a circular production process in which materials can be given a new life after the end of a life-cycle. The interest in circular real estate is growing and more effort is put in achieving a circular built environment. Circularity is a concept that works on different scale levels and therefore is difficult to contain in one concept. Pomponi & Moncaster (2017) identify different levels of circularity varying from the macro level being cities and their policies to buildings and their components. Policy implementation is part of the macro-scale of circularity but has a lot of overlap with the other scale-levels of circularity. For this research the overlap between planning and designing is interesting since there the interaction between public and private stakeholders in the field of CLTPs is taking place. In this chapter a outline on what circular real estate developments are is given. The next step is to look at policy tools and how planning instruments can create real circular outcomes.

## 4.2. Land tender procedures

In this section the planning instruments and land tender procedures are researched.

### 4.2.1. Planning instruments

Local authorities are more and more depending on market parties to achieve their political goals. Planners are facing difficulty due to the pressure generated by the real estate development industry. Due to that pressure public planners are responding to market pressure rather than creating well-informed plans to create sustainable places via public-private interaction. (Heurkens et. al, 2015). Urban projects and real estate developments are mostly based on private-sector development in investment activity, which means public planners need market parties to fulfill their politically established goals. They can influence market-parties to do so through strategic and effective application of the planning instruments at their disposal (Heurkens et. al. 2015). This is where urban projects and real estate developments become public-private interactions in which stakeholders can have different interests.

The successful implementation of planning instruments is dependent on the 'delivery capacity' of the public planner. Power, resources and expertise are identified as key elements of this capacity. When these key elements are present a public planner can successfully transform policy intentions into actual outcomes (Heurkens et. al 2015). In a market economy in which the private sector is producing developments and therefore planning outcomes, public planners need to influence market parties. This influence is based on relationships between planning and the market. The three key factors that are crucial for planners to shape markets are:

4. Planners are required to have a strong focus on defining and pursuing specified outcomes.
5. Planning instruments used, are defined by their expected impact on the market actors.
6. Planners should be equally comfortable using market language or planning language to describe what they have achieved. (Heurkens et. al, 2015)

| Instruments | Impact on markets | sub-types and examples |
|---|---|---|
| **Shaping** | Shape decision environment of development actors by setting broad context for market actions and transactions | Development/investment plans<br>Public (infrastructure) investment plans<br>Regulatory plans<br>Statutory plans, policies, strategies<br>Indicative plans<br>Non-statutory plans, policies, strategies |
| **Regulatory** | Constrain decision environment of development actors by regulating or controlling market actions and transactions | State/third party regulation<br>Planning permission, property rights Contractual regulation<br>Development agreements |
| **Stimulus** | Expand decision environment of development actors by facilitating market actions and transactions | Direct state actions<br>Reclamation, infrastructure, land acquisition<br>Price-adjusting instruments<br>Grants, tax incentives, bonuses<br>Risk-reducing instruments<br>Policy certainty, place management<br>Capital-raising instruments<br>Loan guarantees, funds, partnerships |
| **Capacity building** | Enable development actors to operate more effectively within their decision environment and so facilitate the operation of other policy instruments | Market-shaping cultures, mindsets, ideas<br>New perspectives, ways of thinking<br>Market-rich information<br>Market and development process logics<br>Market-rooted networks<br>Formal and informal interaction arenas<br>Market-relevant skills<br>Human capital, individuals |

Table 8: Adams et al., 2005, 64; Adams and Tiesdell, 2013, 134–35 retrieved from Heurkens et. al (2015)

**Shaping instruments**: "Shape decision environment of individual development actors by setting broad context for market actions and transactions."
**Regulatory instruments**: "Constrain decision environment of individual development actors by regulating or controlling market actions and transactions".
**Stimulus instruments: "**Expand the decision environment of individual development actors by facilitating market actions and transactions."
**Capacity building instruments: "**Enable development actors to operate more effectively within their decision environments and so facilitate the operation of their policy instruments."

### 4.2.2. Active land policy

The policy instrument used to make CLTPs possible is active land policy. In active land policy a municipality buys and sells plots of land from market parties.

The Dutch law allows municipalities to pursue an active land policy. Active land policy consists of three steps: 1) The municipal acquisition of developed or undeveloped land, 2) preparing the land for construction. 3) Giving out the land in sale or lease holds (Hobma,2013). In the Netherlands there is a special situation that ensures that land issues do not fall under public law. When selling land, a government organization acts as a legal person and acts on the basis of private law. An important starting point when entering into private law agreements is the freedom of contract; the freedom to determine with whom a contract will be entered into and which agreements will be made. This also applies to the government. It is true, however, that the government party is also bound by the general principles of good administration in this private law act, such as the principle of due care and the principle of equal treatment (BW 3:14 and Article 3: 1 paragraph 2 Awb). These principles entail that the choice of a particular contract partner must be made after a careful weighing of interests. The government must be able to justify why it makes a choice for a particular party on the basis of transparent and objective criteria (Le Large, 2019).

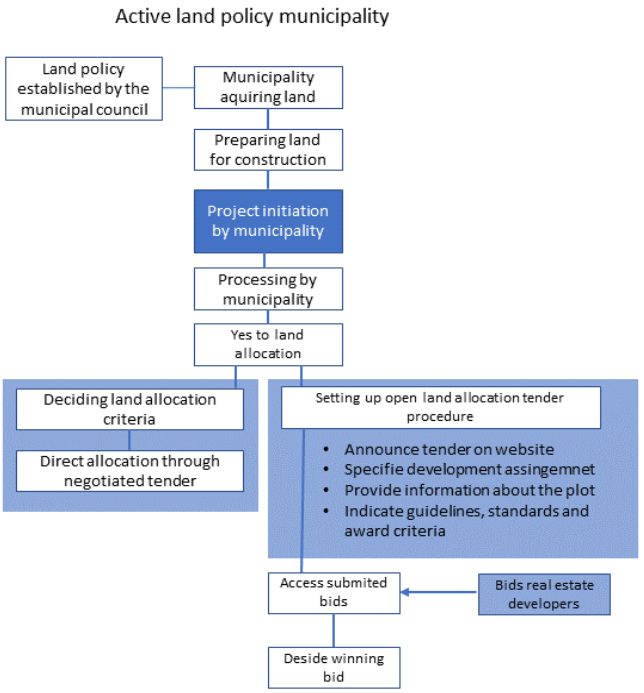


figure 11: active land policy (own ill.)

### 4.2.3. The changing role of the municipality.

In this research the way circular land tender procedures are perceived is investigated. The literature used in this chapter shows that there is a highly complex context in which this new phenomenon is introduced. This makes the introduction of this planning instrument even more important.

Dutch municipalities have the public law option to buy land on which they have spatial plans. For example, buying an industrial area, changing the zoning plan to residential and selling the land ready for construction to a private party (de Wolff, & Groetelaers, 2017). Using this combination of private and public law planning instruments helps the municipality to steer the future development of an area. When the bought land is prepared for construction and the zoning plan is changed, then land can be sold for a substantial profit. De Wolff & Groetelaers describe this as a complicated process because this can be seen as a "double-hatted" game. The changing of a zoning plan is a public deed and selling it to the market can be seen as a private transaction.

It is clear that pursuing an active land policy has become an important addition to the municipal budget. Korthals Altes (2018) describes that the net profit since 2017 has even exceeded one billion euros. This profit made from selling land by the municipality can be used by the municipality to invest in unprofitable projects elsewhere or in any other municipal cost item. In addition to the possibility to sell the land, the municipality can also lease the land on a long lease. In addition the municipalities are under public law allowed to participate in Public-Private-Partnerships (PPPs) (Hobma & Jong, 2016). In these PPPs market risks are carried by the municipalities. These public law options enable the municipality to play a major role in what is in principle a private environment.
The possibilities of the municipalities in the public and private law field allow them to have a considerable influence in the development of real estate projects. When the municipality is the owner of a plot they can sell it to a market party, usually being a real estate developer or investor. The municipality can set regulations on the land that the real estate developer has to satisfy (Hobma & Jong, 2016). Here is where the influence on the opportunity space of and eventual design space of the real estate development is drawn up by the municipality. In artikel 6.13 of the Spatial Planning Law (Wet ruimtelijke ordening) it states that the exploitation plan may also contain rules about the feasibility of the zoning plan. With this, the legislator wants to make it possible for an exploitation plan to contain provisions on for instance the number of social dwellings, or self-build plots. The municipality uses these award criteria in selection procedures to determine the choice for best candidates for land tenders. There is a difference between what the municipality can demand and what the municipality can set as ambition. The municipalities may not legally require developers to more than legally stipulated in the building decree. For example, the statutory EPC for new construction is now 0.4, municipalities may not require an even lower EPC as an award criterion. On the other hand the municipality can add ambitions to the selection procedures for land tenders. This has to do with the thwattering doctrine (doorkruisingsleer). Governments are not allowed to use private law if that use thwarts in an unacceptable way that forms the basis for a public law (Hobma & Jong, 2016).

In practice, the official tender documents do refer to ambition documents that deal with issues such as circularity and sustainability. In this way it is not explicitly required, but the project developer knows what the set standard is (Hulsebosch). In the current Spatial Planning Act, the emphasis is on the planning instruments that the municipality can use to get urban development underway. In 2022, a new law will be introduced that will change this philosophy. From then on, the idea becomes that the Municipality should facilitate more, for example when real estate developers want to continue building during a crisis. The new law has been postponed several times and experts such as Korthals Altes (2021) describe that the new law is based on the idea that the realization of real estate developments is under pressure due to the lack of willingness to invest. This new law was born from a crisis in which funding in real estate developments was lacking, but at the moment there are different problems. The current real estate market is not under pressure because there is no market initiative, but because the market absorption capacity is too low. This is because houses are too expensive, so that only a relatively small part of potential house buyers can take up a home. Korthals Altes (2021) describes that price reduction is the solution to this problem. Construction costs have increased by 36% between 2016 and now (NOS, 15 mei 2021). This, in combination with the slow cycle of real estate developments, means that this price decrease is not expected. Current low interest rates also play a role when it comes to financing investors and individuals. The current pressure on the housing market is an important part of the context in which land tenders and, in particular, circular land tenders are located. Professor Peter Boelhouwer (Interview BNR March 23th) describes the importance of more national steering when it comes to tackling the housing shortage. Municipalities have become increasingly dependent on income from active land policy and therefore demand high prices. This has to do with the decentralization in matters such as youth care, which puts great financial pressure on municipalities. Economist de Groot (2019) describes that the number of 100,000 new homes per year has not been achieved since the major decentralizations in the 1990s.

Due to the growing prices, it also happens more often that real estate developers criticize the policy of municipalities as being too pressing. Boelhouwer (interview Omgevingsweb March 24th.) describes this as the stacking of requirements, these requirements being environmental, social and circular. Next to the stacking of requirements Boelhouwer describes that the market thinks the procedures such as land allocation tenders are too complicated and time consuming. The Dutch association for real estate project development companies (NEPROM) has been calling for a relaxation of procedures for a few years now. In a 2017 letter to the cabinet that more construction sites should be released and that requirements for sustainability and social housing should be relaxed. If it doesn't, they say, the estimated number of 80,000 new homes per year will not be achieved (NEPROM, 2017).

The role of municipalities in real estate development has changed dramatically since the housing market has come under immense pressure. However, it is not said that the housing shortage is the fault of the municipalities. The incompetence to predict how the Dutch population developed in the last decade and the decentralization that has occurred since the 1990s have both not helped the situation (De Groot, 2019).

## 4.3. Circular land tender procedures

*To be able to research circular land tender procedures, this chapter describes the creation of the policy and the literal translation to the selection method. Amsterdam was nationally the first municipality that used this policy and that situation will firstly be introduced.*

### 4.3.1. The first Dutch city with circular land tender criteria.

The municipality of Amsterdam is aiming for further (re) development of the city. 80% of the land within the municipal boundaries of Amsterdam is owned by the city (Hulsebosch, 2021). This is a very high percentage in comparison to other major cities in the Netherlands. The municipality is usually responsible for preparing the locations for construction and subsequently issuing the locations on an annual lease. Since 2016, the municipality no longer sells land, but only uses perpetual leaseholds (Gemeente Amsterdam, 2019). The municipality of Amsterdam wants to show itself internationally as a progressive municipality in the field of circularity (Gemeente Amsterdam, 2020). They believe this will lead to a positive economic impact and trigger new business. One of the programs they have started to make the city circular is that of circular land tendering relating to transformation, demolition and operations. Metabolic and SGS Search were hired to draft a Roadmap for Circular Land Tendering. With this Roadmap Amsterdam became the first city in the world with a tool for circular land tendering.

The roadmap consists of 32 performance-related criteria on a circular built environment. Furthermore, a four-step process is included that helps the municipality to set up circular tenders (Gemeente Amsterdam, METABOLIC SGC Search, 2016). From 2022 onwards all new urban developments in Amsterdam will be based on circular criteria. Until this period the municipality of Amsterdam is aiming to create instruments that help the municipality with achieving their goals. Their main goal being: “The city of Amsterdam 100% circular by 2050, with an intermediate target of a 50% reduction in primary raw materials consumption by 2030.” (Gemeente Amsterdam, 2020). The municipality sees a leading role for itself in the transition and wants to draw up the right preconditions to make this possible. They want to do this by introducing policy instruments in phases by using traditional methods. These existing methods are: 1) the issuing of permits, 2) construction tender processes 3) land allocation tenders 3) partnerships. This therefore concerns the combination of public and private legal options that must contribute to a circular built environment. The Amsterdam circular strategy 2020-2025 describes the course of action of the implementation of instruments. In the year 2022 the municipality is aiming to define the circular ambitions of each district in the city. These ambitions can then serve as the basis for land allocation tenders and one-to-one agreements between real estate developers and the municipality (Hulsenbosch, 2021).

In Amsterdam the income from their active land policy is substantial. The income from land yield and ground lease income is 28% of all income from within the municipality and 16% of all income of the municipality (including external funding) (Gemeente Amsterdam, begroting 2021). In their annual budget, the Municipality of Amsterdam writes that the income from land sales is a very important part of their financial household. They also describe the great risk that a fall in land

prices entails for the municipality. In its own budget, the Municipality indicates that rising costs of real estate developments are therefore a major risk. In it they also explicitly mention the increasingly stringent sustainability requirements and the tight housing market that is driving up prices.

### 4.3.2. Selection procedure with circular criteria.

*In order to gain a better understanding of what circular tenders are for land issuance, this chapter discusses a selection process for a land allocation tender in Amsterdam.*

The Dutch and European law has extensive jurisprudence and guidelines that a government agency must adhere to. The government is obliged to apply the principle of equality when procuring services and when selling public goods and plots of land. This principle forms the basis of procurement law and applies in the case of public and private law (Heijnsbroek, 2013). A government agency is free to choose between a public or a restricted procedure in a tender. If contracting authorities carry out a public or restricted public contract tender, they must indicate their intention to do so in a notice. According to procurement law this publicity is one of the foundations of the system. The notices are published by the commissioner published in the (supplement to the) official Journal, so that the contractors in the community are able to determine whether the proposed contracts are important to them. The choice of the ultimate counterparty must be based on the basis of predetermined selection and award criteria; thus ensuring the equal opportunities for potential counterparties (Heijnsbroek, 2013).

In the case of a municipality like Amsterdam this part of procurement law means two important things. Real estate developers should be treated equally. This does not mean that the Municipality cannot itself search for a suitable party or make a pre-selection, but that the criteria on the basis of which these decisions are made must be clearly established and also published on an official channel of the Municipality.

In addition to the principle of equality, the procurement guidelines also provide guidance on the principle of proportionality. These apply to the suitability requirements of the participating parties and the stipulated award criteria. In concrete terms, the proportionality principle means that each chosen award criterion, in view, is both necessary and appropriate. For example, no technical, professional or financial demands are made that are disproportionate to the object of the concession agreement. Nevertheless, the guidelines insist that granting authorities are free to determine the targets, especially in terms of performance and technical specifications (Heijnsbroek, 2013).

### 4.3.3 Conclusion

The process of implementation of CLTPs in a city like Amsterdam can be explained using the planning instruments of Adams & Tiesdell, Heurkens et. al (2012; 2015). The municipality uses shaping instruments to shape the decision environment of real estate developers. By introducing a circular ambition for the whole of Amsterdam and its real estate developments they make clear to the market what the shaping environment is. Within the regulatory field they use contracts and agreements to secure what is intended with the tender. In that way the public authority is limiting the scope of the real estate developers autonomous action (Heurkens, 2015).

With the active land policy the municipality is able to provide property rights and the possibility of real estate development. The issuing of circular land tenders is also part of the stimulus instruments of the municipality. In the sense of using tenders, they increase the likelihood of circular buildings by rewarding in market parties. When real estate developers come up with a substantial circular bid on a tender, they are granted the possibility of developing real estate at a certain plot. Capacity building is of great importance for the implementation of a policy instrument such as CLTPs. The facilitation of better operations necessary to create the good implementation of policy instruments. Mutual respect, greater trust and willingness to work together with private parties is beneficial and desirable for the implementation of policy instruments (Heurkens et. al, 2015). That is why it is important that the perception of public and private stakeholders is researched in regard to CLTPs.

In the earlier shown image 6 the different concepts from this chapter are connected in the conceptual model. The model shows that intended policies go through the various stages before it becomes a concrete outcome. From circular ambitions to circular real estate developments requires the right implementation of policy tools and the introduction of different planning instruments. This next part of the research will be focused on the orange part of the image.

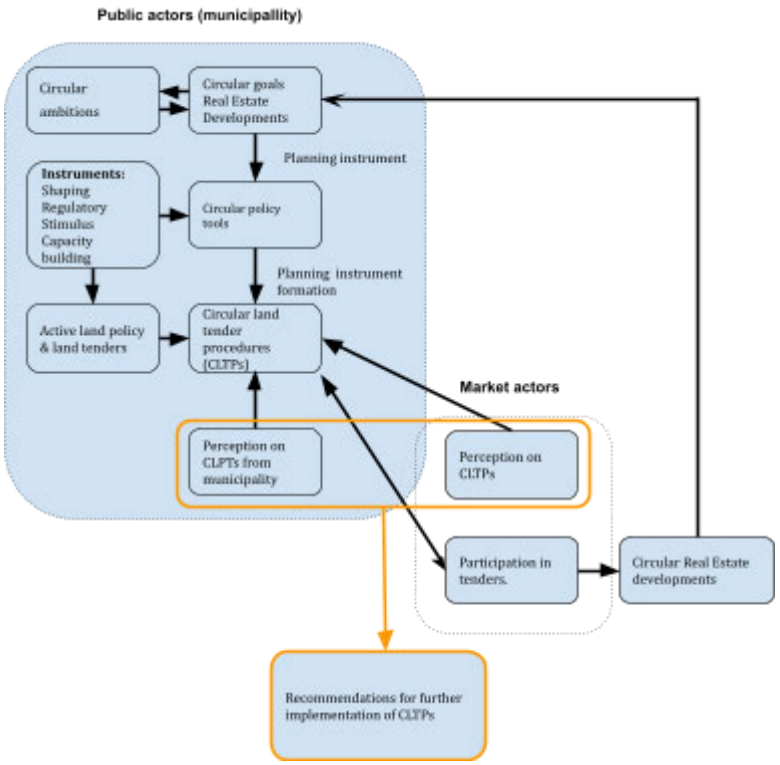


Figure 3: Conceptuel model (Own ill)

# PART V: PRACTICE

# 5. Case studies

In this part a multiple case study research is performed to gather empirical evidence about the used circular principles in urban area development in practice. The chapter starts with a description of both cases. A report is written in which a case description, project planning, stakeholder overview, municipal policy on circularity and the circular ambitions of the project are explained. Furthermore, three involved stakeholders per case are interviewed. A SWOT-analysis is constructed together with the interviewed stakeholders of the cases. This in combination with the interviews and case information will lead to the lessons learned from the cases.

Finally, a cross case analysis is conducted, followed by the most important findings. The research question, which is further elaborated on in this section is: “How do circular land tenders work in practice?” “What are the perceptions of stakeholders on circular land tender procedures?“ “What are the implications of CLPTs on the course of action of real estate developments?”

## 5.1. Case Study Research Method

*In this chapter the “Circularity in lande tender procedures” is validated and sharpened by conducting two case study analysis in these case studies, documents are analyzed, and stakeholders interviewed. A case study research is used as a method to describe the presence of a phenomenon within its real-life context (Yin, 2003).*

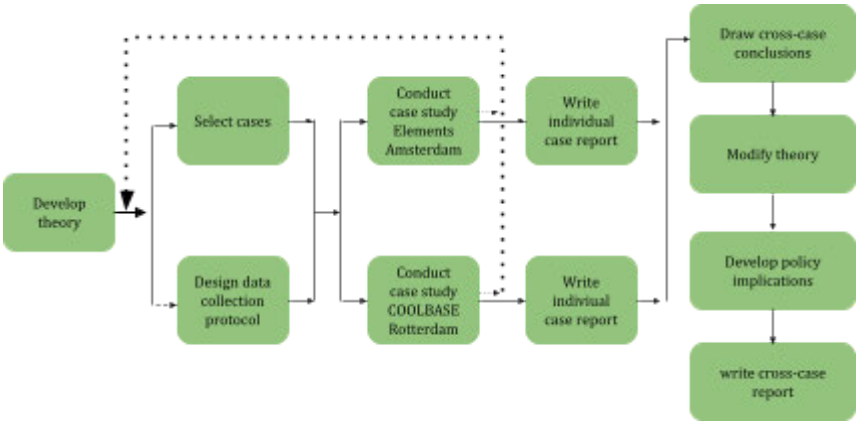


Fig. 12: Visualization of case study research method (Own ill. based on Yin, 2003)

In this case study, the phenomenon of circular land tender procedures is researched and the real-life context consists of existing urban area developments in the Netherlands. The used method is the case study research method of Yin (2003) which consists of three steps. In the first step, which is called ‘define and design’, the research consisted of literature study and explorative interviews, to develop the theory that can be used for the case study analysis. Out of this, two Dutch cases were selected and the ‘data collection protocol’ is designed to conduct the case studies.

The second step is ‘prepare, collect and analyze’ and in this part the two case studies are conducted. For each case study several documents are analyzed and per case three stakeholders are interviewed. These findings are documented in individual case reports. The last part is ‘analyze and conclude’. In this part the individual cases are compared in a cross-case analysis by identifying the differences and similarities between the cases. Out of this, conclusions can be drawn on which factors belong to a circular urban area development.

### 5.1.1. Case study selection

For this part of the research three cases are chosen to make cross-case analysis possible. These three cases are not randomly chosen. The case selection is based on a defined set of criteria.

The next criteria are defined:

- The project is from a public tender
- The tender has circularity as part of the award criteria
- The development of the area is in the planning or execution phase
- The size of the development contains one object, surroundings can be included.
- The size and program c.q. building, public space and infrastructure should be similar to the other case

### 5.1.2. Design of data collection model

To do a cross-case analysis, multiple cases have to be conducted. To conduct every case in the same way a data collection model is designed (Yin, 2003). For this research three cases are researched in the Randstad area in the Netherlands: CoolBase in the municipality of Rotterdam and Elements in the municipality of Amsterdam. The mission for every case study is to understand which factors of this urban area development belong to the principles of the circular economy. The objectives are:

- Analyze each project by gathering information about the specifications and characteristics of the circularity of the project. Get insight into the sustainability and circularity policy documents of the municipality
- Get insight into the sustainability and circularity objectives of the project
- Evaluate the policy instrument of CLPT (literature study and explorative interviews)
- The literature study and explorative interviews are used as a starting point for the case study design.
- Every case is researched in the same way. The steps of each case study can be seen in the data collection mode.

The data collection consists of a project analysis in which the case will be described. Second, policy documents and project documents are used to understand the circular ambitions of the municipality and the project. Finally, three-four stakeholders per case are interviewed to evaluate and identify the factors that contribute to the development of the circular urban area. The aim is to interview someone of the municipality and two public parties that were involved in the creation

and elaboration of the circular ambitions of the tender. All the subtracted information will be documented in a case study report.

The information found in project analysis and policy documents is structured in the case study report in the following way:

- Case description including the project planning and most important stakeholders
- Municipal policy on sustainability and circularity
- Circular ambitions of the project
- Furthermore, three stakeholders will be interviewed per case. To structure these interviews a case study interview protocol is designed which can be seen in appendix II. This interview consists of two parts: questions about the case, questions about CLTPs in general.

Lastly, the strengths and opportunities for circularity in the project will be discussed and a SWOT-analysis is conducted. In this SWOT-analysis internal and external factors are described from the perception of the stakeholders. In this analysis, the strengths and weaknesses of the organization are identified internally. Externally, the most important opportunities and threats are examined. In this way, a complete picture is obtained of the core facts of CLPTs approach. Lessons are then drawn from the analysis of the various components of the cases. These lessons can be applied in the study of the other case and will ultimately ensure that a comparison can be made of the two cases. This happens in the cross-case analysis and is an important part for the substantiation of the conclusions and recommendations made.

# 5.2 Case 1 COOLBASE

*This chapter deals with the first of two cases. The tender for lot 'the Machinist' is one of the first CLTPs in the Municipality of Rotterdam and is a good reflection of CLTPs in general.*

## 5.2.1. The 'Machinist' tender

Lot the Machinist is a site, owned by the municipality, included in the college's "acceleration task". The lot is located between 3 landmarks: the old Machinist school, former tax office Puntegale and the pumping station at the Park Locks. The entrance to the neighborhood is notable for the former Puntegale tax office. Next to it is the Machinist, an old maritime school that has been converted in its original style into a unique place for creative businesses and hospitality. In the neighborhood there are many old buildings that used to be used for the port. These have been converted into offices and cultural institutions, such as Grounds (WMDC), the Theater School and the Batavier House (Rotterdam, 2019). At this location on the Coolhaven currently a well known seafood restaurant named the 'Vismarkt' is located. During construction the Vismarkt is temporarily moved, but will be located back after construction. A notable element of the tender is that a major utility is currently located under the plan area. A very large pipe from Eneco that provides district heating from the port area lies under the plan area. Before construction starts in March 2022, this pipe has to be relocated.


Figure 14 Case location old and new situation (FSD, 2020)

## 5.2.2. The tender procedure

The residential tower that the municipality proposes is about fifty meters and has 16 floors. In the building there will be around 57 homes in mainly the middle-rent segment (about 75%, up to a maximum of 1000 euros monthly rent) and about 25% belong to the high / top segment. In the Municipality of Rotterdam, there is a large shortage of housing and specifically housing in the middle segment. Since the Municipality owns the land, it can use a tender to make a specific request in line with its policy. In this case, it is about houses in the middle segment that are legally bound to a maximum rental price. One could, for example, also explicitly ask for social housing or ask for a percentage of owner-occupied homes, but that is not the case here.

The tender is divided into three different phases. In the first phase, anyone could apply. Of these, three were then selected. These three only made a sketch design and presented it to the jury of the municipality's land company. Of these three, a winner emerged who won the competition.

### 5.2.3 Planning

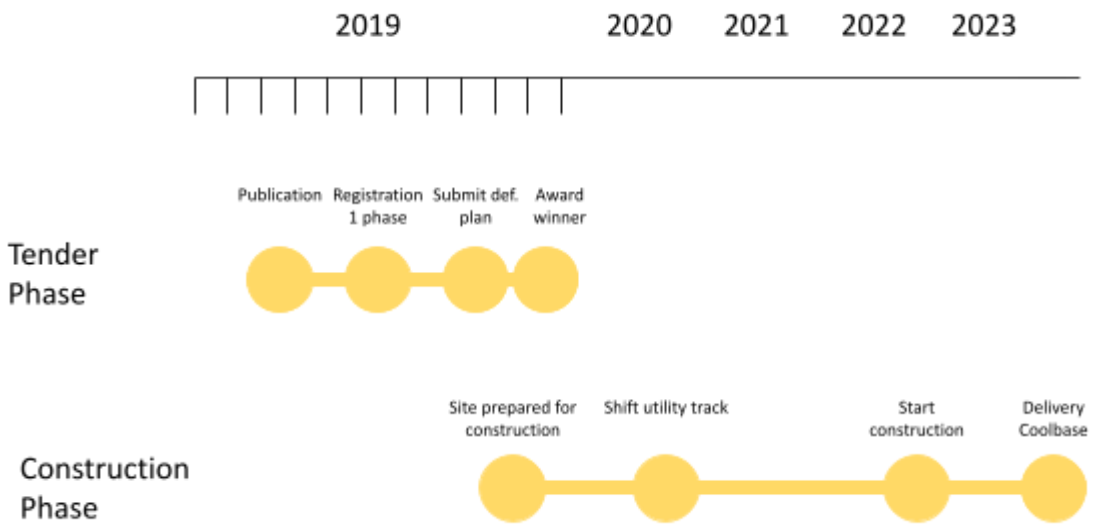


Figure 15 Timeline COOLBASE (Own ill.)

The phasing of the project is divided into the tender phase and the actual construction phase. The case study focuses mainly on the tender phase but the construction phase is also important. During the tender, agreements are also made about the delivery period of the project. In the case of Coolbase this was changed in consultation because the utility route of enenco caused more problems than had been anticipated.

### 5.2.4 Stakeholders

| Gemeente Rotterdam | Fransje Sprunken Development | VMX Architects | J. Van Toorenburg | W / E Adviseurs |
|---|---|---|---|---|
| Municipality | Project Developer | Architects | Installation technology | Energy performance calculations |
| Project Manager: [redacted] | Project Developer: [redacted] | Director / Architect [redacted] | Director [redacted] | Senior Consultant [redacted] |

Figure 16: Stakeholders COOLBASE (Own ill.)

A large number of team members were named in the tender offer. The architect, investor, and all sustainability and installation experts were involved early on. The landscape design was also an important part of the tender so there was a lot of input from experts in that area.

"We start hooking on partners early on. By not only including a landscape architect and gardener in the tender, but even a maintenance contract, we think about the future of the plan. Municipalities generally find this very pleasant." ([redacted]021)

### 5.2.5. Municipal policy on circularity

Rotterdam has expressed its ambition in the field of circular economy. Indeed, metropolitan areas offer a perfect opportunity for a circular economy. They cover only a small part of the land area, but almost all of the raw material consumption takes place there. This is further reinforced by the port, with all the supply and transport and industrial consumption of raw materials that takes place there. Rotterdam wants to be a frontrunner. By 2030, circular is the benchmark. Rotterdam will become a 'living laboratory' in which it will experiment, pioneer and secure the successes. "We are positioning the city and port as a circular hotspot" (Gemeente Rotterdam, 2017)

The Municipality of Rotterdam has prepared a large-scale study with a research consortium consisting of Metabolic, Circle Economy, Blue City and Spring Associates. This research examines the current situation and looks at where the circular opportunities for the city of Rotterdam lie. Since there is a large port area, there are very specific opportunities for the city. The research mainly focuses on waste streams and the use of raw materials.

The five conditions set in the research 'CIRCULAIR ROTTERDAM Kansen voor nieuwe banen in een afvalvrije economie' for the transition to a circular economy are as follows:

1. Waste reduction measures offer the greatest potential impact reductions. Waste must therefore be prevented at the source. Thus, trying to prevent waste more proactively is a very important measure.
2. Without effective separation of waste streams, high-quality circular alternatives cannot be realized.
3. Products / buildings need to be designed differently. Only in this way can circular potential be exploited later. Products / buildings should be designed for sustainable repair, modularity, disassembly, traceability and safe solutions for the environment.
4. Investments in policy changes can become critical success factors for the transition. Entrepreneurs and citizens need structural support to move to circular development.
5. Most interventions needed to make the economy circular lead to jobs rather than costing jobs. Thus, local employment will experience positive effects.

The set conditions are translated into workable planning instruments that the municipality can deploy to get their circular ambitions done. Heurkens et. al (2015) describe different types of planning instruments that underlie the conditions that the Municipality of Rotterdam wants to set.

### Condition 1

Is part of Capacity building instruments the municipality has. The design process should think early on about the waste streams that the project may generate. This requires a different mindset regarding the development of projects. In a tender this translates itself into naming demountable construction and rewarding thought on the after-use phase of the project.

### Condition 2

In the municipality of Rotterdam demolition is above the Dutch average. For every square meter that is built, at least one is demolished. This demolition has a major impact on the waste flows generated by the city and is therefore an important part of the circular ambition. Circular demolition works best when it has already been considered during the design phase, but can also be done without any attention being paid to it. This means that while demolition is more expensive and takes longer, less ends up in the waste streams. The Municipality of Rotterdam also calls for circular demolition during tenders with an existing situation. This is then again an award criterion to win a competition. Heurkens et. al (2015) describe this as a Stimulus shaping instrument, since it stimulates by offering the possibility to construct / demolish.

### Condition 3

Circularity in land tenders is one of the ways in which the City of Rotterdam is trying to achieve this condition. In the land tenders they ask for circular construction methods and use of materials so that in a later phase circularity can be handled more easily. Here too a different mindset needs to be developed in the design field. It is a combination of Stimulus and Capacity building instruments. On the one hand, an incentive is created and, on the other hand, the entrant is challenged to create a new culture.

### Condition 4

Policy changes in a host of areas will be necessary to get an economy that is currently 22% circular (Rotterdam) to 100% circular by 2030. The new steps of circularity in land tenders is a part that can directly contribute to this. The way this is done is of course also of great importance on the outcome. Changing and making policies touches on all the different planning instruments of Heurkens et. al (2015) and also extends beyond the built environment. What is clear is that the City of Rotterdam is broadly committed and also committed to moving towards a circular future. By setting up ambition documents and plans for the future the Municipality is using shaping instruments to create a landscape in which circularity in the city can grow to maturity.

### Condition 5

By linking job opportunities to the circular transformation, the municipality of Rotterdam ensures that a proper cost-benefit analysis can be made. Instead of treating circularity as a cost, it is looked at as an opportunity.

## 5.2.6. Tender specifications

Municipalities have the option of asking for extra money when it comes to tenders. Normal legal standards when it comes to sustainability and construction methods are still in place but making it a competition creates a climate of ambitious project ambitions. In order to assess the plans evenly, the selection criteria of the tender are formulated. In the case of 'the Machnist' tender, these were three project content components and the land bid.

The contract for the plot of ‘de Machinist’ is awarded on the basis of the best price/quality ratio, with part of the points being linked to Quality (G1, G2 and G3) and part to Land Price (G4). These criteria are linked to Quality (G1, G2 and G3) and part to Ground Price (G4).

Selection criteria:

| | |
|---|---|
| Quality | **70 points** |
| G1. Urban Planning & Architecture | 30 points |
| Sub-area 1 Building Mass | |
| Sub-area 2 Materialization | |
| Sub-area 3 Connection with the monumental surroundings | |
| Sub-area 4 Programmatic interpretation of the plinth and the dwellings | |
| G2. Landscape | 20 points |
| Sub-area 1 Public space around the building incl. design under the deck | |
| Sub-area 2 Nature inclusive design | |
| Sub-area 3 Mobility approach | |
| G3. Sustainability | 20 points |
| Sub-area 1 Energy | |
| Sub-area 2 Circularity | |
| Sub-area 3 Climate adaptive design | |
| Price | **30 points** |
| G4. Land price | 30 points |
| Total | **100 points** |

Table 9 : Selection criteria COOLBASE (Own ill. retrieved from Gemeente Rotterdam, 2019.)

## 5.2.7. Assessment method

| Assessment Directive | Awarded part of points |
|---|---|
| **Outstanding**<br>The information provided by the Tenderer demonstrates a very high degree of completeness and appropriateness in relation to the relevant Award Criterion. The information is of excellent quality and is fully in line with / amply meets the expectations of the Municipality. The information is reliable, transparent and complete and has appropriate substantiation in so far as relevant. The Tenderer convincingly demonstrates that he understands the Challenge and can realize all intended ambitions. | **100% of total** |
| **Good**<br>The information provided by the Tenderer shows a good degree of completeness and appropriateness in relation to the relevant Award Criterion. The information is of good quality and is in line with the expectations of the Municipality. The information is reliable, transparent and complete. The Tenderer demonstrates that it has a good understanding of the understands the Challenge and can (partially) realize the intended ambitions | **75% of total** |
| **More than sufficient**<br>The information provided by the Tenderer demonstrates a more than sufficient degree of completeness and appropriateness in relation to the relevant Award Criterion. The information is of more than sufficient quality and is (partly) in line with the expectations of the Municipality. expectations of the Municipality. The information is reliable, transparent and is transparent and is considered complete. Tenderer demonstrates that it understands the Challenge and can (partially) realize the intended ambitions.<br>(partly) realize the intended ambitions. | **50% of total** |
| **Sufficient**<br>The information provided by the Tenderer demonstrates a sufficient degree of completeness and appropriateness in relation to the relevant Award Criterion. The information is of sufficient quality and partly meets the expectations of the Municipality. The information is considered partially complete. Tenderer demonstrates that it understands the Challenge and can realize the intended ambitions in part. | **25% of total** |
| **Unsatisfactory/bad**<br>The information provided by the Tenderer shows an insufficient degree of completeness and appropriateness in relation to the relevant Award Criterion. The information is of insufficient quality and does not or insufficiently meet the expectations of the Municipality. expectations of the Municipality. The information provided by the Tenderer shows that the information is missing or that there is little or no connection between what the Tenderer offered and what is requested by the Municipality. The Subscriber has insufficient understanding of the Problem and is unable to sufficiently realize the intended ambitions. | **0% of total** |

Table 10: Assessment directive COOLBASE (Own ill. retrieved from Gemeente Rotterdam, 2019.)

The combination of the above two tables decides the winner of the tender. The Assessment Committee's task is to assess the Tenders in an objective, transparent and unambiguous manner on the basis of the Minimum Requirements and Award Criteria announced in the Selection and Tender Guidelines. Minimum Requirements and Award Criteria. The assessment will be carried out by the

Assessment Committee. A representative of the Municipality will supervise the assessment assessment procedure but has no vote.

### 5.2.8. Tender specifications on Circularity

Sustainability is fundamental to the quality of life in Rotterdam: now and in the future. As Rotterdam aims to become a sustainable hotspot with a guiding role in the field of sustainability. For new initiatives, sustainable building is an integral part of the design task. The city's ambitions in terms of sustainability are translated in this project by targeting on the following sustainability themes:

#### Circularity

Rotterdam aims to have a fully circular living environment by 2050. This development contributes to this goal. The starting point is that material cycles are closed (as far as possible), this applies to the construction, use and end phase. Circularity relates to the choice of materials, the type of building connections and the handling of waste flows, such as water and household waste. To support this, new building developments are required to use a materials passport. This sub-aspect assesses the extent to which and the way in which sustainable material choices are made and circular applications are included in the design. Requesting an integral concept of the design, taking into account the use of materials with a low environmental impact; efficient use of materials and equipment in the construction, use and final phase; and the degree on which future reuse of applied materials is possible. Based on the substantiation, assessed the degree of concreteness, demonstrability and feasibility of the circular applications. As part of the substantiation, an explanation of the desired final score is requested of the MPG calculation of the entire building. Attention is also paid to the relationship between the promised MPG and EPC score, these should be based on the same assumptions.

#### Energy transition

Rotterdam will be free of natural gas by 2050. Houses will be designed to have a low energy demand and provide their own energy needs as much as possible. In this development, this translates into the principle of an integrated energy system. This includes heating, cooling and electricity.. The plan area is situated in a part of the municipality where it is mandatory to connect to the collective heat network (district heating). Connection for district heating as this location is connected to the energy supplier Eneco.

#### Climate adaptation

Rotterdam aims to have a climate-adaptive city by 2025. For this development a number of starting points apply to this development. For example, not a drop of rainwater will enter the sewers. end up. In addition, the addition of the building volume and landscaping of the public land will not not cause an increase in ambient heat, preferably the development contributes to the reduction of temperature on the site. Finally, the development contributes to the promotion of biodiversity, planting is robust and appropriate to the site and provides adequate space for different types of fauna. The application of climate adaptive measures is an integral part of this development.

## 5.2.9. The winning tender bid

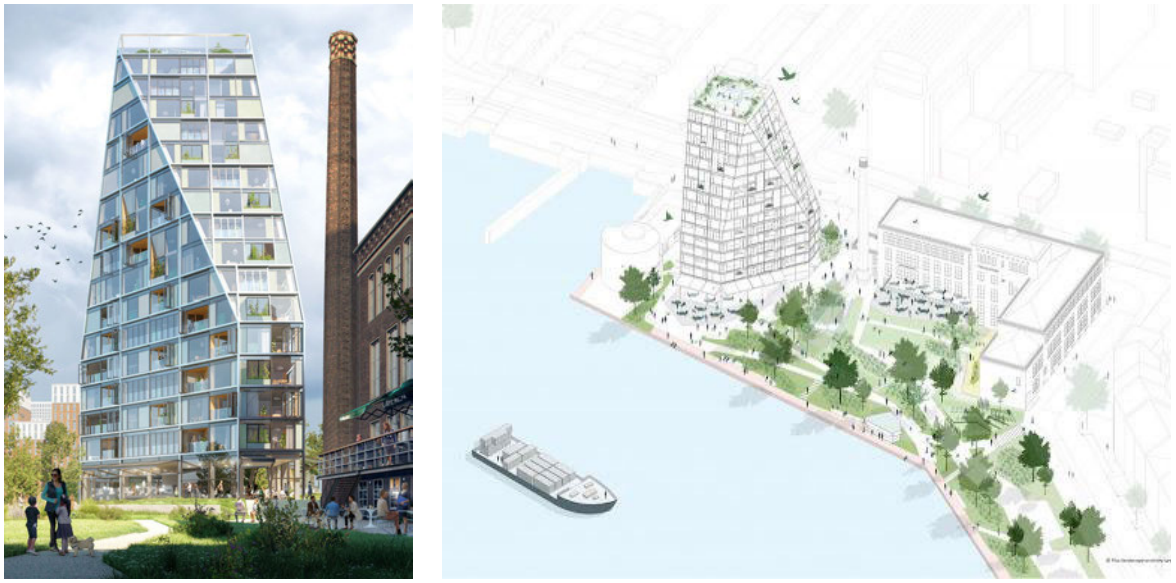

Figure 17: Design for COOLBASE (FSD, 2020)

The design of COOLBASE is distinguished by the use of a lot of glass and open parts in an expressive design. The award decision received a positive response to the various award criteria of the tender. The overflow from the quay to the building and on towards the Machinist is much appreciated. The program in the plinth of the building is praised by the municipality because outside and inside are connected. For the design of the public space, COOLBASE received the maximum number of points in the award. There are height differences that reinforce the routing to the quay, and a lot of additional greenery will be placed in the form of new and mature trees and varied other greenery (FSD, 2020).

The interpretation of the housing types, however, is a difficult task. This is because only mid-range housing will be included. The municipality of Rotterdam has focused on affordable housing in the city center. In this way there is room for people with socially important jobs such as nurses, police officers and teachers. Housing in the middle segment is generally less profitable than owner-occupied housing and free-sector rental housing. (X, personal communication, November 3, 2021).

*"The limiting factor is clearly mid-range rent. Nevertheless, we have been able to put a strong focus on sustainability. A hybrid building, of wood and concrete, in addition it is flexible and demountable. Also so that the delivery of materials can be well phased and organized." (Personal communication, [redacted], 8 October 2021)*

### 5.2.10. Circular ambitions of the tender bid

For the project, arrangements have been made with Nedstaal in Alblasserdam to realize a construction hub there, enabling us to bring the large elements to our site by boat and avoid burdening the inner city with unnecessary construction traffic. COOLBASE is made up of elements, most of which can be assembled using dry joints. On site, the plinth and core are constructed in concrete. The construction from elements guarantees the possibility of circular adaptation in the future. The piles are also made of wood with a concrete top. Meanwhile, in the factory in Bosnia, the wood frame construction for the floors, walls and the wooden facade elements is being prepared. The facade elements are a hybrid construction of wood, aluminum and glass. The wood is FSC certified. The elements are delivered by boat and can be assembled integrally. This ensures a waste-free construction site and a short construction time on site. The facade insulation is also a product from renewable resources: Materials to be used include from VRK (made from cotton waste streams). The wood/bamboo blinds make circularity visible on the outside of the building. The EE product was chosen with a view to its low maintenance requirements. Above all, a wooden construction, combined with various green spaces, some with landscape quality, contributes to a natural atmosphere at Coolbase (FSD, 2021).

The award decision does indicate concerns about the large amount of glass that could create excess heat. The elaboration of proper shading is therefore important. The award decision is positive about the combination of wood in concrete in the design and endorses the feasibility of the submitted MPG score. The demountability of the building elements should be further elaborated in the next design phases according to the Municipality ( Gemeente Rotterdam, 2020) Gunningsbesluit).

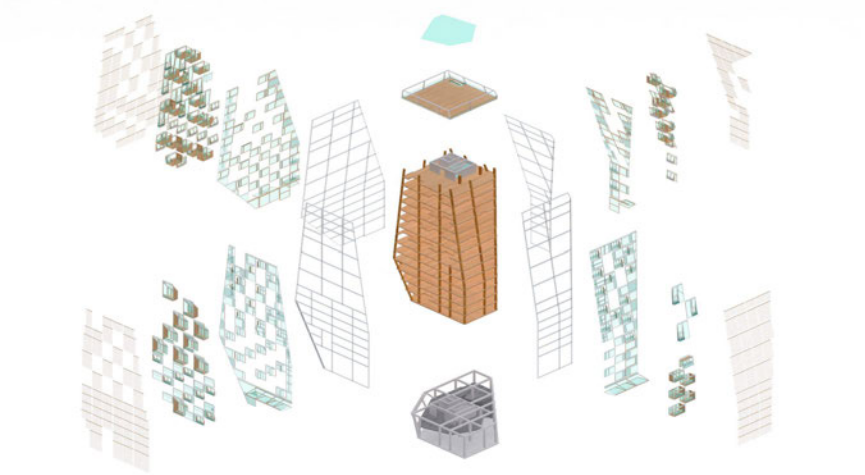

Figure 18:Circular principles Design for COOLBASE (FSD, 2020)

*"For COOLBASE, it was very important to have a logistics plan. It is an inner-city project where the urban fabric cannot be overburdened. Already during the tender we made agreements about a construction hub in Alblasserdam from where we can deliver the prefabricated building components by boat. The municipality considers it important to solve choices of this kind integrally. I also think that this is the reason why we won the tender." (Personal communication, [redacted], 8 October 2021)*

### 5.2.11. Findings interviews

In this table the key take-aways from the interviews with the different stakeholders from the CoolBase case are provided. The components identified in chapter three as the most important fields within CLTPs are used in the table to create insight in the perceptions of the stakeholders. The four main components.The four components are then explored further to create insight into how stakeholders perceive and evaluate these components.

| Component | Real Estate developer & Architect | Municipality of Rotterdam |
|---|---|---|
| **The use of CLTPs** | A good way to learn and set new standards within business operations. By participating in the tenders we challenge ourselves to learn more and we will apply that in future projects. There is also an understanding of the ambitions of the Municipality and a recognition that changes are needed. | It is a good way to turn our circular ambitions into policies. By 2030 we should already be half circular and that is only achievable if the construction industry participates. The market is also able to come up with good solutions when we challenge them. |
| **Award criteria in tenders** | Private parties feel that the stacking of award criteria does not improve feasibility. Circular construction costs more and these additional costs are not easily recovered from the end user. This means that the municipality will have to compromise on land revenue, or include fewer selection criteria in the tenders. | The municipality recognizes that high ambitions on circularity are not possible at every location, but certainly sees opportunities to tender lots with high ambitions. Market forces will ensure good integrated solutions. In addition, the Municipality is also realistic when it comes to tender bids and is willing to think along with the developers. |
| **Circular criteria in CLTPs** | The described circularity in the tender was not very specific in all areas, but that gives room for own input. Really trying to understand what a municipality wants is the key to success. However, there is too much focus on MPG. This makes it all about who fills in the calculation tool the best. Yet there is understanding, since bids have to be compared with each other. | There are many different interpretations of exactly what circularity means. Demountable construction, nature-inclusive or low carbon footprint, all components of circularity. We as a municipality are getting better at defining exactly what we want and how to describe it.<br>By asking for a justification in addition to the MPG calculation, we ensure a concrete approach from the developer. |
| **The realization of projects following CLTPs** | Even though it is difficult to build circularly it has to be done to meet our national and municipal goals. Tenders can contribute to this and so we should use the opportunity to ask for this. If during the project it turns out that the developer can't get out of it, we can still do something within procurement law to accommodate them and that's what we do. It is also nice that the civil servants involved cooperate throughout the process so that a project team is created that can also properly supervise the development. | In the post-award phase, the municipality continues to work with the developer in project teams. These project teams include a sustainability expert from the municipality who keeps an eye on the circular ambitions in the project. Within procurement law, we do have some leeway to deal with changes during drafting. In practice, this does not often lead to major problems. |

Table 11: Four main components interviews COOLBASE (own ill.)

### 5.2.12. SWOT-analysis interviewees

In this section, the process of the CLTP is assessed by the various stakeholders. The stakeholders interviewed completed the SWOT analysis in order to describe the Strengths, Weaknesses, Threats and Opportunities of the CLTP. In this way, the perspective of the developer, the architect and the project manager of the Municipality is presented in an overview. This specifically involves the use of circularity in the tender.

Private stakeholders (Real Estate Developer & Architect) SWOT

| Strenghts | Weaknesses |
|---|---|
| - The real estate development branch is very traditional, but in this way they are challenged to innovate.<br>- It is ultimately market forces and putting circularity in the tender can ensure that a new norm is created.<br>- Circularity is part of an overall quality, this should be worked with as a starting point and not left out. | - Innovative steps in circularity that are made after the tender phase cannot be included in the design. This is because there is nothing about this in the contractual award decision.<br>- Early agreements on circularity (and other topics) are not flexible later. What is on paper is leading through contractual agreements. |
| **Opportunities** | **Threats** |
| - For a developer, there can be great benefits to excelling in a new theme like circularity. In addition, you need to stay involved to continue to understand the "game".<br>- The national standards such as BENG are becoming stricter every year and also include a circularity component. When this is the standard, there is again room for other things in tenders, such as participation.<br>- Future maintenance can be included in the tender offer. This is circular and increases the chances of winning the tender. | - The business case has been put under pressure by the stacking of requirements, especially when a lot of social and mid-range housing is required.<br>- Other market parties such as contractors, architects and installers must be able to adhere to the new principles, otherwise it will not be feasible.<br>- The use of calculation methods such as the MPG and EPC ensure that management is based on calculation values and not necessarily on actual circular quality. |

Table 12: SWOT-analysis CLTP of COOLBASE

From the data of the SWOT analysis, it can be concluded that the market participants see the value of CLPTs. Being ahead of competitors and understanding the 'game' are an important argument for the positive valuation of CLTPs. Opportunities are seen in the substantiation for circularity in the submission. As a weakness, the lack of flexibility in the post-submission phase is referred to. In addition, the current market also creates the threat of CLPTs creating excessive costs. This should be taken into account in the call for tenders and the assessment. In addition, the focus should be on the circular substantiation of the plan and not only on a calculation value of, for example, the MPG and EPC.

Public stakeholders (Project Manager Municipality) SWOT

| Strenghts | Weaknesses |
|---|---|
| - The municipality can express a clear ambition and call out for these ambitions in a supra-legal way.<br>- Tenders serve as a model for other functions. Circularity in tenders can ensure that the bar is raised and that lessons can be learned from the projects.<br>- The Municipality cannot make the transition alone and through tenders a project team is created in which circularity as a key value is jointly supported by the Municipality and the market. | - Circularity can also have an obstructing effect on other ambitions. For example, solar panels are good for local energy generation, but fusion of materials makes recycling impossible. In addition, many heavy raw materials are used for fabrication. Still, local energy generation is a recurring ambition in tenders. |
| **Opportunities** | **Threats** |
| - By asking more clearly on a specific theme of circularity, perhaps better results can be. For the municipality, it is then possible to assess more precisely.<br>- The market comes up with solutions that the Municipality might not think of. Providing innovation but also steering on tender contracts is needed.<br>- Looking at the feasibility of the underpinning of an MPG score, rather than the MPG score in itself, ensures a proper assessment of circularity within a project. This also makes the feasibility of the submission clearer at an earlier stage. | - Each place within the city is different and in some locations other themes are more important than circularity. In some areas, increasing livability is already a very important task and circular construction is too expensive. |

Table 13: SWOT-analysis CLTP of COOLBASE

**Overall, the municipality sees great benefits to using CLTPs, and by using them they can turn circular ambitions into results and set a good example for non-tendered projects. The opportunities for the municipality lie in better grasping what circularity is and staying in touch with market participants. An agreement in what exactly circularity means is important.**

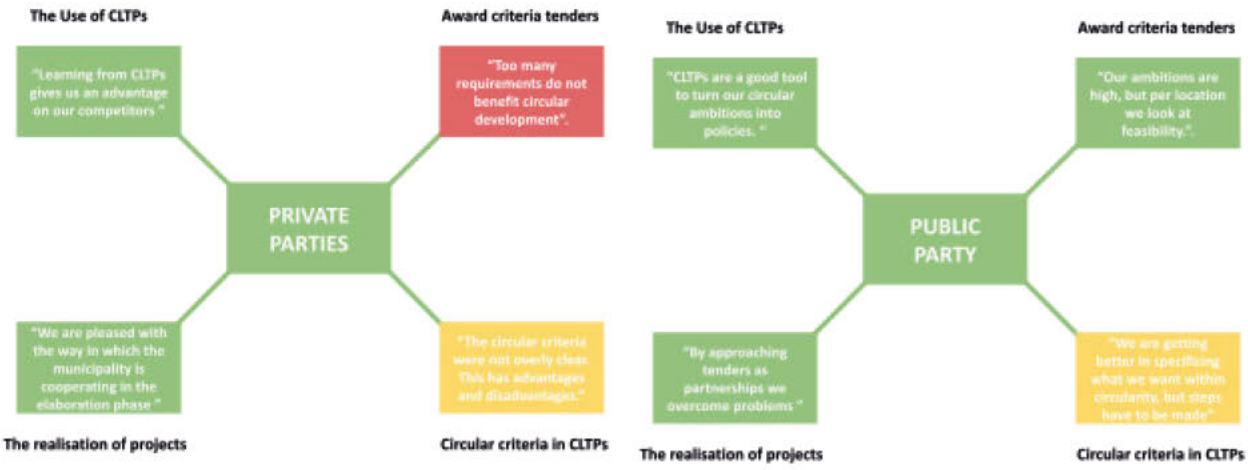


Figure 19 & 20 : Perceptions private & public stakeholdersCoolbase

The figure above shows the stakeholders' views regarding the four major identified components. It shows that there is a positive attitude towards 'the use of CLPTs' and 'the realization of projects' in both directions. Public parties do not always agree with what is asked in the 'award criteria tenders', they think it is too much, the municipality does not agree and looks specifically at the feasibility of the project. Both public and private parties are moderately positive about 'Circular criteria in CLTPs.' That circularity is not yet a completely clear concept is recognized by both. Developers therefore have the opportunity to excel in relation to their competitors by really understanding what the municipality wants. The municipality is making strides when it comes to clarity and unambiguity.

The table below summarizes what stakeholders are saying about the future of CLTPs and what their expectations per component are.

| | The use of CLTPs | Award Criteria tendres | Realisation of projects | Circular criteria CLTPs |
|---|---|---|---|---|
| **Private parties** | We continue to participate in viable tenders | Tenders continue to evolve, in the future participation becomes important | Good cooperation ensures good end results. More space and trust from the municipality is important in this. | Circularity is not yet unambiguous; more guidance is needed for that. |
| **Public party** | The municipality needs CLTPs to meet their circular ambitions through 2030 and 2050. | We will continue to challenge the market in the quality we envision, also when they are not always pleased in this regard. | The current space we provide within procurement law gives us room to think with you. In addition, we must continue to make firm agreements. | We will continue to develop the circular criteria and issue them in a more targeted way. |

Table 14: Future perspective stakeholders COOLBASE (own ill)

## 5.2.13. Lessons learned

### The use of CLTPs

For two to three years, the officials of Rotterdam have been implementing circularity in the built environment. This happens about four times a year with a tender in which circularity is included in the award criteria. Much more often, it is implemented in memorandum of principles and other policy documents. When the CLTPs are issued, the objective of the project is assessed. Circularity is a catch-all term and can be applied in many different ways. For instance, reuse of water is circular but does not have as much to do with the construction method. Project managers and urban planners determine what is important in the project. For example, in transformations one can reuse the materials or be crafty with a building shell. At another location, dismountable construction can be an important aspect because something else will have to take its place in 50 years. In other developments, materials with a low environmental impact can also be chosen. The municipality looks at what is logical at the location. They also indicate that they are still searching and are getting better at it. An unambiguous circular tender procedure is not the goal but a broad approach is kept possible.

For the specific tender of the Machinist they did aim for a more broad circular approach. To ensure that circularity is properly integrated into the tender procedure, early involvement of sustainability experts from the Municipality is needed. The assignments for these experts come from boroughs in Rotterdam that have a plan for a land issue. An early involvement of these experts ensures that circularity is not added at a later stage causing the synergy to be missed. As an example is given that when the idea for a 50 meter high building is made, wood construction is probably not possible. Other circular aspects are probably more suitable and these should be asked for in the tenders. When these issues are known at an early stage by the authors of the tender, a good and feasible tender is created.

"The later we are involved in drafting the tender, the more difficult it becomes to get sustainability themes in. This applies not only to circularity, but also the energy transition and other objectives."

([redacted] personal communication November 3th 2021)

### Award criteria tenders

Developers see that tenders have changed a lot in the past few years. Whereas a few years ago only the offered optie fee was important, that has changed over the years. In Rotterdam this started with the introduction of the EPC in tender documents where building sustainability has become a component. With an improving market and societal demands, municipalities felt that more could be asked than just price and sustainability. From this followed the addition of the program to tenders. For example, specifications on plinth livability and social housing came in. Currently this has been expanded to include mid-rent and other requirements for affordability for end users. Circularity, according to the developer, is a logical consequence of focusing on sustainability. It started with an EPC in which solar panels became important and is now developing into total energy consumption control and the proper handling of material flows. Tenders are evolving, and they can do so in an improving market. In the future, other themes may become more important and then they will also be inserted.

“Tenders are like a top sport, you have to keep playing, to keep winning them. The approach of the tenders changes over time and the developer has to keep up to be able to win."“

([redacted] personal communication October 8th 2021)

## Circular criteria in CLTPs

A lower environmental impact by transport and materialization were important starting points. The tender mentions the MPG value of the development and indicates that this should also be submitted. However, it is explicitly not the intention that the MPG value in itself is a decisive factor. The MPG score must be accompanied by a written substantiation in which the circular principles of the plan are underwritten.

For the tender of 'the Machinist', the developer has focused on far-reaching sustainability and circularity. A hybrid building with concrete and wood is the result. As a developer it is important to understand what the municipality thinks is most important within the theme of sustainability and circularity. For this tender, one of those themes was the pressure on the urban fabric of the city. This is due to the central location of the project. Less movement regarding the delivery of materials etc. ensures a better quality of life for the city. In other places in the city, other themes could be more important. Like the reuse of materials or nature inclusive building.

“It was clear to us that this tender, in addition to medium-rent, was really about sustainability and circularity. That's why we opted for a hybrid construction of concrete and wood.” ([redacted], personal communication October 8th 2021)

## The realization of projects following CLTPs

Municipal officials are aware that the current tenders can be quite challenging for the market. A combination of requirements and rising construction costs is adding to the complexity. Nevertheless, the Municipality thinks there is added value for circular construction, also for investors who end up with a flexible building that can also be worth more. In addition, there are policy goals that the City of Rotterdam must achieve. Officials know what the established ambitions are and act accordingly. By 2030 the entire economy of Rotterdam should be circular and the built environment is no exception. Officials are aware that the target is very ambitious and there can be no delay in taking steps towards this ambition. This is a shared task but the developer needs to contribute to this. According to the Municipality, new opportunities are actually arising. They also have confidence in the market in the sense that they can come up with good solutions. This is visible in the MPG approach where there is more room for innovation and ideas that the Municipality has not yet thought of. This can cause problems when it comes to describing the tenders. On the one hand there should be clear guidance on a number of themes, but on the other hand there should be room for own interpretation and smart ideas. There are still steps to be made in this regard. In this, the Municipality also looks strongly at the feasibility of the submitted plan. When a submitted plan indicates to be circular in all areas while this is very difficult in practice, the submission will be viewed with suspicion. From that initial phase, the Municipality is already concerned with the feasibility of the project. This ensures that there is a collaboration early on that

will be carried through later in the project teams. The tender writers are usually also involved in the further course of the project towards the final design and the determination of the zoning plan.

Since the market parties have a different role than the municipality, it is logical that they look at CLTPs in different ways. This chapter looks at the lessons that can be learned from the cases and the interviews. Here it becomes clear that there are also many similarities between the perceptions of the different parties. The combination of literature and case data contribute to the analysis below. The analysis is again elaborated in a SWOT model. The SWOT also focuses on where the differences between the insights of the parties involved lie. In the cross-case analysis this SWOT is compared with the SWOT of the second case. Thus, the results provide a comparable picture of the case and how the CLTP is viewed by the stakeholders.

Lessons learned from the COOLBASE CLTP

| Strenghts | Weaknesses |
|---|---|
| • Both Municipalities and Developers are positive about the idea that tenders are able to challenge the market additionally.<br>• Developers gain an edge over competitors.<br>• The final results of tenders are positively appreciated.<br>• Municipalities have a tool with which they can realize the ambition to become circular. | • Tenders create a strong contractual link that prevents adaptation in later stages.<br>• Some ambitions within tenders work against each other. For example, solar panels are not circular.<br>• Quality tenders cost the developer and municipality a lot of time and money, which is a waste. |
| **Opportunities** | **Threats** |
| • By expanding BENG, circularity becomes more of a general standard.<br>• Better framing of certain specific components of circularity can challenge market participants without just being "clever" with a calculation tool.<br>• Market consultations can help gain insight into options and costs. | • Circular projects cost more to build and that while prices are already high for consumers.<br>• The stacking of ambitions is mentioned by market parties as a possible stumbling block. Municipalities, incidentally, do not always agree with this |

Table 15: Conclusion SWOT - analysis CLTP of COOLBASE

The conclusions regarding the interviews with COOLBASE stakeholders are given above. By comparing the answers from the interviews of the public and private parties, the SWOT analysis above emerges. There are a number of issues on which the parties agree, but there are also weaknesses and threats that are not easy to resolve. Contractual connections of a tender have proven to be a problem more often in later phases and developers feel that municipalities do not have a good understanding of the implications of the award criteria for the business case.

## 5.3. Case 2 Elements 'Kavel 5 Amstelkwartier'

### 5.3.1. The 'Kavel 5 Amstelkwartier tender'.

The Amstelkwartier is a neighborhood in Amsterdam in the district Overamstel in the south of the district Amsterdam-Oost. The neighborhood is located south of and at the bend of the Amstel River enclosed by Spaklerweg and Duivendrechtsevaart. Previously, the area was a gas fracking facility. The gas plants in the Netherlands were made unnecessary by the new technology and were closed. The site has been polluted by the industry and therefore needs to be remediated before construction. On the site are a number of buildings with monumental value that will be preserved. The Municipality of Amsterdam has created several plots in the area and designated per plot which functionality is desired. This consists of housing in various segments, a school, supermarkets and other facilities. In total there will be about 3400 homes in the area, of which about 1600 will have been built by 2021. (Gemeente Amsterdam, 2021). The first plots entered the market through tender procedures in 2016. The 2nd phase was issued through tenders in 2019 and the last brick is expected to be laid in the area by the end of 2022.

Figure 21 & 22 Zuidergasfabriek. (2017, september).

### 5.3.2. The tender procedure

The Plot 5 tender for the Amstelkwartier consists of 14.000 square meters, divided in mid-range rental housing, free-sector owner-occupied housing and amenities. Like many other municipalities in the Netherlands, Amsterdam is aiming to create more rental housing in the middle segment. On the scale of the Amstel Quarter, the municipality has indicated per tender on which spot homes in different segments should come. The tender for 'Kavel 5' indicates that there is room for 70-90 homes in the higher segment and in addition 70 homes in the middle segment. In addition, there is room for non-residential functions in the plinth of the building. In addition to the programmatic task, the municipality calls for striking architecture with a 'light, elegant appearance'. There are already a number of tall buildings in the area and there should be a relationship to this context. Integration of sustainable techniques in the design, such as color scheme and aesthetic image of the sustainable techniques, including incorporation of solar panels, ventilation and heating/cooling techniques. The municipality of Amsterdam works with an ephemeral system. In principle, the tender winner takes the land in a perpetual leasehold construction. For each function within the program, the municipality has established a leasehold land value. A medium-priced rental home has a lower ground rent value than an expensive owner-occupied home. In this way the project developer's business case is not too badly affected when houses / facilities are realized that generate less revenue. The tender does require an option fee in addition to the ground rent. This is therefore entirely separate from the ground value. The option fee is included in the selection criteria and is an amount of at least 1,000,000 euros (Gemeente Amsterdam, 2021).

Figure 23: Gemeente Amseterdam. (z.d.). *Foto Amstelkwartier 1* [3D Image]. https://www.amsterdam.nl/projecten/overamstel/deelgebieden/amstelkwartier/

## 5.3.3. Planning

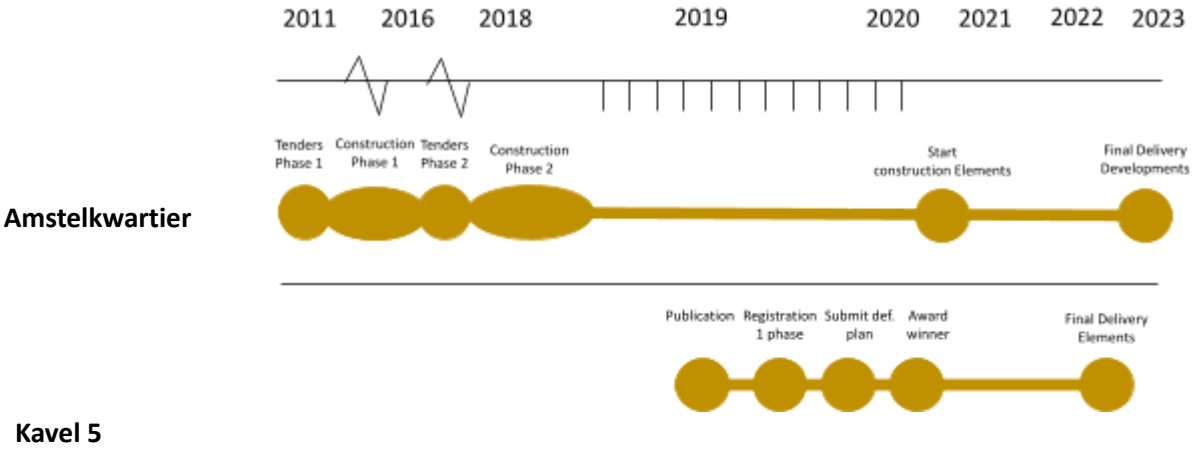


Figure 24: Timeline Elements (own ill.)

The tender and development of Lot 5 is part of an area development called the Amstel Quarter. The land of the district has been issued in three different phases. The first started in 2011 and the final phase started with the tenders in 2019. It is expected that by 2022 or 2023 the entire area will have been developed and a city district will have been added to the city of Amsterdam.

## 5.3.4. Stakeholders

| Gemeente Amsterdam | Kondor Wessels Vastgoed | Koschuch Architects | Tenderboost | HV-TC |
|---|---|---|---|---|
| Municipality | Project Developer | Architects | Tender support | Installations |
| Project Manager: [redacted] | Project Developer: [redacted] | Director / Architect [redacted] | Director [redacted] | Senior Consultant [redacted] |

Figure 25: Stakeholders Elements (own ill.)

### 5.3.5. Municipal policy on circularity

The City of Amsterdam is broadly committed to circularity and also has a comprehensive description of goals and methods for the built environment. Up until 2050 they have set different goals which municipal policy should lead to:

2022: 10% of the municipality's procurement will be circular.

2023: All calls for tenders in the built environment from the municipality will be circular

2030: We will be using 50% less new raw materials in Amsterdam.

2050: Our city will be 100% circular.

Two external agencies, commissioned by the municipality, have written a Roadmap Circular Land Tenders (2017). This tender is in line with this Roadmap. This means that developing parties are challenged to go further than the existing standards for sustainability (Building Decree according to European directive is EPC (Energy Performance Coefficient) 0.4, Amsterdam policy is EPC 0.15) through the award criteria that ask for both a qualitative vision on circularity as quantitative data by means of, among other things, a GPR (Building) score and MPG (Environmental Performance Buildings) calculation. With this interpretation of the 'circularity' criterion, the emphasis in this tender is on the life cycle and environmental impact of the materials used in the building. If tenderers are awarded the option, they must make a design (VO/DO) that complies with the submitted GPR, MPG and EPC score. When the building is handed over, the developing party must submit a certification report. The strategy should ensure a significant reduction in the use of new raw materials and materials, thus contributing to a sustainable city. In the coming years, the municipality will map various material flows, from entry to processing, in order to preserve valuable raw materials.

## 5.3.6. Tender specifications

The contract for the plot of 'Kavel 5 Amstelkwartier' is awarded on the basis of the best price/quality ratio, with part of the points being linked to Quality (G1, G2) and part to Land Price (G3). These criteria are linked to Quality (G1 and G2) and part to Ground Price (G3).

Award criteria:

| | | |
|---|---|---|
| G1. Sustainability | | **30 points** |
| Sub-area 1 | Energy neutral building | 18 points |
| Sub-area 2 | Circularity | 12 points |
| G2. Quality of the design | | **50 points** |
| Sub-area 1 | Relationship to the environment | |
| Sub-area 2 | Character orientation and image | |
| Sub-area 3 | Connection to public space | |
| Sub-area 4 | Programming | |
| Sub-area 5 | Spatial integration of sustainability measures | |
| Sub-area 6 | Synergy | |
| G3. Offered option Fee | | **20 points** |
| Total | | **100 points** |

Table 15: Selection criteria Elements (Own ill)

## 5.3.7. Assessment method tender

### G1. Sustainability

The award criterion Sustainability is composed of the sub criteria Energy neutral building and Circularity for which respectively a maximum of 18 and 12 points per tenderer can be obtained, total maximum 30 points per tenderer for the award criterion Sustainability.

### Sub-area 1: Energy neutral building

(maximum 18 points per tenderer) is composed of the components:

- BENG values Residential (1,2,3) (maximum 15 points per tenderer);
- BENG values for non-residential construction (1,2,3) for plinth functions (maximum 3 points per tenderer);
- BENG (NTA8800) and EPC calculation (combination building NEN7120 - NEN7125) separately to support this (to support BENG standards).

### Sub-area 2: Circularity

(maximum 12 points per tenderer) is composed of the components:

- MPG value residential construction (excluding input PV panels): in € / per m² GFA.
- MPG value for non-residential buildings (excluding PV panels). GPR Building - Environmental Performance section can also be used for this.
- Recycled materials: how much % recycled material and how much renewable % of the total building materials are guaranteed. Also, naming the materials in a materials overview (to be worked out later in a materials passport).
- Green: include green in the design in m² - and also indicate the quality. In addition, the intended costs for the maintenance of the greenery of the building should be indicated in total.
- Elaboration of flexible building in the design and construction, both vertical and horizontal adaptability. For example, separating the support from the installation and indicating the horizontal and vertical flexibility.

### Assessment G1. Sustainability

Entries are judged proportionately. This means that the best scoring entry will receive the maximum points to be earned. The scores of the other three parties will be valued in relation to the best scoring party. With respect to the BENG values for the sub-criterion Energy-neutral Building, the points are equally divided between BENG values 1, 2 and 3. BENG values 1, 2 and 3 therefore count for 1/3 each in the calculation.

For example, the maximum points a tenderer can obtain for the BENG values for housing is 15. The rest of the tenderers score in proportion to their bid compared to the highest bid according to the formula: ((value BENG1) / (highest value BENG1) * 15 * 1/3 = score (rounded to whole numbers). The same calculation is used for BENG2 and BENG3 value.

## G.2 Quality of the Design

### Sub-area 1 Relationship to the environment

The building stands in a varied environment at the head of the Amstel Quarter along the Amstel River and the Duivendrechtsevaart. The high-rise is clearly visible from various directions and different distances. At neighborhood level, the building marks the end of two streets and at the same time it is a prominent starting block of the facade along the Duivendrechtsevaart. On the northeast side, the substructure is part of the urban edge of the Bella Vista Park and is a backdrop for the monumental regulators building. The substructure forms the separation between the eastern "park world" and the western "waterfront". The architect is challenged to bring these different aspects together into an attractive and compelling design.

### Sub-area 2 Character orientation and image

This high-rise is "special" because of its special position, and at the same time it is elegant and understated. Both the substructure and the tower are oriented in an all-sided way. It is crucial to find the right mutual relationship between the two parts in terms of proportion, location,

transition, materialization and detailing so that the high-rise forms an elegant silhouette in the horizon but in combination with the substructure provides an attractive image at street level. A carefully designed differentiation at different scales should ensure an architecture that is interesting from both near and far. The tower and substructure may be designed either as two separate elements or as a coalescing whole. Because the adjacent blocks overlook the roof of the substructure, the roof should be designed as a fifth facade with a green appearance. The roof provides additional living space and a green and lively image that also contributes to the experience at street level. The program of the building as a residential tower with a public first floor / plinth should be readable through the design of the building.

### Sub-area 3 Connection to public space

The ground floor/plinth will have an open and inviting character and connects well with the different types of public spaces around the building. The materialization and detailing of the plinth has a human scale and contributes to a lively streetscape. The programming of the plinth also contributes to liveliness on the street. The design of the tower should focus on limiting wind and shadow nuisance in the public space as much as possible.

### Sub-area 4 Programming

Kavel 5 is a residential tower with public functions on the first floor. The plinth will be filled with a focus on varied target groups, publicity, atmosphere and activities, possibly with co-working spaces. Attractive neighborhood functions will be established here so that a destination place for the neighborhood is formed. It is desirable to focus on a future-proof layout and design of both the housing and the functions in the plinth. Where possible, the dwellings can be enlarged or reduced in size over time. The first floor is also designed to be suitable for changing functions.

### Sub-area 5 Spatial integration of sustainability measures

How sustainability measures are applied integrally in the design of the building.
Sustainability measures such as solar panels are cleverly applied in the design so that it becomes an integral part of the architecture.

### Sub-area 6 Synergy

How the different parts and aspects of the plan are brought together in a coherent and attractive whole and what the added value of this is.

## G2. Assessment Quality of the Design

Judging will be done anonymously. The name of the submitter will be shaded in black on the submitted documents by a municipal official who is not a member of the selection committee or jury. Submissions will be reviewed against conditions listed in the building envelope. The plan will be rated by the individual members of the selection committee through an absolute assessment with a mark between 1 and 50. If the jury gives a party less than 25 points, the party will be excluded from further participation.

### G3. Offered option fee

The Project Manager Land Affairs from the selection committee calculates the bidder's points on the criterion bid option fee. The maximum points per tenderer for the option fee offered is 20 points. The rest of the tenderers score in proportion to their bids compared to the highest bid according to the formula: ((option fee - 1,000,000) / (highest option fee - 1,000,000)) * 20 = score (rounded to whole numbers).

## 5.3.8. The winning tender bid

The winning bid for the 'Plot 5 Amstelkwartier' tender was distinguished by the starting point of a parametric design. As a starting point a number of criteria were put into a model. For example: the path of the sun, daylight, optimal energy generation, water collection, influence of the wind and inclusion of green for more biodiversity. These criteria have an influence on the desired shape of the building. Subsequently, hundreds of variants were generated, from which, through a series of analyses, the most optimal and thus the most sustainable model was selected. In the final design, the houses and the PV panels incorporated in the balcony edges have optimal sunlight. The wind climate on the street, on the roof garden and in the courtyard garden has also been optimized [redacted], 2021).

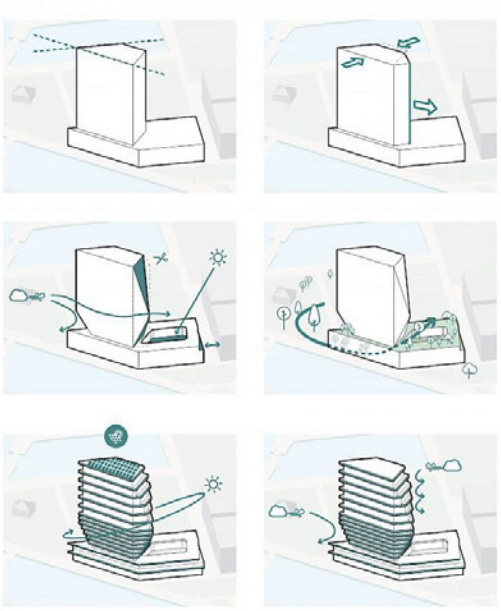

Figure 26: The Elements (Kondor Wessels, 2020)

*"The parametric design and the influence the Elements have on the building are our unique selling point of this tender. It is not easy to keep working on a new form, but this has allowed us to come up with a very high quality and smart design." (Personal communication, [redacted], 1 Oktober 2021)*

The building will house 72 owner-occupied and 70 rental apartments. In addition, the plinth will contain co-working spaces, common areas and restaurants. In Elements, the degree of circularity is expressed in the application of recycled and renewable materials. The MPG was used as a method to make this insightful, Elements scores 0.5 on the MPG. The design of Elements is based on the principle of separating carrier and installation and using materials with a known origin (composition), a high degree of renewability (biobased), a recycled content and detachability (disassembly). [redacted] 7 Oktober 2021)

## 5.3.9. Findings interviewees

In this table the key take-aways from the interviews with the different stakeholders from the Elements case are provided. The components identified in chapter three as the most important fields within CLTPs are used in the table to create insight in the perceptions of the stakeholders.

**The four main components. The four components are then explored further to create insight into how stakeholders perceive and evaluate these components.**

| Component | Real Estate developer & Architect | Municipality of Amsterdam |
|---|---|---|
| The use of CLTPs | Because all districts can decide where to emphasize tenders, there are significant differences. In the 'Amstelkwartier, the tenders are generally good and reasonably market-based. Because all districts can decide where to emphasize tenders, there are significant differences. In the 'Amstelkwartier, the tenders are generally good and reasonably market-based. | The Amsterdam City Council has determined that 30% of tenders are about sustainability. This is always the case. Circularity falls under this 30% and can be categorized by weighting per project. There is an ambition to standardize circularity in tenders, but this is not always successful yet. |
| Award criteria in tenders | The developer feels that the stacking of ambitions has a negative effect on the feasibility of the projects. Circular construction creates much higher construction costs and the municipality has no cost expert to bring insight to this. The municipality claims to make calculations but developers doubt the correctness of the assumptions. | Tenders have a competitive element, in the eyes of the Municipality that means a lot can be asked for. How well the market is doing then determines what they can offer. The number of tenders shows that the land prices are not too high. Requirements such as medium rentals are discounted in the land price. 'By asking a lot we actually challenge the market, that's why we go far in what is asked in tenders.' |
| Circular criteria in CLTPs | For fairness and feasibility, the municipality could also control the number of circular components developers are allowed to elaborate on in the tender bid. Ultimately, more points may be elaborated in the design, but in the tender phase it would then remain a number of points. Tools like the MPG are about how cleverly they are filled in and not about what your actual impact is. No matter how good and new a tool is, that will always be the case. | In 2019 when this tender was held, there was no standard for CLTPs, although there were tenders in which circularity was the main theme, but not as part of a multi-sided quality tender. We were satisfied with what came out in the tender at that time. Hooking up a sustainability expert at an early stage was important in this regard. By asking for a justification with the MPG score, more insight is gained on how the developer intends to achieve this it's promised circular ambtitions. |
| The realization of projects following CLTPs | During the award phase of the tender, the developer goes far to win. In terms of circularity, this means consequences for the construction method. These can lead to higher costs. Since innovating is happening, these costs are not yet in line with the market that will follow later. During realisation the struggle with the municipality begins about where there is room to maneuver to make it financially feasible. | Tender submissions often promise a bit more than developers are ultimately willing to deliver. Nevertheless, the Municipality must be strict about this; after all, there is a contractual connection. If we don't, it's unfair to the losing parties. Ultimately, there are pragmatic solutions to be found, but we must be able to stand behind them as an organization. |

### 5.3.10. SWOT-analysis Interviewees

In this section, the process of the CLTP is assessed by the various stakeholders. The stakeholders interviewed completed the SWOT analysis in order to describe the Strengths, Weaknesses, Threats and Opportunities of the CLTP. In this way, the perspective of the developer, the architect and the project manager of the Municipality is presented in an overview. This specifically involves the use of circularity in the tender.

| Strenghts | Weaknesses |
|---|---|
| - The approach of the tender ensured that sustainability came first. This was the main input for the parametric design.<br>- CLTPs set standards for other projects and teach us new things.<br>- By adding circularity to tenders, quality developers are given a better chance of winning these tenders. It's an extra quality point over a financial bid. | - Innovations that turn out to be possible after the tender cannot be applied because they were not described at a tender stage.<br>- Quality tenders cost a lot of effort and funds.<br>- There is little practical experience at the time when new requirements and new calculation tools are added to tenders. While this can have a major impact on the business case. |
| **Opportunities** | **Threats** |
| - Create agreement around the calculation method behind the tenders, so there is less suspicion.<br>- Market consultations can be better linked to additional costs incurred for developers.<br>- Better framing of certain specific components of circularity can challenge market parties without just 'smart' handling of a calculation tool. | - The fact that different boroughs are allowed to decide on additional award criteria creates a jumble of different tenders.<br>- Providing a calculation tool to calculate circularity does not lead to the most circular building in all cases.<br>- Higher costs for circular construction are a threat for feasibility. |

Table 17:SWOT-analysis CLTP of Elements Perspective Real estate developer & Architect

For the project developer, sustainability and circularity were the key principles for the tender bid. Some of these principles were the input for the parametric design. By using this parametric design, the developer was able to differentiate itself. By understanding what the tender is about and bringing in knowledge of these aspects, they were able to win the tender. There is therefore appreciation for the innovation provoked by the CLTP. They do indicate that when you innovate, you incur extra costs. Circular construction is becoming more marketable, but when you pioneer you don't profit enough from it yet. According to them, the Municipality should have more insight into this. Another problem is that there is a limiting factor in early contracts. Tenderers are not flexible enough when it comes to making adjustments in the further design stages. Furthermore, there should be a more unified approach to circularity and the definition of circular principles.

Municipalities devise tenders and define where and when these tenders go to market. Their role is essentially completely different from that of the parties who bid on the tenders. Their SWOT analysis of the CLTPs is therefore also different.

| Strenghts | Weaknesses |
|---|---|
| - CLTPs and quality tenders in general have the advantage of providing insight into the quality of the tender offer.<br>- The element of competition causes developers to set the bar extra high and the outcome is very good circular buildings.<br>- The ultimate goal of having a lesser impact on the environment and society can be achieved through circular construction. | - CLTPs with extensive justification are basically more subjective than just an MPG / EPC calculation. This can create the idea of unfairness among developers.<br>- There is always the possibility of conflicting demand criteria in CLTPs.<br>- Tenders are not flexible when it comes to design modifications. This causes problems when changes are made. |
| **Opportunities** | **Threats** |
| - CLTPs can be used to query in a very clear way on a particular topic. This ensures that the market will determine what is possible.<br>- Opportunities lie in the even broader request of circularity. The more the municipalities ask the more results are seen in the projects.<br>- There are opportunities in a more unified approach around circularity in tenders. | - CLTPs cause developers to set the bar very high, but this can also become too high.<br>- CLTPs and quality tenders require a lot of capacity from the municipality and thus are not always possible. Tenders based on "numbers" are less insightful when it comes to circular quality.<br>- Assessment of a justification for an MPG score is subjective and therefore sometimes unfair in the eyes of a developer. |

Table 18: SWOT-analysis CLTP of Elements perspective Municipality

Municipalities use CLTPs to achieve their policy goals. Normally, they are bound by public laws about steering the built environment. Tenders give them the unique freedom to go beyond their public domain and enter into a private agreement. The quality they achieve in these projects is high and there is appreciation for that. It's also a good way to be able to meet circular ambitions into the future. The disadvantage, however, is that the private law commitment provides little flexibility after the award phase. Also, there is always a chance of contradictions within a tender, something the municipality always tries to be keen on. In addition, the competitive aspect of tenders results in developers promising too much, which they then have to keep. Requests for quality and well-founded circularity generate a lot of work and money, both for the developer and the municipality. Losing parties can get particularly frustrated about this.

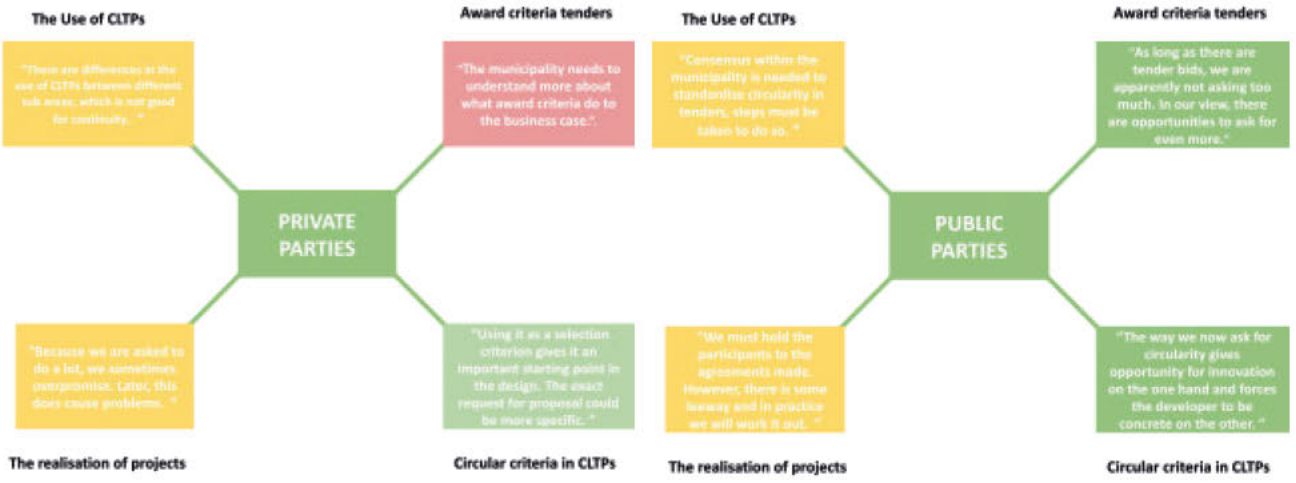


Figure 27 & 28: Perceptions private & public stakeholders on 4 components Elements (own ill.)

In figures 27 and 28 the perceptions on the four components of CLTPs are indicated. There is agreement that the use of CLTPs needs to be more standardized. Since the municipality is a large organization, attention to this is needed when this is taken as a starting point. Both parties also feel that there are differences of opinion in the further development of the project. The developer sometimes promises too much to win the tender. Municipalities must then keep to agreements made, since these are contracts. It is striking that developers indicate that there are too many award criteria in tenders and that this causes problems. The municipality, on the other hand, sees opportunities to add extra criteria. The stakeholders were also asked for their views on the future of CLTPs and the responses can be seen filled in Table 19.

| | The use of CLTPs | Award Criteria tendres | Realisation of projects | Circular criteria CLTPs |
|---|---|---|---|---|
| **Private parties** | We look at each tender to see if the feasibility is there for us. Further development of the CLTPs is of interest. | There are already tenders in Amsterdam where we don't apply because the stacking of award criteria is too high. | The high demands combined with the competitive element cause too much to be promised. Nevertheless, we are trying to come to a good conclusion with the municipality. | Circularity is not yet unambiguous; more specification is needed. By asking out on a few specific components of circularity, developers can be set on a realistic route. |
| **Public party** | There are desires to make CLTPs standard, even though this is not yet entirely successful. Some tenders after the Lot 5 Amstelkwartier are in fact not circular. | We will continue to challenge the market in the quality we envision, also when they are not always pleased in this regard. | The current space we provide within procurement law gives us room to think with you. In addition, we must continue to make firm agreements. | We will continue to develop the circular criteria and issue them in a more targeted way. |

Table 19: Perceptions CLTPs stakeholders Elements (own ill.)

## 5.3.11. Lessons learned

### The use of CLTPs

The development of CLTPs has made strides in recent years. The first tenders in locations like 'Buiksloterham' were completely focused on circularity and worked as a test case for the rest of the city. Since a number of years, circularity has become part of the 30% sustainability criterion that is requested in every tender. In a quality tender this is based on design and substantiation in which circularity can be given a prominent role, although this does not always happen. In tenders based on 'numbers', a land offer and MPG / BENG / EPC are used as selection criteria for winning the tender. Here too, circularity plays a role in the MPG. These standards are not yet as advanced as where the City of Amsterdam wants to be but, steps are made.

The municipality has ambitions to make the city completely circular by the year 2050. Tenders are an important tool to take steps to achieve this goal. Furthermore, there is still little concrete about other necessary measures to get this done. Developers are positive about the use of CLTPs as it challenges them and gives them the opportunity to rise above the competition. However, they do see fairly large differences between sub-districts' professionalism of tenders. More guidance from the municipality's central tender body could improve the quality of tenders.

### Award criteria tenders

Developers and the municipality both see the tender process as a strategic one. According to the developer, the municipality is soliciting on too many topics and the municipality feels that the developer is trying to get away with the most financially advantageous choices. With a recovering market, the ability to ask more of the market also increases. According to the municipality, market forces ensure the most optimal bid. They indicate that they still have a lot of bids for tenders and this indicates that they are apparently still in line with the market. In practice, however, this can lead to an over-promise by the developer to win the tender. This is because there are large personal and financial stakes involved. With the growing complexity of projects and the difficulty of circular construction, perhaps greater problems for feasibility are being created than the municipality is willing to acknowledge. The public and private parties are diametrically opposed when it comes to the "stacking of requirements" in the award criteria. Developers are asking for a more specific and smaller list while the municipality sees room to add even more requirements. However, it must be said that so far this has not led to any lack of tender bids.

"The vision of the municipality of Amsterdam regarding the selection criteria for tenders is unambiguous. In certain prominent places in the city, a quality tender is issued. In these special places, we go for high requirements. We see in practice that everything we ask for is given a role in the tender submissions. Even though circularity only counted for 12 points, by naming it a lot of circularity is reflected in the plan. Basically, everything we ask for makes it into the plans. The market finds a way to deliver on all asked selection criteria. "

(Personal communication, [redacted], 22th November 2021)

### Circular criteria CLTPs

The tender selection brochure clearly states what documentation is expected from the developer. Besides the BENG-score, which is mainly about energy, a vision on circularity is requested, which can be worked out in two pages A4 format. There is a brief description of what this could include and there are hints to possible solutions. This way of asking questions ensures that the developer has a large degree of freedom in the interpretation of the desired circularity in the project. This approach gives room for innovative solutions that cannot be easily captured in a calculation tool. The developer would prefer to see a clearer focus on certain sub-themes within circularity and that they can only be elaborated on in the tender offer. The municipality also sees room to be more specific in the circular demand of the project, but an unambiguous meaning is difficult to grasp. The MPG and BENG do have the advantage that they can be compared without interpretation. This ensures transparency and fairness of the award. The submission is now assessed by a group of 5 internal and external experts so that a degree of objectivity is still achieved. This does mean that more people and resources are needed from the municipality.

### The realisation of projects

During a design process, assumptions and details always seem to change over time. In a tender process where there may be contradictions, these contradictions come into focus after the award phase. This basically causes the contract to go against its terms. Pragmatically these problems can be solved, especially if the quality of the final product becomes better, more circular or more beautiful. Understandably, the municipality is nevertheless reluctant to allow too many changes. Also because developers play a tactical game in which they strip down the submitted design to save costs. Sometimes the attitude of the municipality is justified but there is also a chance that it will go too far. That is, for example, when innovation and technology provide better solutions even though the tender criteria indicate a still outdated calculation tool or direct approach.

Submitting an EPC score was one of the award criteria in the tender. In the meantime, the standard has shifted to the use of the MPG score. The Municipality is so reluctant to allow change that they want the outdated system to be kept. The results from the MPG would ultimately have resulted in a more sustainable and circular outcome. In doing so the ultimate goal is overlooked.

*Personal communication 11th of November)*

**Lessons learned from the ELEMENTS CLTP**

| Strenghts | Weaknesses |
|---|---|
| • Both the municipality and developers see an innovation power in the use of CLTPs.<br>• It is a concrete way to make circular goals to 2030 and 2050 understandable.<br>• Experience in circular developments gives the developer a greater chance of winning tenders in the future. | • Municipalities want to avoid any kind of unfairness so they do not allow adjustments after the award phase. According to the developer, even when it benefits the quality of the property development.<br>• Calculation tools like the MPG, EPC and BENG are becoming outdated. This is inherent in a tool as there are innovations and new requirements. |
| **Opportunities** | **Threats** |
| • More unanimity around the content of circularity would help the process. Here is also a role for the national government.<br>• When circular construction becomes a supported standard, construction costs will adjust accordingly. As a result, prices for CLTPs will decline. | • The public and private parties have completely different views when it comes to award criteria.<br>• Because the different sub-districts have a great deal of autonomy, there are major differences between tenders. Circularity as a standard is not yet in sight.<br>• There is a chance that project developers will drop out if the requirements of CLTPs become too high, especially if yields were to fall. |

Table 20: SWOT - analysis CLTP of Elements

The table above shows the overall SWOT analysis of the Elements case. The analysis was based on case documents and interviews and led to the described insights. The strength of CLTPs is fundamentally broad-based within the stakeholders. The importance of circularity is recognized and there is a basis for working towards a fully circular built environment in 2050. However, there are still major hurdles to be overcome. The aspects mentioned in chapter three by the Program leader sustainable area development of the municipality of Amsterdam are also reflected in this tender. There is a strategic approach on the part of the developer who is trying to meet the wishes of the municipality as best as possible. In this, things are promised which cannot be fully delivered. Tenders also have a restrictive role because agreements are put down on paper at an early stage.
Different from the other selection criteria, circularity is a multi-interpretable concept. More unambiguity through the further development of policy, also on a national scale, could solve this problem. The current growing economy, great scarcity and low interest rates make for a very good real estate market. This provides more spending space for circular project development. Risks therein do include rising construction costs and uncertain future yields.

## 5.4. Cross-case analysis

In this part of the research the findings from the two case studies are compared and a synthesis is made. By comparing the cases, similarities and differences can be clarified and, in a general sense, lessons can be learned from CLTPs in practice (Yin, 2003). The synthesis of the two cases leads to an answer to the following research question: "What are the perceptions of stakeholders on Circular Land tender Procedures?".

### 5.4.1 Cross-case analysis of four components of CLTps

In the table below, the two situations concerning the four main components of CLTPs are shown by case. The information in the table below comes from the case analyses described earlier. For each component, comparable information has been examined and placed side by side. The text below further explains the similarities and differences per component.

| | COOLBASE Rotterdam | Elements Amsterdam |
|---|---|---|
| **The use of CLTPs** | **Timeline:** In Rotterdam, CLTPs have now been used for two to three years. | **Timeline:** Since 2016, the first tenders with circular criteria have been developed. |
| | **Standardisation:** CLTPs are not a goal in themselves and each tender is examined to see if it fits within the demand. | **Standardisation:** A standard text for circularity in tenders is currently being drafted, which will go to the city council. |
| | **Establishing:** The early involvement of a sustainability expert from the municipality led to the circular aspect within the tender. | **Establishing:** The creation of the 'road map circular land allocation' was the basis for circularity in tenders. |
| | **Goal:** CLTPs are seen as an important policy tool to achieve circular ambitions. | **Goal:** CLTPs are an important tool for making circular ambitions a reality. |
| **Award criteria in tenders** | **Multi-ambitions:** The municipality of Rotterdam must look at each location to see what possibilities there are for extensive quality tenders. In highly urban locations, the market can be challenged on a large scale. In other locations there is less opportunity for this. | **Multi-ambitions:** The municipality of Amsterdam thinks the criticism of stacking ambitions is unjustified. The competitive element of a tender ensures that the best emerges. It would be senseless not to make use of this. The number of tender bids is now certainly not substandard. |
| | **Feasibility:** The municipality also looks at feasibility when submitting and experiences the collaboration as a project team effort. | **Feasibility:** The municipality is challenging circularity and looking for the best submission. The responsibility of the feasibility of the submission lies with the market parties. |
| **Circulair criteria in CLTPs** | **Assessment:** In addition to the requested MPG score, written justification is requested. | **Assessment:** In quality tenders, the substantiation of circularity is important. In other tenders, only the MPG score is requested. |

| | | |
|---|---|---|
| | **Consistency:** The municipality is still looking for ways to make the circular criteria more unambiguous and sees opportunities for improvement in this. | **Consistency:** Amsterdam is currently working on a standard text on circularity in tenders. This will be reviewed by the city council. Then this text can be incorporated into every quality tender. |
| **The realisation of projects** | **Contracts:** The contractual connection ensures that there is little opportunity for adjustment in later phases. Both public and private parties see this problem. | **Contracts:** The contractual connection ensures that there is little opportunity for adjustment in later phases. Both public and private parties see this problem. |

Table 21: Cross-case analysis four components of CLTPs (own ill.)

## The use of CLTPs

There are major differences between the municipalities of Amsterdam and Rotterdam when it comes to land exploitation and tender revenues. The municipality of Amsterdam has a very active land policy in which land ownership is issued through a long lease. In this, the municipality assumes minimum land prices and in many cases a selection policy to issue land (tenders). In 2021 the municipality of Amsterdam expects to make 100 million profit from the active land policy, through ground lease and profit taking (Budget Amsterdam 2021). In Rotterdam there is a less active land policy through the municipality. There is less land owned and the investment risk for the municipality is higher than in Amsterdam. In Rotterdam in 2021, therefore, only about 7 million euros is earned from the land policy. This context has an impact on the striking power of the land companies of the two municipalities. In Amsterdam, more tenders will be held in the coming years since they own more land.

Within the municipality of Amsterdam, the development of CLTPs has been going on longer and a standard tender text on circularity is being worked on. Currently the support within city districts is not yet large enough to make CLTPs standard. This probably has to do with the size of the organization. In Rotterdam, tenders are also drawn up by city districts and the involvement of a sustainability expert from the city development department ensures the implementation of CLTPs. Drawing up a standard for circularity in tenders is currently not a goal in itself. This is probably because the financial feasibility of some locations does not yet allow for additional requirements beyond the national standards.

## Award criteria tenders

Both cases involve a qualitative tender. The 'Machinist' tender and the 'Kavel 5 Amstelkwartier' both concern a prominent real estate development. Inner-city with an impact on the area surrounding it. Both are high-rise and visible from a wide area. It was therefore decided to draw up a qualitative tender in which various award criteria are requested. This makes it possible for municipalities to ask for a wide range of things. The legal limitation is that these must be objective, verifiable and reasonable criteria (ECLI:NL:PHR:2021:243).

In both Amsterdam and Rotterdam the usual award criteria are as follows: sustainability (including circularity and nature-inclusive building), program, option fee and architectural quality. Both cases involve a qualitative tender. The 'Machinist' tender and the 'Kavel 5 Amstelkwartier' both concern a prominent real estate development. Inner-city with an impact on the area surrounding it. Both are high-rise and visible from a wide area. It was therefore decided to draw up a qualitative tender in which various award criteria are requested. This makes it possible for municipalities to ask for a

wide range of things. The legal limitation is that these must be objective, verifiable and reasonable criteria. In Amsterdam and Rotterdam the usual award criteria are as follows: sustainability (including circularity and nature-inclusive building), program, option fee and architectural quality. In the future, it is possible that other items will be added. The City of Amsterdam also sees opportunities for asking for more in the area of circularity and other criteria. Developers' criticism of the 'stacking of ambitions' does not yet translate into a lack of bids, but feasibility does seem to be in question. This is perhaps reflected in the fact that Amstedam housing construction targets are not met year after year (NH Nieuws, 2020) .

## Circulair criteria in CLTPs

In both cases, the use of the MPG score is a criterion in the final selection of the tender. The MPG is a calculation tool in which the environmental performance of materials and buildings is expressed in a score. In recent years, circularity has become increasingly important in this for the frontrunners through tenders. Currently, the national requirement on MPG is not yet so high that it has brought about major changes. Towards 2030 the tool will become increasingly important. A group of experts indicates in a report from 2020 that circular design decisions such as; demountable, flexible, temporary, reusable, long life and low maintenance detailing of components are not yet well incorporated in the calculation tool (Bouwkwaliteit in Praktijk, 2020). The municipalities therefore ask for a written substantiation with the calculation to be able to assess the degree of circularity applied in the design. In order to find a way to express circularity in a calculation tool, it is important, however, that there is an agreement on what is meant by circularity. It is therefore very interesting what the municipality of Amsterdam is going to do with the standard text on circularity and how the market will react to it.

This can make it difficult for municipalities to produce good tender texts on circularity. This in turn makes it difficult to be able to judge the submissions on circularity. Rotterdam and Amsterdam try to achieve a certain degree of objectivity through a mixed group of experts and blind assessment against it. The MPG requirements are being sharpened towards 2030 and also adjusted in the meantime to allow for the most inclusive score possible.

## The realisation of projects

The contractual connections are necessary to ensure the fairness of tender procurement. In addition, they ensure that developers do not "strip out" the plan. In some cases, the contract does lead to problems. There are cases where certain requirements from the municipality are contradictory. For example, generating locally with solar panels is positive, but minus points are awarded in the MPG because the substances in the panels are toxic. There are also examples of the reuse of materials that do not fit well within urban planning or other requirements. When there is an update of the used calculation tool (MPG) during the phase after the award, the question for the municipality is whether they are allowed to use the new calculation tool. This also applies when the outcome of the adjustments is positive for the project. Developers feel that municipalities' fear of allowing changes defeats the purpose. Both public and private parties see advantages in working with the same project team from the municipality during the development of the plans. In this way, the municipality can continue to assess whether the goals set are being met during the course of the process after the award phase.

## 5.5. Cross-case analysis perceptions stakeholders

| Strenghts | | Weaknesses | |
|---|---|---|---|
| COOLBASE | Elements | COOLBASE | Elements |
| **Innovation:** CLTPs challenge the market<br><br>**Competition:** Developers gain an edge over competitors.<br><br>**Developments:**The final results of tenders are positively appreciated.<br><br>**Policy instrument:** Municipalities have a tool with which they can realize the ambition to become circular | **Innovation:** CLTPs challenge the market<br><br>**Competition:**Developers gain an edge over competitors.<br><br>**Developments:** CLTPs ensure a good end result which fits the location.<br><br>**Policy instrument:** Municipalities have a tool with which they can realize the ambition to become circular | **Early contract:** Tenders create a strong contractual link that prevents adaptation in later stages.<br><br>**Adaptability:** Some ambitions within tenders work against each other. For example, solar panels are not circular.<br><br>**Funds:** Quality tenders cost the developer and municipality a lot of time and money, which is a waste. | **Early contract:** Municipalities want to avoid any kind of unfairness so they do not allow adjustments after the award phase. According to the developer, even when it benefits the quality of the property development.<br><br>**Adaptability:** Calculation tools like the MPG, EPC and BENG are becoming outdated. This is inherent in a tool as there are innovations and new requirements. |
| **Opportunities** | | **Threats** | |
| COOLBASE | Elements | COOLBASE | Elements |
| **Modify:** By expanding BENG, circularity becomes more of a general standard.<br><br>**Standardise:** Better framing of certain specific components of circularity can challenge market participants without just being "clever" with a calculation tool.<br><br>**Communication:** Market consultations can help gain insight into options and costs. | **Standardise:** More unanimity around the content of circularity would help the process. Here is also a role for the national government.<br><br>**Costs:** When circular construction becomes a supported standard, construction costs will adjust accordingly. As a result, prices for CLTPs will decline.<br><br>**Communication:** Communicating publicly about costs can eliminate suspicion. | **Feasibility:** Circular projects cost more to build and that while prices are already high for consumers.<br><br>**Selection criteria:**The stacking of ambitions is mentioned by market parties as a possible stumbling block. Municipalities, incidentally, do not always agree with this | **Standard:**Because the different sub-districts have a great deal of autonomy, there are major differences between tenders. Circularity as a standard is not yet in sight.<br><br>**Selection criteria**There is a chance that project developers will drop out if the requirements of CLTPs become too high, especially if yields were to fall. |

Table 21: Cross-case analysis perceptions of stakeholders on CLTPs (own ill.)

# 6. Expert panel

In this chapter the focus group is introduced to validate the results found in the previous chapters. The expert panel consists of several professionals in the public and private domain of CLTPs. The panel was held in an online environment and supervised by a moderator. The expert panel is a form of a focus group. The expert panel is a focussed interview in which participants are selected for their knowledge on a specific topic. The results from the cross-case analysis led to five statements that were discussed by the participants. The size of the expert panels often varies between 4 and 7 participants (Bryman, 2012 p. 507). For this expert panel, there are four external participants and a moderator. The participants are very involved in the topic.

## 6.1. Selection of members

A number of professionals with knowledge of tenders were approached for the expert panel. To map public-private partnerships, participants were invited from both fields. The selection resulted in the participation of two individuals who co-wrote tenders and two project developers.

| | Name | Organisation | Job title |
|---|---|---|---|
| 1 | | | Policy Officer Sustainability |
| 2 | | | Project Manager |
| 3 | | | Project Developer |
| 4 | | | Project Developer |

Table 22: Participants Expert panel (own ill.)

Both Mr. de Bruijn and Mr. Maas work on quality tenders. Mr. de Bruijn does this for the municipality of Amsterdam and Mr. Maas does this from an external consulting role for medium-sized municipalities in the Netherlands. Both developers have previously participated in CLTPs in Amsterdam and Rotterdam.

## 6.2. Content & outcomes from the expert panel

The expert panel consists of an introduction after which five statements are discussed. The purpose of the expert panel was to validate the results of the cases in particular. The concluding SWOT analysis of the cross-case gave insight into the views of the various stakeholders and describes a number of threats and opportunities. The members of the expert panel could provide insight into whether these results corresponded to their daily work experience. In preparation, participants received a document with information regarding the topic. A number of sample statements were also provided so that the participants could prepare for the question.

### 6.2.1. Statement 1

*"Circularity in tenders is a good development and makes for good circular projects."*

**Reasoning statement:** This statement is based on the strength of CLTPs that is widely shared from the results in the cases.

**Outcome:** The experts are quick to agree on this proposition. Yes it is true that circularity in tenders is a good thing and that it is logical to develop it further. However, there are large differences between what is known in municipalities. There are also large differences in what municipalities can ask for. Too much stacking of criteria is in many places less market-conforming than in Amsterdam. Smaller municipalities need to identify what the key principles are and build support for them. Further requirements are a fine perk, but should not hold back developments. There are still issues in the implementation of how these CLTPs are created that need to be resolved.

### 6.2.2. Statement 2

"Public and private parties are currently working well together when it comes to implementing circularity."

**Reasoning statement:** Both cases talk about improving communication between public and private parties. This statement hooks up with that and explores how the experts view this.

**Outcome:** Collaboration between public and private parties in circular projects is still very inconsistent. Here the issue of keeping early drafted contracts comes up immediately. The municipality indicates that there are developers who try to get out of their responsibility and execute plans as cheaply as possible. Market parties demand a more uniform approach to circularity and indicate that they would like to work together. There are examples of public-private partnerships that work well. Here knowledge can be shared and there is room for discussion. This can lead to a better understanding and good cooperation. In practice, however, tenders are not grafted onto this. Within tenders, plans are made from a private perspective and assessed by the public parties. At the moment the cooperation really begins, contracts are already concluded. As a result, there is no more opportunity for adjustments and improvements. As a result, the call for a society-wide vision of circularity can be heard from developers. In doing so, this would also greatly assist municipalities in meeting their circular goals. Clear steps in this could be to create a tool in addition to the BENG and MPG that unambiguously captures circularity. In terms of public law, however, it would only be possible for municipalities to use this tool if it becomes a national standard.

### 6.2.3. Statement 3

"The problem that tenders due to early contractual connections are not flexible later on on themes such as circularity, is inevitable."

**Reasoning statement:** The SWOT analyses revealed that the contractual connection that encircles a tender can often cause problems during the process. This statement questions the idea of whether this is preventable or not.

When the EPC was changed to the BENG, it was revealed that it actually causes problems. Agreements made in the EPC period cannot be literally translated to the BENG because that tool works differently. After the award phase, it is then very complicated to assess what is or is not sufficient. For municipalities it is then difficult since they have to comply with contract law. Developers try to work things out with municipalities, but they are often suspicious of the developer's intentions. Developers emphasize that their image with a municipality is also an important reason for guaranteeing promised quality. Even if this means that adjustments must be possible during the process. This is actually the big problem for asking for circularity in tenders. Circularity is an innovative building method and innovativeness is not easily captured in tenders. Tenders are all about making clear agreements and verifying these agreements.

### 6.2.4. Statement 4

"Public and private parties currently have a sufficient understanding of what circular construction means for the process and feasibility of projects."

**Reasoning statement:** The demand from developers and municipalities for an unambiguous description of circularity is unanimously expressed. Steering from the government or better consultation between parties is mentioned as possible solutions. This statement discusses the possibilities.

Nationally, the policy must be drawn on more broadly in order to increase knowledge of the theme. The establishment of a good calculation method that can actually express circularity is important for this. The MPG is currently not suitable enough for this. That is why you see that municipalities are asking for an extra foundation to the calculations. The calculation in itself is not yet sufficient. Questions such as 'What is circularity?' and 'In what way can we assess it?', are still unresolved. In relation to tenders, these questions are very important as the answers can ensure a fair assessment. Market parties have a great need for this as participating in tenders demands a lot from them, especially when a tender is not won. Openness and transparency can therefore ensure that market parties learn more from participating in tenders.

### 6.2.5. Statement 5

"As long as there are bids for tenders, municipalities are not asking for too many ambitions."

**Reasoning statement:** Developers indicate that the "stacking of requirements" does not contribute to the feasibility of (circular) projects. The municipality of Amsterdam on the other hand indicates that they would actually like to stack even more. The idea that when there are tenders, the tenders are in accordance with the market therefore comes from the Municipality of Amsterdam.

On the one hand, this statement is true since submissions basically lead to the circular projects. Yet, there is a great deal of nuance to be made. Indeed, developers are going to promise more if that means they are more likely to win. This is because there are large personal and business interests involved in participating. These interests cause developers to go one step further than is reasonably feasible. Also, the stacking of requirements creates higher costs, some of which are recovered from the end user. This means that the prices of the homes will rise. In today's market mat tightness creates high prices for consumers

## 6.3. Conclusion

#### Differences between municipalities

During the validation of the research results in the expert panel, a number of issues emerged clearly. The value that the final real estate represents is important for the spending space that is available for innovation such as circularity. In fact, at present, circularity involves additional construction costs. In cities with higher sales prices, this additional investment in circularity makes up a smaller proportion of the overall business case. In Amsterdam the selling prices are many times higher than in other cities so the municipality can ask for more in tenders. In other cities this is different and this is also reflected in the tender documentation. Instead of using a wide range of selection criteria, the smaller cities need to make a choice and determine what they actually consider most important. Only when circular construction becomes more marketable will this change.

#### The Municipality VS. The Market

A clear dividing line between public and private parties emerges from the panel discussion. In short, municipalities feel they can ask the market for anything, to the point where there are too few bids. Project developers feel that this often goes a few steps too far and denounce the existing mistrust. What does not help is that municipalities do not have to be transparent with their justification of land prices. Project developers feel they are not in a strong position because they are largely dependent on municipalities. Conflicts are avoided because there is only one Municipality of Amsterdam to do business with. The expert panel revealed that there is a request from developers for more evaluation after tenders. After all, a losing party suffers a significant financial and personal defeat and would like to know what went wrong. Developers also ask for the establishment of partnerships in which knowledge can be shared and trust can be restored.

The Amsterdam official indicates that these evaluation discussions are difficult and that officials cannot be held responsible for them. According to him, project developers are primarily out to make money and the tender procedures are appropriate for the current situation.

### Assessment of CLTPs

The municipalities indicate that the MPG by itself does not provide the right substantiation for the assessment of the tender bids. For this reason, qualitative tenders are asked to include a written substantiation that is assessed by a jury. In this MPG calculation, solar panels are deliberately not taken into account as they have a negative contribution to the MPG score, but are still important for the energy performance. Developers are also not satisfied with the MPG and indicate that it is tweaked until a good score comes out. Possible solutions to this problem are to expand the building code on circularity or to develop a new circularity tool that works better. A calculation tool is a good outcome for the transparency and honesty of the assessment.

It also appears that during the development of tender projects problems arise when new calculation tools are introduced. The flexibility to combat this is simply not in the nature of tendering. During the expert panel it also became clear that there is still no consensus at all about what circularity actually is. Municipalities embrace the principle and project developers want to participate. Yet there is still no set direction emerging when it comes to circularity in tenders. Not all new tenders include circularity and there are different ways of asking for circularity when it is part of the award criteria. So there are still significant steps to be taken here.

### The future of CLTPs

Not all real estate developments come from tenders, yet they are important projects. The quality tenders are selected in prominent locations within the city and the challenge lies in an integrated and architecturally high quality development. The input of the officials in the expert panel and previous interviews shows that they expect the CLTP to continue to develop into a widely supported policy tool. There are, however, major concerns from market participants about the feasibility of the tenders. They indicate that there are currently already certain tenders in which they cannot participate because they cannot complete the business case. Before CLTPs were issued, municipalities also made strides in soliciting for energy efficiency and other sustainability aspects. The big difference with energy demand and circularity is that energy demand is now easy to express in hard numbers. With circularity this is not the case and in the future we will have to work towards this. The market parties see opportunities to do this in consultation and they see the first steps within information platforms that are emerging. Looking even further ahead, it can be said that circular construction methods can become a widely accepted standard. The use of bio-based materials, flexibility and possibility of reuse can also be enforced through the building code. The tender procedures may add other themes in the future. Participation is one of the themes that is currently becoming more important and the new Environment Act also contains provisions on this. Tender procedures will continue to evolve. The sentiment around tenders may well change now that more guidance is expected from a government.

# PART VI: CONCLUSION

# 7. Conclusion

This research aimed to further investigate the new phenomenon of circular land tender procedures. The various research sections and sub-questions aimed to answer the following main question:

*"What are the experiences and perceptions of the stakeholders involved with circular land tender procedures?"*

The research objectives thereby set were as follows:

- Definition on current situation of land tender procedures via exploratory interviews and literature review of documentation of a circular land tender.
- An expounded literature review on policy implementation, circularity and circular real estate developments.
- An in-depth case study analysis of two circular land tender procedures in the Netherlands.
- Recommendations on the further implementation of circular land tenders following from cases and expert consultation.

Since little to no identifiable research could be found regarding circularity in tenders, a qualitative content analysis was used. This analysis consisted of the two exploratory interviews with two professionals involved in a CLTP in Amsterdam. These interviews combined with tender documents of the case gave insight into the current situation regarding CLTPs. In this phase of the research four main components were identified that were later used in the cases to process results. In the following literature review, the relevant scientific knowledge about CLTPs is outlined. These are divided by literature on circularity, land tender procedures and circularity in tenders.
After the foundation consisting of qualitative content analysis and literature review, the cases were introduced. Two comparable cases were used, one located in Amsterdam and the other in Rotterdam. By conducting an extensive case analysis and interviewing the stakeholders involved, a picture of the practice emerged. In the cross-case analysis, general lessons from both cases were compared. Subsequently, the most striking results from this cross-case analysis were translated into propositions that were validated in the expert panel. The results can be interpreted as recommendations for further development of CLTPs.

The above components of the study are linked to sub-questions. Together, these sub-questions contribute to answering the main question as completely as possible.

## 7.1. Theoretical framework

### Sub question 1: *What is circularity in real estate developments?*

The answer to this question is composed of a three-part response. First, it explains the concept of circularity, second, what it means for real estate development, and finally, what research field it relates to. 1) The concept of circularity is the opposite of the existing linear economy, in which a material is extracted, then used, and eventually ends up in waste streams. It is widely acknowledged that the building industry consumes large amounts of raw materials while generating waste and emissions (Van Stijn & Gruis, 2019). This can be changed by ensuring that used materials can be remade into new applications. Therein, the life cycle of the product becomes part of the design process. 2) a circular building being: "A building that is being developed, used and reused without natural resources unnecessarily exhausting, polluting the living environment and damaging ecosystems. Built in an economically responsible manner and contributes to the well-being of humans and animals. Here and there, now and later"(Van Noort, 2018).

### Sub-question 2: *How does the implementation of policy tools work?*

To answer this question, the role of planning instruments, active land policy, and the changing role of municipalities were examined.
Municipalities are heavily dependent on market players for their policies in the built environment. In fact, in almost all cases they take care of the development of real estate developments. Heurkens et. al (2015) identify four different planning instruments with which they can influence spatial development. In these, the mutual cooperation between private and public parties is the starting point of the successful implementation of policy instruments. These policy instruments consist of four different ways of exerting influence.

1. Shaping instruments in which the decision environment of real estate developers is concretized. Examples are statutory plans and policies.
2. Regulatory instruments in which the local authority controls the decision environment of developers by controlling market transactions. Tenders are a form of regulatory instrument in which the municipality may co-determine what is and is not possible on a development site.
3. The stimulus instruments are there to give market parties more space in developments. Examples are the construction of infrastructure and partnerships.
4. Capacity building instruments are there to help developers deal more efficiently with their decision environment. Here the mindsets and ideas are shared and formal and informal interactions are possible. Think tanks and living labs are examples of this.

Active land policy allows municipalities to issue planning permission and property rights through tenders. The land is then acquired through private law and issued to the market through a tender. The advantage of this is that through this construction municipalities can ask for more than the public law requirements and through competition a higher quality is created.

**Sub-question 3:** *How do land tender procedures work and what role do award criteria have?*

To answer this question, attention was paid to the first municipality in the Netherlands that works with CLTPs. In Amsterdam, circular goals have been set that also have an effect on the built environment. By 2050 the municipality should be fully circular and this requires planning instruments to make this goal achievable. The qualitative content analysis has made clear how a CLTP is approached and the information from the interviews has led to the research insights about CLTPs. The legal context of land tenders is special in the Netherlands. The choice of the ultimate counterparty must be based on the basis of predetermined selection and award criteria; thus ensuring the equal opportunities for potential counterparties (Heijnsbroek, 2013). In addition to the principle of equality, the procurement guidelines also provide guidance on the principle of proportionality. These apply to the suitability requirements of the participating parties and the stipulated award criteria. In concrete terms, the proportionality principle means that each chosen award criterion, in view, is both necessary and appropriate.This shows a large degree of freedom and gives the municipality the opportunity to organize tenders to its own satisfaction.

## 7.2. Case studies

**Sub-question 4:** *How do circular land tender procedures work in practice?*

Both cases involved a tender in which quality was explicitly requested. This means that two rounds are organized after which the winning tender bid is selected. Municipalities are free to apply the award criteria as they see fit and can assign a specific score to them. In both cases the circularity is part of the sustainability component and is substantiated by an MPG score with written substantiation. In addition to the qualitative components of the tender, the offered option fee is part of the overall award criteria. The tenders are announced through public channels and participating parties must comply with general integrity requirements. The assessment method of the tenders were set up from the jury that included internal and external experts. The tender bids consist of a list of documents that support the plan in images and text. Blind assessment ensures a degree of objectivity. For circularity this is a combination of assessing the best MPG score and the best substantiation. From best to worst, a value is associated with this. The accumulated given value per award criterion finally comes to assessment per tenderer.

**Sub-question 5:** *What are the perceptions of the cases' stakeholders on CLTPs?*

Interviews with the various stakeholders in the cases reveal differences between how public and private parties view CLTPs. The public parties from the two cases are close in perception just as the private parties have a similar perception. In both cases, there is a difference in perception between public and private parties when it comes to possible weaknesses of CLTPs. Municipalities find it permissible to ask for as many things as possible while private parties see the feasibility decreasing. In the case of Amsterdam, this difference is the greatest. There, the municipality sees opportunities to add even more requirements while the developer indicates that as a result they are refraining from participating in some tenders. The difference in quality between tenders

within a municipality also indicates that CLTPs are not yet the standard and that there is still work to be done there. Stakeholders agree on the benefits of CLTPs. In both cases, involved parties mention the same arguments in favor. The SWOT analysis below provides the overview of stakeholder perceptions of both cases.

| Strenghts | Weaknesses |
|---|---|
| - Both Municipalities and Developers are positive about the idea that tenders are able to challenge the market additionally.<br>- Developers gain an edge over competitors.<br>- The final results of tenders are positively appreciated.<br>- Municipalities have a tool with which they can realize the ambition to become circular. | - Tenders create a strong contractual link that prevents adaptation in later stages.<br>- Some ambitions within tenders work against each other. For example, solar panels are not circular.<br>- Quality tenders cost the developer and municipality a lot of time and money, which is a waste. |
| **Opportunities** | **Threats** |
| - By expanding BENG, circularity becomes more of a general standard.<br>- Better framing of certain specific components of circularity can challenge market participants without just being "clever" with a calculation tool.<br>- Market consultations can help gain insight into options and costings. | - Circular projects cost more to build and that while prices are already high for consumers.<br>- The stacking of ambitions is mentioned by market parties as a possible stumbling block. Municipalities do not always agree with this |

Table 23: Conclusion SWOT-analysis perceptions of stakeholders in CLTPs (own ill.)

**Sub-question 6:** *What are the implications of CLTPs on the feasibility of real estate developments.*

As with the sub-question above, this is viewed differently by public and private parties. This question relates to the market compliance of tenders and CLTPs specifically. Market participants indicate that circular construction involves higher construction costs and that contractors have difficulty realizing circular designs.

In addition, when working out the projects, too little is possible in modifying the design. Municipalities indicate that this is not possible since there are contractual agreements.These contractual connections unintentionally ensure that innovation is held back. On the one hand, tenders are good tools to challenge the market, but they do not ensure optimal knowledge sharing on the collaboration level. Circularity is currently still a developing concept and capacity building tools can strengthen this integration (Adams & Tiesdell, 2012). Early hard agreements ensure just the opposite. CLTPs therefore, in a sense, have a negative impact on the feasibility of

circular developments while, on the other hand, enabling them. When circular construction becomes more of a standard by creating a long-term norm, circular developments will be more in line with the market.

## 7.3. Recommendations

**Sub-question 7:** *How can the implementation of CLTPs be improved?*

During the expert panel, the research results of the cases were validated. In conversation with the professionals in the field, possible improvements were also discussed. The recommendations on improvement apply on tender procedures itself and on circular selection criteria within these tendres. The intensive review of literature and cases together with the expert panel led to the following possible points of improvement.

6. By working together in knowledge networks, consensus should emerge on what exactly circularity means for real estate developments. Both on financial and process moderate impact on developments.
7. In addition to tenders, a more appropriate planning tool should be sought to enable circular innovations. A good example could be a field lab. Here, barriers such as finances can in fact be put on the table much more openly.
8. The national government needs to think about how circularity will become part of the building code. The MPG and BENG are not sufficient when it comes to assessing circular principles; an addition is needed to achieve circular ambitions.
9. Better cooperation between (sub)municipalities will ensure that circular building projects are more widely supported, even among smaller municipalities.
10. Because most bidders do not win, much work and innovation is lost. A way should be found to still put this knowledge to public use. Public and private parties can learn from this and thus the knowledge is not unnecessarily wasted.

**Main question:** *What are the experiences and perceptions of the stakeholders involved with circular land tender procedures?*

Basically, the answer to the main question has been concluded in the above sub-questions. To pack all these different components together into an answer, the following can be said: The perceptions of different stakeholders in the field of CLTPs cannot be unambiguously summarized. Public and private parties agree on the advantages of CLTPs but look differently at threats, weaknesses and possible improvements. Public and private parties depend on each other when it comes to development through CLTPs, but they have significantly different roles. This also translates to a different perception and also to a mutual distrust.

# 8. Discussion

This chapter discusses the interpretations, implications, importance and limitations of this thesis. The goal is to focus on evaluating the research parts and show how the research parts relate to the opposed research outcome.

## 8.1. Interpretations

The results of this study are based on qualitative research focused on the Dutch situation and more specifically on the Rotterdam and Amsterdam situations. The qualitative content analysis laid the foundation for the research field. Since little research has been done on CLTPs, this was necessary to create an understanding. From there, we looked at relevant literature regarding the creation of policy instruments and specifically land issuance. Since circularity plays an important role, we looked at literature research on circularity and what this means for real estate developments. Since the current situation regarding active land policy which makes CLTPs possible is directly related to making CLTPs possible, this was also included in the literature study.
The information from the qualitative content analysis and the literature review were the basis for the case study. The previously identified elements provide the opportunity for framing the qualitative case data. The case results provide a picture of the current state of CLTPs and tell something about stakeholders' perceptions of the cases. In the cross-case analysis these perceptions are generalized and something can be said about perceptions in the general sense. This resulted in a number of striking issues which were translated into five statements. These statements were then validated in the expert panel.
The experts offered additional insight into the underlying system that leads to the differences in perceptions and how these can be (partially) removed. In the conclusion, the sub-questions were answered after which recommendations were made regarding the better implementation of CLTPs.

## 8.2. Theoretical implications

The theoretical implications are that there is an addition to the research on the planning tool land tender procedures and explicitly on circular land tender procedures. Since the circular award criterion has not been around for very long, no research has been done on it. However, the research does connect to sustainability measures in general which has a large overlap and correspondence with circular thinking principles. The research problem discusses the lack of understanding of what CLTPs mean for real estate developments.

### New public management vs. New Public Governance

Tenders are a municipal policy tool to target market demand. The surveys of this thesis show that officials feel it is legitimate to put these complex circular real estate developments on the market. This way of approach has not always been the standard in the Netherlands. At the beginning of the last century, the Housing Act was introduced to solve the large housing shortages. These houses were pre-financed by the government and developed by (social) housing corporations.

Rents and rent increases were fixed and the financing was paid back over the years (Van der Schaaf, 2021). An Amsterdam example of these 'housing law houses' is the area around the Mercatorplein which was built around 1922. The residents were protected against rent increases and the profits were reinvested by the corporations. A century later these houses are privatized and sold for around 500,000 euros (Andere tijden, 2021). The liberal market thinking that originated in the 1980s has caused a cultural shift among policy makers. From process and input the shift has shifted to efficiency and effectiveness. This way of thinking is described as new public management. The government should be steering instead of rowing' (Hood, 1991). Market forces create the desired results through good demand and the government should stimulate this. This way of thinking is widely supported and has actually led to a quality change in various policy fields. New public management also has the approach to act in a market-oriented way and to be inspired by the market. Hereby creating value and allowing innovation to grow. Yet there are also drawbacks to new public management. A highly complex task concerning sustainability, circularity and social equality combined with a considerable housing shortage is too fundamental to be left to the market alone. Tender procedures, on the one hand, have the power to challenge the market and, on the other hand, provide for very good and special real estate developments. There are a large number of examples of this to be found, all around us in our cities. Yet the tender procedure has a major drawback. Namely, it assumes a great deal of mistrust between the developer and the municipality. This can be seen in the tender's extensive and broad list of award criteria. Market parties indicate that developments are under pressure but are distrusted in this by the municipality. The premature drafting of contracts concerning the development that follows from tenders provides little room for flexibility. This flexibility is what is needed when it comes to the major contemporary issues of housing construction. More real cooperation is what is needed and that must come from a new way of making policy. Establishing partnerships between public and private parties is an important starting point. This way of making policy is called 'New Public Governance' and it is used on a broader level in society. The appointment of a Minister of Housing and creating more financial space for housing corporations are steps that have been taken in the current period. The big problems are no longer left to the market alone. The government is therefore going to take part again. The market has proven to be successful in developing state of the art real estate with growing sustainability challenges. But the combination with social rent and mid-range housing is considered very difficult. If the municipalities think it is important to keep the city affordable as well as circular and sustainable, then they will have to provide more guidance, as was the case in the days of the 'housing act houses'.

## 8.3. Limitations, validity and generalizability of the results

The selected literature to provide insight into this problem is sufficient when it comes to implementing planning tools and defining what circularity is. In contrast, little scientific research could be found on land tenders and specifically award criteria of tenders. As a result, the substantiation for these concepts is mainly due to the qualitative content analysis consisting of two interviews and a document review. This was a good opportunity to capture an example of a circular tender, but it was not comprehensive enough to say in-depth things about CLTPs in

general. In further comparison to other tender documents, it became clear that there are major differences and that one example was probably not sufficient.

### CLTP or Tender with Circular Award Criteria (TCAC)

At an early stage, it was decided to introduce the terminology Circular Land Tender Procedures and build on it. As the research followed, it became increasingly clear that tender procedures with circular award criteria are more versatile than just circularity. It is precisely the combination of different award criteria that characterizes a qualitative tender. A different name would therefore have been more appropriate. This versatility of the award criteria is also what emerged as the most striking feature during the research. It is true that circularity has a major influence on design decisions and that it does indeed make a tender truly different, but the combination with housing type provides the interesting intersection between different considerations.

### Limitations of research scope

It is also important to conclude that tenders are an important and targeted tool to enforce circularity but it is certainly not the only one. In Amsterdam, a lot of land is owned by the municipality and therefore, issuing tenders is easier for them. The previously described policy tool of active land policy is also not widely used in other cities. Rotterdam has a very different situation where tenders are less logical and less common. Project developers in many cases buy land from a private owner and through a zoning procedure enter into discussions with the municipality about the proposed developments. It is also very important that there is research on this course of action, which probably has a greater impact on the overall transition to circularity in the built environment.

### Generalizability

The generalizability of the study should also be considered critically. There are already large differences between the two cases. Amsterdam and Rotterdam have a different approach and there is a different business climate. In smaller cities in the Netherlands, therefore, not much can be concluded. In a significant number of municipalities, tender procedures are not used or are hardly used at all, and there are real estate developments there as well. The study does say something about the difference in thinking between public and private parties and how governments view the use of tenders.

## 8.4. Added value of this research

Even though the research lacks quantitative results and has a thin scientific foundation, the research has added value in scientific and societal areas. The research gives an overview of the current situation regarding CLTPs and creates a conceptual model that says something about the interrelationships between different entities regarding CLTPs.

The two selected cases also provide an overview of the current situation in Rotterdam and Amsterdam. The interviews and expert panel provide a comprehensive overview of stakeholder perceptions of CLTPs and in the conclusion recommendations are made that may be useful for local authorities. The research suggests that CLTPs are still developing and more will be held in the

future. Although CLTPs will continue to evolve, this research provides empirical data that helps to determine what CLTPs entail and the implications of putting them in place.

## 8.5. Recommendations on further research

- A frequently mentioned annoyance of stakeholders was the lack of agreement on what constitutes circularity in real estate developments. Future research can look at how this agreement can be reached and whether this actually resolves the problems outlined.
- This study consists entirely of qualitative data obtained from literature, documents and interviews. It would be quite possible to conduct research in a quantitative manner among stakeholders in the field of CLTPs. The tenders are issued publicly and through media it is often possible to find out which parties won the tender. These could be approached with a survey to add a quantitative aspect.
- In this study, the winning parties of the tender were interviewed in the cases. The majority of the tenderers do not win the tendering procedure. For the completeness of the research, it would be beneficial if this group were also included in the analysis.
- Development of an unambiguous calculation tool that can handle circularity is important for the further development of CLTPs. Currently, the calculation tools are not yet adequate and the written substantiation is somewhat subjective.

# 9. Reflection

The final part of this thesis is a reflection on the research an the process which led to this thesis. The position of the research within the graduation laboratory is identified and the research methods and overall process is reflected.

## 9.1. Position of research within graduation laboratory

This research was conducted from the Urban Development Management angle of Management in the built environment. UDM does research on the different stakeholders within the development of urban areas towards a high quality outcome (van Bueren, 2020). "Main research questions in the group focus on the relationship between strategies, outcomes, actors and areas in city making." This research focuses on public and private collaboration through the planning tool CLTPs, which focuses on the perceptions of the different stakeholders involved in these CLTPs. This research connects to the domain of UDM in that it deals with urban challenges such as climate adaptation, circularity and urban development. The research on circularity within the built environment is expanding and this research is a part of that.

## 9.2. Reflection on research methods

### Qualitative content analysis

The order of starting with a qualitative content analysis and then the introduction is not standard in research. This was chosen because there was little concrete national and international literature on CLTPs. The policy document of the municipality led to an interest in the subject and that is where the research started. This does have the disadvantage that the basis of the research lacks some literary underpinnings. The literature part was later sought more at the situation of qualitative content analysis. Nevertheless, there was great value in using qualitative content analysis. It brought insight into how CLPTs are put together by using example tender documents. The exploratory interviews with one public and one private stakeholder provided direction for the rest of the research. The points mentioned in that phase were later reflected in the cases and expert panel. Thus, in the absence of specific literature, a research direction could still be found.

### Literature study

The literature review is important to frame choices made in the cases and the cross-case. It is a missed opportunity that the four components identified in the qualitative content analysis do not form the basis for the conceptual model. These two things now coexist. On the one hand, this does allow qualitative data to be processed but it does not contribute to the academic value of the results. On the other hand, the concepts of the conceptual model are underpinned by multiple literary underpinnings. Since circularity in the built environment is a strongly growing research field, more good sources about it will be found in the future.

### Case studies

The case studies proved to be an important part of the research. The parties involved have all shown great willingness to cooperate in the study. This has contributed to the completeness of the study. The comparability of the selected cases also contributed to this. Even though it was clear that there were differences between the context in Rotterdam and Amsterdam, there were many points where the cases were similar. The public parties of the two cases had almost the same perceptions as each other. With the private parties this was actually the case as well. Because only two cases were used, the results cannot yet be generalized to all municipalities in the Netherlands. Amsterdam and Rotterdam are the largest and second largest cities in the Netherlands and therefore cannot be compared to a small provincial town. This makes it a targeted research from which the results can be generalized to a certain extent.

### Expert panel

For scientific correctness, it is not correct to connect someone from the same organization as the previously interviewed. The problem alone is that public parties dealing with CLTPs are limited to the two cities that have been researched. As a result, someone from the Municipality of Amsterdam was connected while people from there had been interviewed previously. The participant in question does, however, work in a different department within the municipality of Amsterdam. The experts on the panel were all very knowledgeable about CLTPs, which really allowed for depth and discussion which was important to the research results. The fact that it was done via an online environment caused some problems with talking through each other from time to time, but this did not lead to any major issues.

## 9.4. Reflection on research process

*Finally this part of the reflection contains my personal perspective on the process which started in february 2020*.

My personal fascination with pioneering architecture combined with the realization that the earth is experiencing major problems with climate change and waste streams led me to choose this field of research. That there should be more circular buildings is clear to me. From my research I wanted to see how this can be achieved by applying the right policies. Project developers do not always seem to choose to develop buildings as sustainable and circular as possible while the importance of this is clear. Through the document 'Road map circular land tenders' I came to the concrete policy instrument of circular land tender procedures. Although I must say that the document was quite difficult to understand and did not really clarify what exactly it meant.
Through online research I came to the real estate project Juf Nienke which originated from a CLTP. A project with circular building principles with space medium rent, so that the city of Amsterdam remains livable for the social support functions as teachers. A great initiative and a good project to see what a CLTP entails. By talking to the project developer and the project manager of the municipality, insight was gained into what CLTP entails.

In the period leading up to P1, the idea of the research was drawn up and the initial literature study was set up. This is where the biggest challenges of the research turned out to be for me. The lack of specific comparable research made it difficult for me to come up with a concrete story. This resulted in a retake of the P2. At that point, the connection from literature to the rest of the research was not yet what it should be. In the period leading up to the retake, I got to the core of my literature review with the help of my supervisors and a foundation was laid for the cases. Being able to frame policy instruments and the added value of private contractual connections for a municipality were very important for this.

Finding the cases for the case study was fairly easy by combining it with the internship I did at FSD. The thesis process did take a little longer because I was a little too preoccupied with working on things other than graduation during the internship. During the case study I came to a lot of new insights. I have found speaking with people in the field to be very enjoyable and people's willingness to help has not been disappointing. What struck me is that public and private parties have a totally different view of what can reasonably be asked within tenders. It is true, of course, that market parties are not forced to promise things in tender documentation, but the competitive element ensures that developers aim high. In my view, the municipality is not taking enough responsibility in this regard.

During the expert panel I came to an important conclusion about CLTPs for myself and the research. On the one hand, the tenders create circular innovation by challenging the market to come up with circular plans. On the other hand, tenders actually work against innovation. Innovation occurs when knowledge is shared and things can be tried out. The early contractual connection that occurs in tenders actually makes this completely impossible. I can well imagine the frustration that arises during the development phase. By using open ways of sharing knowledge, something can be done about this.

Circularity in itself is a beautiful principle from which a much more thoughtful way of dealing with our environment is made possible. In my research, however, I have discovered that circularity is also a very complicated concept. At the moment it is perhaps still too complicated to use in tenders in the current way. The MPG and BENG are both not good at concretizing circular principles and need improvement. Adding a new circular calculation tool from the national government would be a good addition in the future. A few years ago, sustainability and energy policy also became nationally supported in this way. A clear tool that is tightened annually seems to work well. Although I doubt that circularity can be converted into a calculation tool with the same ease as energy consumption and insulation values.

Looking back, I can say that the research has inspired me on several levels. It has also sparked some new questions that I would like to answer in my professional life. I am excited to complete my studies and am satisfied with the steps I have made along the way.

Willem Wijnen
December 2021

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# Appendix I

**Summary Interview 27-5-2021**

**Gemeente Amsterdam**

*There are a large number of tenders in Amsterdam. Sustainability is requested on every tender and this has a weighting of 30% in the award of points for winning the tender. It differs per tender on which aspects of sustainability this is focused on. This can be energy, for example, or a complete package of various sustainability aspects. In those tenders, we were often told by market parties that this was complicated. Especially because different things were asked for each tender and new work had to be done all the time. This has held back innovation. We are currently in the process of establishing a standard tender text containing energy and circularity. Within circularity, we focus on MPG and flexible construction. A text must also be supplied with the MPG, since the calculation tool does not work well on its own. Making energy efficiency concrete is easy with the BENG, but with circularity this is really much more difficult. We are now also looking at the market to see how they can ensure that this goes well. So that the stated ambitions will be achieved. We notice that it is difficult to properly assess whether buildings will actually become circular. We as a municipality are not experts in this either. As a municipality, we now focus very much on the goal: the MPG. We hope that the project developer will innovate, but perhaps that is a bit naive. We see that the developer promises things and then it turns out that it cannot be fulfilled. This is a game that is always playing, and with circularity this is also an important theme. We work with a supervisor, someone from outside the municipality who also assesses the plans based on what has been promised earlier. At the moment that it is actually built, the plan will still change and the Municipality of Amsterdam has little insight into this. As a Municipality, we assume that the developer has knowledge about circularity, but if during the process it turns out that this causes problems, something must be done about it. This is very difficult in the current system. On the one hand, we think mutual understanding is very important, but because of how it works now, we must achieve our political ambitions. It is difficult for us to work with qualitative criteria, since losing parties in a tender cannot live with them.As a municipality, we would also like to encourage circular construction by, for example, making land cheaper when it is built in this way. Yet there is resistance from within municipal politics to get this off the ground and that is why it is not happening yet.*

**Summary Interview 31-05-2021**

**Project Developer**

*We must make the transition together. In our opinion, building everything quickly and a lot in concrete is not the solution either. We started in 2018 with the Roadmap circular land tenders, which we had to understand for the tender of plot 14-01, which was one of the first circular tenders of the Municipality of Amsterdam. It was a very large file with a lot of information. Ultimately, looking for concrete cases was mainly difficult. We try to excel in content and really want to take those documents seriously. We try to dive in and get things out of it that our competitors can't get out. So it's very complicated, but we think it gives us a head start. We specialize in tenders and cooperate exclusively, which means that we are well versed in the matter. We are a small-scale project developer and can therefore specialize in Amsterdam tenders. The tenders in other cities, such as in a city like Almere, are generally much easier and of a completely different level. In the first circular tender we won, the focus was on the materials we used. In the end, nothing becomes waste anymore. We truly believe that Juf Nienke meets the circular ambitions set in advance by the Municipality. We have created beautiful architecture while still managing to stack in a circular manner. There were many implementation problems. Wood is a hot topic, but it needs to be worked out very well technically. We ourselves had to invest a lot in learning to develop with wood. In the Netherlands we are not that far with that, so we had to go abroad to do research. That now gives us a big advantage over other developers in circular tenders. With our knowledge, we think that building with wood is not suitable for every location. Tenders where medium rent and social rent are a large part of the requirement are currently not suitable for building in wood. The construction costs are too high and it cannot be compensated with more expensive houses. We believe that the publisher of tendres, the municipality, should have a clear idea of what the ultimate request will be. If a plan is not allowed to contain expensive houses, it is not realistic to build in wood. That is very concretely what it means. The municipality is often inclined to pile up demands and ambitions, without realizing what this does to the feasibility. The market cannot solve it all. For us, this means that the first circular tender did not make any significant gains. It has really been a pioneering project, which looks great on our portfolio. We are intrinsically motivated to build what we promise, which is not the case with all market parties. There, a plan is often chewed up and stripped after winning a tender. As I said, we have not yet benefited much from it but are convinced that our circular knowledge will provide an advantage in winning tenders in the future.*

**Summary Interview 22-11-2021**

**&  | Municipality Amsterdam**

*The circularity within the tender was framed from a sustainability expert who was engaged early on. This person brought circularity into the process. The City of Amsterdam always has 30% sustainability in the tender and within this there is room for circularity. In this tender the award revolves around 12 points of the 100 points that can be allocated to circularity. The tender for Plot 5 Amstelkwartier is set up by various parties within the municipality, with the Amstelkwartier project manager working together with the project manager for land affairs and the civil servants of space and sustainability. For each tender the way of tendering and the specifications will be determined in advance. For Lot 5, a quality tender was chosen. In Amsterdam there are also tenders where circularity is explicitly requested, but in the tender for Lot 5 this was not immediately the case. It has become part of the integrated approach that is in place for tenders and therefore a precursor. In 2019, this integral description of circularity was still rare. The sustainability consultant saw this correctly at the time, as it is now more normal. Lot 5 of the Amstel Quarter is a quality tender in which two rounds were invited. In such a tender the design and its substantiation are assessed. In a 'normal' tender only figures are requested. So the land offer and results from MPG or EPC. This way of tendering has the advantage that it goes faster and requires less work from the developer. The CLTPs also allow municipalities to see earlier what the outcome of the sustainability measures for the plan will be. For Lot 5, a quality tender was chosen because the location occupies a prominent place in the area. The tower will be 70 meters high and will be very visible in the area and far beyond. Therefore the spatial quality is also the most important selection criterion. In a tender that asks for the underlying vision and design, subjectivity is always a risk somewhere. By having five different assessors come to an assessment separately and appointing a varied and competent jury, the municipality is trying to do this as well as possible. Continuity in the project can be important. Participating in the tender and then also being involved in the phase leading up to the permit can help the municipality maintain an overview. There are also project developers who go to the edge when it comes to what is promised in the tender and then applied in the design. Besides using Circularity in tenders there are other policy tools that the municipality can use. Important ones in that are the building code, but it does not challenge as much as tenders. In addition, there is the national BENG that is mandatory for new construction. Amsterdam is also working on an Amsterdam BENG that goes further than the national one. In addition to these tools, the municipality can make adjustments to the zoning plan and memorandum of principles are drawn up for developments from a private perspective. Circularity was not a very big part of the call for tenders; there was 12 percent of the score to be earned on it. Yet you see that developers come up with a well-developed concept and design that fits in with circularity. This shows all the more that tenders are a very good tool for asking for a theme on circularity. Developers will go to great lengths to win the tenders. In principle, the Municipality is positive about the use of tenders and they think that this also does not affect the feasibility. Nevertheless, not every new tender chooses to specifically ask for it. In a later tender for Plot 7 of the Amstel Quarter, for example, the EPC was used, a sustainability tool that does not include circularity in the calculation tool. So there is not yet an unambiguous policy. The space and sustainability department of Amsterdam could steer more on this. The criticism that tenders are too much about the option fee is something that also plays a role within the municipality. In new tenders the weighting of the option*

*fee is also taken into account less heavily and, for example, the number of large medium-tenancy homes is rewarded more. The option fee in these tenders is then only 10%. Previously this was 70% in some tenders and 20% for lot 5 Amstelkwartier. By shifting this assessment there is more room for quality and therefore also for circularity. In the first instance, tendering on just an MPG score is disadvantageous as the assessment is not done on a design or justification. Thus, an MPG is promised that may not be achievable. Later, during the design phase, this does allow for more leeway. The MPG must be achieved but in what way is then suddenly a lot more open. This allows for more flexibility in the design.*

# Appendix II

Interview protocol

Geachte projectteam van COOLBASE,

Tenders zijn voor gemeenten een belangrijke tool om ambities op verschillende onderwerpen tot de praktijk te laten komen. Verduurzaming van de gebouwde omgeving is nodig aangezien de bouw een groot aandeel heeft op de CO2 uitstoot en grote afvalstromen veroorzaakt. Circulariteit zorgt ervoor dat de kringen kleiner worden en materialen, wanneer mogelijk, weer hergebruikt kunnen worden. Het begrip circulariteit gaat verder dan hergebruik en is in mijn onderzoek in de volgende punten verdeeld: 1)integrale aanpak, 2) de materialenstroom, 3) gemeenschapsvorming, 4) groen en biodiversiteit in het gebied, 5) steunen van de lokale economie en 6) de mogelijkheid tot adaptief gebruik van het gebouw.

In mijn onderzoek bekijk ik circulariteit in tenders en op welke manier dit door de verschillende stakeholders wordt gezien. Door gebruik te maken van twee cases kan ik een vergelijking maken van de situatie in Rotterdam en Amsterdam. Om hier meer inzicht in te krijgen interview ik verschillende stakeholders van de cases. Ik nodig u daarom graag uit om met mij in gesprek te gaan. Via Email hoop ik dat we spoedig een moment in kunnen plannen. Het gesprek zal tussen de 40 en 50 minuten duren en kan naar uw wens online of fysiek plaatsvinden.

Mocht u na het interview niet tevreden zijn of het liever niet gebruikt zien worden, zijn er twee opties. 1) U kiest ervoor om het interview niet onderdeel van mijn thesis te laten zijn, 2) We anonimiseren uw naam en de naam van uw organisatie.

Om u alvast een idee te geven van wat ik zal vragen, staan de vragen in de onderstaande bijlage.

Ik kijk er erg naar uit om met u in gesprek te gaan over het project en de tenderprocedure.

Vriendelijke groet,

Willem Wijnen

Graag vraag ik u om het onderstaande formulier te ondertekenen. Ik zal dit formulier indien de afspraak fysiek is, ook meenemen zodat u hem dan kan ondertekenen.

Ik verklaar op een voor mij duidelijke wijze te zijn toegelicht voor de aard, methode, doel en belasting van het onderzoek.

Ik begrijp dat het geluids- en/of beeldmateriaal (of de bewerking daarvan) en de overige verzamelde gegevens uitsluitend voor de analyse en wetenschappelijke presentatie en publicaties zal worden gebruikt.

Ik behoud me daarbij het recht voor om op elk moment zonder opgaaf van redenen mijn deelname aan dit onderzoek te beëindigen.

**Ik heb dit formulier gelezen en ik stem in met deelname aan het onderzoek**

[ ] **Graag ontvang ik aan het einde van het onderzoek een korte samenvatting van de resultaten van het onderzoek. Om deze reden verleen ik toestemming om mijn naam- en adresgegevens tot het eind van het onderzoek te bewaren.**

Plaats

Datum

- ----------
  (Volledige naam, in blokletters)

- ----------
  (Handtekening deelnemer)

II: Interview protocol case studies
Casestudies interview

Deel 1: Potentie circulariteit gebied
1.1. Wat is circulariteit volgens u?
1.2. Hoe ziet volgens u circulariteit eruit in [projectnaam]?
1.3. Waarom is [projectnaam] gekozen als gebied waar circulariteit op deze gebiedsschaal toegepast kan worden? Wat zijn de kansen en potenties van dit gebied en waar zitten de moeilijkheden? (locatie/doelgroepen/schaal/programma/samenwerking/etc)
1.4 Wat was de rol van circulariteit bij de tender die tot de ontwikkeling geleid heeft?

Deel 2: Zou u gezamenlijk met mij de volgende SWOT-anaylse in kunnen vullen waarbij circulariteit tijdens de tender centraal staat.

SWOT
Strenghts
Weaknesses
Opportunities
Threats

1.7 Vind u dat tenders een goed instrument zijn voor gemeentes om hun circulaire ambities te bereiken.
1.8 Vind u dat er op andere gebieden uitruiling zou moeten kunnen zijn om circulariteit mogelijk te maken. Denk daarbij aan het toelaten van duurdere woningen , of het toestaan van minder parkeerplekken?
1.9 Bent u tevreden over de uiteindelijke circulaire principes binnen de ontwikkeling?
Denk aan de 1)integrale aanpak, 2) de materialenstroom, 3) gemeenschapsvorming, 4) groen en biodiversiteit in het gebied, 5) steunen van de lokale economie en 6) de mogelijkheid tot adaptief gebruik van het gebouw.

1.10 Welk cijfer zou u de circulariteit van de ontwikkeling van [projectnaam] geven?
1.11 Welk cijfer zou u de circulariteit zoals beschreven in de tenderprocedure geven?
1.12 Kunnen er volgens u zaken beter in de circulariteit van de tenderprocedure, en zo ja wat dan?

3.1 Denkt u dat circulariteit op een juiste manier via tenders bereikt kan worden?
3.2 Denkt u dat circulariteit in tenders het tenderproces vermoeilijkt?

# Appendix II

## Expertmeeting Circulaire Tenders

Scriptie onderzoek Willem Wijnen TU Delft

**Briefing voor expert panel 23 november:**

**Deelnemers:**
Voorzitter discussie: Willem Wijnen ( student TU Delft)
Deelnemer 1:
Deelnemer 2:
Deelnemer 3:
Deelnemer 4:

**Introductie**
Tenders zijn voor gemeenten een belangrijke tool om ambities op verschillende onderwerpen tot de praktijk te laten komen. Verduurzaming van de gebouwde omgeving is nodig aangezien de bouw een groot aandeel heeft op de CO2 uitstoot en grote afvalstromen veroorzaakt. Circulariteit zorgt ervoor dat de kringen kleiner worden en materialen, wanneer mogelijk, weer hergebruikt kunnen worden. Het begrip circulariteit gaat overigens verder dan hergebruik en is in mijn onderzoek in de volgende punten verdeeld: 1)integrale aanpak, 2) de materialenstroom, 3) gemeenschapsvorming, 4) groen en biodiversiteit in het gebied, 5) steunen van de lokale economie en 6) de mogelijkheid tot adaptief gebruik van het gebouw.
In mijn onderzoek bekijk ik circulariteit in tenders en op welke manier dit door de verschillende stakeholders wordt gezien. Inmiddels zijn de Gemeenten Rotterdam en Amsterdam de eerste die bezig zijn gegaan met circulaire tenders. Andere Gemeenten als Utrecht en Den Haag maken ook de eerste stapjes.

**Belang van het onderzoek**
Literatuur toont aan dat publieke en private partijen een verschillende visie hebben op beleidsinstrumenten van Gemeenten. Toch is het van groot belang om te kijken naar op welke manier de publiek-private samenwerkingen tot succes kunnen leiden tot succes. Voor de publieke partijen betekent dit dat beleidsdoelen gehaald worden en de voldaan wordt aan gezette standaarden en voor de ontwikkelaar dat ze succesvolle projecten kunnen ontwikkelen. In mijn onderzoek heb ik publieke en private partijen gesproken. Deze data is vervolgens verwerkt tot onderzoeksresultaten en deze resultaten wil ik u als deelnemer graag voorleggen.

**Doel van het onderzoek**
- Definitie over huidige situatie van gronduitgifteprocedures via verkennende interviews en literatuurstudie van documentatie van een circulaire gronduitgifte.
- Een uitgebreid literatuuronderzoek naar beleidsimplementatie, circulariteit en circulaire vastgoedontwikkelingen.

- Een diepgaande casestudy-analyse van twee circulaire grondtenderprocedures in Nederland.
- Aanbevelingen voor de verdere implementatie van circulaire grondtenders naar aanleiding van cases en expertpanel.

**Uitkomsten in het kort**

De uitkomsten van mijn onderzoek zijn onderstaand verwerkt in een SWOT-analyse waarin de sterktes, zwaktes, kansen en bedreigingen voor circulaire tenders uiteen zijn gezet. Over de kracht van circulariteit zijn publieke en private partijen het over het algemeen eens. Ontwikkelaars kunnen uitblinken en Gemeenten kunnen beleidsdoelen verwezenlijken. Het eindresultaat van de projecten wordt daarnaast ook hoog beoordeeld. De zwaktes van Circulariteit in tenders komen voort uit de contractuele verbinding die vroegtijdig gesloten wordt waardoor aanpassingen op een later moment moeilijk is.Verder kunnen er tegenstrijdigheden ontstaan en kosten de procedures meer geld dan tenders die niet op kwaliteit gehouden worden. Voor dit onderzoek zijn de kansen en de bedreigingen het meest interessant aangezien de samenwerking tussen publiek en privaat een grote invloed op hebben.

| Strenghts | Weaknesses |
|---|---|
| - Zowel Gemeenten als ontwikkelaars zijn positief over het idee dat tenders de markt extra weten uit te dagen.<br>- Ontwikkelaars krijgen een voorsprong op concurrenten.<br>- De eindresultaten van de tenders worden positief gewaardeerd.<br>- Gemeenten hebben een tool waarmee ze de ambitie om circulair te worden kunnen verwezenlijken. | - Tenders create a strong contractual link that prevents adaptation in later stages.<br>- Some ambitions within tenders work against each other. For example, solar panels are not circular.<br>- Quality tenders cost the developer and municipality a lot of time and money, which is a waste. |
| **Opportunities** | **Threats** |
| - Door de BENG uit te breiden wordt circulariteit meer een algemene standaard.<br>- Het beter inkaderen van bepaalde specifieke onderdelen van circulariteit kan marktpartijen uitdagen zonder alleen maar 'slim' om te gaan met een rekentool.<br>- Marktconsultaties kunnen helpen inzicht te krijgen in mogelijkheden en kostenplaatjes. | - Circulaire projecten kosten meer om te bouwen en dat terwijl de prijzen voor consumenten al hoog zijn.<br>- Het stapelen van ambities wordt door marktpartijen genoemd als mogelijk struikelblok. Gemeenten zijn het hier overigens niet altijd mee eens. |

De hoofdvraag van het onderzoek luidt als volgt: "*Wat zijn de ervaringen en percepties van de belanghebbenden die betrokken zijn bij circulaire aanbestedingsprocedures voor grond?*"

Om mijn onderzoeksresultaten te valideren introduceer ik een aantal stellingen die ingaan op de bovenstaand genoemde resultaten. Op die manier onderzoek ik de toepasbaarheid van deze resultaten en kom ik tot nieuwe inzichten.

**Stellingen**

Tijdens de expertpanel zal ik aan de hand van verschillende stellingen mijn resultaten valideren. De vijf onderstaande stellingen zullen worden behandeld. Er is ook ruimte voor eigen inbreng en iedereen zal zich eerst introduceren.

1. *Circulariteit via tenders uitvragen heeft een positief effect op ontwikkelingen, ook bij niet getenderde projecten.*

2. *Het is een goede zaak dat circulariteit wordt meegenomen in tenders en dat Gemeenten hier een gestandaardiseerde manier voor gaan hanteren. (Eens of oneens en waarom)*

3. *Het probleem dat tenders door de vroege contractuele verbinding later niet flexibel zijn op thema's als circulariteit zijn, is onvermijdelijk.*

4. *Gemeenten vragen uit op te veel verschillende thema's als duurzaamheid, middenhuur en circulariteit. Het 'stapelen van ambities' leidt tot problemen*.

5. *Circulariteit kan beter opgelost worden via andere tools zoals een aanpassing van het bouwbesluit of uitbreiding van de BENG.*

**Slot**

Graag wil ik u allen bedanken voor de deelname aan de expert panel op 23 november. Het is interessant en leuk om het met professionals te hebben over mijn onderzoek en ik kijk uit naar de nieuwe inzichten. Voordat het document via de TU Delft repository gepubliceerd wordt ontvangen jullie een digitaal exemplaar. Mocht u zich niet kunnen vinden in de uitkomsten van de panel is het mogelijk om deze te anonimiseren.

Tot de expert panel.

Vriendelijke groet,

Willem Wijnen
Tel: [redacted]