



Developer obligations: the outcome for financing climate change adaptation

Master thesis

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Preface

In front of you is my thesis 'Developer obligations the outcome for financing climate change adaptation?'. This thesis explores under which circumstances developers are willing to financially contribute to climate change adaptation in private land developments. I wrote this thesis to complete my Master degree in Spatial Planning, Land and Real Estate Development at the Radboud University in Nijmegen. After six months this report now presents the end results.

Presenting this thesis would not have been possible without the help and support of several people who I would like to thank. First of all, I would like to thank the respondents who took the time and effort to participate in this research. Without them it would not have been possible to finish this thesis. I also want to thank my family, friends, and fellow students for listening and helping with the struggles that appeared while conducting the research. Lastly, I would also like to thank Ary Samsura for guiding me through the process.

I hope you enjoy reading my master thesis.

Fenne Laarakkers
Nijmegen, June 2022

Summary

As awareness of the effects of climate change is increasing, more governmental plans are set up to adapt to these changing climate situations. Yet, urban financial models are underdeveloped to account for climate change adaptation and not enough attention is given to the cost-effectiveness of these plans (Dunning & Lord, 2020; United Nations, n.d.). Financial decisions, thus, need to be made on how to finance climate change adaptation plans (Root, 2016, Root, Van der Krabben & Spit, 2016). In this thesis, the use of Land Value Capture (LVC) is explored as a possible tool to account for the financing of climate change adaptation. More specifically, the use of developer obligations (DOs) is explored. DOs are contributions of developers, for example to climate change adaptation, in exchange for favourable land-use regulation decisions (Muñoz Gielen & Van der Krabben, 2019). However, because of Dutch regulation, municipalities have a weak negotiation position when coming to an agreement about DOs for climate change adaptation as they cannot condition land-use regulation decisions to a private law agreement (Muñoz Gielen, Salas & Cuadrado, 2017; Muñoz Gielen, 2021). Hence, also the willingness of developers to contribute to climate change adaptation is needed. This research aims to investigate this willingness to contribute. This led to the following research question:

“Under what conditions are developers willing to financially contribute to climate adaptive measures in private land development within the Netherlands through private law agreements?”

To answer this question, a conceptual model was firstly created based on literature research. To verify the relevance of this conceptual model, interviews were held with private developers and policy documents were searched. Based on these three sources of data, an answer was found to the research question. This means that this research is deductive with the use of qualitative data. Firstly, it was found that four variables can be identified as important conditions for developers when considering contributions to climate change adaptation. As most developers are intrinsically aware and motivated to act towards climate change and climate change adaptation, not all conditions have to be perfectly fulfilled. But, the better they are fulfilled, the more developers are willing to contribute through DOs. The four conditions identified through this research are a prospect for return, good risk management, some political certainty, and chain integration throughout the process. Furthermore, barriers that influence those four conditions should be removed. Examples of barriers that need to be removed are the stacking of ambitions, lack of enough public risk management capacity, and the lack of a level playing field between different governmental policies. However, most importantly is that developers want contributions to climate change adaptation to be realistic and should always be considered integrally. The criteria of benefit, causality and proportionality are very important in that integral consideration. Nevertheless, developers can sometimes be convinced that an investment is the 'right' investment, which increases the willingness of developers to set these principles aside.

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Chapter 1 – Introduction

1.1 Contextual background

All around the globe, climate change is happening. As a reaction to this, in 2015, the Paris Agreement was signed by 196 parties. The Paris Agreement is a legally binding international treaty on climate change to limit global warming to 1,5-2 degrees Celsius (United Nations, 2015). To achieve this, the built environment must lower net emissions of gas to zero by 2030 (IPCC, 2018). However, according to figures from the UN environment program, this goal will not be met (UNEP, 2020). Because of that, the built environment is facing and will increasingly keep facing problems due to climate change. Rising sea levels and heavy rainfall can cause floating and problems with sewerage; extremely high temperatures can cause heat stress, poor living, and bad health conditions; and drought can cause subsidence (Knowledge Portal Climate Adaptation, n.d.-a; Kleerekoper, Van den Dobbelsteen, Hordijk, Van Dorst & Martin, 2015). These problems can cause a lot of financial damage (Angelova & Kok, 2020). Therefore, those who produce and manage the built environment must be prepared for climate change and its effects (Hürlimann et al., 2022; Rajkovich & Holmes, 2021). The scientific community, therefore, argues that climate change adaptation is unavoidable (Adger, Arnell & Tompkins, 2005; Biesbroek et al., 2009; International Panel on Climate Change, 2013).

Climate change adaptation “refers to adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change. In simple terms, countries, and communities need to develop adaptation solutions and implement action to respond to the impacts of climate change that are already happening, as well as prepare for future impacts” (United Nations, n.d.).

Many institutions and governance networks have recognized this need for climate change adaptation and its needs to be on the agenda of regional, national, and international organisations (United Nations, n.d.; Biesbroek et al., 2009). The European Commission took a leading role in this, by highlighting the urgency of climate change adaptation when they adopted a new EU strategy on climate change adaptation on February 24, 2021. “The strategy is a key part of the European Green Deal, and it aims to increase and accelerate the EU’s efforts to protect nature, people, and livelihoods against the unavoidable impact of climate change” (European Commission, n.d.). Before this, the European Commission already called for action by member states to set up climate change adaptation strategies. This resulted in national adaptation strategies, mostly including roles, responsibilities, mechanisms, and timescales (Knowledge Portal Climate Adaptation, n.d.-b; Preston, Westaway & Yuen, 2011).

1.2 Problem statement

As explained before, awareness of climate change and climate change adaptation is increasing, and plans are set up at different government levels. However, not enough attention is given to the cost-effectiveness of these plans (United Nations, n.d.). Urban financial models are underdeveloped to account for climate change adaptation (Dunning & Lord, 2020). Especially for municipalities that are already struggling to operate within constricting budgets. Therefore, financial decisions must be made at the municipal level on how to finance climate change adaptation measures (Root, 2016; Root, Van der Krabben & Spit, 2016).

Land value capture (LVC) is a method to be explored to finance climate change adaptation. LVC can be defined as capturing increased land value, not created by the efforts of the landowner (Muñoz Gielen & Van der Krabben, 2019). This is based on the idea that landowners who profit from others' investments should contribute to public costs (Smith & Gihring, 2006). Since evidence is already found that climate change adaptation has a positive effect on land and property values (Kiel, 2021; Kim, 2020; Jin, Hoagland, Au & Qiu, 2015; Fell & Kousky, 2015), LVC is a good way for municipalities to capture part of the expenses for climate change adaptation. However, it should be explored further how municipalities can use LVC as a tool to finance climate change adaptation (Dunning & Lord, 2020).

An LVC-tool that can be considered as a financing tool for climate change adaptation is the use of developer obligations (DOs). "DOs are contributions of property developers and landowners made in exchange for public bodies making decisions on land-use regulations that increase the economic value of their land and buildings" (Muñoz Gielen & Van der Krabben, 2019). Considering that property developers and landowners benefit from investments in climate change adaptation (Kiel, 2021), the use of DOs for financing climate change adaptation measures seems appropriate. However, it should be noted that municipalities in the Netherlands do not have a strong negotiation position when coming to such an agreement, as no legislation allows municipalities to condition land-use regulation decisions to an agreement (Muñoz Gielen, Salas & Cuadrado, 2017; Muñoz Gielen, 2021). Hence, also the willingness of developers to contribute to climate change adaptation is needed. On this topic of the willingness of developers to contribute to climate change adaptation not much is known yet.

1.3 Research objective and questions

The main objective of this research follows from the research problem. This research aims at contributing to the knowledge of how LVC can be used as a financing tool for climate change adaptation. More specifically, it investigates DOs. Because there is no legal foundation for municipalities to ask DOs for climate change adaptation (Muñoz Gielen et al., 2017), the willingness of developers to financially contribute is needed. Thus, this research investigates the circumstances under which developers are willing to financially contribute to climate change adaptation. The aim of this research leads to the following research question:

"Under what conditions are developers willing to financially contribute to climate adaptive measures in private land developments within the Netherlands through private law agreements?"

To answer the research question, the following sub-questions will be answered:

1. "What are the most important factors that would influence a private developers' willingness to contribute to (public) climate change adaptation?"
2. "What are the current barriers for private developers to contribute to (public) climate change adaptation?"
3. "What kind of climate change adaptation programs are private developers willing to contribute to?"

1.4 Relevance of the study

This research aims to contribute to the existing body of knowledge around LVC and DOs for climate change adaptation. With this aim, this research is both societally and scientifically relevant.

1.4.1 Societal relevance

The climate is changing. This can be seen in rising sea levels, heavy rainfall, extremely high temperatures and drought (Knowledge Portal Climate Adaptation, n.d.-a; Kleerekoper, et al., 2015). These changes can cause problems for people, nature, and the climate (Central Government, n.d.). To protect society, action must be taken in the form of climate change adaptation. Especially, since the more the climate is changing and the longer adaptation measures are delayed, the more expensive and difficult it gets to solve the problems that come with climate change (United Nations, n.d.). At the same time, the Dutch government faces the task to build almost one million houses before the end of 2030 (Central government, 2021). In this process, lots of building agreements are closed, which means there are lots of opportunities for municipalities to use DOs as a way of financing climate change adaptation. However, problems are faced in financing these strategies because of limited government budgets (Root, 2016; Root et al., 2016). This research will contribute to solving this problem by looking into the use of DOs as an LVC-tool to finance climate change adaptation.

By considering DOs as a financing tool, responsibility is considered. By taking climate change adaptation measures, land and property values increase (Kiel, 2021). Based on the direct rationale, the increase of value should belong to the community and not to the landowner when public, not private, investments are made (Suzuki, Murakami, Hong & Tamayose, 2015). Because there is no legal foundation, the willingness of the developer to financially contribute needs to be explored further. Conducting this research contributes to finding solutions for the municipal struggle to fund climate change adaptation and, thus, contributes to coming closer to a built environment that is climate resilient.

1.4.2 Scientific relevance

The scientific relevance lies in the creation of the research question based on existing research and literature. Based on the research gaps found in the literature the research question was formed.

As mentioned in the problem statement, there is not always enough attention for the cost-effectiveness of adaptation plans (United Nations, n.d.). Urban financial models are underdeveloped when it comes to climate change adaptation of the built environment. While there is great progress on the concept of LVC and policy development, research is limitedly focused on climate change adaptation (Dunning & Lord, 2020). Hence, it is important to further explore the use of DOs as a tool to finance climate change adaptation on the municipal level (Root, 2016; Root et al., 2016). This is very clearly stated in the paper of Dunning and Lord (2020) where they mention that research is needed to analyse the impact of LVC-tools as a financing method for a climate-resilient built environment.

The success of using DOs varies across sectors. Within the urban planning sector, relatively more barriers to climate change adaptation are faced. The explanation why these barriers emerged remains unclear and further research is needed on the preparedness of developers to contribute to climate change adaptation (Hürlimann et al., 2022). Hence, this research will contribute to the existing body

of knowledge by examining the willingness of developers to financially contribute to climate change adaptation.

Chapter 2 – Theoretical framework

This chapter provides an overview of some theories that are relevant to the research objective and question. Firstly, the financing of climate change adaptation is discussed. After that, the concept of land value capture and developer obligations will be discussed, both in a general context and specifically in the context of Dutch policy. Those first two concepts are important because they need to be understood before being able to proceed further with the third topic, namely that of DOs to climate change adaptation. This topic will be explored by using the ‘willingness to pay’ theory, as proposed by Koppenjan & Enserink (2009). This theory is selected to discuss because of the connection to with the research question. Their theory mentions several factors that contribute to private parties’ willingness to pay for a sustainable urban environment. Although not specifically focused on the Netherlands or developer obligations, this research can be built further on their theory. Based on the theories explored, two central concepts arise. Those concepts are operationalized into variables, sub-variables and indicators. Eventually, leading to a conceptual model in the last section of this chapter.

2.1 Theoretical framework

2.1.1 Financing climate change adaptation

Funding gap and alternative funding

When it comes to climate change adaptation, municipalities play an important role. Together with provinces, regional water authorities, and central governments, they agreed to be climate-proof in 2050 (Knowledge portal climate change adaptation, n.d.-c). To accomplish this, local governments have a leading role in making climate-adaptive plans within their municipality. However, currently, many urban financial models are underdeveloped, and many municipalities are struggling with financing climate change adaptation measures (Dunning & Lord, 2020; Van Bijsterveldt et. al, 2021). This lack of financing is a substantial barrier for municipalities to adapt to climate change (Root et al., 2016).

Municipalities complain about available financial means to finance public services. This is especially present when it comes to green public services. It is also mentioned that the budget for green public services, for example for climate change adaptation, is a budget that is regularly compromised to fill other financial gaps. Figure 1 shows the funding gap that municipalities face when it comes to climate change adaptation. Because of the funding gap, municipalities must find other ways to finance climate change adaptation measures (Root, 2016; Root et al., 2016; Bijsterveldt et. al, 2021).

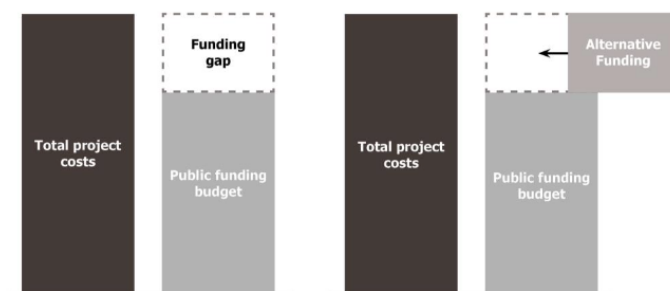


Figure 1: Municipal funding gap climate change adaptation (Murre, 2020).

This alternative funding can be achieved by linking climate adaptive measures to larger projects and plans. Using the LVC-method, DOs in climate change adaptation can be captured in a similar way as DOs in public infrastructure are captured (Root et al., 2016; Hendricks et al., 2021). However, this also means that the goodwill of other (private) actors is needed (Knowledge portal climate change adaptation, n.d.-c).

Land value and climate change adaptation

Not much extensive research is done on the relationship between climate change adaptation and land and property values. However, there is some evidence that climate change adaptation can positively influence land and property values (Kiel, 2021). The advantage can, for example, be caused by green space and trees, water storage systems and improved drainage (Makrapoulos & Butler, 2010; Bobylev, Hung, Jefferson & Rogers, 2013).

This positive effect of climate change adaptation on land and property values can be explained by looking at buying behaviour of house buyers. When selecting how much buyers are willing to spend for a house, purchasers consider the house’s features as well as the neighbourhood. According to economic theory, houses that are more vulnerable to risk, such as increased flooding risk, are worth less to buyers as the projected returns are lower. As a result, every adaptation that reduces the probability of an event or reduces the damage caused by an event should enhance the house’s worth, assuming all other factors remain constant. Furthermore, ‘safer’ residences should have lower insurance costs, which raise the price which a buyer wants to pay (Kiel, 2021). Translating this into a developers’ perspective means that developers can profit from climate change adaptation measures. However, this additionally generated profit due to climate change adaptation is very location-specific, as not every place faces the same climate change issues (Kiel, 2021). Figure 2 shows how taking climate change adaptation measures can increase the value of land and real estate properties. This increased value, for example generated by climate-resilient infrastructure is what municipalities are trying to capture with NDOs.



Figure 2: Value increase due to climate change adaptation (Murr, 2020).

2.1.2 Land value capture and developer obligations in the Dutch policy context

Land Value Capture

Land value capture, also called public value capture or land-based finance, refers to the process where the increased value of land and properties, arising due to public investments or other public efforts, are captured by the public sector, and used for financing urban development and services (Smith & Gihring, 2006; Smolka & Amborski, 2007; Muñoz Gielen & van der Krabben, 2019). It is based on the idea that landowners who profit from public investments should contribute to the public costs (Smith & Gihring, 2006). This increased land value is also called unearned increment (Alterman, 2011; Walters, Du Plessis, Haile & Paterson, 2016). The unearned increment can be caused by public investments in public services or by changed planning and regulation (Peterson, 2009; Vetter & Vetter, 2016). The unearned increment connects land value and spatial planning since any public spatial improvement, for example, infrastructure or climate change adaptation, influences surrounding land values (Nguyen, Van der Krabben, Spencer & Truong, 2017).

Capturing this unearned increment can be done directly or indirectly. Direct value capturing is based on the idea that the landowner does not deserve the unearned increment. An example of this is an on-site improvement that benefits the whole community. The idea behind indirect value capturing is that landowners should internalize negative externalities of development. Examples of indirect LVC-tools are fees and taxes (Alterman, 2011; Muñoz Gielen & Lenferink, 2018). DOs are mostly considered an indirect LVC-tool, used to finance public improvements by placing requirements on developers (Muñoz Gielen & van der Krabben, 2019; Turk, 2018; Muñoz Gielen & Lenferink, 2018). But DOs can also be direct, depending on the rationale of thinking behind them (Muñoz Gielen & Lenferink, 2018).

Developer obligations

DOs are contributions from developers to public investments. There are two sorts of DOs (Muñoz Gielen & Lenferink, 2018). Firstly, DOs can take the form of non-negotiable developer obligations (N-NDO). N-NDOs are costs that a municipality can legally charge to developers via the development contributions plan (Dutch: exploitatieplan) which they have to make in correlation with the land-use regulation decision (Muñoz Gielen & Van der Krabben, 2019). The use of N-NDOs is regulated. There are rules about in what situation a developer can be held accountable, for how much they can be charged, and for what services they can be charged. This is all taken care of in public law under the articles 6.12 and 6.13 of the Spatial Planning Law (Dutch: Wet ruimtelijke ordening) and Articles 6.2.3 to 6.2.5 of the Spatial Planning Decree (Dutch: Besluit ruimtelijke ordening). These articles are all specified to the use of N-NDOs in development contribution plans (Dutch: exploitatieplan) (Hendricks et. al, 2021). Interesting about N-NDOs is that they can be made conditional to building permits (Muñoz Gielen & Van der Krabben, 2019). This means that the developer can only start building after they paid the N-NDOs.

The second form DOs can take are NDOs. NDOs are voluntary contributions made by the developer in a development agreement, also called a private law agreement (Dutch: anterieure overeenkomst). In this voluntary contract, the developer and municipality agree on who will pay for what (Muñoz Gielen & Van der Krabben, 2019). In contrast with the public route of N-NDOs, NDOs are constituted under private law (Dutch: anterieure overeenkomst). Under private law, also cost recovery can be managed that is not allowed under public law (Hendricks, Lacoere, Van der Krabben & Oorschot, 2021).

In practice, it is argued that more costs can be recovered via private law agreements and, therefore, NDOs are preferred (Buitelaar et. al, 2012; Muñoz Gielen & van der Krabben, 2019). Also, time and costs are a reason to not choose a development contribution plan. The downside of using NDOs is that they cannot be conditioned to the land-use plan. For that reason, municipalities do not dare to make land-use changes before negotiations, because they need the possibility to use land-use regulation as leverage in NDO-negotiations (Muñoz Gielen, 2010; Buitelaar, Galle & Sorel, 2011).

From the developer's perspective, the use of NDOs also has downsides. A lot of municipalities have standard policies in which they describe DOs. This blurs the connection between the NDOs and the development and worsens transparency. Lack of transparency, predictability, detail and comprehensibility are often heard complaints of developers with the use of NDOs. This can lead to resistant developers. However, developers are pushed to NDOs by their sometimes-weak negotiation position and time pressure. They can sometimes not afford to lose time and want to keep a good relationship with the municipality for possible future development projects (Hendricks et al., 2021).

The Dutch policy context

Because the Dutch Civil code mandates free enjoyment of one's property, and there is no legislation granting the general public the right to a value increase of privately owned land, any rise in value, whether due to a change in the approved land use or otherwise, belongs to the landowner (Needham, 2007). Due to this, the legal possibilities of public value capture in the Netherlands are confined to cost recovery (Muñoz Gielen & Lenferink, 2018).

The use of DOs is relatively new in the Netherlands. Until around 2008, most Dutch municipalities used an active land use policy. This means that municipalities bought land, developed this land into building plots, provided infrastructure and sold the building plots. The profit they made on buying and selling the land was sufficient to cover costs for public infrastructure (Van der Krabben & Jacobs, 2013). Because of this active approach, developer obligations were limitedly used. Due to the risk an active land policy brings most Dutch municipalities currently prefer a passive land policy over an active land policy. These passive land policies are led by private developers. Here, DOs are used as a tool to recover public costs, for example for on- and off-site public investments (Hendricks et. al, 2021).

Within the passive land policy, a two-step approach is used in the Netherlands (Hendricks et. al). This two-step approach means that the municipality and developer always try to come to a consensus in a private law agreement, hence, the use of NDOs. If such a voluntary agreement cannot be reached, a development contributions plan must be made by the municipality.

2.1.3 Willingness to pay

The willingness to pay, according to McIntosh, Trubka and Newman (2014), is linked to consumer behaviour theory, which indicates that public products are not direct objects of utility but rather derivatives of their attributes and characteristics from which utility is derived (Lancaster, 1966; McIntosh et al., 2014). The willingness to pay for such products is influenced by the utility that it gives. This means that parties are willing to contribute as long as their perceived utility is greater than the current utility (McIntosh et al., 2014).

Because private firms are profit-driven, they must be convinced of the potential for a return (utility) on their investment before investing in public projects. When convinced, they are 'willing to pay'. Four main factors are identified for the willingness to pay for a sustainable urban environment by private parties (Koppenjan & Enserink, 2009). First and foremost, projects need to be able to generate positive cash flows. To generate this, private parties need to be willing to invest and have the capacity to invest. Otherwise, positive cash flows cannot be created. Second, if the project itself is not profitable, developers are sometimes willing to pay if their investment is combined with other land and real estate development which are profitable. This can create a win-win situation. Together, the first two factors should be able to create prospects for return on private developer investments. Third, risk management is important. Risk management can enhance subsidies to realize full cost recovery, provision of financial guarantees regarding operation and currency risks, tax exemptions, soft loans, and supportive regulations that give the private developer a local monopoly (Chang, Menon & Imura, 2003). Finally, because investments in climate change adaptation can only be recovered over a long period, private investors are particularly sensitive to political risks, that is, political or regulatory changes that jeopardize cost recovery. Therefore, a reduction in political uncertainty can boost private actors' willingness to supply public services (Koppenjan & Enserink, 2009; Ye et al., 2018).

2.2 Measuring the conditions under which developers are willing to contribute to climate change adaptation

Two central research concepts can be derived from the theoretical framework on which this research will focus further. In section 2.3 the presumed relationship between the two central concepts is explained using a conceptual model. The two central research concepts are:

- DOs to climate change adaptation
- Willingness to contribute to climate change adaptation

Since the theoretical framework has a very theoretical focus, the concepts are not yet measurable in practice. Therefore, in this paragraph, the central research concepts are operationalized into measurable indicators. This is done by distinguishing (sub)variables for both concepts, for which then relevant indicators are identified. This is both based on new theories and theories from the theoretical framework.

2.2.1 Measuring DOs to climate change adaptation

To measure DOs to climate change adaptation, a distinction is made based on the difference between private law agreements and the development contribution plan. This choice is made because of the two-step approach in the Netherlands where municipalities and developers try to come to a consensus using a private law agreement, but always have the development contribution plan as a backup plan when consensus is not reached. The existence of this backup option will influence the limits to which developers and municipalities are willing to go in the private law agreement (Hendricks et. al, 2021). Based on this theory, two variables are identified to measure (N)DOs to climate change adaptation in private law agreements. Those are:

- Variable 1: DOs that could be covered through N-NDOs (development contribution plan)
- Variable 2: DOs that could not be covered through N-NDOs (private law agreement)

Variable 1: DOs that could be covered through N-NDOs

According to Hendricks et. al (2021), DOs that could be covered through N-NDOs can be divided into three measurable indicators, those are:

- On-site public infrastructure that belongs to the type of costs that have been specified in the law
- Off-site infrastructural provision that benefits multiple areas, with the criteria benefit, causality, and proportionality
- Off-site cost equalisation, with the criteria benefit, causality, and proportionality

Before further elaborating on the indicators, it is first important to define benefit, causality, and proportionality according to the Dutch law:

- Benefit: the location must benefit from the works, measures or facilities to be taken
- Causality: there must be a causal relationship between the area development and the costs to be incurred. The costs are (partly) incurred for the benefit of the plan
- Proportionality: if several locations benefit from a work, they should be distributed proportionally.

Following Dutch law, governments can compulsorily charge private developers all on-site public infrastructure costs, if those costs are specified in the Spatial Planning Law and Spatial Planning Decree. A complete overview of articles 6.12 and 6.13 of the Spatial Planning Law and articles 6.2.3 and 6.2.5 of the Spatial Planning Decree can be found in appendix 1. Examples of costs that are mentioned there are costs of demolition, removal, and relocation of structures, obstacles, foundations, cables, and pipes in the operating area or the construction of facilities such as sewers or roads.

Besides on-site public infrastructure, also a part of the off-site infrastructure can be charged to the private developer via N-NDOs. Off-site infrastructure extends over a larger area than a specific building plan and the costs should therefore not be fully borne by that area. Examples are roads, public transport, parking lots, and regional recreational facilities. Characteristics of these off-site infrastructures are that the total usefulness of these facilities exceeds the importance of the plan area. To determine which part of the costs can be charged to the private developer of the plan area, three criteria are used: benefit, causality, and proportionality. It is irrelevant whether the provision is located within or outside the plan area. The cost recovery is thus well applicable to small-scale organic developments. Facilities to be constructed do not have to be anchored in a structural vision but can be allocated to a specific area (Hendricks et. al, 2021; local council municipality Alphen aan den Rijn, 2020).

Another form of off-site costs is cost equalization (article 6.13 under 7 Spatial Planning Decree). This concerns the equalization of costs and revenues between locations with a spatial and functional connection. The location with a positive result contributes to the location with a negative result. The development must be included in the structural vision and there must be strong functional interdependence. Examples of cost equalization are social housing development or transformation of industrial areas outside the plan area. Also here, the criteria of benefit, causality, and proportionality are leading (Hendricks et. al, 2021; local council municipality Alphen aan den Rijn, 2020).

Variable 2: DOs that could not be covered through N-NDOs

This second variable can be divided into three measurable indicators, those are (Hendricks et. al, 2021):

- 'Voluntary' contributions to spatial developments (bijdrage ruimtelijke ontwikkeling)
- Off-site infrastructural provision that benefits multiple areas, without criteria benefit, causality, and proportionality
- Off-site cost equalization, without criteria benefit, causality, and proportionality

The first indicator is voluntary contributions to spatial developments. Spatial developments include public facilities that are useful for a larger area in the municipality, under the condition that they are related to good spatial planning and are included in the structural provision. The criteria of benefit, causality and proportionality are not relevant here. When making a private law agreement, the municipality can include provisions in the agreement regarding a financial contribution to spatial development. This concerns, for example, nature and recreation, cycle paths, or projects to increase sustainability (Hendricks et. al, 2021; local council municipality Alphen aan den Rijn, 2020)

The irrelevance of benefit, causality, and proportionality also accounts for charging costs of off-site infrastructure that benefits multiple areas and cost equalization. As discussed before, to charge those costs in a development contribution plan, the three criteria must be met. However, when coming to a private law agreement with N-NDOs, also costs that do not meet the three criteria can be discussed (Hendricks et. al, 2021).

2.2.2 Measuring willingness to contribute to climate change adaptation

To measure private developers' willingness to contribute to climate change adaptation Koppenjan and Enserink's (2009) theory is used. The choice for this theory is explained in paragraph 2.1.3. Based on their theory, three variables are distinguished:

- Variable 1: Prospect for return
- Variable 2: Risk management
- Variable 3: Political certainty

Variable 1: Prospect for return

To specify the first variable into measurable indicators, the variable is firstly divided into two sub-variables. The first sub-variable is a developer's capacity to contribute. Under this sub-variable, four indicators are determined:

- A developer's financial capacity
- A developer's capacity to understand (awareness)
- A developer's analytical capacity
- A developer's capacity to take action

Private developers must make a profit to survive. So, they will always have some sort of profit-driven objective. To get private developers to invest, they, therefore, need to be convinced of the prospect of receiving a return on their investment. To get a return, projects with positive cashflows need to be created (Koppenjan & Enserink, 2009). To create those projects, the investments of private developers are needed, and therefore, a developer needs to be financially capable to make investments in climate change adaptation.

According to Moser and Luers (2007), there are three characteristics that parties need to own for them to decide to contribute to climate change adaptation, those are called the AAA criteria (Hürlimann,

2022). The first criteria is awareness, or a developer's capacity to understand the phenomena of climate change and its hazards. It is suggested that decision-makers need to understand how climate change would affect their current and future projects. This awareness is reactive and differs across locations. If there is more risk of a form of climate change, for example sea-level rise in the Netherlands, parties are often more aware (Hürlimann et. al, 2022; Uittenbroek et. al, 2013).

This awareness of the hazards of climate change must be accompanied by a deeper comprehension and aptitude to analyse such data to develop strategies and plans. This ability, along with the understanding gained, as a result, may or may not be sufficient to provide the essential motivation and willingness to act (Moser and Luers, 2007).

Decision-makers must be capable of applying this understanding in decision-making, translating their awareness and concern into real actions. In most cases, the final step entails removing a range of barriers that can prevent the realization of well-intended policies and plans (Hürlimann et. al, 2022; Moser and Luers, 2007). Barriers can concern cost/ funding (e.g., high construction costs), knowledge (e.g., knowledge to inform action), and timelines (e.g., the difference between short political and budgetary timelines and long-term timelines of climate change) (Fastenrath and Braun, 2018; Shan et. al, 2017; Warren-Myers, Hürlimann & Bush, 2020).

The second sub-variable goes into detail about decisions regarding the scope of the agreement. Under this sub-variable, two indicators are determined:

- Profitable activities included in the agreement
- The spatial coverage of the contract

Many projects for climate-adaptive infrastructure are unprofitable, but they may have a positive effect on climate change adaptation. To make private parties interested to invest in those unprofitable activities, the unprofitable activities need to be combined with profitable activities. Decisions regarding which profitable and unprofitable activities to include in the agreement are therefore very important. Together, it is possible to create a package of activities (both profitable and not) with a positive cash flow (Koppenjan & Enserink, 2009).

Choosing the right scope of the agreement is also related to the spatial coverage of the agreement. Private parties are often only interested in investments in profitable areas. To avoid this, activities in different areas need to be combined to also cover off-site activities (Koppenjan & Enserink, 2009).

Variable 2: Risk management

To specify the second variable into measurable indicators, the variable is firstly divided into three sub-variables. The first sub-variable is the use of risk management tools. Since there are very many risk-management tools, but not all of them are (often) used within the Netherlands, the list of indicators is not limitative. Some indicators of risk management tools are the use of:

- Subsidies to realize full cost recovery
- Financial guarantees about operation and currency risks
- Granting tax exemptions
- Providing soft loans
- Formulating supportive regulations that give the private provider a local monopoly

To motivate private parties to make investments in public activities in a climate-adaptive way, governments need to make the conditions for private parties as attractive as possible. This means that risks need to be avoided, and therefore, risk management tools need to be used. Examples of risk management tools are subsidies to realize full cost recovery, financial guarantees about the operation and currency risks, granting tax exemptions, providing soft loans, and formulating supportive regulation that gives the private provider a local monopoly (Chang, Menon, & Imura, 2003). By limiting competition, private parties get the chance to avoid mechanisms that limit profit maximization (Koppenjan & Enserink, 2009).

The second sub-variable is (risk)management capacity. Under this sub-variable, two indicators are determined:

- (Risk)management capacity of private parties
- (Risk)management capacity of public parties

To come to a feasible agreement, (risk)management capacity from both the private and the public parties is necessary. Proper implementation of activities necessitates the capacity of both parties to predict and monitor risks (Chang, Menon & Imura, 2003).

The third sub-variable is security. The indicator to measure this variable is (Chang, Menon & Imura, 2003):

- Information disclosure and transparency preservation

To reduce risks for private developers, information disclosure and transparency preservation are important (Chang, Menon & Imura, 2003). By having access to information, private developers can make a better judgment on possible future projects and their effects. Without information, no good results can be calculated, and private developers are taking more risks when going into an agreement.

Variable 3: Political certainty

To specify the third variable into measurable indicators, the variable is firstly divided into two sub-variables. The first sub-variable is the relationship between private developers and public bodies. Indicators for the relationship between developers and public bodies are:

- The accessibility of governmental regulators
- The similarity between objectives of governments and private developers

Most investments in climate change adaptation in spatial projects can only be recovered over a long period of time. This makes private developers sensitive to political hazards. This means that political or policy changes happen during the concession period, which can jeopardize cost recovery. Johnstone and Wood (2001) argue that placing regulators at arm's length from developers, making them accessible, reduces the risk of policy changes.

Political uncertainty can also be boosted by the existence of a multitude of policies, which might contradict each other. The environmental agency, for example, might set other standards than the economic agency. By making the policies coherent, a private developer gets more clarity on what to expect. When developers' and governments' objectives are similar, this gives more certainty for a good outcome of the plan (Johnstone & Wood, 2001).

The second sub-variable is the institutional framework. Indicators for the institutional framework are:

- Clarity about climate change adaptation objectives
- A clear division of responsibilities

Sometimes, setting climate requirements can reduce the interest of private parties to invest in public activities. However, an institutional framework that gives clarity about its climate program, makes private parties aware of what is expected from them. By making these objectives clear beforehand, there is a chance for private parties to anticipate beforehand (Koppenjan & Enserink, 2009).

In the institutional framework and the agreement, there must be a clear division of responsibilities. Having a clear division of responsibilities makes it easier for private parties to calculate their contribution. By having this clear framework, developers know what to expect and perceive less political uncertainty (Johnstone & Wood, 2001).

2.3 Conceptual model

Figure 3 shows the conceptual model of this research. It is based on the theory discussed in this chapter and visualizes the main theory. It shows that the concept 'willingness to contribute to climate change adaptation' influences the concept 'DOs to climate change adaptation'. The concept 'willingness to contribute to climate change adaptation' consists of three variables: prospect for return on investments (positive cashflows and combining options), risk management, and political certainty (Koppenjan & Enserink, 2009).

The main influencer for this conceptual model is the work of Koppenjan and Enserink (2009). They created their theory based on research into governance systems that stimulate or hinder the reconciliation of participation from the private sector in urban infrastructure projects to improve the urban environment's long-term sustainability. Since the research of Koppenjan and Enserink overlap with this research on the two most important aspects: private party contributions and contributions to climate change, it is appropriate to take this theory as the basis for the conceptual framework. In this research, it will be tested whether this theory also applies to the Dutch policy context and specifically to contributions in the form of DOs.

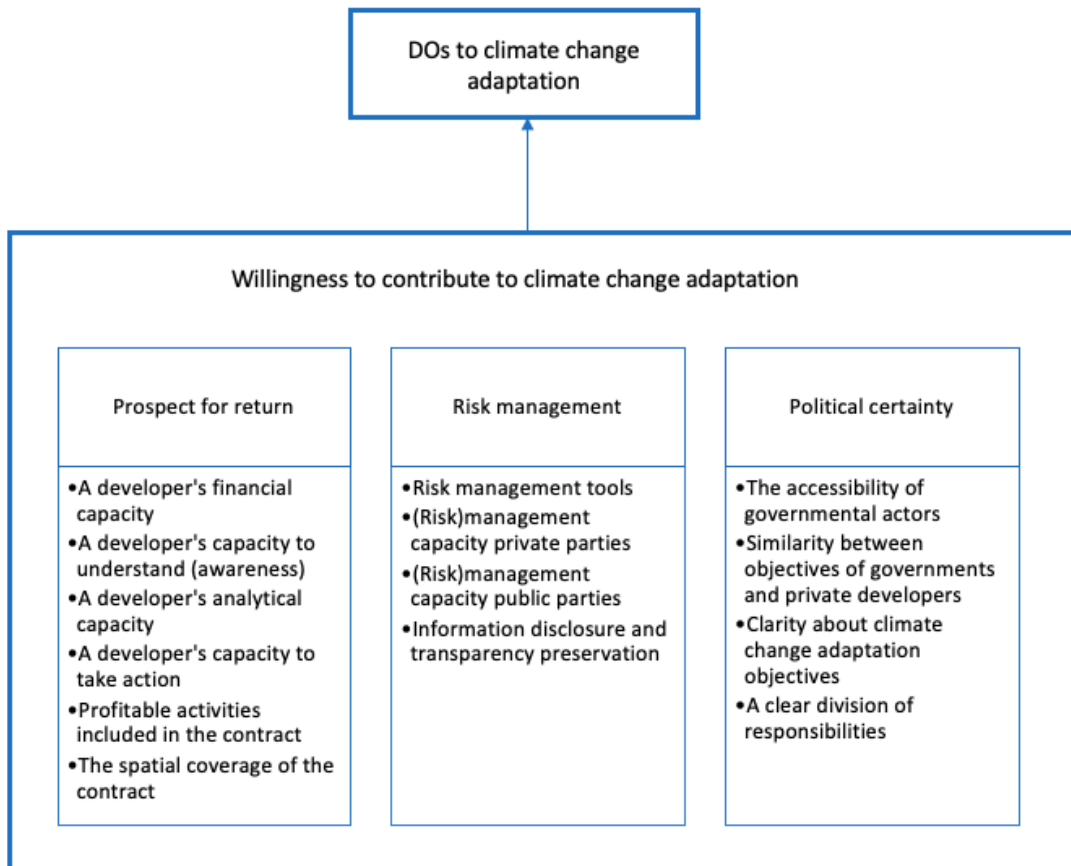


Figure 3: Conceptual model (own work).

Chapter 3 – Research method

This chapter elaborates on the methodology of the research. To do this, Saunders and Lewis (2018) advise using the research onion as shown in figure 4. As the arrow in figure 4 demonstrates, the outer layer of philosophy is the starting point, and the inner layer of data collection and data analysis is the last step. In this chapter, the onion will be used as a road map to describe the research method. The choice to follow the set-up of the research onion is made to establish a level of coherence throughout the methodological setup of the research. Following the onion's structure, the research design will be discussed first, followed by the data requirements, data collection, and data analysis. Lastly, the reliability and validity of the research will be elaborated upon.

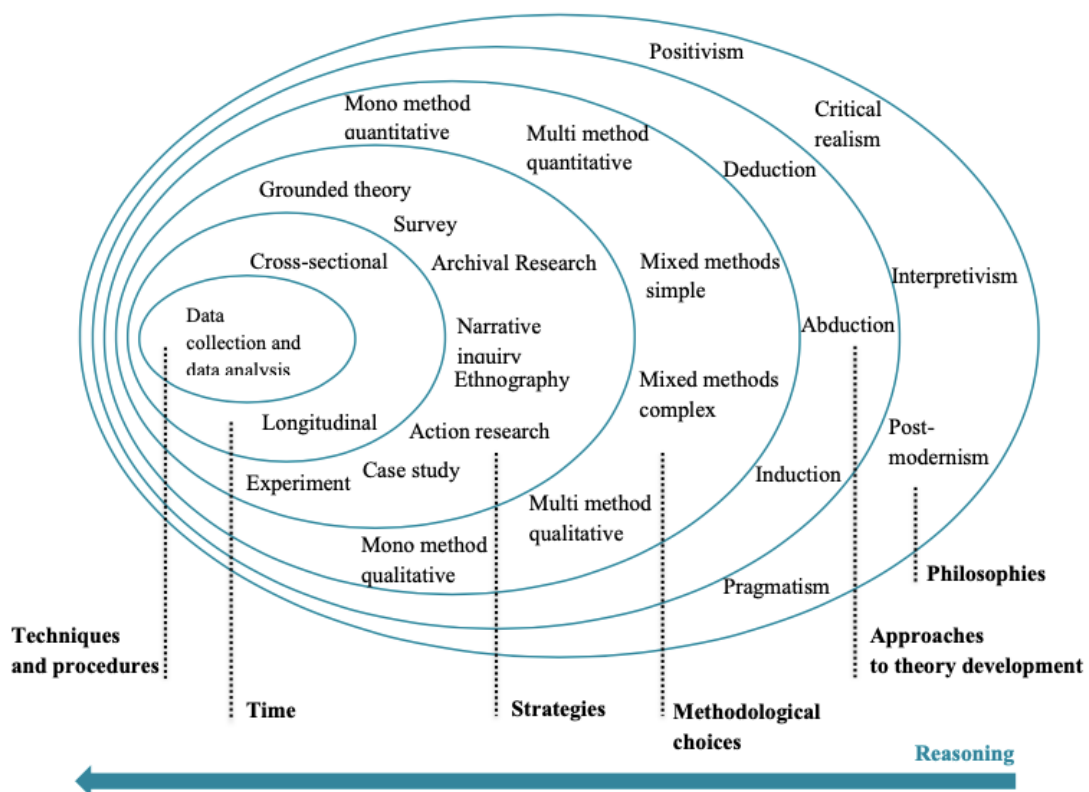


Figure 1: Research onion (Saunders & Lewis, 2018).

3.1 Research design

“The research design is the general plan of how you will go about answering your research question(s) (Saunders, Lewis & Thornhill, 2016). To determine this, the first three layers of the onion are addressed.

3.1.1 Research philosophy

To start with, as suggested by the research onion, the research philosophy is the perspective towards interpreting the research problem. These perspectives are also called research philosophies, which are beliefs and assumptions that guide the research principles (Guba and Lincoln, 1994). According to

Saunders and Lewis (2018), five research philosophies can be distinguished: positivism, (critical) realism, interpretivism, postmodernism, and pragmatism.

Positivism is mostly related to physical and natural sciences and uses highly structured methods, like structured questionnaires or structured observations. By using structured methods, it is aimed to gather pure data and facts that are not influenced by human interpretations or bias. To establish this, a researcher should try to stay neutral and detached from his research. The second philosophy Saunders and Lewis describe is (critical) realism, sometimes called post-positivism. The first form of realism, direct realism, holds the assumption that the things we experience through our senses are the true reality. In contrast with that, critical realism focuses on explaining the experiences, explaining the structures that shape the observation. So, not only observing, but also explaining how the observed event was constituted. The third philosophy is 'interpretivism'. Interpretivism is mostly related to great organizational complexity. It observes social phenomena within their natural environment. It is especially relevant for marketing, organizational behaviour, and human research management as it tries to differentiate humans as social actors. The fourth philosophy, postmodernism, focuses on language and power relations. It emphasises the power of accepted ways of thinking and tries to give voice to alternative viewpoints. Their biggest critique on positivism is not including this power of language. The last philosophy is pragmatism. Pragmatists argue that the research questions and objectives are the biggest determining factors for the research design. It aims at giving practical solutions (Lewis & Saunders, 2018).

Comparing the five philosophies, critical realism is the most suitable for this research. The positivism philosophy is not suitable because the research entails a relatively new topic of interest and factual data is not available for this research. Interpretivism is also not suitable because the philosophy focuses on organizational complex phenomena. However, the interest of this research is not to differentiate between different actors in such organizational phenomena, but to find common variables that explain the decision-making of organisations. The postmodernist philosophy investigates language and power relations and tries to include marginalized viewpoints. Contrary to that, this research looks for common viewpoints for different developing organisations. Lastly, the pragmatism philosophy is not suitable because the research does not aim to give practical solutions but aims to explain structures. This does not entail solving problems or complex situations. The philosophy of critical realism, however, does suit this research because it "focuses on explaining what we see and experience with the emphasis on understanding the underlying structures of reality that shape the observable events" (Saunders & Lewis, 2018). As this research tries to find the driving forces behind DOs to climate change adaptation, the underlying structure questioned is the willingness to pay for climate change adaptation. The reality that shapes the observable events is the actual DOs to climate change adaptation. Hence, the critical realism philosophy is used as a basis for this research.

3.1.2 Approach to theory development

The approach to theory development can take three forms: deductive, abductive, and inductive. Each differs in the way and timeframe theory is used in the research (Saunders et al, 2016). Deductive research is very structured and starts with framing research questions based on existing research. Using this theory, models or hypotheses can be formed including two or more variables that can be operationalized. To test the hypotheses of the theoretical model data is collected based on the operationalized variables. Analysing this data can then determine whether the theory is supported in

reality or should be modified. So, deductive research starts with a theory that is later on tested in reality. Contrary to that, inductive research starts with observations. Those observations are tried to be generalized into theories. Inductive research is mostly used to understand the meaning humans attach to events. So, in inductive research, the reality is observed and, later, theories are developed. Lastly, abductive research moves back and forth between theory and data instead of moving from theory to data or from data to theory. It always starts with observing an unusual phenomenon for which plausible theories are searched. Oftentimes, during this process, more unexpected observations are uncovered (Saunders et al., 2016) (Saunders & Lewis, 2018).

As can be noted by the conceptual model in figure 3 of the previous chapter, this research uses a deductive approach to theory development. This means that it starts, in contrast with the other approaches, with literature research. Based on this literature research, figure 3 shows causal relationships between DOs to climate change adaptation and return on investments, risk management, and political certainty. These causal relationships are later tested, using other research methods. This deductive approach is followed because data to make the phenomenon of DOs to climate change adaptation observable is not directly accessible. Therefore, this research starts with theory and then moves to data. Starting with theory allows one to get more knowledgeable about the topic and allows to add more structure to interviews before entering the field of study. Besides that, starting with theory enables the possibility to generalize research findings to a certain extent and can also be used when only a short time is available to complete the research (Dudovskiy, 2022). As this research aims at generalizing the research results to all developers in the case area, the Netherlands, and the research is restricted to deadlines, the deductive approach is more appropriate.

3.1.3 Methodological choice

In the third layer of the onion, methodological choices have to be made. To do that, it is first important to determine the purpose of the research. The research purpose can be exploratory, descriptive, or explanatory. Exploratory research aims at getting insights into new phenomena or looking at phenomena in new daylight. Descriptive research aims at accurately representing a phenomenon or situation. Lastly, explanatory research aims at explaining relationships between two or more variables (Saunders & Lewis, 2018). As the purpose of this research is to explain under what circumstances (variables) developers are willing to contribute to climate change adaptation, this is explanatory research. The driving forces, or independent variables, behind a developer's actions and a relationship with the phenomena, the dependent variable, are sought. The research does not fit an exploratory purpose, because the research is based on already existing theories. The descriptive purpose is also not suitable, because the research aims at discovering relationships, not just describing the phenomenon.

To best address the explanatory purpose of this research, a qualitative method is used. This method is chosen because the research tries to find underlying drivers that motivate developers to contribute or not. Comparing qualitative and quantitative research methods, quantitative research is more focused on numeric data and causal relations between them. Qualitative research is more focused on participants' motivation and their driving forces (Saunders et al., 2016). The qualitative research method suits best because the research tries to find underlying drivers that motivate developers to contribute to climate change adaptation or not. It allows for collecting more in-depth answers and thoughts from respondents.

3.2 Data requirements

The data that is required for this research can be divided into three categories, namely literature, interviews, and policy documents. Using multiple sources of data, also called triangulation, has the goal to improve the research’s validity and allow for a better insight into the context (Vennix, 2011). Triangulation is “the use of two or more independent sources of data or data-collection methods within one study to help ensure that the data are telling you what you think they are telling you” (Saunders et. al, 2016). The choice for the three sorts of sources is based on the topic of the research and the operationalisation. The used sources need to be representative to measure the indicators and need to present reliable data.

The first source of data used is existing literature on the research topic. By looking at the research aim and objectives and the research questions, the most important concepts are determined. The research question is: “Under what conditions are developers willing to financially contribute to climate adaptive measures in private land developments within the Netherlands through private law agreements?” Based on this question three important concepts are distinguished which are relevant to this research question, namely:

- Land value capture and developer obligations in the Dutch policy context
- Financing climate change adaptation
- Willingness to pay

Those three concepts together are the basis for the conceptual framework as shown in figure 3. In the framework, this resulted in two variables being used, namely the independent variable ‘willingness to contribute to climate change adaptation’ and the dependent variable ‘DOs to climate change adaptation’. So, the framework hypothesises that those main concepts can be used to answer the research question. To determine the needed data to answer the research question, these two concepts are operationalised into (sub)variables and indicators. The indicators are the measurable aspects of the concepts. The indicators, thus, represent the data that is required to answer the research question. The literature in the literature research is gathered using multiple sources, such as Google Scholar, Web of Science and RuQuest. Besides that, also publishments from Dutch governmental organisations are used, such as the Dutch Knowledge Portal on Climate Adaptation. Because this research is a case study concerning the Netherlands, both Dutch and English literature is used. Table 1 shows the operationalisation of the concept of ‘DOs to climate change adaptation’ and table 2 shows the operationalisation of the concept of ‘willingness to contribute to climate change adaptation’. A more detailed description of this operationalisation can be found in paragraph 2.2. A more detailed version of the operationalisation schema can be found in Appendix 2.

Variable	Indicator
DOs that could be covered through N-NDOs	On-site public infrastructure as defined in law
	Off-site infra provision that benefits multiple areas, with BCP-criteria
	Off-site cost equalisation with BCP-criteria

DOs that could not be covered through N-NDOs

Voluntary contributions to spatial developments.
Off-site infra provision that benefits multiple areas, without BCP-criteria
Off-site cost equalisation without BCP-criteria

Table 1: Operationalisation of concept ‘DOs to climate change adaptation’.

Variable	Sub-variable	Indicator
Prospect for return	Capacity to contribute	A developer's financial capacity A developer's capacity to understand-awareness A developer's analytical capacity A developer's capacity to take action
	Decisions regarding scope of the contract	Profitable activities incl. in the agreement The spatial coverage of the contract
Risk management	Use of risk management tools	Subsidies to realize cost recovery Financial guarantees concerning risks Granting tax exemptions Providing soft loans Formulating supportive regulation
	(Risk)management capacity	(Risk)management capacity private parties (Risk)management capacity public parties
	Security	Information disclosure and transparency
Political certainty	Relationship private and public bodies	The accessibility of governmental regulators Similarity between objectives of governments and private developers
	Institutional framework	Clarity about climate change adaptation objectives A clear division of responsibilities

Table 2: Operationalisation of concept Willingness to contribute to climate change adaptation.

To test whether the conceptual framework is applicable, field research needs to be done to collect new data. To do this, interviews are the second source for this research. These interviews aim to get more insight into the motivation and driving forces of private developers to contribute to climate change adaptation. The operationalisation is the basis for this second form of research source. This can be seen in Appendix 3 where the interview guide is displayed. The interview guide contains questions that are based on the indicators as distinguished in Table 1 and Table 2. Besides testing those indicators there are also questions in the interview guide to test whether there might be relevant indicators or variables that are not considered yet. To test this, every section closes by asking if the interviewee can add other relevant aspects or variables.

After the interviews took place, internal policy documents are used to triangulate the data from the interviews. Firstly, internal policy documents for the interviewed businesses specifically for climate change adaptation were searched. If businesses did not have such policies specifically for climate change adaptation, broader statements were explored, for example in their mission and vision or sustainability targets.

3.3 Data collection

3.3.1 Research strategy

Following the research onion, the research strategy should be determined. The research strategy is “a plan of action to achieve a goal” (Saunders et al., 2016). It connects the research philosophy with the choice of the research method to collect and analyse data (Denzin & Lincoln, 2011). There are several forms of research strategies: experiment, survey, archival and documentary research, case study, ethnography, action research, grounded theory, and narrative inquiry. The one that fits best for this research is the case study. A case study is an in-depth examination of a topic or phenomenon in its natural setting (Yin, 2014). Case study research, once defined, aims to explain the dynamics of the topic or phenomena within its natural setting (Eisenhardt & Graebner, 2007). ‘Explain the dynamics of the topic or phenomena’ refers to the interaction between the topic of the case and its natural setting. In this research, the topic or phenomena is the concept of DOs to climate change adaptation. The natural setting, or case, is the Dutch policy context. The natural setting, also called the real-life setting, and the understanding of it, play a crucial role in case study research (Saunders et al., 2016).

3.3.2 Time

Looking at the time horizon of the research, this research is cross-sectional. This is because the research looks into the phenomena in the present time and does not aim to see change over time (Saunders & Lewis, 2018). The research aims to give insight into the willingness of developers to contribute to climate change adaptation. Since the topic of climate change adaptation is relatively new, evolving quickly, and action needs to be taken right away, it is more useful to look at present developments than their evolution.

3.3.3 Techniques and procedures

After defining the data requirements, strategy, and time horizon, it is now possible to select appropriate techniques and procedures, which is the last step of the research onion. Selecting the technique(s) for data collection follows from the methodological choices made so far. As this is a qualitative, case study research, the use of observations, interviews, and analysis of participants’ words suit best (Denzin & Lincoln, 2011; Harrison, Birks, Franklin & Mills, 2017). It allows the researchers to get close to the respondent in their natural environment, which can help to understand and explore a participant’s perspective (Creswell, 2013). Looking at the context of this research, observations are not a suitable data collection technique. To gather the required data about under which circumstances developers are willing to contribute to climate change adaptation through observations, the researcher would need to be able to observe. For that, the researcher would need to be present in negotiations about the development agreement and should be able to record the meeting (Saunders & Lewis, 2018). Since those negotiations are mostly very private, using observations is not a suitable data collection tool here. Interviews, on the other hand, are. Here, semi-structured interviews are used.

Semi-structured interviews are “a method of data collection in which the interviewer asks about a set of themes using some predetermined questions but varies the order in which the themes are covered, and questions asked. The interviewer may choose to omit some topics and questions and ask additional questions as appropriate” (Saunders & Lewis, 2018). This type of interview is chosen

because it gives the opportunity to not only discover ‘what’ and ‘how’, but also the ‘why’ can be explored. In explanatory research like this, semi-structured interviews are a good way to understand the relationship between different variables (Saunders et al., 2016). Besides that, giving structure to the interviews will help to make the interviews comparable, which can help to draw conclusions.

This research aims to give more insight into the motivation and driving forces of private developers to contribute to climate change adaptation. Therefore, the target group for these semi-structured interviews are employees at private development companies. Specifically, it is aimed to speak with employees who are involved in project development and are knowledgeable about climate change adaptation in private law agreements. By only focussing on this specific group, only one interview guide has to be made, which means that the results are very well comparable.

To determine the best way to approach possible interviewees, it is first important to note that no complete list of private developers within the Netherlands was available for this research. In other words, there is not a complete list of the research population. Therefore, non-probability sampling methods are used as those methods can be used when there is not a sampling frame (Saunders & Lewis, 2018). The type of non-probability sampling that is used is quota sampling. This is a way of sampling in which respondents are selected based on certain characteristics. This type of non-probability sampling is a substitute for probability sampling (in which a sampling frame is available) (Saunders & Lewis, 2018). By using this type of sampling, conclusions can later be made based on those characteristics, which might explain differences in answers. The selected interviewees will be approached via an email in which the interviewer and the research are introduced, and it is explained why the specific respondent would be a valuable respondent for the interview.

3.3.4 The sample

As mentioned, the target group for the interviews are employees at private development firms who are knowledgeable about climate change adaptation in private law agreements. This mostly resulted in interviewing project developers and development managers. Besides that, also general managers and an environmental specialist were interviewed. In Table 3 an overview can be found of the interviewees, the function title, and the company they work at.

Interview	Interviewee	Company
1	1. Tom Kohler - development manager	Heijmans
	2. Ewoud de Boer - development manager	Heijmans
2	3. Herman Michiels - shareholder and daily management	Region Vastgoedontwikkeling
3	4. Cees Robbemondt - project developer	Van Wanrooij
4	5. Martijn van Gelderen - environmental quality manager	BPD
5	6. Bartjan van Haaren - development manager	Adriaan van Erk
6	7. Femke van de Meeberg - senior project developer	Dura Vermeer
7	8. Floor Visscher - project developer	Van Wijnen
8	9. Rob Dijkman - project developer	VanWonen
9	10. Harold van Rooijen - general manager	KlokGroep

Table 3: Overview interviewees.

To select relevant companies for the interviews, quota sampling is used. In quota sampling, a distinction is made based on the size of the company and the type of company. Firstly, the idea was to also consider location. However, after doing further research, it was found out that a lot of developers do not have a specific area in which they develop, but much is shredded across the Netherlands. The choice to distinguish on size is made because the size of the company might mean that the company has more (knowledgeable) employees and more capital to invest in climate change adaptation. According to the theoretical framework, (risk)management capacity, financial capacity, and knowledge are relevant factors for developers to contribute to climate change adaptation. Therefore, the size of the company is taken into consideration. With the type of company, a distinction is made between developing constructors and developers. The choice to include the type of company in the quota sampling is that developing constructors have goals in different disciplines. Because those disciplines might influence each other, they might also influence their considerations towards climate change adaptation.

In this research, a distinguishment is made between small, medium, and large companies. This distinguishment is based on a list published by Cobouw. Cobouw is an independent Dutch news source that writes about market developments, sustainability, innovation, construction quality, tendering, and infrastructure for the construction sector. In 2021 they published the first Dutch raking of the 20 largest project developers who develop on their private land, based on Land Registry data (Cobouw, 2021). As this research focuses on private law agreements for private land developments, the list is a good reference source. In Appendix 4, the ranking list can be found. The developing companies listed range from less than 100 sold plots to over 2000 sold plots, so in the top 20 largest developers, there is already a lot of difference. Therefore, this group is split into medium size developing companies (100-499 sold plots) and large size developing companies (500+ sold plots). Companies not on the list of 20 biggest developers are considered small developing companies (less than 100 plots). In Table 4 an overview is given of the size and type of the companies.

Company	Size (sold new building plots)	Type
1. Heijmans	Large (2699)	Developing constructor
2. Region vastgoedontwikkeling	Small (Less then 100)	Developing constructor
3. Van Wanrooij	Large (706)	Developing constructor
4. BPD	Large (2699)	Developer
5. Adriaan van Erk	Small (Less then 100)	Developing constructor
6. Dura Vermeer	Large (517)	Developing constructor
7. Van Wijnen	Medium (361)	Developing constructor
8. VanWonen	Medium (399)	Developer
9. KlokGroep	Medium (138)	Developing constructor
10. KlaassenGroep	Small (Less then 100)	Developing constructor

Table 4: overview interviewed companies.

3.4 Data analysis

After looking at techniques and procedures to collect the data, the last step to complete the research onion is to select techniques and procedures to analyse the data. Since this is deductive research, the conceptual model will be used as a basis for the data analysis (Yin, 2014). To do this, the main concepts, variables, sub-variables, and indicators, as identified before in paragraph 2.2, are used (Saunders et al., 2016). However, since the qualitative nature of the research, the conceptual framework might be too restrictive. Therefore, the data will also be analysed inductively. Together the analysis on a deductive and inductive basis will form a complete analysis of the data.

In this research semi-structured interviews are conducted with developing actors who work at project development companies in the field of land and real estate development. The interviews have the goal to test whether the conceptual model, based on the theoretical framework, is applicable in reality. So, whether the beforehand specified concepts, variables, sub-variables, and indicators are relevant in reality. To make the interviews analysable, they are recorded using a digital recording device. This resulted in a set of audio files in mp4-format. The dialogue in these audio files was then listened to and transcribed. The transcribing process was conducted using the premium version of Word office. Transcribing the interviews will help get familiar with the data. After transcribing, the interview is ready for the actual analysis.

This analysis will take place by coding the transcript using the Atlas.ti version 8.4.4. As mentioned, the analysis will take place deductively and inductively. Because of the use of deductive and inductive analysis, two types of coding are used: structural coding and open coding (Saldaña, 2009). Those two forms of coding will be applied in two different 'cycles' of coding.

Structural coding is an appropriate first cycle coding method (Saldaña, 2009). With this method of structural coding, a content-based or conceptual term indicating a topic of inquiry is applied to a section of data that corresponds to a specific research question used to structure the interview(guide) (MacQueen, McLellan-Lemal, Barholow & Milstein, 2008). As the interview(guide) is based on the specification of concepts, variables, sub-variables and indicators, those indicators will also be seen in the coding scheme. This form of coding is especially appropriate for structured or semi-structured interviews as it "acts as a labelling and indexing device, allowing researchers to quickly access data likely to be relevant to a particular analysis from a larger data set" (Namey, Guest, Thairu & Johnson, 2008). So, large portions of data can be labelled or linked to specific concepts, perhaps speeding up the research process.

In addition to structural coding, the second cycle of coding uses an open coding method, also called initial coding (Saldaña, 2009). As the first cycle of coding only uses codes that can be linked to existing concepts, variables, sub-variables, and indicators as specified in the theoretical framework, they can only be connected to those concepts mentioned in the theoretical framework. This means that with structural coding only answers are found to the research questions, but additions to the theoretical framework are not taken into account. However, this research has the goal to test whether the conceptual framework is applicable in reality. This means that it is not only the goal to check whether the variables are relevant, but also to check whether this list of determining variables is exhaustive. So, using structural coding, which only accounts for the concepts, variables, sub-variables, and

indicators, is not enough. Therefore, the second cycle of open coding is necessary to identify additional codes that arise from the interview data. These open codes are assigned to those parts of the transcript that are relevant for the research, but that were not linked to any structural codes in the first cycle. The purpose of this method of open coding is to keep your mind open to any other theoretical directions suggested by the data (Saldaña, 2009). This second cycle of coding is important to account for the inductive part of the research, which addresses aspects that have not been mentioned in the theoretical framework, the operationalisation into indicators or in the interview guide. The final codebook can be found in Appendix 5 and the attached Atlas.ti file.

3.5 Reliability and validity of the study

To secure the quality of research, both qualitative and quantitative research, two important aspects are the reliability and validity of the study (Van Thiel, 2014). Together, they argue why the methodological framework of the research is sound.

Reliability is “the extent to which data collection methods and analysis produce consistent findings” (Saunders & Lewis, 2018). Thus, if measured on different occasions and with another researcher, but with the same techniques and procedures, the research results will be the same. To achieve that, accuracy and consistency are necessary (Van Thiel, 2014). Because of the flexibility of semi-structured interviews, issues can arise here. Those issues are called biases. Subject bias refers to the interviewee not giving reliable information during the interview because telling the truth might harm them or their environment. Observer bias refers to the interviewer analysing the interview data differently than another researcher would (Saunders & Lewis, 2018). To still be able to assure accuracy and consistency in this research, which includes semi-structured interviews, transparency and correct documentation are important. This should enable other researchers to conduct the same research similarly, producing the same outcomes (Creswell, 2013). This asks for good preparation for the interviews (Saunders et al., 2016). Therefore, in this research, interview guides are used to include standardization in the interviews. The interview guide contains a list of themes, which are based on extensive literature research. The pre-described themes, arising from the literature, also give the researcher guidelines on how to analyse the data in a deductive way, enabling triangularity and improving reliability. In analysing the data, a codebook is used, which helps with consistency in analysing the interviews. In section 3.4 more transparency is given about how data analysis will take place, also improving the reliability.

The validity of research consists of two aspects, namely internal validity and external validity. Internal validity is “the extent to which data collection method or methods accurately measure what they were intended to measure” (Saunders & Lewis, 2018). So, if the research results are representing the right relationships between variables. External validity is “the extent to which your conclusions are generalisable to other research setting” (Saunders & Lewis, 2018). Several measures can be taken to increase the internal validity. Starting during the interview itself, the interviewer can ask for confirmation, asking whether the interviewees' words are understood correctly. After the interview, the technique of ‘participant or member validation’ can be used (Saunders et al., 2016). This is a technique in which interviewees are sent a transcript of the summary of the interview to the interviewee and ask for validation of the interpretations, also increasing the validity. The external validity of this research is of less importance since this is a case study. The results of the study cannot simply be generalized to other countries, because of differences in the institutional contexts that

heavily influence the results. Therefore, no specific attention is given to the external validity of this research. Another method to increase the validity of the research is the use of triangulation. As mentioned in paragraph 3.2 three different sources are used: literature, interviews, and policy documents. The research started with literature research and after the interviews took place. To validate the information from the interview, then policy documents are reviewed. The choice for this approach is also to increase validity. Besides that, it is aimed to speak with multiple respondents from one organisation, this way the results are less influenced by the personal view of the interviewee.

Chapter 4 – Results

In this chapter, the results of the study are presented. The structure of the chapter corresponds to the theoretical framework of the research and the concepts in that framework. The first concept discussed is 'DOs to climate change adaptation'. Secondly, 'willingness to contribute to climate change adaptation' is discussed. Lastly, a discussion section is added. In this discussion section, it is discussed whether the dependent variable 'willingness to contribute to climate change adaptation' is relevant for the outcome of the independent variable 'DOs to climate change adaptation'. So, whether the conceptual framework is correct. Besides that, also other relevant concepts that arose during the interviews are discussed and relevant literature for these concepts are added to the section.

4.1 DOs to climate change adaptation

In the literature, a deviation can be made between N-NDOs (developer obligations that can be enforced via a development contribution plan) and NDO (developer obligations that cannot be enforced via a development contribution plan). This approach was also used in the interviews to determine what kinds of DOs developers are willing to contribute.

DOs that can be recovered through N-NDOs are (Hendricks et. al, 2021):

- On-site public infrastructure that belongs to the type of costs that have been specified in the law
- Off-site infrastructural provision that benefits multiple areas, with the criteria benefit, causality, and proportionality
- Off-site cost equalisation, with the criteria benefit, causality, and proportionality

Additional DOs that can be recovered through NDOs are (Hendricks et. al, 2021):

- 'Voluntary' contributions to spatial developments
- Off-site infrastructural provision that benefits multiple areas, without criteria benefit, causality, and proportionality
- Off-site cost equalization, without criteria benefit, causality, and proportionality

When asking the interviewees about this, it became clear that this deviation, based on the land development plan, is indeed used by some developers used as a starting point when considering contributions to climate change adaptation. Developers find it understandable that contributions must be made to make the area livable. However, much more importance is given to the fact that the choice to contribute or not is always an integral consideration. When fewer contributions are made for facilities outside the plan area, more contributions can be made within the plan area. And if fewer contributions have to be made to other aspects and requirements, e.g., less social housing and lower land prices, more contributions can be made to climate change adaptation. In the end, the most important are always the costs and benefits. When there are benefits, developers can make more costs. However, there are limits and not everything for the entire region can be done. Contributing without making a profit is never an option. There is a certain percentage that is needed for taking the risk.

Interview 6: *“It’s just very simple. If the project remains feasible, it doesn’t matter what you spend your costs on. (...) It simply stands or falls with the feasibility.”¹*

Interview 10: *“I think, somewhere, if you do something in a certain place, then you also have a certain responsibility for it, but I also think, if you have a certain responsibility, you must also have a certain virtue.”²*

Nonetheless, out of the interviews, it becomes clear that developers do have some preferences for what happens with their contributions. Most developers mention that they prefer measures as close to the product as possible. So, starting with the houses and within the plan area. Because the end-user is eventually paying for it, they argue that contributions should add value for those people. When measures are outside the plan area and there is no direct link, developers have to be convinced of the value it will add. In other words, the developer wants something back from their investments. The criteria of benefit, causality and proportionality are therefore indeed important. Transparency and substantiation are important for that.

Interview 1: *“Those BCP criteria are important in this respect, and in particular that they can be explained to the management and our customers; that there is a direct link.”³*

When those criteria do not apply, developers are sometimes still willing to contribute if it helps to solve a problem or serves a certain goal. But developers must be convinced. It helps if there is a link with company goals. For example, if the developer thinks the investments are the ‘right’ investments to reach a goal, and if the developer gets something in return.

4.2 - Willingness to contribute to climate change adaptation

As can be seen in the conceptual model of the research, the willingness to contribute to climate change adaptation is based on three variables. Those three variables are a prospect for return, risk management, and political certainty. The results will be discussed in that order.

4.2.1 - Prospect for return

To create prospects for return on developments, two important sub-variables are indicated in the literature: a developer’s capacity to contribute and decisions regarding the scope of the agreement. Those are discussed in this section.

Developer’s capacity to contribute

- A developer’s financial capacity

¹ Quote in original language (Dutch): *“Het blijft gewoon heel simpel. Als het project haalbaar blijft, maakt het eigenlijk niet uit waar je je kosten aan uitgeeft. (...) Het valt of staat gewoon met de haalbaarheid.”*

² Quote in original language (Dutch): *“Ik vind ergens als je iets doet op een bepaalde plek, dan heb je ook een bepaalde verantwoordelijkheid ervoor, maar ik vind ook, als je een bepaalde verantwoordelijkheid hebt, moet je er ook een bepaalde deugd van hebben.”*

³ Quote in original language (Dutch): *“Die PTP-criteria zijn daarbij wel belangrijk en met name ook dat het uitlegbaar is aan de directie en onze klanten; dat er een directe link bestaat.”*

As argued in the literature review, a developer's capacity to contribute is partly dependent on a developer's financial capacity (Koppenjan & Enserink, 2009). The interviews revealed that private developers indeed consider financial capacity as an important factor for contributions to climate change adaptation. They describe making contributions to climate change adaptation as conditional on financial capacity. Besides that, they consider financial capacity as the starting point for considering climate change adaptation contributions. Without financial capacity, it is not possible to make contributions. Looking at it from a broader perspective, without financial capacity, developers are not able to continue their business and therefore cannot make contributions to anything anymore. So, financial capacity is indeed very important.

Interview 1: *"I always find that conditional, if we don't make profit, we can't keep doing what we do."*⁴

Interview 4: *"The continuity of our company is always a top priority for our management. In addition to the commercial interest of course."*⁵

So, developers describe contributions to climate change adaptation as conditional on financial capacity. They also argue that the financial capacity, in its turn, is conditional on some other factors. Whether the company is financially capable is conditional on two things, namely costs and return. The more money developers already have to spend, the less they have left to contribute to climate change adaptation. With these expenses, they mostly point towards the costs of buying land and construction costs. Looking at the return side, the financial capacity is influenced by the type of houses that are built and the housing price situation. When comparing the return on social housing and luxurious housing, more financial capacity is left to contribute to climate change adaptation when building luxurious housing. Looking at the housing price situation, sometimes developers are restricted to price ceilings, meaning that they have to deal with a maximum housing price, possibly leaving less room for climate change adaptation measures. When looking at the current housing market, prices are currently stabilising after a long period of growing housing prices. Those stabilising housing prices in combination with still rising building costs can cause problems for developers who are, in that situation, struggling to still stay financially capable to contribute to climate change adaptation. This is because they can then no longer calculate the costs for climate change adaptation in the selling price of the house. To still make contributions to climate change adaptation, developers have to sacrifice a part of their return. However, not all developers are willing to do that.

Interview 6: *"What are easy measures that are valuable and also represent a certain value, instead of just costs".*⁶

Interview 7: *"In recent years since the financial crisis things have of course improved in housing construction and you were able to calculate that, but the moment you see that the*

⁴ Quote in original language (Dutch): *"dat vind ik altijd voorwaardelijk, als we geen winst maken kunnen we niet blijven doen wat we doen"*.

⁵ Quote in original language (Dutch): *"continuïteit van ons bedrijf staat altijd hoog in het vaandel bij de directie. Naast ook commercieel belang natuurlijk"*.

⁶ Quote in original language (Dutch): *"Wat zijn nu makkelijke maatregelen die waardevol zijn en een bepaalde waarde vertegenwoordigt ook nog, in plaats van alleen maar kosten"*.

*market starts to stabilize due to the interest price and the construction costs do continue to rise (...) that does not necessarily contribute”.*⁷

- A developer’s capacity to understand (awareness)

The second deterrent for a developer’s capacity to contribute is awareness and capacity to understand the influence of climate change. In the literature it is suggested that this awareness is reactive to risk (Hürlimann et. al, 2022; Uittenbroek et. al, 2013). In the interviews, this is confirmed. The issue of climate change adaptation is described as evolving where we first only had to deal with draining water, but now we also have to deal with heat stress and keeping water in the area to avoid drought.

Interview 7: *“Then another flood in Limburg and the Eifel and then another drought. Yes, that will be our new reality. (...) It already is actually.”*⁸

Developers agree that the topic of climate change adaptation is urgent, and measures must be taken. In other words, they are aware of climate change, the risk, and the big influence they can have on this. Because of that, they created an intrinsic motivation to act towards it; they want to take responsibility. Besides this intrinsic motivation, developers are also motivated by society's expectations. The expectations from society towards developers to take measures for the climate are rising. Developers, therefore, feel they have to fulfil an ethical role.

Interview 5: *“I think that sort of thing is more of a social responsibility that we have to tackle, we too, not just the government, to do things better in the future.”*⁹

- A developer’s analytical capacity

According to the literature, this awareness of climate change and the need for climate change adaptation must be accompanied by a deeper comprehension to understand how company plans are affected and how climate change adaptation can be included in these plans and strategies (Moser and Luers, 2007).

For this aspect, interviewees agree that plans are affected by climate change, mostly by water. Developers have to deal with infiltration, retention, and disposal of water in their plans. The degree to which plans are affected depends on the plan area as some areas ask for more measures than others. This can result in plans with only a limited amount of issuable land, which is their only source of return. Developers, therefore, wonder if, besides value for nature inclusiveness, also value is added in financial terms.

⁷ Quote in original language (Dutch): *“de laatste jaren sinds de financiële crisis ging het natuurlijk steeds beter in de woningbouw en kreeg je dat ook wel weggerekend, maar op het moment dat je ziet dat de markt begint te stabiliseren door de renteprijs en de bouwkosten wel doorstijgen (...) draagt dat niet per se bij.”*

⁸ Quote in original language (Dutch): *“Dan weer een overstroming in Limburg en de Eifel en dan weer een droogte. Ja, dat wordt onze nieuwe realiteit. (...) Is het eigenlijk al.”*

⁹ Quote in original language (Dutch): *“Ik denk dat dat soort dingen meer een maatschappelijk verantwoordings is die we die moeten pakken, ook wij, niet alleen de overheid, om naar de toekomst toe toch dingen beter te doen.”*

Interview 3: *“We see [climate change adaptation] as a quality that indeed often adds value, but whether the value also results in the price that is paid, is another matter.”¹⁰*

It is mentioned that it is hard to link climate change adaptation and positive cashflows to each other 1 on 1. This depends on the customer and their choice to be or not to be willing to pay for climate change adaptation. It also depends on a lot of other factors, like the location and architectural aspects. Although it differs between target groups, most customers base their choice of buying a house on the location, the product, and the architecture. In the last couple of years, more attention is given to climate measures as electricity and gas prices are rising. However, only the group of people who can pay a higher price for their house can afford this. So, oftentimes, the climate is not the number one priority. When this is the case, climate change adaptation measures do not directly result in the creation of positive cashflows because customers do not value it enough.

- A developer’s capacity to take action

To enable action to climate change adaptation, barriers sometimes have to be removed first (Hürlimann et. al, 2022; Moser and Luers, 2007). Some of these barriers can be derived from the results above. The first one is the financial motive of the municipality which leads to higher land prices and price ceilings. To enable action towards climate change adaptation developers can deal with this by using cheap and easy solutions. One interviewee mentioned the use of an internal fund as a solution for this. This fund can be used for projects that are not profitable enough to invest in climate change adaptation. Other barriers derived from the information above are customers who are not willing to pay. To still enable action, developers suggest that customers should notice benefits, for example, fewer charges and taxes, when there is no sewage or gas connection. Another solution can be the use of visible green. Customers are often willing to pay more for a green neighbourhood. By linking the green neighbourhood to a climate-adaptive neighbourhood, costs can be recovered.

Interview 3: *“So that term amenity, it's crucial for developers and that's how most developers will view it”.*¹¹

A barrier very specifically mentioned in the interviewees is the stacking of ambitions. Nowadays, developers have deal with lots of ambitions that range from sustainability, circularity, and climate change adaptation to social housing and affordable housing. However, money can only be spent once which means that spending more money on one ambition leads to less money left to spend on another ambition. Therefore, priorities must be set, and clarity is given about what is important and what ambitions should be taken up in development plans. Not giving clarity leads to more risks, because developers already make high investments for preparing a development plan before negotiations start.

Interview 2: *“I think there are about, at the moment, 7 tons of upfront costs. (...) And we have a slogan from A to B, but that from A to B is a risk for everyone.”*¹²

¹⁰ Quote in original language (Dutch): *“We zien [klimaatadaptatie] als een kwaliteit die inderdaad vaak waarde toevoegt, maar of de waarde ook uitkomt in een prijs die wordt betaald, dat is iets anders”.*

¹¹ Quote in original language (Dutch): *“Dus die term belevingswaarde, die is eigenlijk cruciaal voor ontwikkelaars en zo zullen de meeste ontwikkelaars het ook bekijken”.*

¹² Quote in original language (Dutch): *“Ik denk dat er ongeveer, op dit moment, 7 ton voorloopkosten in zitten. (...) En we hebben een slogan van A naar B, maar dat van A naar B toe dat zijn risico's voor iedereen”.*

Lastly, a barrier for developers can be the imposing of climate change adaptation measures. The interviewees propose that more attention should be given to the specifics of the area. To do this, instead of measures, a goal should be prescribed. This leads to more room for developers to use measures that work well in specific circumstances.

Interview 3: *“So much more about the goals, so damage reduction, that it's a pleasant place to stay even in periods of heat”.*¹³

Decisions regarding the scope of the agreement

- Profitable activities included in the agreement

To create a feasible business case, it is important that unprofitable activities can be compensated with profitable activities (Koppenjan & Enserink, 2009). As contributions to climate change adaptation might not result in the same amount of return, those activities should be compensated by other activities. When talking to interviewees about this, generally, it is agreed upon that program changes can be made to compensate for more contributions to climate change adaptation. A few activities are mentioned which can increase the profitability of the agreements. Those are less social housing, less affordable housing for the elderly and youth and higher building heights. When more profit can be established via these measures, more financial room is left for climate change adaptation. However, sometimes fewer is more and fewer houses, but of better quality, can lead to more profit. Therefore, a balance should be searched between contributions to climate change adaptation and making a profit. Hence, developers do need a feasible business case, but they also want quality and a product that suits the customer. This could be at risk when price restrictions are in order. Therefore, these restrictions should not be part of the agreement.

Interview 8: *“So we absolutely don't want those smaller homes. You are then forced to make it possible if you are stuck at a price ceiling.”*¹⁴

- The spatial coverage of the contract

Combining different projects in different locations with each other can be an option to cover off-site activities (Koppenjan & Enserink). Most developers agree that this can be a way to compensate for different projects. However, in practice, this can be difficult as projects are initiated by different initiatives. Besides that it is difficult, most developers agree that they want all of their business cases to be profitable, and this cannot simply be compensated. From a municipal viewpoint, they also like to keep projects separate as they have to be transparent in their reasoning and every project needs a level playing field. By combining projects, that can be at risk. Mentioned as a solution for the fact that some projects require more contributions to climate change adaptation than others, is the use of subsidies for projects that need lots of climate change adaptation investments.

¹³ Quote in original language (Dutch): *“Dus veel meer over de doelen, dus het verminderen van schade, dat het een prettige plek is om te verblijven ook in periodes van hitte”.*

¹⁴ Quote in original language (Dutch): *“Die kleinere woningen dus willen we absoluut niet. Daar word je dan toe gedwongen om het mogelijk te maken als je aan een prijsniveau vastzit”.*

Interview 1: *“It does happen: the loss-making projects are crossed out against the profitable projects. But the loss-making projects are cracked with the whip.”¹⁵*

4.2.2 – Risk management

In the literature, three important aspects of risk management are distinguished, which are: risk management tools, (risk)management capacity, and security. Those are discussed in this section.

Risk management tools

The use of risk management tools can make it more attractive for developers to contribute to climate change adaptation (Koppenjan & Enserink, 2007). Some interviewees mention subsidy as a risk management tool. Subsidies that are mentioned are the ISDE-subsidy, the subsidy ‘steengoed benutten’, and subsidies offered by water authorities. However, many argue that subsidies are not available for private parties, and if they are, they are not certain. Those subsidies may be already given out, or that a subsidy changes over the years. Therefore, subsidies cannot be accounted for structurally. Therefore, subsidies are described as a pleasant surprise and not something that is taken up in plans. Thus, the risks are still for the developer, who owns the land.

Interview 8: *“The contracts we have now, the risk lies entirely with us. (...) And if the market has collapsed, then it's our problem.”¹⁶*

Only one interviewee comes up with another risk management tool, the use of regulation by water authorities. They argue that because of the regulation of water authorities, you are obligated to take risks into account. If projects are not protected to climate change risks, water authorities do not give a guarantee. So, this can be seen as a tool to prevent disaster happening with climate change.

(Risk)management capacity

- (Risk)management capacity of private parties

Generally, it is argued that private parties have enough (risk)management capacity and knowledge to deal with climate change and accompanied planning risks, as developers see this as a substantial part of their job. This can be seen by the fact that developers are hiring managers specifically for risks and/or climate change adaptation. So, generally, not enough (risk)management capacity at private parties is not seen as a bottleneck. However, it is mentioned that this can differ greatly across the sector. Not everybody is as progressive and, in some fields, there is structurally not enough capacity. To avoid the risks, when there is not enough capacity, developers are less innovative and use methods that have already proven themselves over the years.

- (Risk)management capacity of public parties

Looking at the (risk)management capacity of public parties, they have to deal with a lot of pressure, coming from the ambition to build 100.000 houses a year and ambitions for climate change adaptation. It is described that public parties do not have enough management capacity to deal with these issues.

¹⁵ Quote in original language (Dutch): *“Het gebeurt wel, de verliesgevende projecten worden tegen de winstgevende projecten weggestreept. Maar de verliesgevende projecten daar gaat gewoon de zweep overheen”*

¹⁶ Quote in original language (Dutch): *“De contracten die we nu hebben, daar ligt risico ligt volledig bij ons. (...) En als de markt dan is ingestort, dan is het ons probleem.”*

This results in the situation where developers have to wait for permits, slowing the entire process. Besides that, the ones who are making the decisions are not in the working field themselves, therefore making them under-experienced and not capable to make the right choices.

Interview 9: *“That the people who act there often know where it needs to go, but don't stand with their feet in the clay, so that they occasionally come up with things and in several places at the same time that are contrary or that ultimately don't work.”¹⁷*

However, it is mentioned that together (private and public bodies) they are learning about climate change adaptation and more people are getting addressed purely for climate change adaptation purposes. If not, external people are hired for these kinds of jobs. The quality of these external (and internal) advisors, although, differs.

Security

- Information disclosure and transparency preservation

By disclosing information and being transparent about climate change adaptation programs, risks for developers can be reduced (Chang, Menon & Imura, 2003). It helps to make a better judgment on future projects and their effects. Generally, interviewees agree that governments are not enough transparent when it comes to climate change adaptation programs, or they are not knowledgeable enough to give the right information. But, when you can find the right person, they are mostly of great help. This viewpoint is not generally shared when talking about figures. Calculations are not always shared transparently. When asked to explain calculations and figures and how they should be interpreted, they can oftentimes not give clarity about those.

Interview 10: *“[Often] you need such advisors to apply it and to translate the ambitions from the municipality, the wishes into an applicable program.”¹⁸*

More guidelines would be helpful for developers. This can be in the form of external advisors. Another suggestion made is the creation of a platform, available to all parties, with all developments in the field of climate change adaptation. So, technical possibilities and innovations that are happening. The platform should be easily accessible so that everyone can be up to date quickly. That way, everyone's knowledge level is even, both municipalities and developers. This could possibly fasten the process of climate change adaptation.

4.2.3 Political certainty

Relationship between private developers and public bodies

- The accessibility of governmental regulators

¹⁷ Quote in original language (Dutch): *“Dat de mensen die daar acteren vaak wel weten waar het naartoe moet, maar niet met de poten in de klei staan waardoor ze af en toe dingen verzinnen en op meerdere plekken tegelijkertijd die tegendraads zijn of die uiteindelijk niet gaan werken.”*

¹⁸ Quote in original language (Dutch): *“[Vaak] heb je zulk soort adviseurs nodig om het ook toe te passen en de ambities vanuit de gemeente, de wensen te vertalen naar een toepasbaar programma”.*

Johnstone and Wood (2001) argue that keeping regulators at arm's length reduces the risks of political changes. About the accessibility of governmental regulators, the interviewees say it can differ a lot across municipalities, mostly depending on the organizational structure. It is the easiest to work with municipalities that have a project management department with decisive power so that they do not have to go to the alderman all the time and not too many political fields are involved in the decision making. Looking at it generally, especially municipal officers are accessible, more than aldermen and political parties. This accessibility often improves when a developer has done more successful projects within the municipality. If you want to build a relationship it is therefore important to deliver successful projects, this makes regulators more accessible. However, it is mentioned that because of stricter regulations about transparency, good relationships from the past are not as valuable anymore as there is a level playing field and all parties have the same opportunities.

Keeping regulators at arm's length is therefore not all determining for reducing risks around elections and the political changes it brings. Mostly, it is important to try to get oral agreements on paper as fast as possible.

Interview 5: *"If the agreements are somewhat softer, which often take place in the oral sphere (...) Then you start all over again, so to speak."*¹⁹

A good relationship with regulators and their accessibility can therefore be seen as a factor to speed up or slow down the process of coming to an agreement. Because elections come every four years and therefore changes can happen every four years, a shorter process can lead to a situation where an agreement is made before the political changes happen. But, during the process, the risk of political change is not accounted for as developers never know what to expect. They just hope for the best outcome and in the meantime, they try to get as much on paper as possible.

- Similarity between objectives of governments and private developers

A multitude of policies might lead to an incoherent situation where different policies might contradict each other. By making policies coherent, private developers get more clarity on what to expect. If this matches a developers' own policies, this can give more certainty for a good outcome (Johnstone & Wood, 2001). Looking at the topic of climate change adaptation, there is a similar viewpoint towards climate change adaptation. Climate change adaptation is a hot topic, everybody is talking about it and agrees that something must be done, both developers and municipalities. So, they are both aware of it and do not have to explain the importance to each other. So yes, climate change adaptation is a common goal of municipalities and developers. However, between and within municipalities, there is no level playing field: there are many different rules and policies. This is partly caused by individual employees at the municipality that focus on climate change adaptation, since they all use their own perceptions. This leads to many individual pilots, who might contradict each other. This can happen both within one municipality and between different municipalities. Because of that, developers find it hard to make a generic internal policy. Interviewees mention that it would be helpful to have a more clarity about objectives by creating some sort of national standard with objectives, demands, visions and reasoning. They mention that standardization would make it easier to work together with

¹⁹ Quote in original language: *"Als het wat zachtere afspraken zijn, die vaak in de mondelijke sfeer plaatsvinden (...) Dan begin je weer opnieuw bij wijze van spreken."*

municipalities because many discussions only delay projects, in a housing market where there is an urgency for finishing projects as fast as possible.

Institutional framework

- Clarity about climate change adaptation objectives

Koppenjan and Enserink (2009) argue that by giving clarity about climate change adaptation objectives beforehand, private parties get the chance to anticipate on them beforehand. This can avoid surprising private parties, who are then less interested. In the interviews, it is mentioned that it is sometimes unclear what is asked. This can be caused by legal issues from the past. Municipalities are sometimes hesitant to make decisions because they are afraid to make the wrong decisions. However, for developers, giving clarity about objectives is important. By having clear boundaries, developers can account for those beforehand, giving them the opportunity to deal with them. They can then make the decisions to go ahead with the project or not. Besides that, giving clarity about objectives also leads to less discussions because the developer immediately knows on which aspects there is agreement and on which aspects the discussion has to be focused on. This can help to get a clearer discussion, speeding up the discussion and having less delays in the process.

Interview 5: *“It definitely helps to funnel beforehand.”*²⁰

So, clarity about objectives is experienced as very pleasant. But, if demands are too high, this can also cause developers to be hesitant. Developers like to see a positive approach and open attitude from the municipality. They prefer the municipality to set a standard and then to leave it up to the developers how they meet those standards, using their own way to deal with issues.

- A clear division of responsibilities

By giving clarity about responsibilities, developers know what to expect and perceive less political uncertainty (Johnstone & Wood, 2001). Therefore, those responsibilities are written down in the contract. Mostly mentioned by the interviewees is clarity about responsibilities for maintenance. After the project is completed, the developer delivers the building plots to the consumer and the public space back to the municipality. So, there should be clarity about who is going to maintain that area. A criterion for that is who owns the land. This means that the customer is responsible for its own land and the municipality is responsible for the public area. So, they have to be aware of that and make a plan for that. They can give strict requirements to keep maintenance possible, developers understand that and deal with that.

Interview 4: *“They are quite strict about management and maintenance, because in the end they take over after delivery and if it is not good, they are in the lurch.”*²¹

²⁰ Quote in original language (Dutch): *“Het helpt absoluut om van tevoren te trechteren.”*

²¹ Quote in original language (Dutch): *“Daar zijn ze best wel streng in, beheer en onderhoud, want uiteindelijk nemen zij het na oplevering over en als het niet goed is zitten zij met de gebakken peren.”*

4.3 Discussion

4.3.1 Relevance of three determining variables

To determine the relevance of the three variables (prospect for return, risk management, and political certainty), Table 5 presents an overview of the three variables and the accompanying indicators. In the table, the importance of all indicators can be read. Here, importance means whether the indicator is an important indicator for a developer to contribute to climate change adaptation or not. The table is made based on the results from paragraph 4.2.

Variable	Indicator	Importance
Prospect for return	A developer's financial capacity	Yes
	A developer's capacity to understand (awareness)	Yes
	A developer's analytical capacity	Yes
	A developer's capacity to take action	Yes
	Profitable activities included in the agreement	Yes
	The spatial coverage of the agreement	Not in practice
Risk management	Risk management tools	Not in practice
	Management capacity private	Yes
	Management capacity public	Yes
	Information disclosure and transparency preservation	Yes
Political certainty	The accessibility of governmental actors	Yes
	Similarity between objectives of governments and private developers	Yes
	Clarity about climate change adaptation objectives	Yes
	A clear division of responsibilities	No

Table 5: overview of the importance of indicators.

Prospect for return

Looking at Table 5, five out of the six indicators for the variable 'prospect for return', as described in the literature, are important when developers consider contributions to climate change adaptation. The financial capacity of a developer is very important as it is conditional for making contributions. Without financial capacity, developers cannot contribute to anything. Following on that, a developer needs a deeper understanding of the importance of climate change adaptation. By being aware of the importance, there is more willingness to give up some return. However, that is not necessary when developers have the analytical capacity to see the value that climate change adaptation can add. That means that they see that customers are willing to pay more to live in a climate-adaptive neighborhood. The analytical capacity can also point towards the capacity to come up with cheap and easy solutions, which means that developers do not have to give up as much return. When those three indicators are

fulfilled, a developer also needs the capacity to take action. This mostly means that they need to find solutions to possible barriers, like the government's financial motive, the stacking of ambitions, and the imposing of measures instead of goals, which are described as important barriers to contribute to climate change adaptation. Looking more closely at the agreement, the indicator of the inclusion of profitable activities is very important. It is highlighted by almost all interviewees, that contributing to climate change adaptation is always an integral consideration and that costs and benefits should always be in proportion. Therefore, profitable activities in the agreement are very important. The spatial coverage of the contract, however, is off less importance. Developers do argue that it could be a tool to compensate between projects, but that this is not feasible in practice because governments need to be transparent and that there is always a level playing field. So, the indicator could be important, but due to restrictions it is not important in practice.

When directly asking the interviewees about the importance of the variable 'prospect for return', a very clear answer is given.

Interview 8: *"We are not a philanthropic institution. We just have to make money, otherwise, we won't exist next year."*²²

They describe prospect for return as a very important factor for considering contributions to climate change adaptation and conditional for every project they do. However, it is emphasized by most developers that making profit is not their number one motive for being in the business. They emphasize that they want to take responsibility. Even though developers often have the image of being in the business for making money, it is especially highlighted that that is not the case. The interviewees agree that this used to be the case, and, of course, they need a feasible business case, but this is not their only priority. They want to contribute to a good living environment. This becomes apparent, for example, by company goals specified on the Sustainable Development Goals of the United Nations and the appointment of managers specifically for the environment. Sometimes, this even leads to the situation where company goals are more progressive than actual regulation.

Interview 1: *"You have to score an eight in the Netherlands and we do something on top of that to make it a nine or even a ten, and that is a specific objective (...) not to do the bare minimum, but to do as many extras as possible."*²³

Risk management

As can be seen in Table 5, three out of the four indicators for risk management, as described in the literature, are important when developers consider contributions to climate change adaptation. The only indicator that is not feasible in practice is the use of risk management tools. All developers agree that there are no to little tools used. The only specific tool that is mentioned by a few developers is subsidy. However, they cannot account on these subsidies as they are never structural. So, those subsidies are more seen as a pleasant surprise than an indicator on which they base their decision to

²² Quote in original language (Dutch): *"We zijn geen filantropische instelling. We moeten gewoon geld verdienen anders dan bestaan we volgend jaar niet meer."*

²³ Quote in original language (Dutch): *"Je moet dan wel een 8 scoren in Nederland en wij doen daar nog iets bovenop om er een negen of zelfs een tien van te maken en dat is wel een specifieke doelstelling (...) om niet overal maar met de hakken over de sloot te springen, maar om zoveel mogelijk extra's te doen."*

contribute or not. The management capacity of both private and public parties are seen as important indicators. As risks are described as very important to take into consideration, enough management capacity is needed both from public and private parties. Not enough capacity, especially from the public party, can lead to slowing the process and decisions that are not feasible in practice. Not enough management capacity at private parties can lead to taking risky decisions, which is not desirable either. Lastly, information disclosure and transparency preservation are also important. Multiple interviewees mention that guidelines would be helpful. When there would be a level playing field (in terms of knowledge), developers could be convinced of the success of climate change adaptation, making them more confident to use certain methods and measures.

Interview 5: *"We are not too ahead of the curve when it comes to innovation. (...) There is also a part of risk management."*²⁴

When directly asking the interviewees about the importance of the variable 'risk management' for the eventual contributions to climate change adaptation, they consider this as an important variable. Not just for climate change adaptation, but in an integral consideration all throughout the organisation. The extent to which developers now take risks into deep consideration differs. Some interviewees mention that risk management has a prominent place in their organisation, for example demonstrated by a manager especially for risk management. Others say that risk management does not have a prominent place, however, they argue that more attention should be given to it. So, they do consider it as important. Additionally, one interviewee argues that all risks are financially driven, so, perhaps risk management can be linked to the variable for 'prospect for return'.

Political certainty

For political certainty four indicators became present in the literature review. Three of these four indicators were also identified by the interviewees as important for their consideration to contribute to climate change adaptation. Firstly, the accessibility of governmental actors can feed the process of negotiating. A faster process means less chance on political changes during the process, which the interviewees described as pleasant. However, also mentioned is that a good relationship and regulators at arm's length is not as valuable anymore as it used to be because of transparency regulations. Because of that, every developer gets the same changes, making good relationships from the past less valuable. Therefore, this indicator is now mostly important for speeding up the process. The second indicator is that of similarities between objectives of municipalities and developers. For this indicator, it is mostly mentioned that it is important that different municipal objectives don't contradict each other. Contradicting policies, namely, make it hard for developers to make generic policy. By standardization there would be less discussions and, therefore, less delays in the projects. The third important indicator is that of clarity about climate change adaptation objectives. By having clarity about those objectives beforehand, developers can already take those objectives into account. Here, it is important that objectives are realistic because unrealistic objectives lead to resistance of developers to contribute. The fourth indicator from the literature is a clear division of responsibilities. This indicator was not found important because there already is much clarity in the anterior phase.

²⁴ Quote in original language (Dutch): *"We niet al te vooroplopen in vernieuwingen. (...) Er zit ook een stukje risicomanagement"*.

Those who own the land, have responsibility for risks and maintenance. Because this is already clear, it is not an important indicator for developers to contribute or not.

When asking interviewees directly about the influence of political certainty on their contributions to climate change adaptation, generally, they say the following: it is an important aspect. Developers find this an important variable since politics influence municipal objectives and priorities and this can influence what is asked from developers when it comes to contributions to climate change adaptation. When there is a good relationship between developer and municipality, this can also speed up the process of negotiations. An open and positive attitude from municipal actors towards developers makes them more willing to contribute. Or the other way around, a very negative approach makes developers less willing to contribute. Developers do mention that politics are never truly certain and therefore, it is important to speed up the process and to write agreements down as fast as possible to get some more certainty. So, it is definitely an important variable to have certainty when making contributions to climate change adaptation. However, the influence developers have on this is small and they cannot always account for the political risk beforehand.

4.3.2 New variable: chain integration

Chain integration in the interviews

In the interview, it was not only asked if the variables from the literature were relevant, but also if the interviewees had relevant aspects to add. When asking this, it became clear that 'chain integration' is an important variable to include in the research, as all interviewees mentioned this. Four actors were mentioned as important in the chain, those are: investors, developers, governments, and the consumers.

Two ways are mentioned in which investors influence the market. The first one is that investors are, often, only interested in the return they get on their investments. Putting pressure on the market to make high returns, resulting in putting pressure on contributions to climate change adaptation. The second one is that investors, who are not familiar in the field of area development, buy overpriced land. This leads to a situation where they cannot make a feasible business case in the end because they did not take social responsibilities into consideration when paying too much money for the land. When this happens, developments stagnate, which can also include the developments of other developers. The second actors that needs to be included are developers. When coming to agreement, developers who develop in the same area have to come to an agreement before they can proceed. So, therefore developers have to agree on the level of climate adaptiveness beforehand. Thirdly, governments have to be included in the chain. Important is that they give a good example in their own development of, for example, city halls and schools. They should also show that they have an interest in climate change adaptation to give the good example. Finally, consumers should be included in the chain. Including the consumer in the chain is important because they will become the owner of the issuable land, so they have substantial influence of maintaining the area in a climate adaptive way. This can for example mean that the keep a green garden design in which water can easily infiltrate.

Interview 4: *"In the end, the chain is only as strong as the weakest link."*²⁵

²⁵ Quote in original language (Dutch): *"Uiteindelijk is de ketting zo sterk als de zwakste schakel"*.

In the interviews, it is argued that developers would like to notice a feeling of working together towards a goal. When a mutual problem pops up, they want to work together and come up with a solution together. They have the feeling that by working together, a lot more can be achieved. Working together is not something that developers directly experience at the moment, as much is left to the market. Developers argue that they do not want to be the only one taking steps, but that other parties should also be prepared to take some steps, to come the goal of climate adaptiveness together.

Interview 10: *“You all have to be prepared to make some concessions if you really want to take steps in the field of nature inclusivity.”*²⁶

Chain integration in the literature

Chain integration and partnering

Projects in the construction sector have to deal with diverse problems, including significant environmental impact. To overcome these challenges, it is necessary that the construction sector comes up with innovative solutions. However, despite innovations being available, the housing sector’s overall innovation performance falls short, mostly due to bad adoption and lack of widespread diffusion of ideas (Oorschot & Halman, 2020). This is caused by the fact that the construction sector is based on project-production, leading to a fragmented sector (Vrijhoef & de Ridder, 2007). A fragmented sector with low degrees of integration and repetition contributes to issues and underperformance of the supply chain (Vrijhoef & Koskela, 2000).

To solve this issue, concepts to promote integration and repetition within the chain can be applied, such as partnering arrangements (Bresnen & Marshall, 2000). By doing so, chronic difficulties and irrationalities in chain should be eliminated, including negative symptoms (Vrijhoef & de Ridder, 2007). Two important aspects for this are: entropy and synergy. “Entropy refers to the necessity of feedback across the chain to prevent debilitation of the system” (New & Westbrook, 2004). “Synergy means that parts of the system working together can achieve more than the sum of achievements that each one would achieve separately” (New & Westbrook, 2004).

Partnering entails the parties to a project cooperating in a trusting and open environment to complete the project quickly and without disagreement. Indicators for partnering are: communication, trust, a clear understanding of roles, commitment, consistency, and a flexible attitude. Important is the acknowledgement that nothing will happen without effort by all the parties involved (Black, Akintoye & Fitzgerald, 2000).

So, to successfully deal with growing issues of the environment, the construction sector should show the important characteristic of early client/ end-user involvement, as well as highly engaged stakeholders, as this can have a favorable impact on adopting new innovations around climate issues. This should avoid that poor coordination across the fragmented construction sector, which reflects loose coupling within and among construction businesses, hampers the adaptation of single projects (Oorschot & Halman, 2000).

²⁶ Quote in original language (Dutch): *“Je moet allemaal bereid zijn wat toe teg even wil je echt stappen maken op het gebied van natuurinclusiviteit.”*

The Netherlands

The general view of benefits of chain integration in the construction sector also applies to the Dutch context. Research was done into the potential of using the partnering approach as a governance instrument to increase the adoption of climate change adaptation strategies. Because construction businesses are the ones who carry out the work, involving the construction sector through a partnering strategy has high potential. The early commitment decreases the chances of misunderstanding or failure, while also increasing the opportunity for creative solutions (Rodgers, 2015)

The research findings show that indeed collaboration in the building industry can help to speed up the deployment of climate change adaptation measures. When there are also common interests, this can also increase the prospect of implementing adoption measures. The research concludes that many parties can become involved and contribute to the implementation of climate change adoption measures if the construction process becomes more network-based, as it does when a partnering approach is used. It makes little difference who brings the subject onto the table during the plan formulation and construction phase in this circumstance, as long as it gets there and action is taken. (Rodgers, 2015).

4.3.3 Differentiation

As mentioned in the methodological chapter of this research, developers are differentiated on their size. They are characterized as small, medium, or big. Looking at the size of the developer, no direct relation is found between a developer's size and their contributions to climate change adaptation. This becomes clear when looking at the interview answers on the questions that correspond with DOs to climate change adaptation, when the answers are categorized on developer size. The most important outcomes, as mentioned in paragraph 4.1, have to do with integral considerations, feasibility of the business case and the BCP-criteria. Looking at developer quotes on these topics in the interview transcripts, they appear both at interviews with small, medium, and large companies. Meaning that there is no relationship between the size of the developer and their contributions to climate change adaptation.

4.3.4 Triangulation by (internal) documents

To increase the validity and reliability of the results of the interviews, as described in this chapter, triangulation is used. This triangulation took place by studying internal policies for climate change adaptation. This was done to confirm that developers are indeed, under certain circumstances, willing to contribute to climate change adaptation. Besides internal policy documents, some developing companies also signed agreements with other parties about contributing to climate change adaptation.

Developer	Policy
1. Heijmans	The mission of Heijmans is to create a healthy society. Within this mission they have a pillar for sustainability. Under this pillar, there are three themes, namely energy, materials and space. Within the theme of 'space', they think about redesigning the spatial environment, in which nature-inclusive and climate-adaptive constructions are important

	<p>aspects. With this strategy, they want to make a real impact by setting ambitious goals that will contribute to a healthy living environment. With all their projects, they want to contribute to the recovery of local biodiversity and the climate resilience of areas for a healthy, safe, and livable world. They have the goal to be the creator of a healthy living environment and that is why they commit to the following ambition: <i>“by 2023, all our interventions will lead to significant improvement of local biodiversity, climate adaptation and safety”</i> (Heijmans, n.d.).²⁷ The willingness of Heijmans to contribute to climate change adaptation is also confirmed by them signing the manifesto ‘building for nature’. In this manifesto, the central government is asked to make the application of some climate adaptive measures mandatory for every new construction project by laying them down in legislation and regulation. By making these measures mandatory, nature is no longer a balancing item, but an ingredient for a healthy, biodiverse and liveable environment (Natuur & Milieu, n.d.).</p>
2. Region	<p>Region real estate development does not have specific policies for climate change adaptation. However, they do include sustainability in their strategy: <i>“Region real estate development strives for sustainable area development that makes a long-term contribution to the Land van Cuijk and Maasduinen region. The focus is on an integrated approach to living, working and recreation”</i>²⁸ (Region Vastgoedontwikkeling, n.d.). So, there is no specific statement about climate change adaptation. However, there is attention for sustainability, of which climate change adaptation is part.</p>
3. BPD	<p>Within BPD they have the ‘sustainably accelerate’ strategy. This strategy describes the course that BPD is following in developing and realizing sustainable, healthy and futureproof living environments. The strategy for sustainable area development includes four sustainable pillars. Under the pillar climate and landscape, they aim the following: <i>“By 2025, all our areas will be demonstrably adaptive: resistant to flooding, drought, and heat. They promote biodiversity thanks to their natural and water-rich layout”</i>²⁹ (bpd, n.d.).</p>
4. Van Wanrooij	<p>Van Wanrooij created a yearbook for 2021-2022. In this yearbook they mention that they keep making additional requirements for sustainable building, nature inclusiveness, and climate solutions, because those are important topics. However, they also want to build affordable housing, therefore, they cannot do everything, and they cannot keep stacking</p>

²⁷ Quote in original language (Dutch): *“In 2023 leiden als onze ingrepen tot significante verbetering van de lokale biodiversiteit, klimaatadaptatie en veiligheid”*.

²⁸ Quote in original language (Dutch): *“Region Vastgoedontwikkeling streeft naar duurzame gebiedsontwikkeling die een langdurige bijdrage leveren aan de regio Land van Cuijk en Maasduinen. Daarbij ligt de focus op een integrale aanpak van wonen, werken en recreëren”*.

²⁹ Quote in original language (Dutch): *“In 2025 zijn al onze gebieden aantoonbaar adaptief: bestand tegen wateroverlast, droogte en hitte. Ze bevorderen de biodiversiteit dankzij hun natuurlijke en waterrijke inrichting.”*

	ambitions (Van Wanrooij, n.d.). The willingness of Van Wanrooij to contribute can also be seen, for example, by them signing the manifesto: climate change adaptation strategy municipality Altena. In this manifesto, they agree to work together towards a climate adaptive Altena in 2050 (Water Authority Rivierenland, 2021).
5. Adriaan van Erk	In order to achieve a sustainable world for people and planet by 2030, five important objectives of the United Nations are taken into account in every project Adriaan van Erk develops. Those are: affordable and sustainable energy, reducing inequalities, sustainable cities and communities, responsible consumption and production, and partnership to achieve goals (Adriaan van Erk, n.d.). To achieve an integrated area development with construction as tangible result, they ask themselves: what does the area need? And what fits?
6. Dura Vermeer	Dura Vermeer created a strategy for sustainability: <i>“Connect in doing, forward in green. That is our faith. By giving back more than we ask of the environment, we can add lasting value and contribute to a healthier, sustainable living environment for everyone. Now, and for generations to come”</i> (Dura Vermeer, n.d.). Dura Vermeer signed a covenant for the province of South-Holland for climate adaptive building. Here, they agree that new buildings in the province are built as climate-adaptive as possible, so that they can withstand extreme weather conditions as a result of climate change. The covenant has been signed by construction companies, municipalities, the province, water boards, social organisations, financiers and project developers (Province of South-Holland, n.d.).
7. Van Wijnen	Van Wijnen has the mission to: <i>“build space for a better life together”</i> (Van Wijnen, n.d.). By ‘life’ they do not only mean people, but also nature. Therefore, they always search for inspiration to come up with new ideas to help nature. They have several points of view on that, including that the location determines the solution and that climate-adaptive does not have to be expensive
8. Van Wonen	Van Wonen had the strategy of <i>“creating homes and living environments for the healthiest generation (...) Based on the shared wish of a healthy, future-proof society”</i> ³⁰ (VanWonen, n.d.-a). Future-proof means that climate change adaptation is already part of the general company’s strategy. Besides that, Van Wonen created a sustainability manifesto. Here they aim for a climate adaptive living environment (VanWonen, n.d.-b).
9. KlokGroep	In their yearbook of 2020, KlokGroep states that they always take legislation about climate change adaptation and biodiversity into account in projects that they develop. Not only because they have to, but because they are convinced that the next generation should also have a nice place to live (KlokGroep, n.d.). To show this they signed the climate change adaptation strategy for the region of Nijmegen and Land of Maas and Waal, because they consider climate change adaptation and the application of biobased products

³⁰ Quote in original language (Dutch): *“Woningen en leefomgevingen creëren voor de gezondste generaties. (...) Vanuit de gedeelde wens van een gezonde, toekomstbestendige samenleving”*.

	important. They are the only market party that is a member of this platform, in addition to municipalities and housing associations (KlokGroep, n.d.).
10. KlaassenGroep	KlaassenGroep does not have specific policy for climate change adaptation. They do have a sustainability pillar which focusses on energy saving and environmentally friendly use of materials. Here they also aim responsible use of the nature, which can be linked to climate adaptive building (KlaassenGroep, n.d.).

Table 6: overview company's climate change adaptation policy.

Chapter 5 – Conclusions

This last chapter will firstly provide the answers to the research questions as formulated in the first chapter. Next, theories will be further developed. After that, recommendations for praxis are given. This entails both recommendations for further research and recommendations based on the research results. Lastly, there will be a reflection on the limitations of the research.

5.1 Answering the research questions

Because municipalities have no legal foundation to ask DOs to climate change adaptation using private law agreements, this study aimed at giving more insight into the circumstances under which developers are willing to contribute to climate change adaptation. The following research question was used: *‘Under what conditions are developers willing to financially contribute to climate adaptive measures in private land developments within the Netherlands through private law agreements?’* To answer the research questions, three sub-questions were formulated. Those sub-question will be answered first before concluding by answering the main research question.

1. *‘What are the most important factors that would influence a private developers’ willingness to financially contribute to (public) climate change adaptation?’*

Out of the literature, three determining variables emerged that are important for a private developers’ willingness to contribute to climate change adaptation. Those are: prospect for return, risk management, and political certainty and are here called factors. Under those three factors, indicators were identified. Those indicators can be seen as the important sub-factors that influence private developer’s willingness to contribute. Out of the interviews, it became clear that not all indicators were relevant considerations for private developers. This led to the following.

A developer values prospect for return. Important factors for this are a developer’s financial capacity, a developer’s capacity to understand (awareness), a developer’s analytical capacity, a developer’s capacity to take action, and the profitable activities included in the agreement. Risk management was also confirmed in the research to be an important variable. Important factors to describe risk management are enough management capacity for public and private parties and information disclosure and transparency preservation. Lastly, also the variable political certainty was a confirmed variable. Important there is the accessibility of governmental actors, similarity between objectives of governments and private developers, and clarity about climate change adaptation objectives.

Besides the factors and sub-factors emerging from the literature review, another important variable appeared during the interview and was later verified by further literature research. It became clear that chain integration is also very important for developers when contributing to climate change adaptation. With this is meant that all actors of the chain work together towards a climate adaptive future. This includes investors, developers, governments, and consumers.

2. *‘What are the current barriers for private developers to financially contribute to (public) climate change adaptation?’*

Out of the interviews, several barriers for developers to contribute to climate change adaptation emerged. Those barriers are distributed over the important factors as identified earlier in this chapter. To start with, several barriers decrease a developer's financial capacity, those are rising buildings costs, price ceilings set by municipalities and high land prices caused by a municipality's financial motive. Secondly, it is hard for developers to analyse and understand the influence that climate change adaptation has on their plans because it differs a lot between target groups and many other factors are involved that influence the project. It is therefore hard to account for their influence in the development of strategies and plans. This target group itself can also be a barrier as mostly those interested in affordable housing, do not value climate change adaptation as much as some other groups or are not as much aware of the risks and measures taken. In other words, they are not willing to pay, reducing a developer's prospect for return. Next to that, the stacking of ambitions is a big barrier for developers. Because often times no priorities are set and ambitions are very high, developers cannot live up to all ambitions. Lastly, the imposing of specific measures instead of goals to reach, is a barrier for developers because they are restricted in their freedom to come up with the best solutions.

Under the second variable 'risk management' also several barriers were mentioned. The biggest barrier concerning risk management is the lack of public risk management capacity. This points both towards the lack of personal and the lack of knowledgeable personal. Mostly leading to delayed projects. A second barrier for risk management is the absence of guidelines that can guide developers in how to implement public climate change adaptation strategies.

Thirdly, for political certainty also a barrier came up. This is the fact that there is no level playing field between and within municipalities, meaning that there are many different rules and policies. Because of that, developers are struggling to make generic policy.

Lastly, the 'new' variable of chain integration can also be seen as a barrier. Developers argue that they do not always notice the same commitment from other chain parties. This leads to a situation where they do not have the feeling that they are working together towards a goal, while they have the feeling that working together will lead to the best result.

3. *"What kind of climate change adaptation programs are private developers willing to contribute to?"*

In the literature, a deviation is made between NDOs and N-NDOs to determine to what kind of climate change adaptation programs private developers are willing to contribute. However, when questioning this in the interviews, this turns out not to be completely true. Some developers do say this can be a starting point in their consideration, however, they mostly argue that it is always an integral consideration. When there are more benefits, more costs (meaning contributions) can be made. And when less contributions have to be made to off-site climate change adaptation, more on-site climate change adaptation contributions can be done.

So, it is always an integral consideration, mostly between costs and benefits. This is their biggest motive. Nevertheless, developers do have some preferences when it comes to what kind of programs their contributions are used for. Most developers prefer measures as close to their product development as possible. This means that first measures are taken to make the house and plan area

climate adaptive. When contributions are used for programs outside their plan area, developers have to be convinced of the value it will add. So, the criteria of benefit, causality, and proportionality are definitely taken into consideration by private developers. When those criteria do not apply developers can sometimes be convinced to contribute when there is a clear link between the contribution and their company goals, if the developer thinks the investments are the 'right' investments to reach a goal, and if the developer gets something in return.

'Under what conditions are developers willing to financially contribute to climate adaptive measures in private land developments within the Netherlands through private law agreements?'

Derived from the answers to the three sub-questions, an answer is found to the main research question. Firstly, four variables are identified that are important for developers. As developers are intrinsically already aware and motivated to make their plans resilient to climate change, not all factors need to be perfectly fulfilled, however, the better they are fulfilled, the more developers are willing to contribute. Developers value a prospect for return, good risk management, some political certainty, and the integration of chain partners throughout the process. Additional to this, barriers that influence those factors, as mentioned in this chapter when answering the second sub-question, should be removed. Most importantly, contributions to climate change adaptation should be realistic and always be an integral consideration. Here, the criteria of benefit, causality, and proportionality are very important. However, when convinced that an investment is the 'right' investment, developers are sometimes willing to set these principles aside.

5.2 Further development of theory

As mentioned in the scientific relevance of this study, research on LVC is limitedly focused on climate change adaptation (Dunning & Lord, 2020). Hence, possibilities to use DOs as a financing tool for climate change adaptation should be explored (Root, 2016; Root et al., 2016). Moreover, it should be explained why barriers for contributing to climate change adaptation emerge and when developers are willing to contribute (Hürlimann et al., 2022). Based on those comments, this research explored the circumstances under which private developers are willing to financially contribute to climate change adaptation.

The results of this study confirm some theories as discussed in chapter 2, but also reject some theories. The three factors, as described by Koppenjan and Enserink (2009), are confirmed. Besides those three, a fourth factor is added: chain integration. Therefore, this variable is added to the framework. Yet, not all indicators/ factors were indicated as relevant. Those factors are the spatial coverage of the contract, the use of risk management tools, and a clear division of responsibilities (Koppenjan & Enserink, 2009; Chang, Menon & Imura, 2003; Johnstone & Wood, 2001). Hence, those three indicators/ factors are removed from the conceptual framework and the fourth variable chain integration is added to the framework. This can be seen in figure 4.

The new conceptual model as shown in figure 4 visualizes the theory that follows from this research, which are the driving forces behind a developer's willingness to contribute to climate change adaptation. So, this study enhances on the several studies mentioned above.

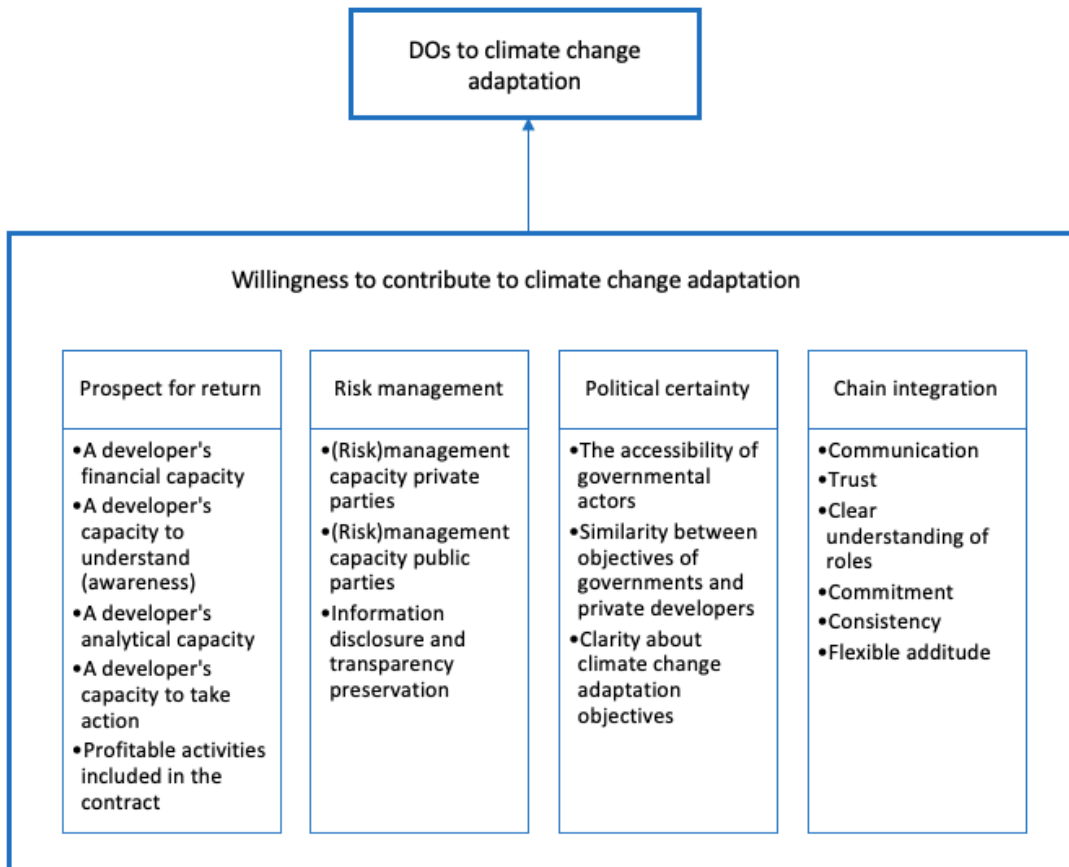


Figure 4: Conceptual model after alterations (own work).

5.3 Reflection on limits of the research

In this paragraph, the limits of the research are discussed. This entails discussing details about the research process that influenced the research results.

- In this research, developers are differentiated on their size and the type of developer they are (building developer vs. single developer). It was already mentioned and substantiated that there is no relationship found between a developer's size and a developer's willingness to contribute. However, when looking at the type of developer, no conclusions can be drawn. This is because there was a focus on differentiating developers on size, which led to the situation where the sample is out of balance when it comes to the type of developer. Eight interviews were held with constructing developers and only two interviews were held with companies that solely develop. Therefore, it is hard to say something about the difference between them. More research is needed to say if this distinguishment has any effect on their DOs to climate change adaptation.
- During the interviews, a new variable arose, which is chain integration. This variable is, after some literature research, taken up in the newly created theoretical model. However, this does not fit in the deductive research approach chosen for this research, but more looks like an inductive approach. However, because the interviewer was not prepared to talk about the topic, no indicators or specific questions were prepared. Besides that, there was already a shortcoming in time in most interviews. This led to the situation where only limited time was

available to explore the topic and limited depth was created in the conversation about chain integration. It would therefore increase the validity of the research when additional field research was done after the literature research on chain integration. There would then be more of an abductive approach. However, due to deadlines and short time available, this could not be taken up in the scope of this research.

- To increase the validity and reliability of the research, triangulation was used. This was done by using internal documents as a third research source. When searching and asking, it became clear that many developers do not have specific policies for when or when not to contribute to climate change adaptation. Contrary, many developers did have some other sort of policy on climate change adaptation. So, it can be said that using policy documents for triangulation might not be the best fit. However, the absence of a very concrete policy does fit the research conclusion that the decision to contribute or not is always an integral consideration and very much dependent on the situation, which means there is no standard policy that applies in all situations. To improve the research, quantitative data could be a new type of source to add to the research for triangulation. To do that, a way should be found to measure contributions to climate change adaptation in private law agreements.
- To select interviewees, it was aimed to use quota sampling. However, when reaching out to private developers selected via quota sampling, it became clear that without a contact person within the organization, no (positive) responses were given to the quest for an interview. Because of that, another non-probability sampling method was used that is helpful when sample members are hard to reach: snowball sampling. This is a “type of non-probability sampling in which, after the first sample member, subsequent members are identified and volunteered by earlier sample members” (Saunders & Lewis, 2018). A risk of snowball sampling is that the interviewees are likely to volunteer others who are similar to them. To avoid this, a list was made with the private developers already spoken to and interviewees were asked for contact persons in organizations that were underrepresented in the list so far. So, after interviewing some larger developers, they were asked if they could give contact information of employees at smaller development companies.
- In the method, it is described that it was aimed to interview multiple people from one company to increase the reliability of the research. However, because it was already hard to reach one participant within a company, it was mostly not possible to speak to multiple people. To still increase the reliability, it was emphasized in the interview questions that the viewpoint of the entire company was asked and not just their personal opinion.

5.4 Recommendations

In the introduction of this research, it was stated that urban financial models are underdeveloped to account for public climate change adaptation programs and thus alternative funding is needed. Proposed is the use of LVC and DOs. But, due to the weak negotiation position of Dutch municipalities in private law agreement negotiations, the willingness of developers to contribute to climate change adaptation is needed. In this research, the conditions under which developers are willing to contribute to climate change adaptation was investigated. Based on those results, some recommendations can be given on how this willingness can be increased, leading to more DOs to climate change adaptation and to less financing problems for public climate change adaptation programs.

- By setting price sealing, municipalities aim to ensure more affordable housing. So, the first-house buyer can buy the house for an affordable price. To establish this, developers often have to decrease their percentage of return. However, when the first homeowner sells the house, this price sealing does not apply anymore and therefore they can sell the house for the 'normal' market price. This means that the additional value will flow away to that first house buyer and the house will from then on be on the market for 'normal' prices. Municipalities are advised to take this in consideration and determine who they want the additional value to flow away to: the developer or that one consumer.
- Because consumers are not always aware or interested in the risks and measures are taken for climate change adaptation, they often do not value climate adaptiveness in the house price. This leads to a situation where developers have less opportunities to recover costs. To increase awareness and interest, programs should be developed on the topics of climate change risks and more information should be disclosed towards consumers what measures are taken to make the area adaptive to those risks. Besides programs, consumers could also be made aware by the use of climate labels for buildings, like it is done with energy labels.
- A very important barrier mentioned in the research is the stacking of ambitions. Stacking of ambitions makes it impossible for developers to live up to all ambitions, which leads to a situation where there might be no financial room to include climate change adaptation in development plans. To avoid this, it is advised that priorities are set on climate change adaptation and it is clear for developers that they should focus their development plans on that.
- To deal with high land prices and rising building costs, developers need room to use cheap and easy measures, for example measures they are already experienced with. To give developers the freedom to do this, it is advised that municipalities do not impose certain measures, but they give goals. Then, the developer can come up with the measures to achieve those goals.
- To decrease the risk perception of developers, it is advised to give more transparent information on how to deal with climate change adaptation programs. This can be done by increasing the visibility of government actors that can answer questions and by creating a platform which is available to all parties included in the process. On this platform, information can be shared about technical possibilities and innovations in the field of climate change adaptation. That way, developers and governments can learn together, creating a level playing field.
- It is also recommended to create a level playing field when it comes to municipal rules and guidelines. By giving clarity about this, developers know what they can expect and can make generic policy for that, speeding up the process.
- Lastly, developers experienced that by working together with other chain actors, more can be achieved. It is therefore recommended that more efforts should be made to include all chain actors. This means that all actors work together towards the goal of climate change adaptive neighbourhoods, achieving more than all parties working separately.

Besides recommendations for praxis, also some recommendations can be done for further research.

- As mentioned in the previous paragraph, it was not possible to conclude whether the type of developer (building developer or single developer) has any influence on their DOs to climate change adaptation. To make it possible to draw conclusions on that, further research should

be done with a sample that has a good balance between building developers and single developers.

- Also mentioned as a limitation of the research is the extent to which the fourth variable, chain integration, is researched. Additional field research should be done to increase the validity of including chain integration in the revised conceptual framework. To do this, additional research should be done into the relation between chain integration and DOs to climate chain integration.
- A third recommendation for further research goes into the limitations of data triangulation. As the triangulation by internal documents, as mentioned in the previous paragraph, was limited due to the fact that some companies did not have policy documents for climate change adaptation, quantitative research could possibly enrich the research validity and reliability. Hence, quantitative research should be done to measure DOs to climate change adaptation in a quantitative way.

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Appendix 1 - Overview of relevant law articles

Article 6.12 of the Spatial Planning Law

1. De gemeenteraad stelt een exploitatieplan vast voor gronden waarop een bij algemene maatregel van bestuur aangewezen bouwplan is voorgenomen.
2. In afwijking van het eerste lid kan de gemeenteraad bij een besluit tot vaststelling van een bestemmingsplan, een wijziging als bedoeld in **artikel 3.6, eerste lid**, of naar aanleiding van een omgevingsvergunning waarbij met toepassing van **artikel 2.12, eerste lid, onder a, onder 2° of 3°, van de Wet algemene bepalingen omgevingsrecht** van het bestemmingsplan of de beheersverordening wordt afgeweken besluiten geen exploitatieplan vast te stellen, in bij algemene maatregel van bestuur aangegeven gevallen of indien:
 - a. het verhaal van kosten van de grondexploitatie over de in het plan of de vergunning begrepen gronden anderszins verzekerd is;
 - b. het bepalen van een tijdvak of fasering als bedoeld in **artikel 6.13, eerste lid, onder c, 4°, onderscheidenlijk 5°**, niet noodzakelijk is, en
 - c. het stellen van eisen, regels, of een uitwerking van regels als bedoeld in **artikel 6.13, tweede lid, onderscheidenlijk b, c of d**, niet noodzakelijk is.
3. Met betrekking tot een omgevingsvergunning als bedoeld in het tweede lid alsmede bij een besluit tot vaststelling van een bestemmingsplan als bedoeld in **artikel 3.6, eerste lid, onder a**, kan de gemeenteraad de bevoegdheden, bedoeld in het eerste en tweede lid, delegeren aan burgemeester en wethouders.
4. Een exploitatieplan wordt gelijktijdig bekendgemaakt met het bestemmingsplan of de wijziging, bedoeld in **artikel 3.6, eerste lid**, waarop het betrekking heeft. Een beslissing omtrent een exploitatieplan die betrekking heeft op een omgevingsvergunning wordt tegelijk met die vergunning bekendgemaakt.
5. De gemeenteraad kan in samenwerking met de raden van aangrenzende gemeenten een intergemeentelijk exploitatieplan vaststellen. Burgemeester en wethouders van deze gemeenten leggen het vastgestelde plan gelijktijdig ter inzage. In afwijking van **artikel 3.8, derde lid**, vangt de in dat lid genoemde termijn aan na vaststelling van het exploitatieplan door alle betrokken gemeenteraden.

Article 6.13 of the Spatial Planning Law

1. Een exploitatieplan bevat:
 - a. een kaart van het exploitatiegebied;
 - b. een omschrijving van de werken en werkzaamheden voor het bouwrijp maken van het exploitatiegebied, de aanleg van nutsvoorzieningen, en het inrichten van de openbare ruimte in het exploitatiegebied;
 - c. een exploitatieopzet, bestaande uit:
 - 1°. voor zover nodig een raming van de inbrengwaarden van de gronden, welke inbrengwaarden voor de toepassing van deze afdeling worden beschouwd als kosten in verband met de exploitatie van die gronden;
 - 2°. een raming van de andere kosten in verband met de exploitatie, waaronder een raming van de schade die op grond van [artikel 6.1](#) voor vergoeding in aanmerking zou komen;
 - 3°. een raming van de opbrengsten van de exploitatie, alsmede de peildatum van de onder 1° tot en met 3° bedoelde ramingen;
 - 4°. een tijdvak waarbinnen de exploitatie van de gronden zal plaatsvinden;
 - 5°. voor zover nodig een fasering van de uitvoering van werken, werkzaamheden, maatregelen en bouwplannen, en zo nodig koppelingen hiertussen;
 - 6°. de wijze van toerekening van de te verhalen kosten aan de uit te geven gronden.
2. Een exploitatieplan kan bevatten:
 - a. een kaart waarop het voorgenomen grondgebruik is aangegeven en de gronden welke de gemeente beoogt te verwerven;
 - b. eisen voor de werken en werkzaamheden voor het bouwrijp maken van het exploitatiegebied, de aanleg van nutsvoorzieningen, en het inrichten van de openbare ruimte in het exploitatiegebied;
 - c. regels omtrent het uitvoeren van de onder b bedoelde werken en werkzaamheden;
 - d. een uitwerking van de in [artikel 3.1, eerste lid](#), en [artikel 2.22, zesde lid, van de Wet algemene bepalingen omgevingsrecht](#) bedoelde regels met betrekking tot de uitvoerbaarheid;
 - e. regels met inachtneming waarvan bij een omgevingsvergunning kan worden afgeweken van bij het exploitatieplan aan te geven regels.
3. Voor gronden, waarvoor nog een uitwerking als bedoeld in [artikel 3.6, eerste lid, onder b](#), moet worden vastgesteld, of waarvoor ingevolge de fasering geen omgevingsvergunning als bedoeld in [artikel 6.17, eerste lid](#), kan worden verleend, kunnen de onderdelen van een exploitatieplan, bedoeld in het eerste en tweede lid, een globale inhoud hebben.
4. Voor de berekening van de kosten en opbrengsten wordt ervan uitgegaan dat het exploitatiegebied in zijn geheel in exploitatie zal worden gebracht.
5. Indien geen sprake is van onteigening wordt de inbrengwaarde van gronden vastgesteld met overeenkomstige toepassing van de [artikelen 40b tot en met 40f van de onteigeningswet](#). Voor gronden welke onteigend zijn of waarvoor een onteigeningsbesluit is genomen, of welke op onteigeningsbasis zijn of worden verworven, is de inbrengwaarde gelijk aan de schadeloosstelling ingevolge de onteigeningswet.
6. Kosten in verband met werken, werkzaamheden en maatregelen waarvan het exploitatiegebied of een gedeelte daarvan profijt heeft, en welke toerekenbaar zijn aan het exploitatieplan worden naar evenredigheid opgenomen in de exploitatieopzet.
7. Bovenplanse kosten kunnen voor meerdere locaties of gedeeltes daarvan in de exploitatieopzet worden opgenomen in de vorm van een fondsbijdrage, indien er voor deze locaties of gedeeltes daarvan een structuurvisie is vastgesteld welke aanwijzingen geeft over de bestedingen die ten laste van het fonds kunnen komen.
8. Bij of krachtens algemene maatregel van bestuur worden nadere regels gesteld over de exploitatieopzet en de daarin op te nemen opbrengsten, en de verhaalbare kostensoorten.
9. Bij of krachtens algemene maatregel van bestuur kunnen regels worden gesteld omtrent de beschikbaarstelling van het exploitatieplan en nadere regels worden gesteld over:
 - a. de kaarten, eisen en regels, bedoeld in het eerste en tweede lid;
 - b. de manier van opstellen en de berekeningsmethode van de exploitatieopzet, en
 - c. kosten, welke deel uitmaken van de exploitatieopzet.
10. De voordracht voor een krachtens het achtste lid vast te stellen algemene maatregel van bestuur wordt niet gedaan dan nadat het ontwerp is overgelegd aan beide kamers der Staten-Generaal, in de Staatscourant en langs elektronische weg is bekendgemaakt en aan een ieder de gelegenheid is geboden om binnen een bij die bekendmaking te stellen termijn van ten minste vier weken schriftelijk opmerkingen over het ontwerp ter kennis van Onze Minister te brengen.

Article 6.2.3 and 6.2.5 of the Spatial Planning Decree

Artikel 6.2.3

Tot de kosten, bedoeld in artikel 6.13, eerste lid, onder c, ten eerste, van de wet, worden, voor zover deze redelijkerwijs zijn toe te rekenen aan de inbrengwaarde van de gronden, gerekend de ramingen van:

- a. de **waarde van de gronden** in het exploitatiegebied;
- b. de **waarde van de opstallen** die in verband met de exploitatie van de gronden moeten worden gesloopt;
- c. de **kosten van het vrijmaken van de gronden** in het exploitatiegebied van persoonlijke rechten en lasten, eigendom, bezit of beperkt recht en zakelijke lasten;
- d. de **kosten van sloop, verwijdering en verplaatsing** van opstallen, obstakels, funderingen, kabels en leidingen in het exploitatiegebied.

Artikel 6.2.4

Tot de kosten, bedoeld in artikel 6.13, eerste lid, onder c, ten tweede, van de wet, worden gerekend de ramingen van:

- a. de kosten van het **verrichten van onderzoek**, waaronder in ieder geval begrepen grondmechanisch en milieukundig bodemonderzoek, akoestisch onderzoek, ander milieukundig onderzoek, archeologisch en cultuurhistorisch onderzoek;
- b. de kosten van **bodemsanering, het dempen van oppervlaktewateren, het verrichten van grondwerken, met inbegrip van het egaliseren, ophogen en afgraven**;
- c. de kosten van de **aanleg van voorzieningen** in een exploitatiegebied;
- d. de kosten van **maatregelen, plannen, besluiten en rechtshandelingen** met betrekking tot gronden, opstallen, activiteiten en rechten in het exploitatiegebied, waaronder mede begrepen het beperken van milieuhygiënische contouren en externe veiligheidscontouren;
- e. de in artikel 6.2.3 en de onder a tot en met d en g tot en met n bedoelde **kosten met betrekking tot gronden buiten het exploitatiegebied, waaronder** mede begrepen de kosten van de noodzakelijke **compensatie** van in het exploitatiegebied verloren gegane natuurwaarden, groenvoorzieningen en watervoorzieningen;
- f. de in artikel 6.2.3 en de onder a tot en met d bedoelde kosten, voor zover deze **noodzakelijk** zijn in verband met **het in exploitatie brengen van gronden die in de naaste toekomst voor bebouwing in aanmerking komen**;
- g. de kosten van **voorbereiding en toezicht op de uitvoering**, verband houdende met de aanleg van de voorzieningen en werken, bedoeld onder a tot en met f, en in artikel 6.2.3, onder c en d;
- h. de kosten van **het opstellen van gemeentelijke ruimtelijke plannen** ten behoeve van het exploitatiegebied;

- i. de kosten van het **opzetten en begeleiden van gemeentelijke ontwerpcompetities en prijsvragen** voor het stedenbouwkundig ontwerp van de locatie, en de kosten van vergoedingen voor deelname aan de prijsvraag;
- j. de kosten van andere door **het gemeentelijk apparaat** of in opdracht van de gemeente te verrichten werkzaamheden, voor zover deze werkzaamheden rechtstreeks verband houden met de in dit besluit bedoelde voorzieningen, werken, maatregelen en werkzaamheden;
- k. de kosten van **tijdelijk beheer van de door of vanwege de gemeente verworven gronden**, verminderd met de uit het tijdelijk beheer te verwachten opbrengsten;
- l. de kosten van **tegemoetkoming van schade**, bedoeld in artikel 6.1 van de wet;
- m. niet-terugvorderbare **BTW**, niet-gecompenseerde compensabele BTW, of andere niet-terugvorderbare belastingen, over de kostenelementen, genoemd onder a tot en met l;
- n. **rente** van geïnvesteerde kapitalen en overige lasten, verminderd met renteopbrengsten.

Artikel 6.2.5

Tot de voorzieningen, bedoeld in artikel 6.2.4, onder c, worden gerekend:

- a. *nutsvoorzieningen met bijbehorende werken en bouwwerken, voor zover de aanlegkosten bij of door de gemeente in rekening worden gebracht en niet via de gebruikstarieven kunnen worden gedekt;*
- b. *riolering met inbegrip van bijbehorende werken en bouwwerken;*
- c. *wegen, ongebouwde openbare parkeergelegenheden, pleinen, trottoirs, voet- en rijwielpaden, waterpartijen, watergangen, voorzieningen ten behoeve van de waterhuishouding, bruggen, tunnels, duikers, kades, steigers, en andere rechtstreeks met de aanleg van deze voorzieningen verband houdende werken en bouwwerken;*
- d. *infrastructuur voor openbaar vervoervoorzieningen met bijbehorende werken en bouwwerken, voor zover de aanlegkosten bij of door de gemeente in rekening worden gebracht en niet via de gebruikstarieven kunnen worden gedekt;*
- e. *groenvoorzieningen, waaronder begrepen openbare parken, plantsoenen, speelplaatsen, trapvelden en speelweiden, natuurvoorzieningen en openbare niet-commerciële sportvoorzieningen;*
- f. *openbare verlichting en brandkranen met aansluitingen;*
- g. *straatmeubilair, speeltoestellen, sierende elementen, kunstobjecten en afrasteringen in de openbare ruimte;*
- h. *gebouwde parkeervoorzieningen, voor zover deze leiden tot optimalisering van het grondgebruik en verbetering van de kwaliteit van de openbare ruimte, openbaar toegankelijk zijn en voornamelijk worden gebruikt door bewoners en gebruikers van het exploitatiegebied, voor zover de aanlegkosten bij of door de gemeente in rekening worden gebracht en niet via de gebruikstarieven kunnen worden gedekt;*
- i. *uit een oogpunt van milieuhygiëne, archeologie of volksgezondheid noodzakelijke voorzieningen.*

Appendix 2 - Operationalization scheme

Concept	Variable	Sub variable	Indicator	Literature
Willingness to pay	Prospect for return	Capacity to contribute/capacity to invest	<ol style="list-style-type: none"> 1. A developer's financial capacity 2. A developer's capacity to understand (awareness). 3. A developer's analytical capacity 4. A developer's capacity to take action 	(Koppenjan & Enserink, 2009); (Moser & Luers, 2007); (Hürlimann et al., 2022)
		Decisions regarding the scope of the contract	<ol style="list-style-type: none"> 1. Profitable activities included in the agreement 2. The spatial coverage of the contract 	(Koppenjan & Enserink, 2009)
	Risk Management	Risk management tools	<ol style="list-style-type: none"> 1. Subsidies in order to realize full cost recovery 2. Financial guarantees with regard to operation and currency risks 3. Granting tax exemptions 4. Providing soft loans 5. Formulating supportive regulations that give the private provider a local monopoly 	(Chang, Menon & Imura, 2003); (Koppenjan & Enserink, 2009)

		(Risk)management capacity	<ol style="list-style-type: none"> 1. (Risk)management capacity of private parties 2. (Risk)management capacity of public parties 	(Chang, Menon & Imura, 2003); (Akintoye, MacLeod, 1997)
		Security	<ol style="list-style-type: none"> 1. Information disclosure and transparency preservation 	(Chang, Menon & Imura, 2003)
	Political certainty	Relationship between private developer and public bodies	<ol style="list-style-type: none"> 1. The accessibility of governmental regulators 2. Similarities between objectives of governments and private developers 	(Johnstone & Wood, 2001)
		Institutional framework	<ol style="list-style-type: none"> 1. Clarity about climate change adaptation objectives 2. Clear division of responsibilities 	(Chang, Menon, & Imura, 2003); (Mao et al., 2005); (Van Dijk, 2005); (Koppenjan & Enserink, 2009); (Johnstone & Wood, 2001)

Table 7: Operationalisation of the concept 'willingness to pay'.

Concept	Variable	Sub variable	Indicator	Literature
DOs to climate change adaptation	DOs that could be covered through N-NDOs (exploitatieplan)		<ol style="list-style-type: none"> 1. On-site public infrastructure that belongs to the type of costs that have been specified in the law (Dutch: kostensoortenlijst) 2. Off-site infrastructural provision that benefit multiple areas (Dutch: bovenwijkse voorzieningen), with criteria: benefit, causality, and proportionality) 3. Off-site cost equalisation (Dutch: bovenwijkse kosten/ verevening), with criteria: benefit, causality, and proportionality 	(Hendricks et al., 2021)

	DOs that could not be covered through N-NDOs		<ol style="list-style-type: none"> 1. 'Voluntary' contributions to spatial developments (Dutch: bijdragen ruimtelijke ontwikkeling) 2. Off-site infrastructural provision that benefit multiple areas, without criteria: benefit, causality, and proportionality) 3. Off-site cost equalisation, without criteria: benefit, causality, and proportionality 	(Hendricks et al., 2021)
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Table 8: Operationalisation of the concept 'DOs to climate change adaptation.

Appendix 3 – interview guide

ENGLISH

Data and time:
Location:
Interviewer:
Interviewee:

Introduction

Introduction of myself and the research

Hello, and thank you for being here and participating in this interview.

Firstly, I will shortly introduce myself. My name is Fenne Laarakkers. I am a master's student in Spatial Planning, with a specialization in Planning, Land and Real Estate Development at the Radboud University in Nijmegen.

This interview is a contribution to the research I am conducting for my master's thesis. The goal of this research is to contribute to the knowledge of how land value capture can be used as a financing tool for climate adaptation. More specifically, the research investigates the land value capture method of developer obligations (DOs). Because, generally, more costs can be recovered using private law agreements (Dutch: *anterieure overeenkomst*), this type of agreement is preferred over a development contribution plan (Dutch: *exploitatieplan*). However, because there is no legal foundation for municipalities to make DOs to climate adaptation through a private law agreement conditional to building permits, the willingness of developers to financially contribute is needed. Therefore, the research (and this interview) investigates the circumstances under which developers are willing to financially contribute to climate adaptation using DOs in private law agreements. The central question in the research is: *“Under what conditions are developers willing to financially contribute to climate adaptive measures in private land developments within the Netherlands through private law agreements?”*

Aim of the interview

This interview is one in a series of interviews with developers. With these interviews I hope to get insight into whether developers are willing to contribute to climate adaptation and under what conditions. The interview questions are based on literature research conducted beforehand for this interview. Together, the interviews account for the data needed from field research.

Time needed

The interview will take approximately 45 minutes. Is that okay for you?

Recording the interview

I would like to record the interview. This would help with processing the results. I could listen to your answer again to make sure I get the right conclusions. This recording is confidential which means only my professor and I will listen to it. Are you okay with recording the interview?

Asking confirmation

Know that, if you have any questions or want to stop the interview you can intervene me at any moment. Is everything clear for you and shall we start the interview?

1. Introducing questions

- a) Can you introduce yourself?
E.g., where do you work and what is your position?

- b) In what kind of projects are you involved?
E.g., out of own land ownership vs. public land ownership?
E.g., public vs. private law agreements for privately owned land development?
- c) What are your companies main goals with developing private land?

2. Willingness to pay

As mentioned before, the interview questions are based on a theoretical framework (show framework). As you can see, the determining variable is the concept 'willingness to pay'. This concept exists out of multiple variables, and I would like to discuss those with you and ask for your opinion.

Prospect for return on investment

- ◇ Capacity to contribute/ capacity to invest
 - a) Are your projects typically exposed to climate change risks? If yes, to what risks?
 - b) Is climate change adaptation part of the goals of the company?
 - c) How does climate change (adaptation) affect your current and future plans?
 - d) Does (in your professional opinion) investments in climate adaptation programs contribute to creating positive cashflows? / How does investments in climate adaptation programs affect your goals?
 - e) What are the main barriers that withhold you from taking action (contributing) to climate change adaptation? (funding/costs, knowledge, time frames)
 - f) To what extent is your organization financially capable to contribute to climate adaptation?
 - g) How does this capacity to contribute (formed by the questions asked in this section) affect your contributions to climate adaptation in private law agreements?
- ◇ Decisions regarding the scope of the contract
 - a) What profitable activities can be included in the private agreement to increase profits?
 - b) Are you willing to contribute to unprofitable projects if you can compensate for this with profitable projects? (E.g., a combination of social housing and luxurious housing)
 - c) How does the scope of the contract (formed by the questions asked in this section) influence your decision to contribute to climate change adaptation in private law agreements?
- ◇ General
 - a) Are there things we haven't discussed that contribute to creating prospects for return?

Risk management

- ◇ Use of risk management tools
 - a) Are risk management tools frequently used?
 - a. Subsidies to realize full cost recovery
 - b. Financial guarantees about operation and currency risks
 - c. Tax exemptions
 - d. Providing soft loans
 - e. Formulating supportive regulations that give the private provider a local monopoly
 - f. Other tools?
 - b) How does the use of risk management tools affect your contributions to climate adaptation in private law agreements?
- ◇ (Risk)management capacity

- a) Does your company have enough management capacity to support climate adaptation programs?
 - b) Do you feel like public parties have enough management capacity to support private developers in climate adaptation programs?
 - c) How does (risk)management capacity affect your contributions to climate adaptation in private law agreements?
- ◇ Security (information disclosure and transparency preservation)
 - a) Do you feel like enough information is disclosed and there is transparency to lead a successful climate adaptation program?
 - b) How does this affect your contributions to climate adaptation programs?
 - ◇ General
 - a) Are there things we haven't discussed that contribute to risk management?

Political certainty

- ◇ Relationship between developers and public bodies
 - a) Are public regulators accessible? How does the relationship with regulators influence the feeling of political certainty?
 - b) Do you see similarities between public and private objectives regarding development projects?
 - c) How does the relationship between developer and public bodies affect your contributions to climate adaptation programs?
- ◇ Institutional framework
 - a) Do you think public parties give clarity about climate adaptation objectives when negotiating a private agreement?
 - b) Do you think there is clarity about responsibilities in private agreements?
 - c) Do you feel more political certainty when the institutional framework is clear?
 - d) How does a clear institutional framework contribute to climate adaptation programs?
- ◇ General
 - b) Are there things we haven't discussed that contribute to creating political certainty?

Overall

We have discussed three variables that determine a developers' 'willingness to pay': prospect for return, risk management, and political certainty.

- a) Do you have any other variables or other things to add to what we have discussed so far about a developers' willingness to pay?
- b) How important do you think the three variables are compared to one another? Is it possible to rank them from most of least important?

3. Developer obligations to climate adaptation

The independent variable in the framework is the concept 'developer obligations to climate adaptation'. So, the willingness to pay determines the eventual developer obligations to climate adaptation (the outcome). In the literature, a deviation can be made between N-NDOs (developer obligations that can be enforced via a development contribution plan) and NDO (developer obligations that cannot be enforced via a development contribution plan). I would like to discuss both types of NDOs with you.

DOs that could be covered through N-NDOs (development contribution plan)

- a) Are you willing to contribute to climate-adaptive on-site public infrastructure that belongs to the type of costs that have been specified in the law and why?
- b) Are you willing to contribute to climate-adaptive infrastructural provision that benefits multiple areas, when benefit, causality, and proportionality (PPP) are accounted for?
- c) Are you willing to contribute to climate adaptive off-site cost equalization, when benefit, causality, and proportionality (PPP) are accounted for?
- d) If mentioned that you are not willing to contribute to those costs, are there any of the factors as discussed for 'willingness to pay' that can be changed to make you willing to contribute to those costs?

DOs that could not be covered through N-NDOs

- a) Are you willing to contribute to climate adaptive spatial developments?
- b) Are you willing to contribute to climate adaptive off-site infrastructural provision that benefit multiple areas, without the criteria of benefit, causality, and proportionality?
- c) Are you willing to contribute to climate adaptive off-site cost equalization, without the criteria of benefit, causality, and proportionality?
- d) If mentioned that you are not willing to contribute to those costs, are there any of the factors as discussed for 'willingness to pay' that can be changed to make you willing to contribute to those costs?

Overall

- a) Is how I here differentiate between NDOs and N-NDOs useful or do you have another suggestion to differentiate between DOs?

5. Closure

Thank for contribution

From my side, all questions are answered. I would like to thank you for your participation. This really helps me further with the research. Are there any other matters that could possibly be useful for the research, but which we have not discussed?

What happens to the results

As I mentioned the recording won't be made public. Only my supervisors and I will have access to it. I will transcribe and analyse the interview into a summary. If you would like, I could send this to you so you can confirm it is correct?

Contact for possible further questions

If I have any remaining questions or maybe think of additional questions later, can I contact you again?

Last thoughts

Do you maybe have remaining questions or things you would like to say?
Then I will stop the recording. Thank you once again for your contribution.

***Ask for connections that might be interested in doing an interview*

DUTCH

Datum en tijd:
Locatie:
Interviewer:
Interviewee:

Introductie

Introductie van mezelf en het onderzoek

Hallo, fijn dat jullie hier zijn en mee willen werken aan dit interview.

Om mee te beginnen, zal ik mezelf even kort introduceren. Ik ben Fenne Laarakkers. Ik ben momenteel bezig met een master Spatial Planning aan de Radboud Universiteit, met een specialisatie in Land and Real estate Development.

Dit interview is een bijdrage aan het onderzoek dat ik verricht voor mijn master scriptie. Het doel van dit onderzoek is om bij te dragen aan de kennis over hoe 'land value capture'/ landwaardevastlegging kan worden gebruikt als financieringsinstrument voor klimaatadaptatie. Meer specifiek wordt in dit onderzoek gekeken naar het landwaardevastleggingsinstrument van 'developer obligations' (Dos). Omdat er in het algemeen meer kosten kunnen worden verhaald door het gebruik van de anterieure overeenkomst, heeft dit type overeenkomst de voorkeur boven een exploitatieplan. Echter, omdat er geen wettelijke grondslag is voor gemeenten om DOs aan klimaatadaptatie middels een anterieure overeenkomst afhankelijk te stellen van bouwvergunningen, is de bereidheid van ontwikkelaars nodig om financieel bij te dragen. Daarom wordt in dit onderzoek (en dit interview) onderzocht onder welke voorwaarden ontwikkelaars bereid zijn om financieel bij te dragen aan klimaatadaptatie middels het gebruik van Dos in anterieure overeenkomsten. De centrale vraag in het onderzoek is: "Onder welke voorwaarden zijn ontwikkelaars bereid om via de anterieure overeenkomst financieel bij te dragen aan klimaat adaptieve maatregelen bij private grondexploitaties binnen Nederland?"

Doel van het interview

Dit interview is er één uit een reeks interviews met ontwikkelaars. Met deze interviews hoop ik inzicht te krijgen of ontwikkelaars willen bijdragen aan klimaatadaptatie en onder welke voorwaarden. De interviewvragen zijn gebaseerd op literatuuronderzoek dat vooraf is gedaan voor dit interview. Samen zijn de interviews verantwoordelijk voor de gegevens die nodig zijn uit het veldonderzoek.

Benodigde tijd

Het interview zal ongeveer 45 minuten duren. Is dat oke?

Het interview opnemen

Ik zou het interview graag opnemen. Dit zal mij helpen bij het verwerken van de resultaten. Ik zou dan nog eens naar uw antwoorden kunnen luisteren om te verzekeren dat ik de juiste conclusies trek. De opname blijft vertrouwelijk, alleen ik en mijn begeleider krijgen toegang tot de opname. Vindt u het oké als het interview wordt opgenomen?

Bevestiging vragen

Als er vragen zijn, mag het interview altijd onderbroken worden. Is alles duidelijk en zullen we beginnen?

Introducerende vragen

- a) Kunt u uzelf voorstellen?

- Bijv., waar werkt u en wat is uw functie?
- b) In wat voor projecten bent u zoal betrokken?
Bijv. eigen grondontwikkeling of tenders
- c) Wat zijn de voornaamste doelen voor uw bedrijf?

Bereidheid om te betalen

Zoals eerder vermeld, zijn de interviewvragen gebaseerd op een theoretisch kader (laat framework zien). Zoals je ziet is de bepalende variabele het begrip 'bereidheid om te betalen'. Dit concept bestaat uit meerdere variabelen en die wil ik graag met u bespreken en om uw mening vragen.

Perspectief voor rendement op investering

- ◇ Capaciteit om bij te dragen/ om te investeren
 - a) Worden uw projecten doorgaans blootgesteld aan risico's op het gebied van klimaatverandering? Zo ja, wat voor risico's?
 - b) Maakt klimaatadaptatie deel uit van de doelen van uw organisatie?
 - c) Welke invloed heeft klimaatverandering op uw huidige en toekomstige plannen?
 - d) Dragen (naar uw professionele mening) investeringen in klimaatadaptatie bij aan het creëren van positieve cashflows? / Hoe beïnvloeden investeringen in klimaatadaptatie uw doelen?
 - e) Wat zijn de belangrijkste barrières die u ervan weerhouden om actie te ondernemen op het gebied van klimaatadaptatie? (bijv. financiering/ kosten, kennis, termijnen)
 - f) In hoeverre is uw organisatie financieel in staat om bij te dragen aan klimaatadaptatie?
 - g) Hoe beïnvloedt uw capaciteit om bij te dragen (gevormd door de vragen als zojuist besproken) uw bijdragen aan klimaatadaptatie in anterieure overeenkomsten?

- ◇ Beslissingen over de reikwijdte van het contract
 - a) Welke winstgevendende activiteiten kunnen in anterieure overeenkomsten worden opgenomen om winst voor de ontwikkelaar te vergroten?
 - b) Ben je bereid om bij te dragen aan onrendabele projecten als je dit kunt compenseren met winstgevendende projecten? (Bijv. combinatie van sociale woningen en luxe woningbouw).
 - c) Hoe beïnvloedt de reikwijdte van het contract (gevormd door de vragen als zojuist besproken) uw beslissing om bij te dragen aan klimaatadaptatie in anterieure overeenkomsten?

- ◇ Algemeen
 - a) Zijn er dingen die we niet hebben besproken die bijdragen aan het creëren van perspectief voor rendement op investeringen?

Risicomanagement

- ◇ Gebruik van risicomanagement instrumenten
 - a) Worden risicomanagement instrumenten gebruikt (vanuit de overheid)?
 - Subsidies
 - Financiële garanties
 - Belastingvrijstelling
 - Verstrekking van goedkope leningen
 - Formuleren van ondersteunende regelgeving om een lokaal monopolie te creëren
 - Andere hulpmiddelen
 - b) Hoe beïnvloedt het gebruik van risicomanagementtools uw bijdrage aan klimaatadaptatie in anterieure overeenkomsten?

- ◇ (Risiko)management capaciteit
 - a) Heeft uw bedrijf voldoende managementcapaciteit om klimaatadaptatieprogramma's te ondersteunen?
 - b) Vindt u dat publieke partijen voldoende managementcapaciteit hebben om private ontwikkelaars te ondersteunen bij klimaatadaptatie?
 - c) Hoe beïnvloedt (risico)managementcapaciteit uw bijdrage aan klimaatadaptatie in anterieure overeenkomsten?
- ◇ Zekerheid (openbaarmaking informatie en transparantie)
 - a) Vindt u dat er voldoende informatie wordt vrijgegeven en dat er transparantie is vanuit de overheid om een succesvol klimaatadaptatieprogramma te leiden?
 - b) Welke invloed heeft dit op uw bijdrage aan klimaatadaptatie?
- ◇ Algemeen
 - a) Zijn er dingen die we niet hebben besproken die bijdrage aan risicomanagement?

Politieke zekerheid

- ◇ Relatie tussen ontwikkelaars en overheidsinstanties
 - a) Zijn publieke toezichthouders toegankelijk?
 - b) Zie je overeenkomsten tussen publieke en private doelstellingen met betrekking tot ontwikkelingsprojecten?
 - c) Welke invloed heeft de relatie tussen ontwikkelaars en publieke instanties op uw bijdrage aan klimaatadaptatieprogramma's?
- ◇ Institutioneel kader
 - a) Vindt u dat publieke partijen duidelijkheid geven over klimaatadaptatiedoelstellingen bij het onderhandelen van anterieure overeenkomsten?
 - b) Vindt u dat er duidelijkheid is over de verdeling van verantwoordelijkheden in anterieure overeenkomsten?
 - c) Als deze zaken duidelijk zijn, voelt u dan meer politieke zekerheid? Hoe draagt dit bij aan uw bijdrage aan klimaatadaptatie?
- ◇ Algemeen
 - a) Zijn er dingen die we niet hebben besproken die bijdragen aan het creëren van politieke zekerheid?

Algemeen

We hebben drie variabelen besproken die de 'bereidheid om te betalen' van een ontwikkelaar bepalen: vooruitzicht op rendement, risicomanagement en politieke zekerheid.

- a) Heeft u nog andere variabelen of andere dingen die u kunt toevoegen aan wat we tot nu toe hebben besproken over de bereidheid van een ontwikkelaar om bij te dragen?
- b) Hoe belangrijk vindt u de drie variabelen in verhouding met elkaar? Is het mogelijk om ze te rangschikken van de meest of minst belangrijke?

DOs aan klimaatadaptatie

De onafhankelijke variabele in het raamwerk is het begrip 'DO to climate adaptation'. De betalingsbereidheid bepaalt dus de uiteindelijke DOs van ontwikkelaars aan klimaatadaptatie (de uitkomst). In de literatuur kan een verschil worden gemaakt tussen N-NDO's (ontwikkelaarsverplichtingen die via het exploitatieplan kunnen worden afgedwongen) en NDO (ontwikkelaarsverplichtingen die niet via een exploitatieplan kunnen worden afgedwongen). Beide soorten NDO's wil ik graag met u bespreken.

DO's die verhaald kunnen worden met N-NDOs (via exploitatieplan)

- a) Bent u bereid bij te dragen aan klimaat adaptieve on-site infrastructuur die behoort tot de kostensoortenlijst als benoemd in de wet en waarom?
- b) Bent u bereid om bij te dragen aan klimaat adaptieve bovenwijkse voorzieningen die meerdere gebieden ten goede komt, waarbij de PTP-criteria van toepassing zijn? (profijt, toerekenbaarheid, proportionaliteit)
- c) Bent u bereid bij te dragen aan klimaat adaptieve off-site bovenwijkse kosten/verevening, waarbij de PPP-criteria van toepassing zijn?
- d) Indien u vermeldt dat u niet bereid bent om bij te dragen aan die kosten, zijn er dan een van de factoren zoals besproken voor 'bereidheid om te betalen' die kunnen worden gewijzigd om u bereid te maken om bij te dragen aan die kosten?

Dos die niet kunnen worden gedekt door N-NDOs (via exploitatieplan)

- a) Bent u bereid een bijdrage te leveren aan 'bijdrage ruimtelijke ontwikkeling'?
- b) Bent u bereid om bij te dragen aan klimaat adaptieve bovenwijkse voorzieningen die meerdere gebieden te goede komt, zonder de PPP-criteria?
- c) Bent u bereid bij te dragen aan klimaat adaptieve off-site bovenwijkse kosten/verevening, zonder de PPP-criteria?
- d) Indien u vermeldt dat u niet bereid bent om bij te dragen aan die kosten, zijn er dan een van de factoren zoals besproken voor 'bereidheid om te betalen' die kunnen worden gewijzigd om u bereid te maken om bij te dragen aan die kosten?

Algemeen

- b) Is de manier waarop hier wordt gedifferentieerd tussen NDOs en N-NDOs een juiste benadering of heeft u een andere suggestie?

Afsluiting

Bedanken voor bijdrage

Van mijn kant zijn alle vragen beantwoord. Ik wil je bedanken voor je deelname. Dit helpt mij en het onderzoek een stuk verder. Zijn er nog andere zaken die mogelijk nuttig kunnen zijn voor het onderzoek, maar die we niet hebben besproken?

Wat gebeurt er met de resultaten?

Zoals ik al zei, wordt de opname niet openbaar gemaakt. Alleen mijn begeleiders en ik hebben er toegang toe. Ik zal het interview transcriberen en analyseren tot een samenvatting. Als je wilt, zou ik dit naar je kunnen sturen, zodat je kunt bevestigen dat het correct is?

Contact voor eventuele verdere vragen

Als ik nog vragen heb of misschien later nog vragen heb, kan ik dan weer contact met je opnemen?

laatste gedachten

Heeft u misschien nog vragen of wilt u iets kwijt?

Dan stop ik de opname. Nogmaals bedankt voor je bijdrage.

****Vraag naar connecties die mogelijk geïnteresseerd zijn in een interview**

Appendix 4 – Cobouw ranking of private land developers

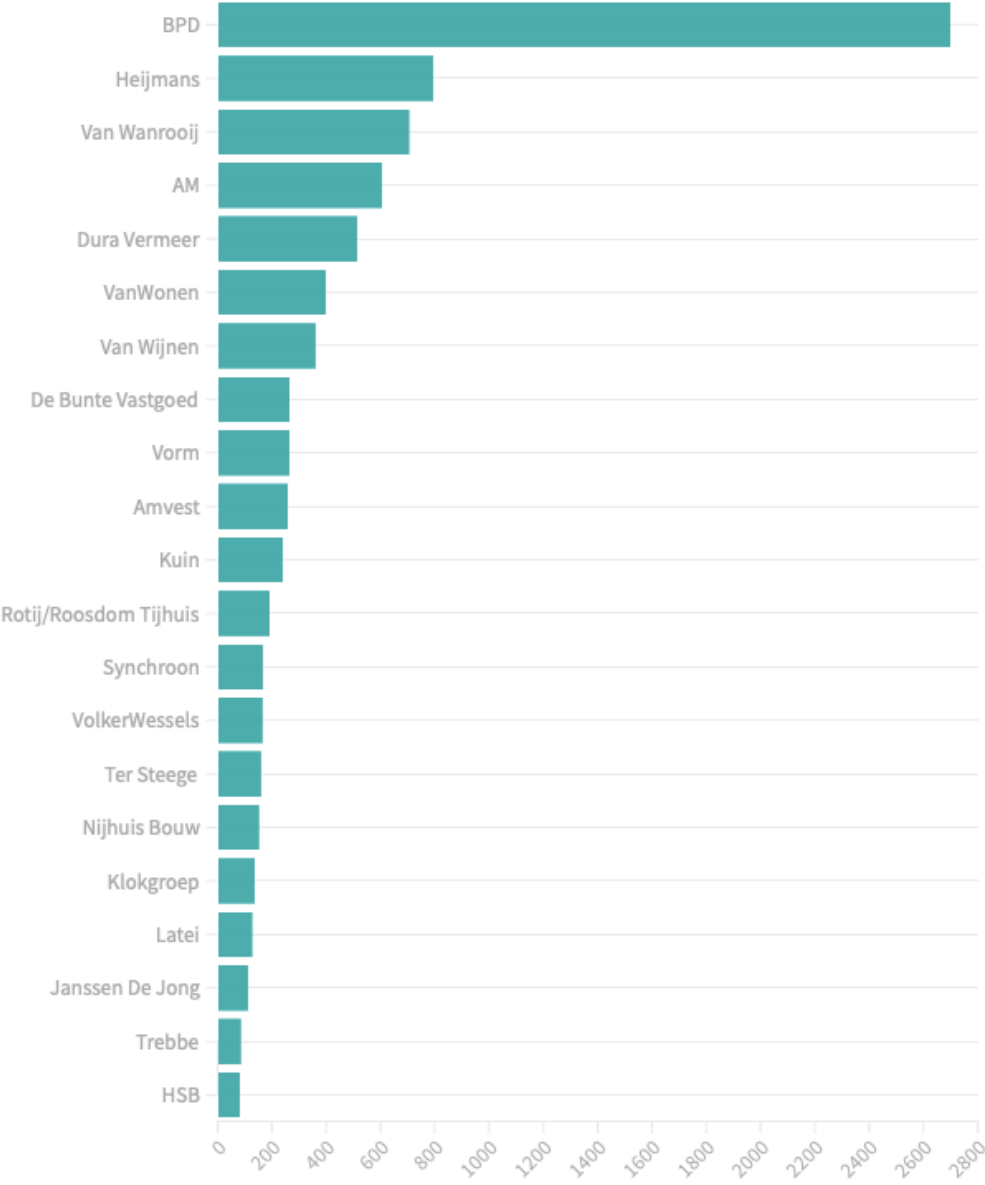


Figure 5: Cobouw ranking of private land developers (Cobouw, 2021).

Appendix 5 – Codebook

Prospect for return

- Financial capacity
- Capacity to understand (awareness)
- Analytical capacity
- Action
- Profitable activities
- Spatial coverage contract

Risk management

- Risk management tools
- Management capacity public
- Management capacity private
- Information disclosure and transparency

Political certainty

- Accessibility governmental regulators
- Similar objectives
- Clear objectives
- Clear division
- Government position

Developer obligations to climate change adaptation

- DOs that could be covered through NDO
- DOs that couldn't be covered through NDO
- Connection with development
- Connection with goals

Other

- Chain
- Connection
- Goals