LIZ ROOT

BENDING THE RULES UNTIL THEY BREAK

THE LIMITS AND OPPORTUNITIES OF MARKET-BASED FINANCING INSTRUMENTS FOR MUNICIPAL INVESTMENTS IN CLIMATE ADAPTATION
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THE LIMITS AND OPPORTUNITIES OF MARKET-BASED Financing
INSTRUMENTS FOR MUNICIPAL INVESTMENTS IN CLIMATE ADAPTATION

Proefschrift

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“Men [sic] in the plural, that is, men in so far as they live and move and act in this world can experience meaningfulness only because they can talk with and make sense to each other and to themselves”

Hannah Arendt - The Human Condition
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Research Problem and Objectives
1.0 Municipal Investments in Climate Adaptation

The scientific research is clear: we are not planning for climate change, we are planning in times of climate change (IPCC, 2014; Matthews, 2013). It is also clear that local governments are on the frontline of expected adverse impacts. The effects of extreme weather, which include impacts ranging from harder and more frequent rainfall, to prolonged periods of extreme heat and drought, will manifest in a range of challenges including economic disruption, health effects, and damage to public infrastructure (Bobylev, Hunt, Jefferson, & Rogers, 2013; Makropoulos & Butler, 2010; McCarney, Blanco, Carmin, & Colley, 2011; van Hooff & Blocken, 2010). Research broadly agrees that the effects will be experienced locally. While evidence mounts about the certainty of climate change and the need to adapt to climate change (IPCC, 2014), municipal governments are already struggling to operate and maintain deteriorating, and increasing obsolete, physical infrastructure within constricting budgets. A combination of overburdened physical systems, and reduced financial resources, plus the need to invest in strategies to reduce the impact of climate change, compounds policy-making and investment decisions at the municipal level.

In making decisions about investing in climate adaptation, the conundrum for local government is determining what investments are required, when to invest, where is most effective, and what resources should be used to finance long-term physical infrastructure investments. A range of possible instruments are identified in the literature that could be used to facilitate investment, including regulatory conformance requirements or performance measures (Uittenbroek, 2014), economic incentives such as subsidies (Mees & Driessen, 2011), or communication strategies that focus on building the awareness of non-governmental actors about the benefits of autonomous adaptation (Roders, Straub, & Visscher, 2013). The question of what type of instruments should be applied raises issues about roles and the balance of responsibilities between government and non-governmental actors (Mees, Driessen, & Runhaar, 2012), degrees of financial risk, and about the distribution of benefits between those who invest and those who may benefit without financial contribution. For example, in the context of long-term adaptation to climate change, intergenerational equity has been identified as a substantive dilemma for those making decisions about nearer term futures, which conventionally delineate capital planning processes (Hulme, 2009). These issues bring into focus the degree to which selecting an instrument to facilitate local investment is not wholly an environmental nor an entirely technical undertaking. Rather, the process of identifying an appropriate instrument to facilitate investment is embedded within an institutional context, which is underpinned by formal structures and socio-political dimensions, including norms and values. Although the lack of political priority-setting to allocate resources for climate adaptation is often attributed to a lack of financial resources, there is a greater degree
of complexity in the governance process in assembling the sufficient conditions to stimulate investment in adaptation measures.

The aim of the research described herein is to enrich our thinking about the role of institutions in shaping practitioners’ perspectives concerning financing instruments that could be used to facilitate investment in local climate adaptation. Specifically, this dissertation reports on the potential of applying a financing instrument, known as tax increment financing, to facilitate adaptation-related public infrastructure. The analysis is situated in the institutional nexus of planning actors and climate adaptation, in the context of planning and development in the Netherlands. The objective is to contribute to climate adaptation research by focusing on the role of institutions in local municipal planning. This will shed more light on the yet to be identified climate adaptation implementation pathway. A single climate adaptation pathway is unlikely. The adaptation literature points to multiple routes, yet the most successful journeys are likely to be those that provide a comfortable fit for the operators. As Adger (2003) states “…the effectiveness of strategies for adapting to climate change depends on the social acceptability of options for adaptation, the institutional constraints on adaptation, and the place of adaptation in the wider landscape of economic development and social evolution” (p. 388). But how is the fit determined and by whom? A rich adaptation literature exists but the relationship between the hard and soft infrastructure (Healey, 2007) of governance processes remains weakly theorized (Wejs, 2014). More attention in climate adaptation research should be given to the interplay between contexts and structures in order to build an understanding about the frames of reference and planning cultures that shape the policy formation process (Healey, 2007). As identified above, this theoretical aim occurs within the context of an empirical problem of financing local investments in adaptation, using a market-based mechanism.

In this research project, adaptation to climate change is situated within the context of urban planning. The inter-connectedness of adaptation as a planning issue is explored from a new institutionalist analytical perspective. It builds on the institutionally oriented climate adaptation literature, highlighting why it might be difficult to define precisely what the barriers to implementation are. Rather, the new institutional approach used in this research (see chapter 2) provides the analytical tools to develop a thick understanding of varied institutional conditions that shape enabling or constraining factors. Indeed, whether financing is available or not is more likely to be related to a complex set of institutional conditions than the absence of funding or lack of instruments that could be utilized to facilitate investment. Firstly, this introductory chapter identifies the relationship between institutions and urban planning and, secondly, identifies the comparatively untapped conceptual potential of new institutionalism in the climate adaptation governance literature. The intention of this first chapter is to locate institutions theoretically and empirically, while chapter 2 provides a more in-depth account of the theoretical approach applied in the research design.
The remaining sections identify the research objectives and questions that underpin the research, sketch out the scientific and practical relevance of the study, and conclude with a brief outline of the overall organization of the dissertation.

2.0 Relationship of Urban Planning and Adaptation to Climate Change: Why institutions matter

The common implementation challenge cited by research on climate adaptation is identified under a broad umbrella of governance. The governance-oriented literature on climate adaptation provides different explanations about the complexity associated with integrating adaptation into organizational routines. The complexity is generally associated with different types of barriers or stimuli that either constrain or act as drivers of the adaptation policy-making processes. Barriers may include uncertainty and lack of knowledge about climate change, unclear governance arrangements and ineffective policy frameworks, institutional inertia, financial and technological limitations, and lack of political support (Eisenack et al., 2014; Moser & Ekstrom, 2010; Oberlack & Neumarker, 2011; Uittenbroek, Janssen-Jansen, & Runhaar, 2013; Wilson, 2006). The particular combination of barriers and stimuli tend to be contextually specific, which indicates that institutions play a fundamental role in shaping planning adaptation outcomes. In the research described here, institutions are conceived of as providing: “…the organizational and socio-cultural context within which human activity is structured, values are expressed and norms are created. They represent the systems of rules that govern decision-making, and the underlying logic for the organizations that fundamentally shape the design and implementation of policies that help societies respond to risk” (Burch, 2011, p. 180). Yet, despite the significant role of institutions in governance, the market, and daily life, research on climate adaptation offers a limited amount of theorizing that endeavors to explain the interplay of the governance process and the institutional context of the adaptation planning process (Eisenack et al., 2014). Rather, a dominant stream in the literature offers solution-oriented analyses, including cost-benefit analyses, assessment frameworks, and sets of indicators, which provide a diverse package of prescriptions to the wicked problem of adapting to climate change (Termeer, Dewulf, & Breeman, 2013). As a relatively new field of research (Aakre & Rubbelke, 2010), these findings contribute fundamental knowledge and analytical variations towards developing localized solutions. However, these approaches reflect a certain deliberative1 instrumental rationality, which is free from the complexities of context and the broader

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1 According to Alexander (2000b), the objective of classic rational deliberative planning is “…for the actor to decide on the ends of future action and what course of the action would be most effective”
factors that inform decision-making processes. Drawing from Alexander’s planning paradigms and framework of types of rationalities (Alexander, 2000a), in the aforementioned stream of adaptation literature there is a logical connection between the evidence arising from the data, projections about future outcomes, and the formulation of solutions that are likely to be the most effective\(^2\). But in order to advance knowledge about how, or the degree to which, adaptation has become, or can become, embedded in planning routines, contributions that come back to “… earth in the complex flow of practices” (Healey, 2009) will build complementary knowledge towards embedding adaptation in governance processes. Planning processes exist within a set of rationalities that are unlikely to reflect the ideal mode on which to implement the most effective adaptation solutions in an unencumbered manner. As argued by Alexander, the different rationalities of planning are not clear cut, because planning practice operates within the types of rationality that ‘have’ reasons and a second type of rationality that ‘give’ reasons, which are communicative in nature (2000a). Delving into why certain reasons are ‘given’ focuses attention on the issues that are important to practitioners at the ‘street level’, but also offers some clues about constraining factors that confront them when faced with adjusting existing processes to accommodate new public policy issues.

Urban planners are amongst the interdisciplinary actors that will contribute to policy formation and implementation processes, which will in turn enable investment in new or existing infrastructure to cope with changes to local climatic conditions. The contribution of urban planning to climate adaptation is not limited to coordinating the delivery of adaptation solutions using regulations and land use policies. Rather, the activity of planning should also be understood as playing a role in mediating the place of adaptation within shifting socio-political discourses, policy agendas, and implementation practices. As Healey argues, the contribution of planning to the future “… should be in helping open up institutional spaces within which transformative energy gets released, in feeding transformative initiatives with knowledge resources, technical capacity and repertoires of practice [and] in highlighting value issues at stake and in shaping emergent possibilities” (2007, p. 82). Fischler (2012) describes urban planning as occupying uneasy axes between long-term and incremental planning, between systematic analysis and ad hoc action, and between the design of physical spaces and as an activity that is about the “…design of institutions and processes” (p.108). The challenge for urban planning practice is to evolve practices that embed climate adaptation within those axes and to find strategies to overcome the complex dilemmas presented by climate change.

\(^2\) We can see similar modernist tendencies in the ambition to govern climate change. As Hulme (2009) argues, it is unlikely climate change can be ‘solved’ through scientific and technological interventions.
Decision-making in urban planning continually navigates through what Savini (2013) describes as a series of dilemmas wherein practitioners must make “…compromises over different trade-offs, based on politically and arbitrary constructed visions of the specific problem at stake” (336). In the context of climate adaptation, Haug et al. (2010) highlight six governance dilemmas in their evaluation of European climate policies: 1) problem perception and policy objectives; 2) levels and scales of governance; 3) timing and sequencing; 4) modes and instruments of governance; 5) costs and benefits; and, 6) implementation and enforcement. These six can be further reduced into three broader themes that are also addressed in the literature (Adger et al., 2009; Berkhout, Hertin, & Jordon, 2002; Mees et al., 2012; Preston, Dow, & Berkhout, 2013; Walker et al., 2011). Firstly, the lack of consolidation about social values concerning climate adaptation is fundamentally unresolved; secondly, the perception that benefits are too far off in the distant future to justify planning actions in comparison to immediate concerns; thirdly, financial commitments are unlikely to benefit initial investors directly, thus there is little incentive to take actions or impose requirements. Those dilemmas are, arguably, socially constructed and reflect wider frames of reference that influence how adapting to climate change is framed. That is to say, such dilemmas are types of informal rules that play a role in situating the problem of climate adaptation and thus are presented to planning practice with a particular socially constructed package. Given the role that formal and informal institutions play in the planning process (Verma, 2007), the intention of the research described in this dissertation is to consider the role of institutions in facilitating local climate adaptation investments. This will provide a contribution towards answering the question about why actions remain limited.

2.1 Understanding Institutions in Climate Adaptation

As thus described, in the field of urban planning, institutions clearly matter. Institutions in the climate adaptation literature are, however, described in a variety of ways from representing a constraint (Corfee-Morlot et al., 2009; Funfgeld, 2010) to being a ‘double edged sword’ as both a facilitator and limiter (Anguelovski & Carmin, 2011). Inherently conservative, institutions are considered as both a strength and a weakness in relation to embedding adaptation into practice (Gupta et al., 2008). How is it that institutions can represent such a varied and contradictory set of characterizations? One explanation often cited is that as a new public policy issue, climate adaptation is distinguished by its “weakly defined ambitions, responsibilities, procedures, routines, and solutions” (Termeer et al., 2011, p. 164). In the aggregate, these contradictions create what is referred to as an institutional void, a concept which is cited to explain barriers to climate adaptation implementation (Eisenack et al., 2014). Defined by Hajer (2003, p. 175), an institutional void occurs when “there are no clear rules and norms according to which politics is to be conducted and
policy measures are to be agreed upon”. Indeed, the lack of a clear connection between formal and informal institutions about climate adaptation hinders the potential of institutions to structure social actions (Healey, 2007). Hence, institutions tend to be identified as barriers, rather than facilitators, of adaptation to climate change (Runhaar, Mees, Wardekker, van der Sluijs, & Driessen, 2012) and, as a result, there is a limited focus on the institutional conditions that may shape how organisations approach the problem and devise adaptation strategies.

Other research turns to institutions as a resource from which to reveal insights about why certain barriers may exist, which Eisenack et al. (2014) described as the need to understand the origins of barriers and develop explanations that link the potential clarifying capacities of those variables. An evolutionary process is detectable with respect to explaining the role of institutions in the literature. For example, institutionally-oriented research that focuses on multi-level governance pays attention to the role of institutional structures as linkages between national climate adaptation goals and the capacities of local governments (Biesbroek, Klostermann, Termeer, & Kabat, 2011; Bulkeley & Betsill, 2005; Laukkonen et al., 2009; Wilson, 2006). This area of research emphasises that while climate adaptation is largely dependent on concrete actions taken at the local level, such actions must be appropriately enabled, financially, technically, and legislatively by higher levels of government (Amundsen, Berglund, & Westskogå, 2010). This research stream analyses the formal institutional structures and cites a similar range of barriers and constraints as identified in the previous paragraph. However, in a recent article Bulkeley and Betsill reflect on the evolution of climate adaptation in the urban domain over the past 10 years. They suggest that multi-level governance approaches would be enhanced by descaling the vertical orientation: investigating what is referred to as “…the discursive and institutional terrains through which climate change comes to be an issue on urban agendas” (2013, p. 150) and to consider the structures and norms of the socio-technical networks that underpin urban decision-making.

We can see Bulkeley and Betsill’s advice in research that is scaled to the municipal level of government. This body of literature analyses the emerging institutional terrains of local climate adaptation policy-making. Broadly, these scholars draw from a social constructivist tradition that emphasises “...how social and historical particularities structure the policy world and how such understandings become normalised and, thus, unquestioned, institutionalised into practices and routines” (Juhola, Keskitalo, & Westerhoff, 2011, p. 460). For example, the research of Wejs focuses on juxtaposing the events that represent ‘why’ integration of climate adaptation actions are initiated and the mechanisms that relate to ‘how’ the actions taken to integrate such action into organizational routines are undertaken (Wejs, 2014). The interconnection between ‘why’ and ‘how’ illustrates the range of responses
and configurations that are possible. The commonality in this stream of research is the focus on getting beyond the 'barrier' metaphor, but rather to consider the broader structural logics and the organizational rationales that are buffeted and shaped by the institutional context in which practitioners are operating (Keskitalo, Juhola, & Westerhoff, 2012). Overall, this research-orientation analyzes the tension between structure and agency. This also implies that potential lies within existing structures that could be used. The challenge in practice is unlocking the potential. As Burch (2010) asserts there is a “…fallacy of explanations of inaction that focus on technical and financial insufficiency” (p.296), but rather the focus should be put on organizational culture and strategies for incremental institutional learning.

A new institutional approach in climate adaptation research expands the conceptual blackbox of institutions as path dependent and inert. By considering the diverse and changing barriers, we can improve our understanding about the complexity of adapting to climate change. However, more than just identifying that a diverse range of barriers and dilemmas relative to the institutional context exists, by making institutions endogenous, rather than exogenous, to the analysis (Verma, 2007) we can analyze the degree of agency that actors are willing to exert, within the formal institutional structures in which they operate. This approach offers scope to apply the findings beyond the contextual specificities associated with case study research. Moreover, new institutionalist theory offers analytical tools that allow that the dynamics of governance processes to have their own rationality. As Healey suggests, governance “processes are not a machine, but complex continually emergent dynamics in which small contributions matter and large-scale projects may easily fail” (2007, p. 82). By not restricting the role of institutions to formal rule application, institutions can be conceived of as evolutionary, where change is part of a creative selection process about what formal and informal rules will legitimately be applied (Moroni, 2010). Institutions from this perspective are not static nor can institutions be newly invented to deal with problems as they arise. Institutions are ontologically prior (Bell, 2011) and new institutions are better understood as ‘successor’ institutions (Moroni, 2010) that emerge as part of a process of gradual change (Hall & Thelen, 2009; Lowndes, 2005; Mahoney & Thelen, 2010). From this perspective, actors are understood as embedded within institutions and to evoke change, actors can use existing tools to deal with new problems. Indeed, Mahoney and Thelen (2010) argue institutional change often occurs “… precisely when problems of rule interpretation and enforcement open up space for actors to implement rules in new ways” (p.4). For adapting to climate change, these theoretical insights point to a broader interconnectivity between the idea that there are both barriers and stimuli to implementing climate adaptation. More specifically, this dissertation explores the degree to which institutions constitute the ground on which modes of practice in governance
processes are played out and values and ideas evolve or are reinforced (Schmidt, 2010). The findings add to the research on climate adaptation, both theoretically and empirically, as we learn about the degree to which adaptation actors are willing to use existing instruments as means to facilitate investment in climate adaptation.

3.0 Research Objectives and Questions

3.1 Research Objectives
The previous sections established, firstly, the institutional connection between urban planning and climate adaptation and, secondly, the contribution of conceptualizing the role played by institutions in shaping practitioners’ perspectives on policy choices to climate adaptation research. The ambition is to provide insights and empirically based explanations about why a financing instrument might be understood as more or less appropriate and applicable than other means that could be used to facilitate investment in climate adaptation-related public infrastructure investments.

The research objectives are based upon a layered analytical approach that builds an empirical foundation on which to experiment with a novel financing instrument. The first two layers establish the interplay between formal and informal institutional structures and norms and the third layer is designed to ‘play’ with the “rules of the game” (North, 1990). The three-layered approach illustrates the case study construction and how the analytical process is conceived, as follows:

![Figure 1](image_url)  
**Figure 1** Case Study Construction and Analytical Process
3.2 Research Questions:
Following the aim and objectives of this research, the questions are both empirical and theoretical:

- **Empirical questions:**
  1) What modes of practice and instruments do Dutch spatial planning actors use to facilitate investment in local public urban infrastructure?
  2) Are new municipal instruments necessary to facilitate investment in climate adaptation?
  3) Are spatial planning practitioners willing to reinterpret and reshape institutional rules to enable local investment in climate adaptation?

- **Theoretical question:**
  4) How can we conceptualize and explain the role of institutions in facilitating local public investments in climate adaptation and in shaping practitioners’ perspectives about the applicability of policy instruments?

Figure 2 illustrates the analytical relationship between the questions:
4.0 Relevance

4.1 Scientific Relevance
There is a substantial body of research about the threat (Adger et al., 2009; IPCC, 2014; Swart et al., 2009) of climate change and the need to make investments in urban areas to mitigate impacts. However, questions remain in relation to the role of institutions in shaping perspectives towards approaches to facilitate investment in local planning processes. The findings described in this dissertation build on existing governance literature and add theoretical insights about the interplay between structures and norms in the planning process. This contributes to the scientific community’s ambition to develop a deeper understanding about the complexity of operationalizing adaptation measures into existing processes and programs, and to enrich the limited analytical capacity of the barrier metaphor. Further, in addition to contributing to the body of case study literature, this dissertation also builds on it by developing a simulation game method to explore urban planning practitioners’ responses to a novel financing mechanism. The knowledge generated by the simulations provides further insights in relation to both the technical-physical and the social-political dynamics of implementing and investing in climate adaptation at the local level.

4.2 Practical Relevance
Analyzing the potential institutional fit of a financing instrument for investment in climate adaptation makes an important contribution to planning practice. By focusing on the socio-political dimensions in relation to formal institutional structures, this research has practical relevance on several levels. Firstly, practitioners were provided with an opportunity to ‘test drive’ a financing instrument not used in the Netherlands. The experience enabled them to obtain technical knowledge about tax increment financing but, perhaps more importantly, also to develop a multi-dimensional understanding about the socio-political dynamics that may constrain or enable operationalizing it. Secondly, the simulation gaming sessions provided an opportunity for participants to experience the instrument and interactively learn from each other, without the risk of professional or organizational damage. While the particular nuances of the debates about whether to apply the financing instrument are specific to the Dutch spatial planning context, the method could be applied in other planning environments by amending the simulation scenario for other planning contexts. For planning practitioners struggling to figure out what instruments are appropriate for their particular location, the findings offer insights about ways to develop a deeper understanding about the context in which they are operating; secondly, given that strategies for climate adaptation investment are inherently local, the findings offer ideas on how to reconceive existing local resources. Moreover, rather than focusing
on lack of financing as an obstacle that is dependent primarily on a buoyant economy, the findings offer evidence of innovative ways to overcome a financial gap by reinterpreting existing formal rules.

5.0 Organization of the Dissertation

The sequencing of the chapters is organized based on the three layers of the research design (figure 1). The dissertation is a compilation of four papers, as identified in table 1. Chapter 2 elaborates on the theoretical perspective applied in this research project with a fuller explanation about the new institutional approach that was introduced in this chapter. Secondly, having situated the theoretical perspective in the relevant literature, chapter 2 describes the research design and methods. Included is an introduction to the Dutch case and tax increment financing, with the latter conceptualized as a potential instrument to facilitate municipal investments. Chapter 7 summarizes and discusses the core findings, provides reflections on methodological considerations, implications for practice, and suggestions for future research.

As described in section 2.1, the research design is composed of three distinct phases. Phase one is the ‘learning’ layer and establishes evidence of innovative practices that have facilitated investment in local adaptation measures using existing mechanisms. These practices were enabled by emerging norms and values, both in urban planning practice and in relation to evolving ideas about how to implement climate adaptation actions. The findings are based on a case study of the Rotterdam Stadhaven redevelopment project, as described in Chapter 3.

Phase two builds on the findings of phase one with respect to the potential to reinterpret existing mechanisms and processes by considering the potential of redirecting a local income stream. In the ‘analyze’ layer, Chapter 4 describes the complexity of reinterpreting the conventional use of property taxes should using the income to underwrite area specific investments be a strategy. Here the focus is on the institutional system that structures and informs investments in local public infrastructure in the Netherlands.

The third phase draws from the cumulative findings of the first two phases to develop a simulation game. This phase shifts from an analysis of current practices into the ‘explore’ layer by engaging practitioners in a future scenario wherein participants are confronted with a market-based instrument to facilitate investment in climate adaptation related investments. The results of these sessions are described in chapters 5 and 6, where the evidence highlights three fundamental dilemmas of climate adaptation that shape perspectives about the types of instruments that are
### Table 1  Sequencing of Research Design

<table>
<thead>
<tr>
<th>Research Phase</th>
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<tr>
<td>Methodology</td>
<td>Theory and methods</td>
<td>Overview of theoretical perspective and methods applied</td>
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<tr>
<td>Learn</td>
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<td>Paper 1: Bridging the Financial Gap in Climate Adaptation: Dutch planning and land development through a new institutional lens</td>
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<td>Chapter 3</td>
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<td>Published: Root, et al (2014) in <em>Journal of Environmental Planning and Management</em></td>
</tr>
<tr>
<td>Analyze</td>
<td>Inter-relationship between institutional structures and norms and whether there is scope to apply existing instruments to facilitate investment in</td>
<td>Paper 2: Between Structures and Norms: assessing tax increment financing for the Dutch spatial planning toolkit</td>
</tr>
<tr>
<td>Chapter 4</td>
<td></td>
<td>Published: Root et al (2015) in <em>Town Planning Review</em></td>
</tr>
<tr>
<td>Explore</td>
<td>Application of a market-based mechanism (tax increment financing) and how practitioners learn about whether a financing instrument is appropriate</td>
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<td>Revise and resubmit: Journal of Planning Education and Research (Special Issue)</td>
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<td>Conclusion</td>
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appropriate. The findings also illustrate how a new instrument is more likely to be confronted with the enforcement of both formal and informal institutional rules, rather than technical issues, if applied to a climate adaptation agenda.
References


Uittenbroek, C. (2014). *How Mainstream is Mainstreaming? The integrating of climate adaptation into urban policy*. (Doctorate), University of Utrecht, Faculty of Geosciences.


2

Theoretical Approach and Methods
1.0 Introduction: Theoretical approach and methods

New institutionalism offers a rich conceptual toolkit from which to draw. A sociologically oriented new institutionalist approach is particularly applicable, given that the aim is to explore the degree to which adaptation actors are willing to reinterpret, or enforce, existing practices, the institutional rules that underpin their behavior in relation to what Oberlack and Neumarker refer to as the “…plethora of challenges for adaptation governance” (2011, p. 10). Amongst the list of complexities, the scholars highlight that the lack of adaptation to climate change is connected to entrenched worldviews and shared mental models; scale and multi-level governance mismatches that cause coordination and free rider problems; issues of justice and legitimacy that impact adaptation actions (or lack of actions); and the challenge of integrating adaptation actions into existing structures given the “…multiple climatic and non-climatic stresses” (p. 11) that compete for attention and adequate resources. Lastly, Oberlack and Neumarker identify the need to consider what they describe as the “pre-conditions for autonomous adaptation” (p.11). These governance challenges are interrelated and can be understood as institutional in nature, wherein broader structures are at play, coupled with norms and values. The interplay between structures, values and norms ultimately affects whether (and what) actions are taken to address societal problems (Healey, 2007).

The results described in the forthcoming chapters elaborate on these structural and normative challenges by empirically investigating and analyzing behavioral variables, which include how actors interpret narratives in relation to the type of policy instruments that are selected (Turnpenny, Jordon, Benson, & Rayner, 2015), and how actors connect values with formal structural means. The new institutional theoretical approach described in this chapter illustrates the overall findings in terms of the degree to which actors make institutionally situated choices. Local adaptation to climate change faces varying and unique challenges. The evidence arising from this research builds on, and contributes empirically, to the governance literature, aiming to develop theoretical generalizations and learning across cases (Oberlack & Neumarker, 2011). More particularly, the sociological-normative orientation applied here distinguishes from what, as described in chapter 1, can be characterized as the deliberative-rational orientations that represent a dominant stream of the governance-related literature. Here the theoretical perspective assumes that actions occur within a set of institutional rules, which are created, maintained, and changed by actors operating within “…institutionally defined logics of effect or appropriateness” (Lawrence & Suddaby, 2006, p. 220). This implies that while actors are ‘rational’ they operate within a degree of bounded-ness and adapt to the institutional conditions and dynamics.

The purpose of this chapter is to sketch out the methodological approach used to address the research objectives identified in chapter 1. The chapter begins with an
introduction to the central theoretical ideas associated with new institutionalism. In doing so, the theoretical approach and key concepts that were applied to the empirical data are identified. Although new institutionalist theory is broader than the following overview, the intention is to draw out the theoretical underpinnings of this approach, and to sharpen the description in relation to the theoretical perspective applied. The second half of the chapter turns to the methods. The research design assumes that local context matters, and local actors construct meanings that underpin the views that they express. As such, the theory and methods reflect an actor-centered approach that acknowledges the role of structures, but stresses the role of actors, as stated: the “…raw material on which institutional evolution acts is supplied by human trial and error, by intentional agents trying to deal with problems” (Rivolin, 2012, p. 70). Overall, the research approach offers a strategy to consider how ‘adaptation actors’ (Eisenack et al., 2014) play with the institutional rules. It also concerns the extent to which practitioners stake out the outer perimeter of rules as they engage in the far-reaching and complex challenge of determining what institutional arrangements are appropriate and possible, given the range of dilemmas that are coupled with climate adaptation policy formation processes (Haug et al., 2010; Mees, Driessen, & Runhaar, 2012; Preston, Dow, & Berkhout, 2013).

2.0 New Institutional Theory: Expanding the conceptual blackbox

The International Panel on Climate Change (IPCC) defines adaptation to climate change as “the process of adjustment to actual or expected climate change and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate change and its effects” (IPCC 2014, p. 5). Identified in this definition is the need to adjust structures and behaviors. The question of what types of structural and behavioral adjustments are required, by whom, and when the adjustments should begin continues to be contested and fraught with socio-political complexity. Scholarly research has been fundamental to building the scientific case to support actions to mitigate or reduce the risk of climate change, as exemplified in the aggregate reporting by the IPCC. The multidisciplinary scientific evidence sets out the need to reduce greenhouse emissions and to initiate adaptation actions in order to reduce vulnerability to climate-related risks. Despite the evidence, practitioners and scholars alike struggle to ‘unpack’ the climate adaptation puzzle into actionable items, including calibrating actions into an effective system of governance. Termeer, Dewulf, and Breeman (2013) assert that “governance scholars nowadays risk causing more confusion in practice over whether wicked problems are in fact tame. They can
raise expectations far beyond their ability to deliver” (p.36). Indeed, drawing from Lawrence and Suddaby (2006), the complexity of making adjustments to existing systems of governance can be characterized as “institutional work”. Lawrence and Suddaby conceptualize “institutional work” as a “broad category of purposive action aimed at creating, maintaining, and disrupting institutions” (2006, p. 216). Thus, the work of making structural and behavioral adjustments in relation to climate change is, ultimately, a socio-political-economic project that is centrally concerned with purposefully engaging and understanding existing sets of practices: the normative and the structural underpinnings. The aim of institutional work is to build an understanding about the availability of institutional space for a diverse range of possible adaptation actions.

In institutional work, we use analytical concepts of new institutional theory to analyze the work of adapting to climate change in the context of urban planning. The contribution of an institutional approach is that it focuses on creating accounts “….of the processes through which institutions govern action” (Lawrence & Suddaby, 2006, p. 215). Indeed, while it is often lamented that we do not know why embedding climate adaptation actions into practice faces a range of barriers, an alternative way of viewing the issue is that it is the role of institutional dynamics in the process of adapting to climate change that we do not understand. Thus, by focusing on the “act of production, rather than the product itself” (Lawrence & Suddaby, 2006, p. 248) the research described here is concerned with understanding the relational origins that may play an important role in shaping, constraining or enabling the climate adaptation process.

2.1 Distinctions Between New Institutionalist Schools of Thought

New Institutionalism comes in a range of ‘flavours’ (March & Olsen, 2005) and offers theoretical variations about the role of institutions in structuring society within a school of thought (Hall & Taylor, 1996). New Institutionalism is associated with a range of disciplines: economics, political science, sociology, and organizational studies (Healey, 2007). Each offers a different understanding about how institutions structure behavior, and the degree to which individuals can exert agency to create new institutions. The common theme is the departure from ‘old’ institutionalism, which emphasized the central role of law and the reification of structures that left scant room for individual agency (G. Peters, 2005). Beginning in the 1960’s and 1970’s, the dominant schools of new institutional thought started to develop a deeper concept of institutions as created and shaped by humans (i.e. not a natural order of things) by offering analyses that introduced other variables such as culture, power, and cognition. New institutionalists are interested in the contradictions represented by institutions, such as predictability and change; innovation and inertia; and learning and replication (Clemens & Cook, 1999). Lines of inquiry within this theoretical
orientation focus on explaining how humans develop rules, scripts and cultural accounts, and why different strategies for organizing society may occur (Lawrence & Suddaby, 2006; March & Olsen, 2005).

In the mid-1990’s Hall and Taylor (1996) sketched out the new institutional terrain as represented in three foundational streams of thought: historical institutionalism, rational choice institutionalism, and sociological institutionalism. According to Hall and Taylor, although the three orientations developed independently and were based on different conceptions of the origins of human behavior, the theories shared an interest in explaining the role of institutions and the way in which institutions emerge and change (Hall & Taylor, 1996). In part, new institutionalism was a broad reaction to the assumption that organizations and individual behavior are somehow rational and can be changed through purposeful institutional design. Drawing from G. Peters (2005) and Hall & Taylor (1996), historical institutionalism, rational choice institutionalism, and sociological institutionalism share the understanding that because institutions play an essential role in shaping human behavior, whether in terms of determining behavior or imposing a degree of regularity, institutions are an essential unit of scholarly analysis. Secondly, while analytical focus varies between the approaches, institutions are understood to be a result of purposeful human action. The difference, according to Peters, is how constraints and enabling factors are understood to be enforced either through values and norms or through a combination of formal rules and incentives (p. 157). The emphases differ between the relative role of structure and agency (p. 157) and the degree to which institutions are understood as exogenous (rational choice, empirical institutionalism) or endogenous (normative, sociological; historical). Further, the analyses chart various pathways in relation to cognition in terms of the role of ideas in relation to institutions (Lawrence & Suddaby, 2006), or the role of norms and routines in defining the extent of agency (Bell, 2011).

Institutionalists of all flavors are generally interested in the decision process, not the actual decision (Healey, 2007). Historical and sociological institutionalists understand that actors are the heirs of institutional repertoires, and rules and regulations are in a constant state of negotiation, which, in the aggregate, is the “…history of language, experience, [and] memory…” (March & Olsen, 2005, p. 10). Alternatively, rational choice institutionalists understand that rules and incentives arise from interactions and negotiations, and there is particular focus on the objective of interactions. The explanations generally focus on the degree to which the exchanges between calculating self-interested actors (March & Olsen, 2005) produce improved collective outcomes or maximize their own utilities (G. Peters, 2005). Also important is the degree to which actors are punished because the results of their maximizing behaviors lead to sub-optimal collective outcomes. Nonetheless, the idea of shared
understandings about institutional rules is a common new institutional thread. As asserted by Ostrom (1999), institutionalist rules are not arbitrary insofar as “rules are shared understandings among those involved that refer to enforced prescriptions about what actions (or states of the world) are required, prohibited, or permitted... all rules are the result of implicit or explicit efforts to achieve order and predictability...” (J. Mahoney & K Thelen, 2010). Institutions are characterized as formal (legislature, legal framework) or informal (shared norms and values). Together institutions create regularity and stability over time, and provide patterned interactions that individuals and groups can understand within a set of shared socio-cultural perspectives, which both shape and constrain behavior (Lowndes, 2009; G. Peters, 2005).

New institutionalists also make a distinction between organizations and institutions (Healey, 2007). Although organizations (especially large organizations such as universities, hospitals, and governmental offices and religious organizations) are often commonly referred to as institutions, institutionalists conceptualize formal and informal rules as affecting and structuring the routines of organizations and the individuals that operate within them. A concrete example of how formal and informal institutions structure organizations and the actions of individuals is in relation to compliance with property taxes remittance. In the Netherlands, property owners are legally required to pay taxes in conjunction with a market-based assessment system (Allers, 2011). Paying taxes is also generally understood to be part of a broader social contract for property-owning citizens to contribute towards collective investments. Social convention also exerts pressure on politicians with respect to taxation rates and the relative responsibility of paying taxes between residential, commercial, and social housing tenants. Thus, paying property taxes is an important institution that structures how both local and senior levels of government organizations set and collect taxes and how property owners comply to technical and social institutional requirements. The practices are articulated via formal structures set out in laws and administrative requirements between the national government and local municipal governments, and informal norms and values. The latter are detected in political narratives regarding, for example, fairness and equity in relation to distribution of resources and overburdening from those local taxpayers who argue against taxation increases. Thinking about institutions metaphorically, Mantzavinos, North and Shariq (2004) propose that “institutions are the rules of the game; organizations are the players” (page). Indeed, while property taxes are a conventional form of taxation used by countries throughout Europe, how the particular rules of the game are played vary and the institutional arrangements are comparatively unique.
Returning to the definition of adaptation to climate change, institutions play an important role in adaptation to climate change, in terms of creating the conditions (i.e. constraints and opportunities) that organizations and individuals must negotiate in order to achieve adaptation objectives (Lowndes, 2009). Further, institutions are conceptualized as a source from which incentives, or disincentives, are drawn, as a means to stimulate organizational change. As noted by scholars, organizations make adjustments in response to changing institutional circumstances both as a means to retain relevancy but, more broadly, as a means to achieve certain common goals (Berkhout, 2012a). Institutional change is a dominant theme in the climate adaptation literature. As already identified, new institutionalists generally argue that, as human systems, institutions do change, as a result of concerted human actions that may occur through ‘windows of opportunity’ or gradually through incremental change.

Explanations about how institutions change, and the role of individuals and organizations in the change process, is, nonetheless, theoretically contested ground. In advance of characterizing the conceptual approach used in this dissertation in more detail, the following two sections conceptually couple ‘change and uncertainty’ and ‘agency and learning’ and provide a brief new institutionalist description of these concepts, which form part of the analytical toolkit that is applied in the remaining chapters.

2.2 Explaining Change and Uncertainty

For institutionalists that consider institutions as endogenous (for example, sociological and historical, normative, and constructivist institutionalism) context matters. For historical institutionalists, social causation is traditionally referenced by the concept of path dependency. Path dependency refers to the idea that existing structures and practices operate within a bounded rationality, making change difficult. Institutions tend towards maintaining and replicating the status quo, thereby creating a self-referential inertia that is enduring and difficult to change. For historical institutionalists, understanding the past provides a strong indication of what will happen in the future (i.e. predictive abilities). In its foundational conceptualization, historical institutionalists understood institutions to be in a state of equilibrium, remaining stable and constant until a sudden occurrence punctures the equilibrium (G. Peters, 2005) thereby provoking destabilization and uncertainty. This brand of historical institutionalism is what Lowndes (2001) refers to as “vulgar” institutionalism insofar as institutions are understood as inflexible and interventions by human agency institutions are not a meaningful part of the analysis. This perspective has shifted to what Bell (2012) refers to as ‘flexible’ historical institutionalism, in contrast to earlier ‘sticky’ historical institutionalism. In this approach, the choices of individuals and organizations are embedded within a historical context, which provides legitimacy for the choices. Thus, as Bell argues, choices are not made on a “tabula
rasa” (p. 719), but rather institutional change occurs over time, in the interaction process between institutional environments and actors. Bell characterizes this phenomena as “institutionally situated agency” (p. 717). Similarly, scholars that draw from historical institutionalism, such as Mahoney and Thelen (2010), argue that institutional change should be understood as occurring gradually. By allowing for constructivist explanations, in this conception agents engage in interpretative struggles wherein institutions do evolve and change is unlikely to be sudden. Rather, institutional change occurs through subtle shifts in relation to actors’ interests, preferences, and resources (Bell, 2012; J. Mahoney & K. Thelen, 2010). Overall, historical institutionalism provides a theoretical background that allows for strategic action and individual agency, and in contrast to rational choice institutionalism, as described below, individuals are characterized as “satisfiers not utility maximizers” (Hall & Taylor, 1996) and change is explicitly connected to a historically contextualized causal chain.

Rational choice approaches offer an alternative theoretical background to historical institutionalism to explain how and why institutions change. Broadly, the commonality between rational choice institutionalists is the shared assumption that institutions are non-equilibrium structures (G. Peters, 2005). Rather than passively awaiting critical junctures or incremental change, scholars argue that individuals and organizations will proactively initiate change in order to adjust the institutional environment to meet their own needs (G. Peters, 2005). For example, a rational choice institutionalist, such as those found in new institutional economics, tends to focus on strategic choices based on sets of preferences. Individuals will, accordingly, behave instrumentally in order to maximize those preferences (Hall & Taylor, 1996, p. 945). Institutions are developed in order to increase efficiency, thus reducing transaction costs, and to absorb undesirable externalities that can be a result of ill-defined institutional arrangements. From this perspective, institutional change is a result of strategic calculation, wherein choices that are not aligned with norms are likely to result in sub-optimal results for the individual and, by association, sub-optimal results for the broad collective. As summarized by Hall & Taylor, “…what prevents the actors from taking a collectively-superior course of action is the absence of institutional arrangements that would guarantee complementary behavior by others” (p.945), i.e. a lack of incentives. Thus, rational choice institutionalism allows for institutional change, which is a result of human agency, but agency is ultimately reduced to rules and incentives (G. Peters, 2005).

In the third new institutionalism school identified by Hall and Taylor, i.e. those operating within the sociological institutionalist framework, departs from punctuated equilibrium as a key variable of institutional change, or the pivotal role of individual actions in effecting collectivities, as offered by rational choice institutionalism scholars.
Institutional change for sociological institutionalists occurs through a process of learning and adaptation to emerging circumstances (G. Peters, 2005). Similar to historical institutionalism, sociological institutionalism acknowledges that institutions are ontologically prior and endogenous but focus attention on the process of interpretation conducted by actors in relation to institutional change. March & Olsen coined the concept of the ‘logic of appropriateness’ (1989) to describe how actors (as individuals or within organizations) discover what institutional rules guide behaviors and routines. Here the emphasis is on the informal rules at play that will inform actors’ perspectives about what should happen in a given situation and, in the event of a new situation, they consider what existing rules could be applied. According to March & Olsen “through rules and logic of appropriateness, political institutions realize both order, stability, and predictability, on the one hand, and flexibility and adaptiveness, on the other” (p. 160). Change, unlike rational choice and historical institutional change, is less precise, neither predictable nor efficient and purposeful institutional design is unlikely to be achieved in the way envisioned by initiators. Instead, as argued by March & Olsen, change is constant and the particular formations will have exponential impact as subsequent changes emerge, including the speed of change or seeming lack of change (March & Olsen, 2005).

Change, it seems, is not easy and occurs slowly. Indeed, institutions can be characterized as a double-edged sword, wherein, on the one hand, they provide certainty, consistency, and stability, but for those wanting change, institutions are an obstacle to alternative pathways. This is due in part to the prospect of uncertainty that is introduced by change. Institutions thus provide a ballast of stability against change that, conversely, offers an unknown future (March & Olsen, 2005). Unlike historical or sociological institutionalists, in this conception, rational choice institutionalism distinguishes institutions a-historically and focuses on the ability of humans to impose sufficient agency to design and assemble the mix of rules and incentives to generate an optimal institutional arrangement. This ultimately reduces uncertainty, given the multiplicity of possible preferences (Schmidt, 2010). But how do actors exert agency to effect change, and how do they learn about what the preferred institutional arrangement might be? The following section provides a brief explanation, including identifying variation between the theoretical orientations.

### 2.3 Explaining Agency and Learning

New institutionalists place a different emphasis on human agency in creating, shaping, or shifting practices and, thus, changing institutions (Lawrence & Suddaby, 2006). As noted in the preceding, institutions constrain or enable human agency and play a role in structuring interactions between individuals and organizations (Berkhout, 2012b; Healey, 2007). Sociological and normative institutionalists emphasize the embeddedness of individuals and organizations within their institutional context,
insofar as actors are constantly engaged in acts of (re)interpretation as a strategy to determine what is appropriate in the given circumstances (March & Olsen, 1989). Interactions between individuals, between individuals and organizations, and between organizations and the institutional environment on which society is underpinned, inform how decisions are made, and as a result, what decisions are made. Actors, according to this perspective, draw from the institutional environment to piece together what rules and norms are appropriate, thereby providing frames of reference. Individual actors undertake these considerations within the context of interactions with others, as a means to gather knowledge about the conditions under which they are operating. As March and Olsen (2005) suggest, individuals are not muscular engineers directing and guiding institutional change, but rather “institutional gardeners” (p. 19) thus implying the need to tend multiple factors by engaging in a type of social husbandry.

Rational choice institutionalists argue that sociological normative approaches have a thin explanation of the origins of agency (Mantzavinos et al., 2004; G. Peters, 2005). Rational choice institutionalists focus on the role of human agency in devising institutions and the degree to which rules and incentives are designed for the purpose of maximizing individual benefits, rather than being informed by norms and values (Hall & Taylor, 1996). As exemplified by North (1990), rational choice analyses consider cognition as an autonomous factor in how actors interpret the social reality in which they are operating and, thus, how actors encode and replicate institutions (Mantzavinos et al., 2004). Institutions are conceived of as ‘givens’ that can be devised and remade, rather than as an outcome of enduring and continuous historical process (G. Peters, 2005). Nonetheless, Clemens and Cook (Clemens & Cook, 1999) argue that the distinct lines between sociological and normative explanations about agency, and those explanations from rational choices are less clear. For example, the concept of ‘choice within constraints’ exemplifies the crossover between analyses that emphasize the role of norms and values, and rational choice oriented analyses that assume actors exert strategic agency in the choices that they make.

Before turning to a description of the research methods, the next section briefly introduces how the concept of ‘learning’ is used in this research. Learning is a conceptual thread that connects the overall analysis. Here the analytical interest is focused on how practitioners learn about what is appropriate and how learning is operationalized through organizational routines. The intention is not to offer an exhaustive explanation, but rather this section touches on the conceptual apparatus that informs the analysis.

2.4 Learning About What is Appropriate
The aim of this research is not to analyze and propose what technical changes ought to be done to improve systems of governance in order to adapt to climate change.
Rather in thinking about how, or whether, existing systems are responsive climate adaptation imperatives, a broader goal, and the starting point of this research, is garnering insights into how individual actors and organizations learn about the significance (or insignificance) of particular values and norms. Also important is the degree to which certain formal rules should be ‘used’ through enforcement, largely ignored, or comparatively easily reinterpreted. Under the rubric of new institutionalism, the theoretical variations provide explanations about the role of institutions as the backbone of continuity and, paradoxically, of change (whether sudden or gradual). Social learning is an important variable between agency and institutional change or, conversely, of institutional inertia, wherein existing practices are taken for granted and continuously reinforced. Institutional change, however discrete or obvious, may occur as actors interact with others, reinterpret rules (informal/formal) and, in the process, engage in a negotiation process wherein actors/organizations learn about what may work and what will not work (for example, either through positive reinforcement, sanctions or punishment).

Here we consider explanations about how individuals and organizations learn. Starting with the concept of social learning, Reed et al. define this concept as follows: “…social learning may be defined as a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks” (Reed et al., 2010). According to this definition, social learning is truly achieved if the learning extends beyond the individual and is transferred into a deeper level of understanding and behavior change. This type of learning is in contrast to a second type which Reed refers to as instrumental and technical learning, which remains at the level of the individual and not distributed more widely. The concept of social learning is drawn from organizational studies. Similarly, institutional analyses use the concept of diffusion to conceptualize how patterns of collective learning are established, which is to say, institutionalized. According to Lawrence and Suddaby (2006) institutionalization occurs through diffusion when “…the pattern of events and relationships among them … involves an object from being recognized, then accepted by relatively few actors, and then widely diffused and broadly accepted with a field” (Lawrence & Suddaby, 2006, p. 247). Actors, in this process, undertake to demonstrate the benefits of innovation and the relevance to current and future practices by building legitimacy. Learning occurs when legitimacy is established for new or a revised set of rules and practices.

The question of how new ideas and practices are established is encapsulated in the concept of routines, which, like social learning, is also drawn from organizational studies. Routines are described as “…rules, procedures, strategies, technologies,
conventions, cultures and beliefs around which organizations are built and through which they operate” (Berkhout, Hertin, & Gann, 2006, p. 137). Routines are the operationalization of processes that are understood to be appropriate to the particular circumstances, which are derived from experience and learning (Berkhout et al., 2006). Here we integrate the concept of ‘soft spots’, as spaces of action between the rules-in-use and rules-in-form (J. Mahoney & K. Thelen, 2010), and routines as part of the conceptual toolkit to help explain how new practices using existing instruments occur. Berkhout et al. (2006) identify a four tier interconnected typology of processes that enable or constrain organizational change actions. I conceptualize this as occurring within the ‘soft spots’. The interconnection is cumulative where the process of ‘signaling and interpretation’ initiates a process of ‘experimentation and search’. The mechanisms that characterize these first two tiers are processes of sense-making in the face of a novel situation. Actors draw from previous experience and tacit knowledge as key frames of reference. These processes play a foundational role in shaping the pathway of the next two tiers of processes, which shift into more deliberative activities by codification of new or revised routines. In ‘knowledge articulation and codification’ new procedures are created and/or behavioral requirements, where the details of operationalizing the ideas, which had been deemed appropriate, are developed. The last tier, according to this conceptual package, is ‘feedback and iteration’. Here, assumptions are validated when adjustments demonstrate organizational benefits, insofar as changes are responsive to the first two tiers. The typology offers concepts that can be used to unpack processes of change, or resistance to change. These concepts of organizational change offer complementary analytical resources to March and Olsen’s (2005) assertion that institutions cannot be changed automatically “…because institutions are defended by insiders and validated by outsiders, and because their histories are encoded into rules and routines, their internal structures and rules cannot be changed arbitrarily. The changes that occur are more likely to reflect local adaptation to local experience and thus be both relatively myopic and meandering, rather than optimizing, as well as ‘inefficient’, in the sense of not reaching a uniquely optimal arrangement. Even when history is relatively “efficient”, the rate of adaptation is likely to be inconsistent with the rate of change in the environment to which the institution is adapting” (p. 9).

2.5 Convergence: A sociological new institutionalist orientation
Both theoretically and empirically, the boundaries are not always clear between the different versions of new institutionalism. Attributes and strategies are empirically evident in the behavior of individuals and organizations. This is to say, actors use strategic behaviors to maximize preferred outcomes, while at the same time picking up normative cues from the institutional context to which behaviors conform. Indeed,
the boundaries between the institutionalisms are more often than not blurred. For example, Ostrom (2010), who is associated with rational choice as an institutional economist, argues for the need of a behavioral theory of human action in order to address climate change: “...a behavioral theory of the individual assumes that individuals do not possess perfect information but are capable of learning as they interact in a particular setting. Individuals are boundedly rational and do seek benefits for themselves but vary in their other-regarding preferences and norms about the appropriate actions that should take place in particular setting” (2010, p. 551). Further, Ostrom emphasizes the role of interactions between actors to develop and sustain trust and reciprocity as a means to overcome social dilemmas. Here the focus is not on efficiency as a primary driver of behavior. Rather Ostrom draws on the idea of appropriateness and learning as key variables, rather than limiting the analysis to rules, incentives, and explanations that emphasize the role of utility maximizing behaviors. Similarly, March & Olsen (2005) argue that the analytical strength of new institutionalism is that it relaxes conceptual rigidity by loosening expectations about actors' capacities “…in terms of normative commitments (virtue), cognitive abilities (bounded rationality), and social control (capabilities). The rules, routines, norms, and identities of an 'institution', rather than micro rational individuals or macro social forces, are the basic units of analysis...[and]...the spirit is to supplement rather than reject alternative approaches” (p.20).

The new institutionalist orientation used in this research can be characterized as a sociological-normative perspective. By adopting this theoretical perspective, the research focuses on the availability of interpretative space between formal and informal rules, and offers an analytical lens through which to view micro-interactions between actors and the role of interpretation in gradual organizational learning. By assuming interpretative agency, the analysis endeavors to unpack how actors make choices as they navigate the complex institutional terrain of climate adaptation. Their choices, as individual actors situated within a broader institutional context, provide a signal about the dynamic interplay between the institutional context and the governance process. The focus is not on the heroic institutional entrepreneur, but rather attention is paid to the steps, and the underlying conditions that allow interpretative actions, that preceded the emergence of an organizational 'champion'. Interpretative actions occur in what Mahoney and Thelen (2010) refer to as the 'soft spots' between rules, interpretation of rules, and enforcement of rules. When faced with new problems, organizational actors use the so-called soft spots to apply existing rules in new ways by acts of reinterpretation (Hall & Thelen, 2009; Lowndes, 2009).

The pathway to institutionalizing organizational routines can be explored by examining the interconnections of institutional dynamics. In these, actors/organizations are knitted into the dynamic both as being part of the fabric and as the knitters. This
social constructivist perspective assumes while actors/organizations actively shape and/or resist new ideas, embedded discourses and practices also exert influence (Healey, 2007, p. 67). This theoretical approach allows for interpretative actions by institutional actors yet assumes that actors are “…highly attentive to social and symbolic pressures arising from their institutional environment” (Suddaby, Deidl, & Le, 2013, p. 330). However, learning and institutional change remain a constant. Similarly, Lawrence and Suddaby (2006) argue that by focusing on actors as active players (rather than passive) scholarly research can “…break the dramatic spell of institutions and draw attention behind the scenes, to the actors, writers and stage hands that produce them ….to understand the ways in which disparate sets of actors, each pursuing their own vision, can become coordinated in a common project. By paying attention to institutional work, theorists can avoid the subjective illusion of institutional outcomes and begin to unpack the relation and interactive moments of institutional production” (p.249). For research and policy formation that is focused on developing and establishing policy process for climate adaptation, dismantling the institutional puzzle is important in order to develop a richer understanding about how adaptation to climate change is situated within the values and norms of adaptation actors and the ways in which informal institutions are connected to formal enabling structures.

3.0 Research Design and Methods

The remaining sections now turn to a description of the research design and methods. As explained in the preceding chapter, the research design is based upon a layered analytical approach with the first two layers (referred to as ‘learn’ and ‘analyze’) establishing the interplay between formal and informal institutional structures and norms, and the third layer (‘explore’) designed to ‘play’ with the “rules of the game” (North, 1990). In this chapter the methods that were utilized to achieve the research objectives are described, including the case study selection of the Netherlands and the exploration of tax increment financing as a possible mechanism to facilitate municipal level investment in climate adaptation. In describing the methods, this section pays particular attention to the simulation gaming strategy used in the ‘explore’ phase. As an experiential research strategy, it offers an interactive format that is well suited to building knowledge about the socio-political and structural challenges facing practitioners as they struggle in the current phase of ‘trial and error’ (Berkhout et al., 2006). In that sense, simulation gaming offers an experiential setting practice as adaptation actors travel along a learning curve of climate adaptation policy formation and, for research, it provides an experimental setting to observe the way in which policy-makers make room for institutional action spaces.
3.1 Research Design

The research methods combine: 1) multiple case studies as a means to conduct in-depth research on real life phenomena, and as a strategy to understand the same phenomena under different conditions (Swanborn, 2010; Yin, 2013) and 2) an experimental method using simulation gaming, which is consistent with Yin’s contention that case studies can offer important evidence to complement experiments. Drawing from Straatemeier et al. (2010), the research design is based on a sequential research process that builds knowledge through case studies and applies the learning to test practitioners’ responses ‘in action’. This approach reflects what Straatemeier refers to as an experiential research design. The objective of this approach is to iteratively build on case study findings, which serve as the input to develop abstract concepts that can be ‘tested’ in the context of planning practice. Arguing that “...if one wants to know how new planning practices can be generated...” (p.578) research methods that create an interface between “…science’s ‘codified’ knowledge and practitioners ‘tacit’ knowledge…” are essential in order to address socio-political challenges that are cross-disciplinary and confound uni-dimensional responses. The way in which ‘testing’ is conceived draws from the design sciences wherein the aim is not to pinpoint causation or predict behaviors, as practiced in the natural sciences (Klabbers, 2009; Straatemeier et al., 2010). Rather, an approach influenced by the design sciences aims to maintain a firm link between the activity of building knowledge and applying knowledge as a contribution towards “…changing existing situations into preferred ones” (Klabbers, 2006). The orientation of design sciences, in the

![Research Process and Design Diagram](image-url)

**Figure 1** Research Process and Design - drawing from Straatemeier et al.’s “An Experiential Approach to Research in Planning” (2010)
context of social inquiry, is to both understand the problem, develop insights into possible underlying mechanisms, and to consider alternatives and possible solutions. The aim of the research described herein is to consider the interplay of informal and formal institutional dynamics, with the objective of learning and exploring participants’ perspectives on existing municipal instruments to facilitate municipal investment in local-level adaptation. The approach achieves two fundamental goals: firstly, as described in chapters 3 and 4, knowledge based on case studies established further insights about current and innovative practices in relation to the use of existing mechanisms; secondly, as described in chapters 5 and 6, the research process builds on that data from the first half of the project, but introduces an alternative application of an existing mechanism that practitioners are asked to ‘test drive’ using a simulation gaming process. Figure 1 draws from Straatemeier et al.’s model of experiential research design, which illustrates the integrated research approach reflecting a cumulative learning cycle. Beginning by coupling investing in local climate adaptation as both a scholarly research question and as a tangible practical planning problem, the next step is the case study phase. This phase was used for three key inter-related objectives: firstly, to gather data and gain a deeper understanding about the world (Qu & Dumay, 2011) of the planning practitioners and the complexity they face in relation to climate adaptation; secondly, the empirical findings were used as the basis to design the simulation game, wherein the complexity of the ‘real world’ policy context is reduced into the abstraction as the reference system on which the ‘Watervliet Safe Haven’ game is modeled and; thirdly, the data was fundamental to creating the internal validity of the simulation game in the third phase of the research process (see section 3.3.1 for a description of simulation gaming). In the fourth phase further abstract concepts are developed. The purpose is to build theoretical and empirical knowledge as a contribution towards understanding the degree to which, for example, the oft cited financial barrier to implementing climate adaptation is a ‘surface constraint (Measham et al, 2011) or whether alternative explanations offer a richer understanding. Lastly, the intention of including a gaming process in the research design is to offer a ‘concrete experience’ that practitioners could learn from. As a dynamic model, the knowledge is returned to the first phase in relation to future research and further exploration towards improving planning practice.

3.2 Case Selection

3.2.1 Urban Adaptation to Climate Change in the Netherlands: A policy laboratory

The Netherlands has been selected as the case for this research because it is regarded as a front-runner in European climate adaptation, and has attracted international attention with flood risk management plans (ie the Room for River program), technological innovations (ie such as innovative approaches to dike design), and
global networking initiatives that focus on building awareness and transferring information between the world’s major Delta regions (known as the Connecting Delta Cities Network). Nonetheless, as experience in other European countries shows, how to finance local investments remains unclear (Swart et al., 2009). The Netherlands has been engaged in developing policy processes and producing climate research since the national adaptation program was launched almost 10 years ago under the ARK program in 2007. The Delta Program is now responsible for developing recommendations for adaptation to climate change in the Netherlands (Termeer, Biesbroek, & van den Brink, 2011). Local-level climate adaptation-related infrastructure improvements will be delivered using existing spatial planning investment frameworks, and through coupling adaptation investments with redevelopment activities over time. (Deltaprogramma, 2010, 2012a, 2012b) (Delta Programme, 2014).

While the policy framework is still a work in progress, two key directions stand out. Firstly, local spatial adaptation investments will be achieved through market-based development activities in conjunction with planning and land development processes; thus secondly, the implication is that new institutions or introducing new instruments will not be necessary. These directions highlight an inclination towards market and growth-oriented solutions as potential means by which to facilitate investment in climate adaptation; and, secondly, an acknowledgement that alternative applications of existing mechanisms ought to be considered. Without additional targeted funds or specifically designed adaptation-related tools, local level municipal actors will need to consider how to strategically apply the existing ‘toolkit’ in such a way to facilitate investment in climate adaptation1.

In the foreseeable future, however, it is unclear how Dutch municipalities will be able to finance adaptation measures given the stagnated development sector. Conventional planning approaches and instruments that are used to facilitate local-level public goods investments during the development phase are unlikely to be effective because many development projects across the country are struggling to remain financially viable (Deltaprogramma, 2011). Thus, given the active policy process driven by the Delta program (van Buuren, van Vliet, & Termeer, 2015) and search for the new ‘holy grail’ of planning instruments and financing models, the Netherlands represents a kind of policy laboratory and a fertile research context in which to explore new approaches to financing local level public infrastructure in times of climate change.

Finally, the Netherlands was also selected for practical reasons: the funding for this research was provided by the Dutch research program ‘Knowledge for Climate’, theme 4 of the ‘Climate Proof Cities’ component. While the funding was provided with

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1 This direction is generally consistent with the characterization of Dutch spatial planning as having transitioned into an era that is heavily focused on market-based processes and principles (Heurkens, 2014).
the objective of focusing adaptive capacity of Dutch urban areas and the role of urban planning in the governance process, there was a substantial amount of research space to interpret and explore the theme from a broad perspective.

3.2.2 Tax Increment Financing: A short introduction

As described above, given the expressed interest in the application of market-based solutions to finance adaptation investments during the planning and land development processes in the Netherlands, the research design makes several propositions. First, it takes as a starting point that because of the underlying long-term incremental characteristics of climate change, mechanisms that focus on capturing immediate return on land value to facilitate investment in climate change are poorly designed to motivate commitment and a long-term investment perspective. Secondly, autonomous adaptation by municipalities could be enhanced if resources were available at the local level, and thus not dependent on actions from higher orders of government. Based on those two propositions, the research focuses on the use of property taxes, in the context of a specific value capture mechanism known as tax increment financing. A specific focus on the potential of property taxes to facilitate investment in local adaptation is based on four key characteristics: 1) it is a relatively long term stable source of income; 2) it provides a degree of local control; 3) the use of property taxes can strengthen the understanding about the connection between benefits and costs in relation to local service levels; and, 4) as an income source, it does not add upfront costs during the development phase (Kitchen, 2010; Merk, Saussier, Staropoli, Slack, & Kim, 2012).

Tax increment financing (TIF) is an instrument designed to capture the future projected value of property taxes (chapter 3 provides a detailed review of this instrument). TIF is defined within a group of instruments that “…enable the increased value of land and property as a result of public investments…to be captured directly or indirectly, so that it [the value] can be used for financing the activities that are responsible for the increased value” (van der Krabben & Needham, 2008, p. 654) and/or to finance those parts of the plan that are not cost effective (Priemus, 2007). Value capturing instruments assume that there is sufficient value in the future created by the development process that can be used to support the financing of public infrastructure investments. Value capturing is different from other strategies such as cost recovery, which is limited to recovering the costs of the public works in the plan area from the property developers during the development phase (van der Krabben & Dinteren, 2010). TIF indirectly captures value from land and property owners. It is inherently future oriented and does not directly add cost to the development phase, which can act as a disincentive to investment, as the design assumes that value is recouped over time. Conversely, development fees rendered in the development phase or additional levies, as used in assessment districts (Zhao & Larson, 2011)
add upfront costs. Other strategies, such tax abatements used in enterprise zones result in tax cuts thereby reducing the flow of tax income to the municipality.

To summarize, the exploration of TIF as a possible means to facilitate investment in climate adaptation is based on the understanding that in tax increment financing the local investment is capitalized in the property, and the future property tax increment is captured over an extended period, thereby rendering a degree of cost and benefit distribution between contemporary and future users. It is a mechanism that earmarks a revenue stream for investment in a range of public investments (underground services, brownfield, parks, etc). Finally, it is a locally-based mechanism that is embedded in a regulatory framework based on defined policy criteria (referred to as the “But-For” test), public consultation, and approval from designated authorities. It is also a mechanism that can be used to facilitate long term capital budgeting and as a means to attract private sector finance (Merk et al., 2012). TIF, however, is a risk-based financing instrument that is not without controversy. The degree to which certain TiF’s have not met expectations or, conversely, some TIF districts may exemplify sound management and good governance, is the subject of local administration and political decisions. What is empirically pertinent to this research is whether TIF is a potential new tool for the Dutch climate adaptation financial toolkit.

From a theoretical perspective, as described in the foregoing sections, the emphasis of this research is on the degree to which practitioners’ perspectives are shaped by institutions in the type of financing mechanisms that they deem as acceptable. TIF provides a means to analyze whether practitioners are willing to consider such an instrument for conventional investments and whether it is deemed appropriate for climate adaptation-related investments. As described in chapters 4 and 5, introducing TIF provoked responses that are reflective and grounded in complex socio-political dynamics that offer rich insights about the possibilities of a new market mechanism for Dutch municipalities.

### 3.3 Research Methods and Data Collection

A combination of research and data collection methods were employed in this project, based on case studies and simulation gaming. Simulation gaming is an interactive strategy that is actor-focused, in contrast, but complementary, to comparative analysis of planning policy and program documents, which forms the backbone of much governance climate adaptation research (Hamin & Gurran, 2009). A combination of case studies with simulation gaming is also well suited to the

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2 The policy rationale for creating a TIF district is based on the ‘but for’ test, i.e., private sector investment would not occur or it would not occur in a planned way within an acceptable timeframe, if it were not for government intervention and use of public resources (Squires, 2012).
challenge of researching municipal investment in climate adaptation. This is because there is very limited empirical data that provides evidence about the use of market-based mechanisms to facilitate local area investment in climate adaptation.3

3.3.1 Summary of Methods

Desk Research: literature review (scholarly and policy documents and reports) to draw on research about: 1) Dutch spatial planning and land development, Dutch municipal financing; 2) international literature on climate adaptation, and focusing specifically on the Dutch policy process.

Interviews and Engagement with Practitioners: in total, 121 professionals ranging from practicing spatial planners, economists, developers, municipal financing and tax advisors, and experts from academia and the banking sector provided data for this research. In-depth interviews (approximately 1.5 hours each) were conducted (n=28) with individuals that were identified in policy documents, websites, and snowball sampling (Farquharson, 2005). All interviews were recorded, transcribed, and coded using a qualitative data-analysis software (NVivo). Simulation game participants (n=59) self-identified by responding to an advertisement for the sessions that was posted on a range of social networking sites. The gaming sessions were focused on Dutch spatial planning issues and/or climate change related topics. Staff from the Knowledge of Climate program distributed the invitation for the simulation gaming sessions using the organization’s database of contacts.

Questionnaires: Senior municipal tax officials (n=34) participated in a nation-wide questionnaire via telephone. Data was analyzed using descriptive statistics. The strategy provided an indication of whether large municipalities engaged in redevelopment activities use or include future property taxes earnings within redevelopment budgets. Two questionnaires were administered to participants in the simulation game sessions. Each questionnaire was based on a Likert Scale, using a five point scale ranging between strongly agree to strongly disagree. A statistical software program (SPSS) was used to analyze the results of the questionnaires using descriptive statistics.

Simulation Gaming: Seven three-hour sessions (21 hours) were held in five different locations in the Netherlands. All session material and discussion was in Dutch, except the first 20 minutes wherein a presentation was conducted in English (see validity session for further discussion). Three methods to collect data during the

3 The use of green bonds has relatively recently entered the private investment market. Green bonds are used to raise financing for both mitigation and climate adaptation municipal investments. The third sector organization, C40 recently issued a overview of the role of green bonds in the U.S context and guidance to policy makers, see http://www.c40.org/blog_posts/new-playbook-guides-cities-through-green-bond-market. This mechanism is not exclusive to the North American market. In 2014 the City of Johannesburg successfully issued a US$143m green bond to support a range of initiatives focused on reducing the city’s greenhouse gas emissions.
sessions were used: 1) each session was audio recorded and a written summary of each session was produced by a native Dutch speaker identifying the themes, key debates and tensions; 2) the two questionnaires, as mentioned; 3) each group produced a brief written report, using the same report template. The next section provides a brief overview of the simulation game method.

3.3.2 Simulation Gaming: a brief overview
Drawing from the literature, this section provides a brief overview of simulation gaming and the rationale for selecting the method and the choice of a role play format. Chapters 4 and 5 provide an explanation about the simulation game, known as the Watervliet Safe Haven game, that was used in the seven sessions.

Gaming and simulations have a long history (Crookall, 2010; Shubik, 2009) and are used in a range of applications and a diverse array of settings from creating military strategies, improving business and organizational management, educational and social policy development, to urban planning. Drawing from Mayer et al (2005; Mayer & Veeneman, 2003) and (Shubik, 2009) three functions of gaming and simulations can be distinguished: firstly as a learning and teaching tool wherein participants can learn about the system that is being referenced in the game in relation to reinforcing methods of technical training and interpersonal skills; secondly, gaming can be used for research because an experimental environment can be developed that enables researchers to “…learn about the system from the interactions among the participants and from the interaction between the participants…” (Mayer et al., 2005, p. 407); more specifically, according to Shubik, to generate or validate hypotheses, match experiments and theory, and for the generation of new theory; and thirdly, gaming can be used as a tool for policy intervention insofar as both researchers and participants can learn about decision-making and policy-making in a compressed and simplified environment in comparison to the real “messy” world of policy development (Mayer et al., 2005).

Gaming and simulations are, as described by de Caluwe et al. (2012), quasi-experiments insofar as the researcher is able to manipulate variables yet create a realistic environment which the participants interact with and enrich by inserting the complexity of ideas, experience, and values that cannot effectively be modeled in a laboratory research setting. Gaming simulation is, a “…special type of model that uses framing techniques to model and simulate a system. A gaming simulation is an operating model of a real life system in which actors in roles partially recreate the behavior of the system” (Duke & Geurts, 2004). In the context of exploring and testing new ideas in the policy development process, gaming offers, as noted by Kuit et al. “…an experimental environment [that] is relatively safe. There is no risk of real institutional damage” (Kuit, Mayer, & Jong, 2000, p. 8) moreover, it is a methodology that is able to reflect
the complexity of policy making by incorporating “... the technical-physical and social-political dynamics...” that is not captured in workshops and brainstorming sessions (Mayer, 2009). For example, one of the key objectives of brainstorming is to come up with original or novel ideas (Putman & Paulus, 2009), but in doing so, such novel ideas are often substantially normative and not grounded in broader contextual considerations. Similarly, the purpose of focus groups, a well established workshop format, is to encourage a greater understanding of different attitudes and opinions insofar as it is a method that “...is useful for exploring and examining what people think...about issues of importance to them without pressuring them into making decisions or reaching a consensus” (Liamputtong, 2011, p. 5).

3.3.2.1 Simulation Gaming in this Research
The objective of this research is to build an understanding about how planning practitioners would respond to a reformulation and reaplication of property taxes in the form of TIF’s as a strategy to facilitate investment in local adaptation measures. A methodology was needed that would generate sufficient data about behaviors and decisions in relation to, what Kuit el al. describe as, a “...behavior in an unknown situation in the future.” (2000, p. 145). Investigating problems and issues that cannot be directly accessed is not uncommon in research and training (Peters, Vissers, & Heijne, 1998). Using case studies, information can be gathered that exists today and we can conduct speculative interviews (de Caluwe et al., 2012) by asking practitioners how they think they would respond to a novel financing instrument; similarly, surveys can be used to determine opinions and preferences. However, these strategies risk losing the rich information available in the former or risk losing the generalizability of the latter.

A key advantage of simulation games is their ability to, on the one hand, simplify reality, and, on the other, allow for the inherent complexity that actors infuse into the game. If we accept that policy-making is “chaotic and messy’, as Mayer (2009) suggests, computer simulations of human systems are inherently weak in relation to the purpose of the research objectives given the challenge of modeling “…tacit knowledge”⁴ (Klabbers, 2009; Meijer, 2009). When human participants become part of the model they introduce a level of complexity and realness that is limited in controlled laboratory settings and computer modeling (Daré & Barreteau, 2003, p. 24). Game simulations, therefore, provide a multi-actor platform for actors to experience the complexity of the policy making process in a more simplified and controlled manner. The simulation game compresses the time-frame of a typical policy making

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⁴ Novak and Canas described tacit knowledge as the knowledge that experts have but cannot articulate well to others, which is acquired over many years of experience and derives in part “…from activities of the expert that involve thinking, feeling, and acting” (Novak & Canas, 2006).
process yet offers a simplified institutional context that has been infused with the socio-political and technical endogenous and exogenous influences and tensions that actors would typically contend with in their regular professional lives. Gaming accepts that the players do not have perfect information, nor are they rational actors with comprehensive information about the local context such as, for example, in a game theoretic approach (Alexander, 2000). For this reason, using simulation gaming for the purposes of this research provides a methodological framework that has a conceptual connection with the new institutional theoretical approach described in the preceding sections.

3.3.2.2 Choosing a Game Format
When confronted with the challenge of designing a game in which to generate data for scientific purposes, researchers must make a series of decisions starting with the form of the game. Will it be a simulation or a game? Or something in-between? According to Crookall, the debate between gaming scholars continues with respect to agreeing on a definitive and broadly accepted conception and application of game and simulation (Crookall, 2010). Nevertheless, there are differences between gaming and simulation. According to Meijer and Hofstede (2003) a “simulation can be defined as studying the effectors of human behaviors or decisions on some key variables on a model that represents a real-world system. A game can be defined as a clearly delineated activity with its own roles, rules, and incentives, carried out for its own sake. A gaming simulation is a simulation of a real world system in the form of a game. This implies that the roles, rules, and incentives of the game mimic some real world phenomenon” (p.24). Sauve et al. provide further guidance by emphasizing the artificial nature of a game format in comparison to simulations or simulation games, both of which require a strong element of simplification of real-life and allowing for a dynamic that allows participants to control the reality in which they have been placed. By allowing this, unlike a conventional model that is static (Sauve, Renaud, Kaufman, & Marquis, 2007), researchers can study the behaviors of the participants within that reference system. According to Sauve et al. (2010), the difference between a simulation and a simulation game is the former is reality defined as a system, which is a model that must be faithful to controlling variables. Simulation gaming, while it is reality defined as a system, is a model that is comparatively flexible and is not faithful in controlling variables. Secondly, a simulation game requires participants, a degree of conflict, and a goal to win, which can also be conceived as reaching an objective (as is the case of the Watervliet Safe Haven game).
3.3.2.3 Simulation Game Using a Role Play Format: the choice in this research

A simulation game method using a role play game format is well suited for the objective of this research because a simulation game using a role play format provides an intermediate step to stretch the institutional parameters (i.e. not a simulation that must be faithful and accurate) and is not artificial and based in fantasy without a connection to reality. The elements of the game can be represented in different formats from computer-based virtual worlds, board games, role play games, using a range of materials from metaphors (i.e. beads representing resources) to materials that are literal objects from everyday life (i.e. maps). Rather than modeling human behavior using computer models, as in agent-base modeling, the social element of simulation games is achieved through players taking on a role. Role play games are not restricted by the board form, unlike board games. Neither do they have the randomness resulting from throwing the dice, or limitations in terms of the rigidity of modeling, like computer-based games. Instead they are a format that compels participants to develop a dialog within the context of a simplified reality, which is purposely designed to reflect the particular institutional context in which participants operate in their everyday life.

Role play games (RPG) are a learning and research strategy that is an established format in the world of policy exercises. Unlike interviews, RPG build in contextual factors and tensions that the participant must operate within. It is not a one-on-one interview or a survey, within which respondents can provide opinions unconstrained by peers. RPG are a live format that is infused with elements of reality that the player must contend with, but offer a degree of ‘play’ to participants and the space to stretch their ideas, norms, and values.

Role play games are based on the relationship between three poles; drawing from Dare (2003): observed reality and a controlled experiment that is embedded in a conceptual model (i.e. the reference system). Roles provide players with a particular function that refers back to the reference system (Os van, 2012) and plays a function in the game. The roles can be written to be open and flexible, thereby giving the player a degree of freedom in the objectives and constraints, or they can be detailed and specific. Similarly, as described by van Os (2012), games can be either rigid rule-based games or free-form gaming. In the former type of game, all of the rules are defined at the start of the game, typically in the form of a computer program. Free-form games are underpinned, based on certain assumptions that are derived from the research objectives, but the in-game constraints and objectives are generally more free flowing, thereby allowing the players to behave more openly.

The use of role play as the format for the simulation game used in this research offers methodological coherence with the theoretical focus of this investigation (Morse, Barrett, Mayan, Olson, & Spiers, 2002). According to Thoenig (2012), in public organizations decisions are based on a some degree satisficing to meet an
acceptable form of understanding and general consensus by making “…tradeoffs between the content of the problem they [are addressing] and the level of uncertainty they face in real time” (Thoenig, 2012, p. 173). That is to say, public organizational actors make decisions based on reaching an understanding between each other, which is a kind of role play, about the context they face and in determining the possible strategies using values they imagine to be acceptable (both endogenously and exogenously derived). Indeed, as Innes and Booher assert, role play is not isolated to artificial games, as they argue planning processes in everyday life are comprised of citizens and professionals playing a particular role and changing their roles accordingly to meet with personal or organizational objectives (Innes & Booher, 1999). Moreover, in addition to more instrumental motivations, according to their research on role play and consensus building, planners and stakeholders often balance a range of roles, which have different and potentially competing values, from personal to professional, that must be managed and/or strategically deployed.

Role play gaming, unlike a more traditional workshop format, is a method that allows the game designer to purposely intervene to manipulate variables (i.e. with some surprises that both create a degree of ‘fun’ but also represent real life scenarios that mimic the real world). Participants must collectively overcome these variables during the simulation process. In the Watervliet Safe Haven game described in chapters 5 and 6, information was provided to participants that added pressure and complexity to their discussions. The design of the information, and the means to convey it, was based on realistic formats. For example, during game play, participants were provided with media reports about public budgets and financial risks, political actions from an abutting neighborhood, and flood risk projections and plans provided by engineers and planners. A role play format offered a dynamic and flexible strategy to empirically observe how the players responded. It used the information in relation to conceptualizing the use of property taxes, within the TIF construction, and the degree to which they could, as a group, reconcile differences of opinion.

Quantitative research methods seek to address threats to validity through randomization and controls (Maxwell, 1992). However, as shown in the following section, validity criteria and strategies to overcome such issues in research using simulation games adhere to conventional principles. Also they have developed specific techniques that can be applied in the design and empirical cycles of the research process.

3.3.2.4 Validity Criteria in Gaming

The methodological approach taken in this research project is qualitative. This approach provides strategies to work with the data in a more interpretative, open-ended, and contextualized way than is possible with quantitative approaches.
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(Creswell & Miller, 2000). Simulation gaming is a method that is applied to conduct scientific research, as means to generate and collect data (Meijer, 2009). Simulation gaming is primarily a qualitative method (Meijer, 2009) that incorporates inductive techniques to address threats to validity, such as the iterative review of data to discount preliminary ideas, create alternatives, or strengthen hypotheses. As Maxwell notes, this approach “is accepted by qualitative researchers from a wide range of philosophical positions” (Maxwell, 1992, p. 296).

Peters et al. draw from Raser’s (1969) four criteria for validity in gaming in their article “The Validity of Games” (1998). First, the model of the reference system must create an environment that is realistic to the players, referred to as the psychological reality. Without such an environment, players tend not to act like they would in reality: e.g. they take more risks than they typically would, therefore their behaviors could not correspond to the reference system. Secondly, the game ought to demonstrate structural validity: the theory and the assumptions that are built into the game must be isomorphic to the reference system. Peter et al. suggest that this means that the game does not need to mimic precisely the reference system, but rather the objective is to simplify the complexity of reality. Similar to the first two criteria, process validity supports the development of a realistic environment for the player, such as the flow of information, resources, and interactions between the actors. Raser’s focus on creating a reference system that is responsive and recognizable to players is consistent with Malaby’s contention that making a game “….is about creating the complex, implicit, contingent conditions wherein the texture of engaged human experience can happen” (p. 107) in order to “….generate interpretable outcomes” (Malaby, 2007). Raser’s fourth validity criterion is predictive validity wherein a game is considered valid “…to the degree that it can reproduce historical outcomes or predict the future” (quoted in Peters et al. p. 24). This last criterion is problematic given it seems hardly feasible to achieve statistic probability using gaming, due to the typical sample sizes. However, Peters et al. interpret this criterion as relating to the game accurately reflecting what happens “in reality” (p. 24). The research described here builds on this conception of the predictive validity criterion, by conceiving of it as the degree to which the outcomes conform to social norms and values.

3.3.2.5 Validity in this Research: Strategies used in the Watervliet Safe Haven Game

Based on the above overview of validity criteria with respect to simulation gaming, table 1 summarizes the strategies that were used in the Watervliet Safe Haven game (see chapters 5 and 6). The following summary is based on criteria and techniques from Peters et al. (1998), De Caluwe et al. (2012), Duke (1980):
| Psychological Reality: behaviors correspond to reference system | - All material and discussion in native language of participants (Dutch); participants were made aware that a 20-minute presentation at the beginning of the session would be in English; the pre-game questionnaire indicated that 100% of the participants were comfortable with the presentation being in English.
- Native Dutch speaker was present during sessions to provide assistance.
- Participants/roles were developed to specifically reflect the actors that would be part of the type of professional meeting in reality.
- Individual roles were similar or the same as participants’ real-life roles.
| Structural: simplification of reality | - Issues identified in the game reflected the reference system (based on case study research in phase 1 and 2 of the research design), providing a thick understanding of the challenges and dilemmas that were simplified into the simulation format.
- Testing and member checking was undertaken prior to the first session in two sessions with colleagues from Radboud University and master’s students. Feedback and revisions were incorporated into the simulation game thus strengthening the scenario to ensure it reflected an accurate abstraction of reality.
| Process: information, flows, interactions | - All materials designed to look like materials from reality: i.e. the City Council report, newspaper articles, letter from National government; press release, and a neighborhood petition.
- Participants received a formal invitation from the “Mayor” (as part of a package) approximately one week prior to the session thereby enhancing the perception of their official capacity to participate in the session.
| Predictive: conforms to social norms and values | - Results consistent with literature and findings arising from phase 1 and 2 indicating that participants did not offer perspectives and a final recommendation that would not realistically conform to norms and values.
- The post-game questionnaire confirmed that the strong majority agreed that the final recommendation of the group to the Watervliet City Council was realistic.
- Multiple repetitions of the same simulation game rendered consistent behaviors and perspectives.

Table 1  Validity Criteria - Simulation gaming
4.0 Conclusion

In this chapter the methodological approach was identified. A description of the new institutionalist theoretical approach was sketched out and situated in relation to the broader school of new institutionalist thought. This was represented in rational choice institutionalism, historical institutionalism, and sociological institutionalism. It was argued that sociological institutionalism, as an approach that emphasizes the interactive relationship between formal and informal institutional rules, allows for an interpretative space within which actors can exert a degree of agency – yet, such agency is situated within an institutionally bounded context. It was further argued that this analytical approach provides a conceptual means to consider the ways in which planning practitioners navigate the dynamic context of Dutch planning, grappling with the question of how, and by which means, to enable municipal investment in climate adaptation. This chapter also provided an overview of the research design and methods that were used to collect and analyze the data. The latter half describes the qualitative research design as a case study strategy wherein data from smaller cases, within the broader Dutch case, and simulation gaming, were used to analyze the socio-political dimensions of using tax increment financing to facilitate local investments. The next four chapters provide a detailed analysis of the findings, following the order set out in section 4 of chapter 1.
References:


Berkhout, F. (2012a) Adaptation to climate change by organizations. Vol. 3 (pp. 91-106).


3

Bridging the Financial Gap in Climate Adaptation: Dutch planning and land development through a new institutional lens

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Abstract

Based on a case study of the Stadshaven port redevelopment in Rotterdam, this chapter explores whether existing spatial planning mechanisms and processes can be used to facilitate local-level investment in climate-resilient public infrastructure and/or whether new processes and mechanisms are required to encourage investment in climate adaptation. The study reveals several key findings. Firstly, a lack of conventional funding sources or formalized regulatory framework allowed room for experimentation with existing mechanisms and flexible strategies. Secondly, project planners are currently ambivalent towards introducing new mechanisms as a means to overcome implementation challenges. The case provides evidence about the role of the governance process, not simply as a means of system coordination that exists in isolation from institutional norms and values, but rather as a space for innovation, which can contribute towards reducing the financial gap associated with climate adaptation.
1.0 Introduction

Despite efforts to reduce greenhouse gas emissions, the scientific community agrees that adaptation to climate change is necessary (Swart et al. 2009; International Panel on Climate Change 2013; Adger, Arnella, and Tompkins 2005). Additional stresses related to climate change present an emerging challenge for public urban infrastructure. The effects of climate change will include multi-hazard simultaneous phenomena and ‘creeping’ changes (Birkman et al. 2010) that will become more frequent and intense, including rises in sea level, river flooding, and urban heat island effects (de Bruin et al. 2009). Local governments are required to facilitate investment in, and oversee, conventional public urban infrastructure, e.g., water distribution and sewers. Within the context of climate change, research about resilient city building also suggests that municipalities will benefit from new public infrastructure strategies such as permeable pavement, separation of stormwater and sewage, strategic application of greenspace and trees, water storage and retention, and improved drainage and grading plans to mitigate possible flooding or deluge incidents (Makropoulos and Butler 2010; Bobylev et al. 2013). However, in times of fiscal stress, any new infrastructural investments, or even retrofitting existing systems, poses a substantial financial challenge for municipalities.

This chapter addresses these issues in the context of the Dutch planning system, focusing on two main issues: firstly, can innovative practices and uses of existing spatial planning mechanisms and processes facilitate local-level investment in climate-resilient public infrastructure, and/or, secondly, are new processes and mechanisms required to encourage investment in climate adaptation? This chapter will also explore institutional changes such as modifications to existing rules, norms, and practices by local-level Dutch spatial planners. The assumption of this paper is that institutions are complex and dynamic facets of the adaptation implementation process, rather than as inert and inflexible.

Mahoney and Thelen argued that institutional change often occurs “…precisely when problems of rule interpretation and enforcement open up space for actors to implement rules in new ways” (2010). This paper considers the interplay between local governance processes and the institutions in which the actions are embedded. Section 2 introduces an institutionalist conceptual framework, which will be applied to analyze empirical findings to build on institutionally-oriented research about climate adaptation (Storbjork and Hedren 2011; Oberlack and Neumarker 2011; Gupta et al. 2010; Termeer 2009; Biesbroek et al. 2011; Glaas et al. 2010; Inderberg 2009).

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2 Resilience in this context refers to an engineering conceptualization wherein adaptation measures are designed to return the impacted area to a steady state after the disturbance (Funfgeld and McEvoy 2012).

3 Innovation refers to the application of existing mechanisms to create novel solutions to meet new requirements.
Specifically, it explores the degree to which institutions constitute the ground on which modes of practice are played out and values and ideas evolve or are reinforced (Schmit 2008).

Section 3 outlines the methodology and Section 4 provides a brief background about the Dutch national climate adaptation program and key characteristics of Dutch planning and land development practice. By connecting program with practice, Section 4 also problematizes the anticipated institutional delivery platform of local climate adaptation investments, which will likely occur through planning and redevelopment processes. Sections 5 and 6 present a case study: the large-scale, long-term Stadshaven port redevelopment project in Rotterdam. This case reveals the degree to which practitioners are modifying modes of practice and reinterpreting rules as a means to facilitate investment in climate resilient public urban infrastructure. The chapter concludes with critical reflections and identifies the fundamental tensions that are highlighted by the findings of the Rotterdam case study.

2.0 Theoretical Approach

2.1 Situating the Role of Institutions

Adaptation to climate change is a relatively new research field (Aakre and Rübbelke 2010) and scholars have used a variety of philosophical and theoretical approaches to explore the issue. Institutions in the climate adaptation literature are described in a variety of ways from representing a constraint (Funfgeld 2010; Corfee-Morlot et al. 2009) to being a ‘double edged sword’ as both a facilitator and limiter (Anguelovski and Carmin 2011) and, as inherently conservative, institutions are considered as both a strength and a weakness in relation to embedding adaptation into practice (Gupta et al. 2010). Scholars tend to view institutions as barriers, rather than facilitators, of adaptation to climate change (Runhaar et al. 2012). From this perspective, implementation of climate adaptation will require changes in planning and funding processes, e.g., through mainstreaming, cross-sectoral policy integration, or application of a multi-level governance framework (Uittenbroek, Janssen-Jansen, and Runhaar 2013). The purpose of the research described in this chapter is to explore the interplay between the governance process and the institutional context in which the actions are embedded. Biesbroek et al. (2013) called this a ‘realists’ perspective’ because the focus is “…geared towards the dynamics of the process in an attempt to understand the value positions, interests, and institutions that could reveal ‘why’ impasses have emerged” (35).

The current study builds on this realist perspective description, and also focuses on the spaces that evolve during this process and how they offer opportunities for
action to the actors and organizations that operate within an institutional platform. The analysis draws from previous research suggesting that institutional change is often a gradual process (Mahoney and Thelen 2010; Hall and Thelen 2009; Lowndes 2005). From this perspective, actors are seen as embedded within institutions; to evoke change, actors use existing tools to deal with new problems. That is, there is a broader interconnectivity between the often evoked idea that there are both barriers and stimuli to implementing climate adaptation. Biesbroek et al. (2011) defined barriers to adaptation as “...those conditions and factors that actors experience as impeding, diverting, or blocking the process of developing and implementing climate adaptation strategies” (182). Barriers may include uncertainty, lack of knowledge about climate change, and a lack of effective policy, governance, institutions, and financial resources (Moser and Ekstrom 2010). Oberlack and Neumarker (2011), defined stimuli in terms of dynamics that support the “drivers of adaptation” (8). However, while descriptive metaphors, the concepts do not provide an analytical lens to consider the way in which barriers and stimuli play out in different ways and in different contexts (Keskitalo, Juhola, and Westerhoff 2011; Westerhoff et al. 2011). The next section will present an institutional framework to consider how institutions play a critical role, and how an institutional platform can shape the context in which planning and implementation processes play out.

2.1.1 Dimensions and Dynamics: A new institutional conceptual framework

Concepts arising from ‘new institutionalism’ can help to clarify the degree to which Dutch spatial planning actors are starting to shape an implementation pathway. These concepts illuminate the role of institutions in structuring access to resources for climate adaptation investments (Agrawal 2010), the agency actors use in applying rules, and the degree to which there is scope available to bend or modify rules.

New institutional theories provide a range of explanations about how institutions behave in relation to uncertainty, how rules are applied, the types of actors that operate within institutional contexts, and the factors that inform institutional change. Although the theories differ in how they describe institutional change and inertia, they tend to agree that institutions do change. Buitelaar et al. (2007) argued that although practices and policies become strongly embedded once institutionalized, “…institutional change takes place as a result of an ongoing process of social-political manipulation and tireless tinkering, a process which can be appropriately labeled as ‘institutional bricolage’” (905). Some scholars working in the field of climate adaptation governance have suggested that new institutions and better coordination

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4 Buitelaar et al. (2007) refer to Chase Smith et al (2001, 42) definition of “institutional bricolage”: as “the patching together of institutional arrangements from the cultural resources available to people in response to changing conditions. A key feature of institutional bricolage is the coming together of different (mainstream and alternative) logics and perspectives” (p.95).
between stakeholders is required to implement adaptation. However, institutional change might not necessarily require overt abolishment of institutions or the creation of new ones, but may occur via reinterpretation and different applications of existing rules and practices (Hall and Thelen 2009). Lowndes (2009) argued that when institutional actors face new problems, the ambiguity creates “...critical openings for creativity and agency to establish new precedents for action” (12). Changes occur within what Mahoney and Thelen (2010) referred to as the “soft spots” (14; see Figure 1) between rules, interpretation of rules, and enforcement of rules. Therefore, in contrast to the general perception that institutions are inflexible and lack human agency which has been described (Lowndes 2001) as “…vulgar institutionalism [that] treat institutions as facts of life” (1956), this paper will apply a framework in which institutions change and evolve over time. This gradual evolution is largely reflective of contemporary socio-political norms, in what Dembski and Salet (2010) referred to as “patterns of social rules” (617).

Figure 1 draws from Mahoney and Thelen (2010), Hall and Thelen (2009), and Lowndes (2009) to illustrate the dimensions and dynamics of gradual institutional change. This analytical lens can help clarify the interdependency between institutions and governance. Rather than being inert, the governance process is seen as involving fluidity and agency in terms of the actors, organizations, and between the institutional platform in which the formal and informal ‘rules of the game’ are embedded (North 1990).

2.1.2 Institutional Platform: Rules of the Game
Institutionalist approaches\(^5\) conceptualize institutions in different ways, in terms of their relative economic, political, and sociological perspectives, but as Dembski and Salet noted, “...what most institutional approaches have in common is that they aim to explain how social rules enable collective action in a world of individual choices” (2010, 614). This kind of analysis emphasizes the relative importance of the social context that shapes the actions of individuals and organizations. Social practices are informed and shaped by norms, values, habits and routines, formal and informal rules. Lowndes (2005) referred to the range of ideas, values, and influences, including the role of media in framing social issues, as ‘institutional templates’ within which actors and organizations function, and are influenced by. Formal and informal institutions differ: formal institutions are generally seen as government rules that are enforced by the legal system, e.g., laws, constitutions, ordinances, and local land-use

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\(^5\) Four schools of thought, representing variants of new institutionalism, are referred to as historical institutionalism, rational choice institutionalism, and sociological institutionalism, and discursive institutionalism (Thynne 2008). Thynne identifies the logics associated with each institutionalism as ‘path-dependence’, ‘interest’ ‘appropriateness’ and ‘communication’, accordingly (p.329).
plans. Informal institutions have less explicit rules and emerge via repetition and solidification of behaviour through perceptions, values, beliefs, and norms (Buitelaar et al. 2011). Formal and informal rules interact and shape actions and behaviours at organizational and individual levels. Thus, institutions create the conditions (constraints and opportunities) that organizations and actors must negotiate to achieve their objectives (Lowndes 2005). Metaphorically, organizations and individual actors are players within a larger game with implicit and explicit rules that evolve over time (Lowndes 2009; Van Hal et al. 2012).

### 2.1.3 Governance: (Re)Interpretation and enforcement

In the conceptual model (Figure 1), governance is both a binder and an embodiment of the complex interactions between formal and informal rules. Governance is not reduced to a technical problem of ‘system coordination’ (Lowndes 2009, 95) as a means to improve implementation processes. Rather, governance is complex and involves building consensus and engaging in processes to obtain consent to carry

![Figure 1 Dimensions and Dynamics Between the Institutional Platform and Governance](image)

**Figure 1** Dimensions and Dynamics Between the Institutional Platform and Governance

Source: Author’s interpretation based on Mahoney and Thelen (2010), Hall and Thelen (2009), and Lowndes (2009)
out objectives in arenas involving diverse and conflicting interests (de Alcantara 1998). Birkman et al. (2010) described governance as the way in which actors and organizations interface and use mechanisms to articulate their interests, exercise their legal rights, and mediate their differences. This involves constant interpretation of rules, norms, and practices: written and unwritten, formal and informal, explicit and tacit (Van Hal et al. 2012). Thus, institutions may constrain or enable actors in the governance process to manage conflicting agendas and to set priorities (Storbjork and Hedren 2011).

Mahoney and Thelen distinguished between ‘rules-in-use’ and ‘rules-in-form’ and referred to the ‘soft spot’ (2010, p.14) of (re)interpretation or ignoring rules until the rules gain broader legitimacy and become part of a shared understanding. Actors may seek to adapt the ‘rules of the game’ to meet the demands of uncertain and changing environments and to protect (or further) their own interests. This conceptual perspective helps clarify the dynamic interplay between institutions and governance in the context of climate adaptation policy-making and implementation, by offering a degree of agency to practitioners to effect change while simultaneously acknowledging that they operate within an institutional context in which they must navigate a complex set of informal and formal ‘rules of the game’ (North 1990).

Application of this perspective to the Stadshaven project can help clarify the interactions between the broader factors influencing actions and the subtle ways that project actors are (slowly) finding solutions in the ‘soft spots’ of the governance process.

3.0 Methodology

This chapter explores how municipal-level actors use planning and land development processes to facilitate local-level investment in climate adaptation, whether innovative strategies are emerging, and the degree to which new mechanisms are required. The epistemological assumption behind this research is that local context matters and local actors construct meanings that underpin the views that they express (Creswell 2009). These views are the result of ongoing interactions within their professional sphere and through (professional) cultural norms. By focusing on a single detailed case study of the Stadshaven redevelopment plan, we explore the local planning context and the broader dynamics that affect responses to climate adaptation.

Rotterdam has garnered international attention for its climate adaptation strategy (Stead and Taşan-Kok 2013). This chapter goes deeper, describing how the Stadshaven project, and the Rotterdam Adaptation Strategy, is a work-in-progress that can provide insights as project planners grapple with complex issues related to major changes in Dutch planning and land development practice. The Stadshaven
project is not necessarily unlike other municipalities that are less engaged with climate adaptation, or are attempting to develop a strategy. Although the ambitious scale of this project might be beyond the capacity of many municipalities, the implementation challenges may be similar. Gerring (2007) referred to this as an “influential case” with respect to case selection (p.108). The objective here is not to focus on extraordinary pilot projects within the Stadshaven portfolio, but rather to focus on the “case that proves the rule” (Gerring 2007, p.108) with regard to the interplay between local institutions, governance, and the potential for actors to exert agency.

This chapter combines document analysis (national climate adaptation policy and programs; municipal and project policy and programs; local planning and land development regulatory frameworks) and semi-structured interviews. From September 2011–January 2013, 18 interviews were conducted with senior managers, policy-makers, spatial planners, and development managers from the key public sector organizations involved in the project (the City of Rotterdam, the Port of Rotterdam, the Stadhaven Project Management Bureau, and a non-profit social housing corporation). Interviews were also conducted with national senior policy advisors from the Ministry of Infrastructure and the Environment, who are responsible for national adaptation program development. Key individuals were identified from the policy documents, and subsequent interviewees were identified using snowball sampling (Farquharson 2005). Interviewees were asked about the degree to which investment in climate adaptation is part of the planning and land development program; more specifically, they were asked about the mechanisms and processes that are being used, or will be used, to facilitate investments in climate-adaptation public infrastructure. They were also asked whether new mechanisms are required. Interviews were transcribed and coded using qualitative data-analysis software (NVivo). Key themes were identified and the themes were further narrowed using the conceptual framework described in Section 2.

The findings clarified the complexities faced by practitioners, reaching beyond the information available in public documents (Qu and Dumay 2011). The data were sufficient to enable us to contrast and compare differences and similarities in viewpoints between organizational actors and to obtain a robust understanding of the institutional context and the evolving norms and principles that local actors are developing during policy-making and implementation.
4.0 Plugging into an Institutional Platform: Dutch planning and land development practice

4.1 Adaptation to Climate Change: Implications for planning and land development

In the Netherlands, the national government has accepted evidence that climate change will occur, and launched a national adaptation program in 2007 (VROM 2007, 2007). The Delta Program is responsible for the ongoing development of the program (Vink et al. 2012; Termeer, Biesbroek, and van den Brink 2011): the urban

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Table 1  List of Interviewees

<table>
<thead>
<tr>
<th>Interviewee Numerical Reference</th>
<th>Role</th>
<th>Interview Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Rotterdam &amp; Project Management Bureau</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Urban Planner</td>
<td>August 10/12</td>
</tr>
<tr>
<td>15</td>
<td>Climate Adviser</td>
<td>August 23/11</td>
</tr>
<tr>
<td>16</td>
<td>Climate Advisor</td>
<td>July 12/11</td>
</tr>
<tr>
<td>8</td>
<td>Climate Advisor</td>
<td>August 27/12</td>
</tr>
<tr>
<td>4</td>
<td>Water Engineer</td>
<td>August 23/12</td>
</tr>
<tr>
<td>2</td>
<td>Urban Planner</td>
<td>September 27/12</td>
</tr>
<tr>
<td>9</td>
<td>Engineer</td>
<td>November 5/12</td>
</tr>
<tr>
<td>6</td>
<td>Urban Planner</td>
<td>August 10/12</td>
</tr>
<tr>
<td>10</td>
<td>Project Manager</td>
<td>June 4/12 and August 23/12</td>
</tr>
<tr>
<td>5</td>
<td>Project Manager</td>
<td>November 19/12</td>
</tr>
<tr>
<td>Port of Rotterdam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Project Manager</td>
<td>November 19/12</td>
</tr>
<tr>
<td>Stadshaven Project Management Bureau</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Project Manager</td>
<td>August 27/12</td>
</tr>
<tr>
<td>14</td>
<td>Adviser</td>
<td>August 23/12</td>
</tr>
<tr>
<td>Ministry Infrastructure &amp; Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Project Manager</td>
<td>September 15/11 and September 3/12</td>
</tr>
<tr>
<td>12</td>
<td>Project Manager</td>
<td>September 15/11</td>
</tr>
<tr>
<td>Heijplaats Housing Corporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Project Manager</td>
<td>January 13/13</td>
</tr>
</tbody>
</table>

18 interview sessions
component of which is called the New Housing Development and Restructuring Program (Deltaprogramma 2010). Policy research about precise implementation mechanisms is ongoing, with the objective of developing a clear national policy framework in 2014. Based on research conducted to date, local-level climate adaptation will be delivered using existing frameworks on spatial investments. The focus will be on improved coordination and using existing cost recovery and cross-subsidization mechanisms, which are conventionally used in Dutch planning and land development practices (Ministry of Infrastructure and Environment 2011) (Interviewees 11, 12). Thus, climate adaptation investments are handled in similar ways as other public infrastructure investments and must be financed with income from the usual value-capturing mechanisms that are applied in Dutch planning. However, the economic downturn of 2008 is a fundamental exogenous intervening factor beyond the control of municipal actors. One Delta Program document indicated that while existing planning and land development approaches and instruments available to municipalities could be applied to facilitate local-level adaptation investments, in the short term current practices hold less promise as development projects are less financially able to contribute to climate adaptation measures (Deltaprogramma 2011). The next section provides a brief overview of Dutch planning and land development, identifies the key characteristics that define modes of practice, and introduces the tensions between control and flexibility within the institutional platform and played out in the governance process.

4.1.2 Planning and Land Development: Planning culture and mode of practice

A defining and unique feature of Dutch planning and land development practice is the active role played by municipalities over the past 40 years (Needham 2007; van der Krabben and Jacobs 2013). Using a public land development model, municipalities (and arms-length development organizations) have played a major role in directing the land development process by assembling land, undertaking the servicing, and ultimately selling the lots to developers for commercial, industrial, and residential purposes (Buitelaar 2010; van der Krabben and van Dinteren 2010). This strategy has enabled municipalities to use the market to invest in their communities and deliver a range of public goods with a high degree of spatial quality. This public land development model is now facing scrutiny because many municipalities are currently burdened with substantial land holdings and financial exposure (van der Krabben and Jacobs 2013).

As a mode of practice that is enabled by formal and informal institutions, the public land development model may have produced a planning culture that assumes local municipal government has a duel role: to control the planning and land development process and to steer the process to achieve planning objectives (Buitelaar and Sorel 2010). Planning culture can be defined as “...the collective ethos
and dominant attitudes of planners regarding the appropriate role of the state, market forces, and civil society in influencing social outcomes” (Buitelaar and Sorel, 985). Buitelaar and Sorel argued that this results in an ambiguous overlap: a plan-led approach wherein development applicants must conform to legally binding land use plans; and a mode of practice that has more in common with the development-led approach usually found in the UK (Janssen-Jansen and Woltjer 2010). In practice, Dutch planners tend to implement a pragmatic rule application and achieve planning objectives using a goal-justifies-the-means approach (Needham 2007).

The next section focuses on the Stadshaven project, which serves as a case study to illustrate the dilemmas faced by practitioners, who must simultaneously grapple with shifting modes of practice as a result of the reduced financial capacity of land development, and emerging public policy related to climate adaptation. It shows how informal institutions shape responses to climate adaptation that reflect local norms and values, and how practitioners may experiment with available formal planning instruments to find solutions that facilitate investment.

5.0 Existing Mechanisms and Evolving Practice: Introduction to the case study

5.1 Stadshaven, Rotterdam
The Stadshaven precinct is located at Rotterdam’s inner harbour, and is the second largest inner-city redevelopment in Europe (Daamen and Vries 2012). Rotterdam has one of the largest ports in the world, so this area is of considerable economic importance to the Netherlands and the European market. The redevelopment plan encompasses 1,600 ha of land and harbour basins. The ‘Creating on the Edge’ document (Stadshaven 2008) describes a planning vision that includes relocating the deep sea cargo services out of this inner port area and closer to the North Sea, thereby increasing inter-Europe shipping container activity in the Waalhaven area. The redevelopment vision also involves adding 5,000 new residential units and introducing a variety of commercial uses, innovative start-up businesses, and educational facilities into the area (Stadshaven 2011, 2008). The long-term vision to the year 2040 explicitly refers to the area as a testing ground to support experiments and foster innovative thinking. Based on the idea of sustainable transition, the planning vision includes developing energy-neutral climate-proof buildings that do not rely on carbon-based energy and are designed in anticipation of temperature and sea level rise and extreme events. Water is framed as an opportunity, with the possibility for floating communities and climate-adaptive mobility (Stadshaven 2011). The following analysis of this case study applies the concepts shown in Figure 1. It begins by describing how stakeholders are positioning adaptation to climate
change and shifting their perspectives on the role of planning and land development in the redevelopment process. Next, it focuses on one area of Stadshaven, called Heijplaat, to illustrate how they are experimenting with existing rules.

5.1.2 Influences from the Institutional Platform: Shifting role of planning

Implementation of the Stadshaven project is planned in phases. The 2007–2015 phase (Stadshaven 2008) involved a €710M public investment development program, based on the public land development model and assumptions about a strong housing market that would stimulate and financially support the redevelopment. Specifically, public sector actors were to use land to lever investment and steer the development process. After the downturn of the national economy in 2008, and the reduced demand for housing and commercial properties, the public land development model lost its effectiveness. Stadshaven project actors consistently referred to this as the ‘old model’ (Interviews 1, 2,6,9,10,11,12,14). One area planner commented:

Stadshaven is really thinking about how new developments will happen and not based on the traditional way where government made everything happen. And that is the challenge today, especially in this economic climate where we are in the economic crisis that we are facing right now. (Interviewee 2)

They contrasted this with the concept of a ‘new model,’ in which the public sector assumes a facilitating role and leaves most of the investment to the private sector. This shift from government as the driver of the development agenda to facilitator is pivotal and represents what some actors described as a fundamental “paradigm shift” (Interviewees 14, 7), which also includes moving from large-scale comprehensive development planning to incremental development based on a small-scale format (Interviewees 7, 10).

In 2008, changes to the Spatial Planning Act gave municipalities new legal powers to recover the costs of public works. Despite these new formal rules, which provide alternatives to a risk-oriented planning model, most municipalities continued to use the public land development model (van der Krabben and Jacobs 2013). The perception that few options were available to facilitate investment in Stadshaven illustrates the organizational logic (Keskitalo et al. 2011) and norms behind the original planning approach, which was that the public sector would drive development. Without the apparent means to deliver this planning vision, one actor noted, the development program would become more commercial:

…the one who pays decides…[so] if your role is shifting from the necessity of not having the financial resources, you are not in the driver’s seat…you have to
loosen up a little, more than a little bit, in terms of what you can demand from market parties, in terms of quality, the specific requirements of what you would prefer to see happen in a certain area. (Interviewee 1)

According to this interviewee, despite the existence of a regulatory framework compelling market players to finance the costs of public goods (including climate adaptation measures) using cost-recovery mechanisms, Stadshaven planners do not have the degree of influence they once had. The implication is that investments would be required to demonstrate added value as recognized by the market, and such benefits would be extracted according their market value. Thus, investment would be based on the objectives of market players, and might or might not align with the broader public policy objectives. Van der Krabben and Jacobs (2013) referred to this problem as the ‘two hats dilemma’ that Dutch municipalities often face, i.e. the dilemma between achieving spatial planning goals or favouring economic considerations.

This shift in practice represents a change in the governance process: away from a “command and control” model (Interviewee 9) toward a new model in which the government must achieve public policy goals without providing financial resources (Interviewees 9, 11, 12); in other words, from a supply-oriented model to a demand-driven model. This shift is exemplified by how planning actors are now approaching the overall timing of the development process. Rather than a stepwise systematic implementation process, the strategy is now to facilitate a slow transformation by working with existing businesses and strategically attracting new businesses in an incremental process (Interviewees 2, 3). Project actors were anxious about applying a new model, but rewriting the institutional rules for planning and land development offered an appealing opportunity (Interviewee 6, 9) for organizational and individual ingenuity (Interviewee 6). Lowndes referred to this as “....a critical opening for creativity and agency to establish new precedents for action” (2009, 12).

5.1.3 Climate Adaptation as a Market Opportunity: Ideas, values, influences
Its adaptation to climate change marks Stadshaven, and Rotterdam more generally, as a leader in innovation. The overall vision is to reposition Rotterdam’s negative image as a working-class port city. According to one senior policy adviser, local politicians exploited this reputation to attract subsidies from the national government. This tactic made the city dependent on funds from the national government and was a strategy that was counter-productive to attracting investors (Interviewee 6). Conversely, other interviewees (Interviewees 1, 4,6,7, 8, 9,14) commented that the new focus on climate adaptation, including high-profile pilot projects such as floating communities, the Rotterdam Climate Campus, and the RDM Campus, will help Rotterdam develop a more positive image. One senior policymaker said:
Rotterdam is really reframing it as a chance and if we can find the technical solutions then we are going to export them all over the world …everybody is coming to Rotterdam to see how we do it. (Interviewee 8)

The Stadshaven project is based on the assumption that climate adaptation is vital to sustainable development and a prosperous economic future (Interviewee 1). By signalling its commitment to climate adaptation, the objective is to attract long-term investors for various commercial opportunities. Rather than generating fears related to water safety issues, which could cause global and national investors to invest in other major ports like Hamburg and Antwerp, the focus is on technological innovation and planning foresight (Interviewees 1, 6). Therefore, adaptation to climate change is linked with broader values associated with a strong economy, local employment, and the city's international reputation as a pioneer in technological innovation.

Development of the Rotterdam climate adaptation policy framework is ongoing. A number of showcase projects are currently underway, but it is still unclear how climate adaptation fits into spatial planning processes and what identification of concrete actions are needed to address specific issues, such as urban heat island effects (Interviewees 7, 8). According to one development manager, the focus on creative and innovative strategies has generated "…all sorts of measures, but they have not yet made a plan on how we do it" (Interviewee 3). Rather than providing details for implementation, the policy vision is a broad strategic document that has played an important function in building intra-organizational support (Interviewee 8). It is a formal way to collect inter-departmental information about how the policy could be operationalized, based on input from various city departments and stakeholders, and connected to other processes. This strategy was developed based on the general consensus among policymakers that climate adaptation does not have enough substance or urgency as a standalone issue (Interviewees 8, 11). It has evolved into a process-oriented activity based on consultation and building relationships and support for the strategy (Interviewees 7, 8). Policymakers now recognize that this process has been fundamental to building legitimacy and clarifying how the strategy could be embedded into a large complex organization. In other words, the policy-making process began as a lineal exercise to determine the costs and benefits of adapting to climate change, and has evolved into an organizational learning process, showing how governance can help build consensus and address differences between organizational actors. This intra-organizational incremental strategy runs parallel to the high-profile pilot projects (e.g., floating communities) and external international communication and networking efforts. Thus, external and internal organizational dynamics are functioning simultaneously, which informs the institutional platform and, in turn, the governance process.
5.1.4 Playing with the Rules
The Stadshaven Structure Vision was jointly prepared by the City of Rotterdam and the Port of Rotterdam and was approved in 2011. The Structure Vision (structuurvisie) defines the strategic planning vision and sets out the general policy underpinnings; this is joined by a legally binding land use plan (bestemmingsplan). The Structure Vision and the land use plan for each area of the precinct (not all of the land plans are finalized) do not yet contain revised local safety standards or specific benchmarks related to climate change (Interviewees 4, 7, 8). This is not surprising, because the target for finalizing the Rotterdam Adaptation Strategy is sometime in 2013, but it is interesting that in contrast to most climate adaptation studies, which identify the need for new tools to bridge the implementation gap, a consistent theme is emerging among project actors: the idea that new regulations are not required to implement adaptation. Instead, the focus is on mainstreaming climate adaptation objectives into existing sectoral practices, such as water and spatial planning (Interviewee 8). Interviewees argued that the existing spatial planning framework, including the structure vision, zoning, and environmental impact assessment, is sufficient, and all that is really required is broadening the scope of the existing mechanisms (Interviewees 3, 8, 4). Interviews revealed three main themes. First, existing mechanisms are not being maximized and more creativity is required to use the available legal means (Interviewees 4, 8). Second, too many inflexible regulations are already in place, making it difficult to advance spatial planning goals, and adding more regulations would widen the implementation gap (Interviewees 3, 5, 8, 10). Third, incentives to encourage developers, such as fast-tracking approvals and allowing more building density, would be more effective than new regulations (Interviewees 1, 6). One senior policy advisor stated that “positive sanctions” and “voluntary compliance” through negotiation would be more effective than “command and control” approaches (Interviewee 6). A lack of support for conformance-oriented solutions was also evidenced by the interest in developing performance-based criteria, wherein development projects would be required by regulations to attain a certain level of performance, e.g., in relation to on-site water management or heat comfort, but without the local authority specifying the types of interventions. The practical challenge at the moment is that no accepted performance indicators in relation to climate change are available (Interviewees 6, 8).

The next section will move from a meso-level analysis to a micro-level analysis by focusing on the small residential village of Heijplaat, in the Waalhaven area of Stadhaven.
5.2 Heijplaat: Planning a climate-resilient neighbourhood

Most of the houses in the village of Heijplaat are owned by a social housing corporation, Woonbron. When Woonbron indicated their intention to demolish 200 dwellings and redevelop the southern half of the village, the City of Rotterdam set the following condition of approval: the applicant must increase the height of the development site by 1 metre, which would also require replacing all underground infrastructures. The rationale behind this requirement was that the area is located in a flood-prone zone. City staff took into consideration future climate risks associated with rising sea levels, more intense rainfall, and increased discharge of water from rivers (Arcadis 2012), but lacking local benchmarks, adopted provincial standards based on water risk standards that are applied to areas that are located inside of dike protected areas.

The cost of increasing the height of the land was estimated at €5.6 million; Woonbron dismissed the approach as financially unfeasible and argued that increasing the height of the land was an unjustified strategy that was disproportionate to the estimated damage that might be caused by nuisance flooding events (Interviewee 13). Woodbron also argued that the height difference between the redeveloped area (intended for ownership housing) and the abutting lower-income rental housing could emphasize differences in the community and drive a social wedge between residents (Interviewee 13). The next section focuses on the governance process and how traditional planning instruments were used, which included the use of market contracts.

5.2.1 Experimenting within Institutional Parameters

In March 2011, the village of Heijplaat was designated as a pilot project for a climate-adaptive building strategy. The strategy was based on a multi-dimensional approach to flood risk management, to limit flooding events, reduce damage, and promote recovery (Arcadis 2012). Flooding in the area is not considered to be life-threatening; it is expected to cause modest physical damage and neighbourhood inconvenience. Reconceptualizing the main issue from safety to nuisance/inconvenience opened up space to experiment with other solutions based on tolerance and acceptance of living with water (Interviewees 8, 13). The revised plan will improve the projected flood risk of 1:10 years to 1:250 and 1:4000 years by using a resilient building-design approach: the average height of the land will remain at 3.0 NAP\[^6\] but the flood risk impact will be reduced by introducing measures to limit damage. For example, building facades must be water-proofed to a height of 3.60 NAP, and utility connections within the houses must be located at 3.90 NAP.

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\[^6\] A NAP [Normaal Amsterdams Peil] of ‘0’ is the average sea level of the North Sea, which is a topographical reference point used in the Netherlands.
Regulations also specify a climate-resilient public space and flood-proof roads and sidewalks, ensuring the neighbourhood is resilient to water infiltration, rather than fortified against it (Interviewee 13). The physical plan will be supported by a communication strategy to improve awareness about flood risks and develop evacuation and recovery plans. The revised plan for the village is currently in its final stage of approval. It includes various points of departure from conventional practice, while still remaining within the realm of traditional planning. For example, the plan must ensure adherence to water safety standards from the EU, national and provincial governments, and the City of Rotterdam. It is part of the Stadhaven Structure Vision, providing a localized solution within a broader framework.

The Heijplaat case illustrates how local governance and institutional actors can affect how formal rules are applied, and help devise responses that are based on local values and ideas. This kind of solution is linked with an evolution in thinking about the climate-adaptation policy-making process. One interviewee said:

… first we said ‘no wet feet’ and then we thought, well maybe in some locations, wet feet are not that bad and maybe measures to avoid wet feet are so extremely expensive that maybe we should change our way of thinking [and] change our way of looking at water, water annoyance, and accept some water on the street once in awhile. [It is] a kind of calculated risk…and it was kind of a paradigm shift. Dealing with wet feet isn’t the ultimate goal anymore. (Interviewee 8)

While this kind of resilience-based approach requires more tolerance about potential water intrusion, it is an alternative to the original idea, which would have led to a difference in elevation between higher- and lower-income residents. This example also demonstrates the critical need to incorporate formal regulatory requirements along with less-structured negotiation processes. The City of Rotterdam used provincial flood height benchmarks (Interviewee 13), and simultaneously demonstrated willingness to experiment by reconsidering the initial requirements. This enabled a mutually beneficial process: the social housing organization was able to proceed with the development application, and the City of Rotterdam was able to improve the flood plan and reduce the vulnerability of the village.

Heijplaat is a small-scale example of how evolving perspectives about tolerance to water intrusion could be implemented in practice (Interviewee 8). Unlike other stalled development projects, it provided an opportunity to create a balance between spatial planning goals, climate adaptation objectives, and the interests of different stakeholders (Interviewee 3) – whether it is successful remains to be seen. In the short term, the market risk rests with the housing corporation, in relation to the market value of the land, and the degree to which the explicit climate risk claims in planning documents and sales contracts negatively affect the project. In the long term, the
climate risk rests with residents, in relation to the performance of the design specifications and whether occasional inconvenience due to nuisance flooding is acceptable.

6.0 Conclusions

This research explored how innovative practices can develop from existing mechanisms, and the degree to which new processes and mechanisms need to be included in the planning and land development process to facilitate investment in climate adaptation at the local level. The findings revealed the innovative potential of legal rules (van Rijswick and Salet 2012), and also that innovative practice is enabled by the dynamics and interplay between the institutional platform and governance process. For example, the Heijplaat case involved typical stimuli (political support, internal champions, problem awareness) as well as a number of barriers that can act as major impediments to climate adaptation implementation (lack of financing, a weak formal policy framework). Stakeholders overcame these barriers using existing mechanisms and processes: they found solutions in the soft-spot created by shifting modes of practice, a broad agreement about the value of climate adaptation to Rotterdam, and emerging norms about tolerance to water. This soft-spot, along with the application of ‘rules-in-use’ and ‘rules-in-form,’ indicates that existing mechanisms have a degree of adaptive capacity. One senior policy said, “...I think it is more the way we use the rules and tools and the cultural change than that we have to dramatically change the rules and tools” (Interviewee 6). Thus, cultural changes can enable or constrain organizational actors. From an institutional perspective, this finding illustrates the tension between informal and formal rules that inform practice, and are, in turn, informed by actions in practice. The policymaking and implementation process is iterative, and innovation occurs through building consensus, addressing conflicts, and utilizing mechanisms to (slowly) achieve collectively agreed-upon objectives in relation to climate change.

The findings also revealed that stakeholders do not support new formal mechanisms, such as regulations and additional requirements. The general reluctance about new regulations reflects a dynamic within Dutch planning: on the one hand, there is the desire to open spaces to establish new forms of action (Mahoney and Thelen 2010); and on the other hand, conventional Dutch planning culture tends to straddle between a plan-led and a development-led approach. The latter has provided Dutch planners with a degree of steering capacity (Buitelaar and Sorel 2010) to achieve spatial planning objectives. In the context of adapting to climate change, project actors are unsure of what types of concrete measures are required and how much investment is needed (Interviewees 3, 4, 7, 8). The desire to
steer the process is illustrated by the general perception that adaptation implementation will be encouraged by allowing room for reinterpretation of the existing framework – as opposed to additional regulations. This finding also suggests that project actors are unclear about what additional rules are needed to propel concrete actions. Instead, they are developing a shared understanding and a set of normative rules as a precursor to introducing formal regulatory actions.

The focus on Rotterdam’s high-profile climate adaptation initiatives and as a technical innovator, draws attention away from the governance-related insights that can be gained. Although the Stadshaven project is benefitting from freedom to experiment, Rotterdam’s planning actors are constrained by the same factors that other Dutch planners face: reduced financial resources and a shifting role of the public sector in spatial planning. Moreover, for other municipalities that are developing an adaptation strategy and wondering how to implement policy ambitions, we learn that Rotterdam is also continuing to define the implementation pathway. The Stadshaven case provides informative evidence about the role of the governance process: it is not simply a means of system coordination and does not exist in isolation from institutional norms and values; it also provides a space for innovation, which can contribute towards reducing the financial gap associated with climate adaptation.
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Between Structures and Norms: Assessing tax increment financing for the Dutch spatial planning toolkit

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Abstract

The aim of the chapter is to assess the institutional (mis)fit of tax increment financing for the Dutch spatial planning financial toolkit. By applying an institutionally oriented assessment framework, we analyze the interconnectivity of Dutch municipal finance and spatial planning structures and practices. Empirical findings from the case study highlight several insights: 1) application of TIF would be more constrained by socio-political than technical dimensions; 2) such an instrument may not achieve the policy goal of shifting financial risk away from local government given the corporatist characteristics of Dutch planning culture; and 3) despite apparent institutional space to consider alternative instruments, enduring norms tend to be resistant to change.
1.0 Introduction: Policy context

In the Netherlands local government has historically played a central role in the physical planning process, including land acquisition, site preparation, and public infrastructure provision. Following World War II, the public land development model became the cornerstone of the Dutch spatial planning and development process. By acting as an active player in the land market, municipalities were able to embed and recover the costs of local public infrastructure, such as underground infrastructure and utilities, and parks and play areas in the land price (Lowe, van der Krabben, & Priemus, 2003). However, even before the recent economic crisis in 2008, the financial risk and steering role in the process taken by municipalities was in question (van der Valk, 2002). Moreover, despite changes to the Spatial Planning Act in 2008, designed to encourage greater involvement in land development by market-players, municipalities continued to participate as active players themselves (Halleux, Marcinczak, & van der Krabben, 2012; Needham, 2007). As a supply-led model, Janssen-Jansen argues that due to the substantial revenues municipalities were able to realize, over-zealous participation in the land market has resulted in a distorted real estate market and oversupply of offices (Janssen-Jansen, 2012).

The degree of financial risk and substantial land holdings held by municipalities has been widely reported and criticized in the media since 2008. Discussions have since ensued about alternative models and consideration of instruments that do not rely on growth nor are driven by the public sector. Numerous studies have been commissioned by the national government, including a website hosted by the National Office for Entrepreneurial Netherlands called the Financial Structure Toolbox and reports by consultancies and research institutes (ECORYS, 2010; Heijkers, van der Velden, & Wassenberg 2012; Ministry, VNG, & NEPROM, 2009; Planbureau, 2014; Planbureau & Urhahn, 2012; VROM, 2010) that identify planning and financial instruments from other countries as possible tools in the Netherlands to stimulate investment and broader participation from market players in the planning and development process (Heurkens, 2012; van der Krabben & Needham, 2008). The range of possible instruments tend to be reviewed based on general characteristics and possible regulatory restrictions. The analyses often lack a full account of the wider institutional context, which would include both legal and socio-political considerations. The analyses also tend not to identify more general limitations that municipalities may face in relation to operationalising the majority of financing instruments. Constraints may extend beyond regulatory issues, such as limited local

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2 A 2014 Urban Land Institute real estate report also states that the substantial oversupply and high vacancy rates on the office market (at 18%) has made Amsterdam an unattractive location for investors.

3 www.rvo.nl/onderwerpen/innovatief-ondernemen/innovatieffinanciering/toolbox-financierings-constructies
knowledge and financial resources that are often needed in order to lever alternative funding sources (ie such as different bonds products in the private market). Finally, little attention is given to cultural matters, such as norms and values, that play a role in defining policy instrument selection. The latter consideration is particularly important when considering instruments from other countries, which have their own particular policy context.

Tax increment financing (TIF), commonly used by North-American cities, has also been cited as a possible mechanism for Dutch municipalities (Heurkens, 2012; L. Janssen-Jansen, G. Lloyd, D. Peel, & E. van der Krabben, 2012; Offerman & van de Velde, 2004), however, few studies have analyzed the use of TIF in the Netherlands from an institutional perspective. Research about TIF in the Netherlands generally focuses on four themes: firstly, identification of generic technical features; secondly, the degree to which the mechanism is a sufficient incentive to draw private investment, given the public-sector driven nature of land development in the Netherlands (Heurkens, 2012); thirdly, the inherent risks involved in relying on projected market growth (Janssen-Jansen, 2012); and, fourthly, more broad criticisms related to the purpose of property taxes, e.g., the argument that property taxes are meant to function as a modest buffer to fill budget gaps left by inefficient distribution of transfer payments from the national government (L. Janssen-Jansen, G. Lloyd, D. Peel, & E. van der Krabben, 2012). These points touch on conventional issues (pro's/con's) associated with TIF, but taken separately we do not get robust understanding about the degree to which TIF is a potential institutional fit, considering technical, social, and political dimensions inherent in policy instrument selection.

Against this background, this paper explores tax increment financing (TIF) as a potential financial instrument to facilitate investment in localized public infrastructure, as an alternative and/or in conjunction with existing physical planning instruments in the land development process conventionally used in the Netherlands. Needham makes a distinction between physical instruments and financial instruments (1982) that can be used to influence the development process. The former type of instrument acts on land and buildings in relation to development approval and building processes and the latter, as described by Needham, “...acts directly upon the financial circumstances within which people make decisions” (1982, p. 4). Particular types of measures include grants, taxes, and levies. Using this typology we understand TIF to be a financing instrument that can be used by local authorities to

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4 Investments include conventional urban infrastructure for such things as water supply, sanitation, and solid waste management (Alm 2013) as well as new investments and new types of physical public infrastructure that might be needed to deal with the adverse effects of climate change, such as permeable pavement, renewal of existing systems to separate storm water and sewage, elevation of urban areas, strategically deployed green space and tree planting, additional space for water storage and retention, and enhanced above-grade drainage and grading plans (Bobylev, Hunt, Jefferson, & Rogers, 2013; Makropoulos & Butler, 2010).
influence the development process. We categorize tax increment financing accordingly because it is an instrument that is designed to capture the expected future property tax value increment generated from local area investment, rather than (necessarily) utilizing physical instruments such as land acquisition.

TIF is explored in the context of Dutch planning, land development, and the broader municipal financing system. There is a substantial body of research to draw from in relation to TIF. The literature tends to offer polarized perspectives about TIF (see section 2) that draws attention to the varying applications and diverse experiences. The exploration presented in this paper focuses on TIF as a financial instrument, which can be applied and managed well or poorly, and the degree to which it is institutionally applicable to the Dutch municipal financing system in relation to the socio-political dynamics within the Dutch context. Secondly, integral to considering the application of TIF in the Netherlands is the degree to which the use of property taxes for localized public infrastructure investments would be supported institutionally in terms of structures and norms. Drawing from Alm (2013), we identify property taxes as a potential revenue stream for local infrastructure based on three distinct characteristics; first, property taxes are a relatively long-term stable income source; second, property taxes provide a degree of local control; and third, it is an income stream that tends to focus taxpayers attention to the benefits and costs of local service provision.

The chapter addresses the following inter-connected questions: what are the dimensions and dilemmas of directing income from property taxes to support investment in area specific public infrastructure? Beyond technical considerations, what institutional considerations are involved in relation to operationalising tax increment financing in the Netherlands? The remainder of this paper is structured in six sections. We begin with a brief description of tax increment financing by highlighting the key characteristics of this instrument and the conventional financing models typically associated with TIF’s. Given the extensive literature on TIF, the purpose of section 2 is not to repeat the debates but rather to summarize the key attributes and critiques of this instrument that are often cited. Section 3 and 4 outline the methodological approach and introduce the institutionally influenced analytical framework that is applied to the case study. In the second half of the paper, we present a case study of the Netherlands with a focus on the intersection of Dutch municipal financing, spatial planning, and land development structures and processes (section 5). In Section 6 the assessment framework is used to analyze the potential application of TIF in the Netherlands. The final section provides concluding comments and suggestions for future research.

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5 This is not to suggest that it is an “either/or” argument as TIF can be used in conjunction with physical instruments by local authorities.
2.0 Tax Increment Financing: a primer

Tax increment financing (TIF) is a bounded value capturing instrument\(^6\) designed to “earmark the related increment of property tax in a proclaimed area to fund public investments” (Alexander, 2012). While the duration varies, a TIF is typically based on a 25-year time-span in a prescribed designated community improvement area. It is fundamentally premised on the idea that the provision of new infrastructure in the designated area will increase property values. Additionally, the future incremental property tax value can be captured and redirected to finance area-specific public infrastructure investments (Briffault, 2010). The policy rationale for creating a TIF district is based on the ‘but for’ test, i.e., private sector investment would not occur or it would not occur in a planned way within an acceptable timeframe, if it were not for government intervention and use of public resources (Squires, 2012).

TIF originated in California in 1952 and is now widely used in most American states to address stalled local area investment (Lefcoe, 2011). It has also been adopted in major Canadian cities within the last ten years and more recently in the UK, where the explicit objective was to increase autonomy and provide a range of revenue generating tools at the local level (Squires & Lord, 2012). Financial risk represents a substantial issue for municipalities that create a TIF designation area. The degree of financial risk is connected to the financing strategy, which generally involves one of three approaches (Pricewaterhouse Cooper, 2008):

1) Market-Backed:
   a. Revenue Bonds: the municipality issues bonds secured against the projected tax increment. Revenue bonds can be used wherein the city and taxpayers are not at risk if TIF revenue is less because bond purchasers shoulder the risk.
   b. Developer-Funded: the developer borrows to provide the initial capital. The municipality then reimburses the developer using the actual tax increment which the developer uses to repay its borrowing. This method shifts the risk from the municipality to the developer.

2) Municipality-Backed:
   a. General Obligation (GO) Bonds: like revenue bonds, the municipality issues bonds secured against the projected tax increment but the financial risk is backed by the municipality’s general revenue; which means if the TIF revenue is less than expected, the financial risk rests with the municipality.

\(^6\) Value capturing tools are described as “…a group of instruments that enable the increased value of land and property as a result of public investments……to be captured directly or indirectly, so that it [the value] can be used for financing the activities that are responsible for the increased value” (van der Krabben, 2008, p. 654) e.g. to finance those parts of the plan that are not cost effective (Priemus, 2007).
b. The municipality borrows using bank financing to provide the initial capital. The authority then repays its borrowing from the actual tax increment.

These conventional TIF financing models illustrate different risk management strategies that can be utilized. According to Kitchen (2006), in principle, revenue bonds can be used to fund infrastructure if the investment generates a revenue stream back to the bond (such as water, sewer levies, or in the case of TIF, property taxes). The risk of using this type of bond may be expensive “… if creditors perceive that the revenue stream is a less certain source of revenue when compared with general revenues that are backed by general obligation bonds” (Kitchen, 2006). Research on tax increment financing in the US has found that municipalities tend to take more risk than private sector actors, largely because they are highly motivated to stimulate local economic development (Le Roy, 2008). In Canada, municipalities have been more risk adverse and often utilize what is referred to as tax rebate strategies with developers. For example, in the Province of Ontario this model is referred to as a “tax increment equivalent grant”. In this model, developers take the financial risk by advancing the investment and are subsequently reimbursed when the future tax value materializes.

Tax increment financing is the subject of extensive research that we can draw from to consider both the strengths and weaknesses of this instrument. Some researchers have identified governance flaws and misuse in relation to public policy objectives, resulting in benefits to developers and cross-jurisdictional tax revenue absorption issues (Weber, 2003). Others have criticized the degree to which a public policy rationale even exists to justify government intervention and the associated financial risk or whether expediential investment attracts business or simply displaces businesses from one area to another (Chapman & Gorina, 2012; Weber, 2010). The degree to which TIF is overused by cash-strapped municipalities is also a major issue, given the potential to freeze a percentage of the general tax base for a sustained duration (Youngman, 2011).

On the positive side, other researchers have referred to the instrument’s leveraging effect: a TIF designation may send a positive signal to market players, in turn attracting private investment in public benefits to support important public policy goals (McGreal, Berry, Lloyd, & McCarthy, 2002). By recouping value over time rather than providing tax

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7 In the Province of Ontario, provincial regulation under Section 28 of the Planning Act provides for the granting of public resources to private actors. The program uses property taxes: “A Tax Increment Equivalent Grant could be described as financial assistance equal to all or a portion of the municipal property tax increase (increment) following the completion of a project which has resulted in an increase in the assessed value of a property. Municipalities estimate using a market-base assessed value” (www.mah.gov.on.ca/AssetFactory.aspx?did=9077 accessed May 14, 2014). Also see Ministry of Municipal Affairs and Housing “Municipal Financing Tools for Planning and Development” available at: www.mah.gov.on.ca/Asset674.aspx.
breaks, which eliminates tax revenue flow, or by adding upfront costs (i.e., fees and levies) in the development phase, a TIF can act as a ‘self-financing’ tool for urban infrastructure by facilitating efficient use of public resources and enabling local control over local resources (Alexander, 2012; Squires & Lord, 2012).

Rather than attempting to reconcile these positions, this paper rests on the assumption that TIF is a financial instrument in which local investment is capitalized in the property and the future property tax increment is captured over an extended period, thereby involving a degree of cost and benefit distribution between contemporary and future users. This mechanism earmarks a revenue stream for investment in a range of spatially bounded public investments (underground services, brownfield, parks, etc.). Finally, it is a locally-based mechanism embedded within a regulatory framework based on defined criteria, public consultation, and approval from designated authorities. The degree to which certain TIFs meet or fail to meet expectations, or whether TIF districts undertook a thorough risk assessment or exemplify sound management and good governance, is an issue for local administrators. Here, the relevant issue is the degree to which TIF could potentially be used as a new tool in the Dutch financial toolkit. In order to achieve this intention an institutionally oriented assessment framework will be applied to the empirical findings arising from the case study described in section 5.

3.0 Methodology

The Netherlands is a dynamic institutional context within which we can scale the analysis of a potential financing mechanism to the local level. In order to address the inherent challenge of analyzing the degree to which there is an institutional fit of a financial instrument that does not exist in the Netherlands, the research design reflects what Needham (1982) cites as an “empirical exploration” (p.23). For our analysis, we used qualitative research methods including semi-structured interviews, document analysis (municipal and project policy and programs; local planning and land development frameworks; and reports and policy documents related to Dutch municipal financing), and a telephone questionnaire, as described below.

1) From May–October 2013, we administered a nation-wide questionnaire via a telephone interview. The request was sent to 43 Dutch municipalities from

The municipalities that were asked to participate in the questionnaire are all members of an organization called Platform 31. Members of this organization are, according to the organization’s website, “...actively involved in the development of the city and region” (www.platform31.nl/partners). The members include 22 of the 25 largest Dutch municipalities (Central Bureau of Statistics http://www.cbs.nl).
which 34 senior municipal tax officials agreed to participate (79% participation rate). At the time of the interviews, all participating municipalities were, or had been, engaged in redevelopment initiatives. The purpose of the questionnaire was threefold: 1) to determine whether any of the municipalities applied expected future property tax value increment in redevelopment project budgets; 2) to assess how they perceived the role of property taxes; and 3) whether they were knowledgeable about TIF. The questionnaire was not intended to determine whether respondents considered TIF to be applicable to the Netherlands. Because few empirical data are available about whether Dutch municipalities use property tax income as means to invest in local public infrastructure, the results of the questionnaire provide an important benchmark by confirming conventional practices and the unique use of the projected future property tax increment by the City of Nijmegen (see section 5).

2) Between December 2012 and January 2013, we conducted six in-depth semi-structured interviews (each lasting 1-1.5 hours) with senior public officials in the national government, with researchers including economists, financial experts in academia, and those in the banking sector. Questions focused on the technical and socio-political dimensions of Dutch municipal financing, specifically key sources of municipal income, limitations and degree of flexibility in the use of property taxes, approval requirements, and financing strategies (especially municipal borrowing and risk assessment practices). Questions about the socio-political dimensions focused on the debates associated with the Municipal Fund (see section 5), such as the role of property taxes, the tension between decentralization and the desire for local autonomy, and the revenue-generating mechanisms that are currently available. Interviewees were also provided with a description of TIF and asked to comment, based on their expertise, whether the mechanism would be constrained by technical and socio-political issues.

3) Between December 2012 and April 2013, we conducted a detailed study of the Nijmegen Waalfront redevelopment project in which, uniquely for the Netherlands, the City of Nijmegen uses projected future property tax increment. Four interviews were conducted. Two senior project tax officials, a planning economist, and a project director were interviewed about the technical and socio-political dimensions related to the use of future property tax increment in the Waalfront redevelopment budget. They were asked about the underlying rationale, the original approval, the administration process, and the current status. They were also asked to comment on how property taxes are conventionally used and the relationship to the Municipal Fund system. The findings initially suggested that the City of Nijmegen was an exception, given the deviation from the norm with respect to the use of property taxes, but more
careful analysis revealed that it should be more accurately identified as what Gerring (2007) referred to as an ‘influential case’ with respect to case selection: it is a “case that proves the rule” (p.108) because it substantiates the role of broader institutional norms and values, despite the apparent atypical local practices.

We identified key individuals from the policy documents and identified interviewees using snowball sampling (Farquharson, 2005). The interviews were transcribed and coded using qualitative data-analysis software (NVivo). Key themes were identified and the themes were further narrowed using the conceptual framework described in section 4. The data from the multiple interviews provided a solid basis for us to contrast and compare the differences and similarities in viewpoints to generate a robust understanding about the institutional contexts and the evolving norms and principles in relation to public municipal finance, and to assess the potential and applicability of TIF as a mechanism to facilitate investment in localized public infrastructure in the Netherlands.

To address the research questions, the next section describes the assessment framework that was used to analyze the case study.
4.0 Conceptual Approach

4.1 Institutions: Structures and Norms
We began with the conceptual approach that institutions are important to public finance and spatial planning given formal institutions structure access to resources and provide a degree of agency that is exerted by actors in how rules are applied. According to Fischel (2000), property taxes cannot be examined in isolation from the institutional context, i.e., the municipal setting is dependent on it as a source of income. Similarly, according to Alexander (2005), for spatial planners, “…all planning takes place within a specific institutional context or often in sets of different and varying ‘nested’ institutional contexts as indeed do all societal activities” (p.210).

Institutions embody what North referred to as the ‘rules of the game’ (North, 1990) in terms of the dynamic process of how people interpret and use rules, norms, and practices – written and unwritten, formal and informal, explicit and tacit (van Hal & van Bueren, 2012). Institutions are often described as either formal or informal: formal institutions are generally understood as government rules that are enforced by the legal system and are expressed as laws, constitutions, ordinances, and local land-use plans. Informal institutional rules are less explicit and emerge via repetition and solidification of behaviour through perceptions, values, beliefs, and norms (Buitelaar, Galle, & Sorel, 2011). Together formal and informal institutional rules interact and ultimately shape actions and behaviours of organizations and individuals. The interaction is dynamic and creates the conditions (constraints and opportunities) that organizations and actors must negotiate on a perpetual basis to achieve their objectives (Lowndes, 2005). Metaphorically, organizations and individual actors are players within a larger game with implicit and explicit rules that evolve over time (Lowndes, 2009; Root, van der Krabben, & Spit, 2014). A dynamic tension exists between the technical and socio-political institutional rules: they are not static and evolve through endless tinkering and manipulation (Buitelaar, Lagendijk, & Jacobs, 2007). By highlighting the role of institutional norms and values, the analysis of TIF’s deviates from a purely technical analysis. Our assessment focuses on the relative importance of the socio-political context that shapes, and is shaped by, the social norms and values and modes of practice, and in turn shapes the formal structural components that regulate decisions – in this case, the coupling of municipal public finance and spatial planning in the Netherlands.

4.2 Types of Governance:
The theoretical aim of this research is to gain a deeper understanding about the normative underpinnings of the institutional system (Pierre, 2011) that structure and inform municipal investments in localized public infrastructure in the Netherlands. We
cannot advance the analysis without explicitly considering governance and how it is conceptualized in this research. In our analysis the concept of governance is conceived as both a binder and an embodiment of the complex interactions between formal and informal rules (Root et al., 2014). Similarly, as Lowndes argues (2009), governance should not be reduced to a technical problem of ‘system coordination’ as a means to improve implementation processes. Governance is a complex process, which involves building consensus and engaging in arenas that have diverse and conflicting interests as a means to gain consent to carry out objectives (de Alcantara, 1998). Birkman et al. (2010) described governance as the way in which actors and organizations interface and use mechanisms to articulate their interests, exercise their legal rights, and mediate their differences. Thus, institutions may constrain or enable actors in the governance process to manage conflicting agendas and to set priorities.

Pierre (2011) argues that governance takes a number of forms. In doing so, the form of governance provides substantial information about objectives and the goals of municipalities as well as “…the key constituencies sustaining governance [and the] institutions created to pursue the governance objectives” (p.25). In the Netherlands, policy-making and decision-making is often described as being based on the ‘polder model’, which is uniquely Dutch in title and culturally specific with its consensus style decision-making. Pierre distinguishes between four models of governance. In the interest conserving space, we limit the description of the typology to the model that is the most useful to our assessment framework: the corporatist model of governance, which provides a close characterization of Dutch consensus-style of planning governance (van der Valk, 2002). According to Pierre’s analytical typology of governance models, the defining feature of the corporatist model is the significant involvement of civil society organizations both in urban politics and in relation to involvement in the delivery of public policy objectives (p.49). The degree of social organization and involvement in influencing decision-making and shaping policy preferences at the local level characterizes this model. While the model has a range of attributes, the salient feature is the degree to which this type of governance is driven by what Pierre refers to as the “…distributive aspects of urban politics” (p.57). This aspect of corporatist governance means that “…maintaining fiscal discipline often becomes a significant problem. In other to achieve compromises which are acceptable to all major represented interests, public spending frequently tends to exceed what is financially possible…” (p.65). This aspect of the corporatist governance model is insightful because it contributes to our analysis about the applicability of TIF

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9 Pierre (2011) identifies four analytical types of urban governance models: Managerial, Corporatist, Pro-growth, and Welfare governance.
in the Netherlands. More particularly, if applied in the Netherlands we might expect that municipalities to continue to take a risk position due in part to the durability of norms and values, and how such norms and values are operationalized and replicated structurally. In other words, understanding the configuration of the Dutch planning and public finance governance tells us why the application of property taxes (a seemingly modest proposal) is complex and why the answer to the applicability of tax increment financing is connected to a larger institutional system.

We turn now to the case study. We begin with a more in-depth characterization of Dutch planning and land development practice than provided in section 1 as the central backdrop for the analysis of the case study. The subsequent two sections focus on the empirical findings prior to the assessment on the applicability and limitation of tax increment financing in the Netherlands.

5.0 The Netherlands: Intersection of municipal financing, planning, and land development

5.1 Dutch Planning and Development Practice

As a mode of practice that is enabled by formal and informal institutions, the public land development model may have influenced Dutch planning culture\textsuperscript{10} insofar as there is an assumption that local municipal government has a dual role: to control the planning and land development process and to steer the process to achieve planning objectives (Buitelaar & Sorel, 2010). Responding to the housing shortage after World War II, municipalities proactively serviced land in order to facilitate the building process (Needham, 2007). Leväinen and Korthals-Altes (2005) note that municipalities considered that “…it was their duty to supply serviced land as it was needed” (p.140). The original focus on housing supply evolved into a conventional approach to direct, control and heavily intervene in the land development process by assembling land, undertaking the servicing, and ultimately selling the lots to developers, for both commercial, industrial, and residential purposes (Buitelaar et al., 2011; van der Krabben & Jacobs, 2013). The perceived advantage of this model is that it has provided a substantial amount of public control to achieve spatial planning goals, as well as an approach that has delivered a range of public goods, from municipal infrastructure, parks, recreation facilities, and an overall high standard within the public realm; this was achieved by leveraging the residual value through the land development process and reinvesting the funds into a range of public

\textsuperscript{10} Planning culture can be defined as “…the collective ethos and dominant attitudes of planners regarding the appropriate role of the state, market forces, and civil society in influencing social outcomes” (Buitelaar & Sorel, 2010) (p.985).
infrastructure investments; moreover, when the market was strong, they were able to make a profit (van der Krabben & Jacobs, 2013).

Buitelaar and Sorel argue (2010) that the Dutch planning culture is ambiguous: although formally it is recognized as a plan-led planning model, in practice it has more in common with the development-led characterization usually found in the UK (Janssen-Jansen & Woltjier, 2010). As noted in section 1, the vulnerabilities of this model have been revealed by the 2008 economic crisis and substantial debate and research has been undertaken to consider possible alternatives. However, market-oriented activities undertaken in planning and development processes to finance local public goods ambitions are also coupled and enabled by the broader municipal financing system. The next section introduces the municipal finance system.

5.2 Dutch Municipal Finance

5.2.1 Key Income Sources

The system of government in the Netherlands is characterized as a decentralized unitary state (Toonen, 1987). This means that municipalities are responsible for administration of local level activities and have relative autonomy in plan-making and expenditures. Though municipalities are able to undertake independent initiatives, the hierarchy of the central government is reflected in the financial governance structure and distribution system of municipal income (Dussen, 1992). The main source of income for municipalities is from the Municipal Fund11, which is managed at the national level (M. Allers, 2011). In 2011, together with general and specific grants, that source represented 49% of municipal income. Distribution of funds is based on a 60 point equalization formula-based system, which is, in part, based on the local tax base but, more importantly, based on the actual need of the municipality (Interviewees 1 and 6). The formula is a method to allocate the means to municipalities throughout the country to provide an equal level of services, yet conceptually providing local governments with autonomy in how that is achieved (Boerboom & Huigsloot, 2007). The Municipal Fund is a system rooted in socio-political norms based on ideas about fairness and equality (Interviewees 1, 7, 3, 4). As noted, the objective of the formula-based approach is to provide financial sources based on need and, importantly, based on the available budget; which is to say, all municipalities experience a level of grant reduction, or increases, subject to availability of resources at the national level. Recently, due to austerity measures at the national level less funding is available from the Municipal Fund to deliver the same level of programs and services (Interviewees 4 and 1).

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11 In Dutch, it is referred to as the ‘Gemeentefonds’.
At 31%, income from activities in the land market is the second source of municipal income (Allers, 2012). As has been identified in the preceding section, this income source has been profoundly impacted by the economic downturn. In addition to modes of practice and planning structures that use the market to achieve planning goals, easy access to capital by two nationally backed lending institutions\textsuperscript{12} have also enabled municipalities to engage in the land market. In addition to having limited restrictions on borrowing, as a financial director of a prominent NGO noted, municipalities will call BNG (see footnote 11) “...and ask for €10M and in two minutes they will have €10M” (Interviewee 4), municipalities have been able to heavily borrow and still balance their annual budgets (Interviewee 2). Though Dutch municipalities are required by law to balance their internal budgets annually, in practice the accrual accounting system has allowed municipalities to carry debt from year to year (Allers & Merkus, 2013). A second structural reason that may have facilitated active engagement in the land market is the connection between so-called ‘bail out’ rules of the national government and the lending practices of the aforementioned banks. The current system was introduced in 1960 by the Financial Relations Act (Wet Financiële Verhoudingen). Article 12 of the Act provides for an additional grant from the Municipal Fund (not from the national government budget) if a municipality is not able to support its debt and is under threat of bankruptcy (Allers & Merkus, 2013). As explained by several interviewees, because municipalities are sheltered from bankruptcy under Article 12, banks are also protected and willing to provide municipalities with access to low cost borrowing. With respect to municipal borrowing, project-specific risk assessments are typically not carried out by the lending institutions (Interview 2). This structure and practice results in very little incentive and experience, given the risk and required expertise, to seek private financing in the bond market (Interviewees 1, 2, 3, 7); sharply stated by one interviewee: “...why float a bond? There is no need. We have money ‘on tap’” (Interviewee 1). A third element, that incentivizes market activities, is that profits derived from market activities are not included in the Municipal Fund grant formula; this means that while increases in the local tax base can potentially result in less grant funding, municipalities are not required to claim land market-based profits in the Municipal Fund formula (Interviewee 1).

Apart from market activities and intergovernmental grants, Dutch municipalities have a modest income stream from taxes, fees, and levies (15% of municipal income). Property tax is the largest component of municipal income at approximately 7% (M. A. Allers, 2011), which represents only 1.5% of the national tax revenue (Allers et al., 2013). The Netherlands uses a market assessment system to determine property tax payments: in 2013 the national average property tax rate for residential dwellings was

\textsuperscript{12} BNG and Waterschapsbank are the two Dutch banks that specialize in loans to local government.
0.1% and the non-residential rate was 0.38% (Allers et al., 2013). Although these rates are low, municipalities have more freedom to determine how these funds are used compared with grants from the Municipal Fund. Municipalities are also able to increase the property tax rate independently, without a limit; the only structural limitation is set by the national government. In 2008 the national government introduced a national ceiling on the total rise in property tax revenues for all municipalities; in previous years an absolute cap was imposed on municipalities rather than on a national aggregate. As Vermeulen and Allers comment, despite the national ceiling being binding, “...paradoxically, however, individual municipalities can raise property taxes as much as they like” (Vermeulen & Allers, 2013). Nonetheless, the salient point is that the national government plays a role in defining property tax rates and there is a structure in place to keep property taxes low.

5.2.2 Role of Property Taxes
As in other European countries, property taxes in the Netherlands are a conventional source of income for municipalities. While there is a structural disincentive to raise taxes represented in the national ceiling, from a political perspective, politicians in the Netherlands, like politicians in other countries (Slack & Bird, 2014), prefer not to raise taxes (Interviewee 1, 3). This is particularly true in the Netherlands because national-level politics are inextricably linked to municipal politics. One financial director from a third section association commented that national politicians are very concerned about local taxation rates because if “…municipalities raise the taxes too high it will interfere with voters at the national level…” (Interviewee 4). Several interviewees noted that reliance on the Municipal Fund also creates a disincentive for local politicians to fully utilise taxation mechanisms, including raising property taxes. One public finance expert said that it is more expedient to blame the national government when funds are insufficient to support local programs and services (Interviewee 1). Accordingly, insufficient funding is also a problem for national politicians because most Dutch citizens feel that resources should be equally distributed between municipalities. As suggested by a financial director, Dutch people “.....don’t and won’t accept too many differences....everybody from the northern part, to the southern part, to the western part should have access to more or less the same thing” (Interviewee 4). Another public finance expert said that to ensure equity, the formula-based approach is used to equalize potential differences in the distribution of Municipal Fund resources (Interviewee 1). The national government’s goal is to provide the financial means and sufficient autonomy to local governments to achieve service and program objectives based on local circumstances (Boerboom & Huigsloot, 2007). Property taxes, therefore, according to a senior ministry official and a financial director, are meant to act as a “…buffer to equalize for the small problems in the distribution of the [Municipal Funds]” (Interviewee 3) and not to pay
for local services (Interviewee 4). More specifically, taxpayers do not make an explicit connection between their property taxes and investments in local services. A national research institute economist commented that there is “...a path dependence in the sense that most of the revenue comes from the central government. People do not see the connection between local taxes and local services and there is no willingness to change” (Interviewee 7). A senior ministry official said, “...you have to have a big change...you have to lose the idea that local taxes are just to close the gap, they have to have a much bigger important role in local decision-making.” (Interviewee 3). Thus, property taxes play a minor role in the overall municipal financing system while the national distribution system plays the primary role.

The disconnect between property taxes and financial support for local area-specific infrastructure investments has significant implications for the implementation of TIF. The results of our questionnaire conducted with 34 senior municipal tax officials from across the country reveal that none of the municipalities used property taxes in a manner that reflect a TIF construction. With respect to using property taxes in the context of tax increment financing, 56% expressed doubt as to whether it was a promising new financing instrument. Reasons cited include: 1) the assertion that using property taxes for area specific development purposes is inconsistent with its perceived function as an income for general purposes; 2) pre-designating future property tax earnings on a multi-year basis reduces flexibility offered by property tax income, and; 3) commitment of future revenue represents a financial risk, despite the modest income stream generated by property taxes. Respondents identified other available instruments to generate local revenue that they preferred: imposing fees on outdoor advertising; utilizing business improvement districts, with annual levies on local businesses within the designated area; and focusing on cooperation with market players, such as real estate developers and social housing corporations. Conversely, 44% stated that they were interested in finding out more about tax increment financing. According to those respondents, the shift away from land development means that alternative ideas and strategies are needed.

This section has identified the key revenue streams and outlined conventionally accepted social-political norms based on ideas about fairness and equality and the technical administrative infrastructure that has been developed to support municipal financing institutional structures. However, we turn to an example in our case study that illustrates how local practitioners and decision-makers utilized the existing rules in alternative ways and, as a result, defied accepted norms in relation to property taxes. Its unique application of the expected property tax value increment as a component of the redevelopment project budget provides an opportunity to analyse the reasons for the decision and the outcomes.
5.3 Unconventional Practice: Future property tax increment

5.3.1 Waalfront Redevelopment Project

Nijmegen is located on the east side of the Netherlands. In 2003, the City Council approved an ambitious plan to redevelop 33 hectares of industrial waterfront lands in close proximity to the city centre. In 2007, the redevelopment budget was based on profits from the sale of land (49%), external subsidies (21%), and from the city’s own budget (18%). The city’s contribution included reallocation of expected grants from the national government (10%), an agreement between the political parties with respect to internal allocations (2%), and the use of expected income from property taxes that would be generated as a result of the redevelopment (6%). The amount of future property taxes was capped at €15.7m. until 2022 (Nijmegen, 2003, 2006a, 2006b). The use of property taxes was considered unprecedented, particularly because the revenue would be directed toward a specific area and earmarked for land acquisition and land development costs (Interviewees 5 and 8).

5.3.2 Key Lessons and Reflections

Project actors cited three key reasons for why future property taxes were applied to the project budget, which can be characterized as typical TIF ‘but-for’ rationales as described in section 2. First, the project had to be self-financing because it could not rely on the general city budget. The plan was expected to generate new taxes, which would be absorbed into the redevelopment budget (Interviewees 5, 6, 8, 10). Project planners did not expect general city budget to be impacted because the ‘future’ income had not been designated for other programs and services. Accordingly to one project tax official, “the mechanism was chosen because the plan generates money and it generates taxes, we wanted the plan to finance itself…and that is why the [property taxes] are put back into the plan because otherwise it would not be finance-able” (Interviewee 6). The degree of political interest to move the project forward, because it was considered an important city-building initiative, was a critical factor according to project actors. However, without the property tax increment the project would be a “no-go” (Interviewee 8). In short, to balance the budget and improve the project’s feasibility, future property tax was identified as the source to close the 6% gap.

The economic downturn profoundly affected the Waalfront project. In 2012, the plan was substantially revised in response to the drop in housing demand and the associated drop in land prices (Kunst, 2012; Matthieu, 2012; Nijmegen, 2012). The project duration was expanded from 2020 to 2030, and the master planning approach that initially drove the project evolved into an incremental approach. According to project planners, this means that each project phase will not be advanced until income is available to support the project costs (Interviewees 6, 8, 10). Unlike in recent years, when there
was political support for debt financing, politicians are no longer willing to absorb financial risk (Interviewee 10). Revisions to the development plan have reduced the estimated project value due to fewer market housing units and more social rental housing units. Project planners anticipate that there will be less revenue to support the project’s capital budget and the additional interest costs related to financing land and property acquisitions. A project director stated that because there will be “….less in quantity in price and value [and because] we have already [budgeted] €15M…we will have to donate the €15M but not from the building of houses…but we have to find another source…it is a high risk profile”. The City Council subsequently acknowledged that substantial project losses are expected, and in November 2013 staff and external advisors recommended using funding from the city’s reserve fund (van der Ploeg & Bruls, 2013).

The Waalfront case illustrates several key points. First, it is technically and politically possible to apply future property tax streams to local redevelopment budgets in the Netherlands. However, a decade later the original political perspective has profoundly changed. As a planning economist noted in reference to assuming the future property tax increment into the project budget, “….nowadays, they say: how is it possible that they would have done this?…. now they (politicians) have decided that the 15.7 M is the end. We don’t do it again…it is a one-time experience” (Interviewee 8). Local politicians have returned to more conventional perspectives regarding the use of property taxes, according to municipal officials, because they are not in favour of containing revenues generated by property taxes to a specific area, but rather for general uses that provide broader benefits (Interviewee 10). At an estimated 6%, the use of property taxes was comparatively minor relative to the budgeted revenue of 49% from land development, yet it is clear that the reliance on real estate performance in Dutch spatial planning practice is at a crossroads. The Nijmegen case demonstrates that municipal officials did push the parameters of conventional practice, but are now returning to conventional practice. The next section applies the assessment framework that was introduced in section 4 to address our research questions.

6.0 Institutional Dimensions: Assessing the potential of Tax Increment Financing in the Netherlands

The aim of this chapter was to probe the applicability of TIF in the Netherlands to facilitate investment in localized public infrastructure. The approach was to consider the interconnectivity between structural issues and the socio-political dynamics that may play critical roles in operationalising the mechanism in the Dutch planning context. Table 2 focuses on the fundamental issues that either makes TIF an
institutional ‘fit’ or ‘misfit’ in relation to application in the Netherlands. The objective is not to identify strengths and weaknesses of TIF’s in general, but rather to identify the particular institutional characteristics of the Netherlands in relation to TIF as a financial instrument for local investment.

The existing planning regulatory framework provides an essential structure to embed a TIF approval process. The planning system is understood as legitimate and contains pre-existing mechanisms to ear-mark revenue for area specific investments. Property taxes are a local revenue that, while modest, are reasonably flexible in their usage by municipal decision-makers. Similarly, when considering the socio-political dimensions, evidence suggests that the entrepreneurial practices of Dutch municipalities, coupled with a proactive perspective regarding the provision of local public goods based on activities in the land market, implies that government intervention using the market is acceptable. This perspective is fundamental to the application of TIF.

But if we dig deeper, by applying an institutional analysis we see that the applicability of TIF in the Netherlands is confronted with both technical and socio-political dimensions that may impede its application. Beyond conventional concerns about relying on positive real estate performance, the need for a TIF specific approval process/risk assessment framework or the potential risk of burdening future administrations with debt due to the unrealized tax increment, the low taxation rate is a substantial matter particularly given it is constrained politically and structurally. That is to say, even though research has found that a TIF designation is an effective device to signal government commitment to area investment that can result in economic development and increasing property values (Man & Rosentraub, 1998), the current low tax rate limits the application of this mechanism as a significant revenue generator. Secondly, if we consider conventional TIF financing models, which seek private financing in the bond market, the market-back models are not likely applicable in the Netherlands. As described in section 5, municipalities, generally speaking, are able to access low cost financing that is backed by a national guarantee under Article 12 of the Financial Relations Act. This is a structural disincentive for municipalities to seek more risky, complex, and expensive funds in the private bond market or to require, or persuade, market-players to do so. From a normative perspective, we find that there also might be a mismatch between TIF and its use in the Netherlands. Property taxes are a minor player insofar as the evidence points to their role as a buffer for “soft” programs and services, not “hard” public infrastructure investment in a capital plan. In the minds of taxpayers, according to several interviewees (Interviewee 1, 4,7), there is a weak connection between expenditures related to the latter investments and local property tax revenue.
Table 2  Tax Increment Financing: assessing the applicability for Dutch planning and local public infrastructure investment

<table>
<thead>
<tr>
<th>Institutional Dimensions:</th>
<th>Institutional Fit</th>
<th>Institutional Misfit</th>
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<tbody>
<tr>
<td><strong>Technical: formal dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational</td>
<td>No restrictions imposed on property tax use</td>
<td>Low property tax rate and macro cap in place to contain property tax level based on the national aggregate</td>
</tr>
<tr>
<td>Regulatory</td>
<td>Existing planning process and regulatory framework provides basic governance/approval structure</td>
<td>Low cost financing and national government guarantee backed lending practices could be a disincentive to use future property tax income and to seek funds in the private bond market</td>
</tr>
<tr>
<td>Financial</td>
<td>Instruments already exist (ie cost-recovery mechanisms) to earmark revenue for local area investments</td>
<td>Instruments already exist (ie cost-recovery mechanisms) to earmark revenue for local area investments</td>
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<tr>
<td><strong>Socio-Political: informal dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Values and norms Modes of practice</td>
<td>Responds to debates for more local revenue tools</td>
<td>Potential to constrain future political decision-makers and ability to use general budget as “buffer” for “soft” local programs and services</td>
</tr>
<tr>
<td></td>
<td>Dutch planning and development practice is akin to development-led model</td>
<td>Municipal Fund premised on equity of services. TIF (market mechanism) = winners and losers</td>
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<td></td>
<td>Government intervention to facilitate provision of public goods is accepted practice</td>
<td>Weak connection between local services and provision using local revenue</td>
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<td>Slow pace of actualizing property tax value out of step public sector practice of steering development process</td>
<td>Slow pace of actualizing property tax value out of step public sector practice of steering development process</td>
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<td></td>
<td>Financial risk based on property value not aligned with current spatial planning discourse</td>
<td>Financial risk based on property value not aligned with current spatial planning discourse</td>
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<td></td>
<td>Public sector inclination towards absorbing risk implies possible TIF models to allocate risk to market players less applicable in the Netherlands</td>
<td>Public sector inclination towards absorbing risk implies possible TIF models to allocate risk to market players less applicable in the Netherlands</td>
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</table>
Despite the issues identified in Table 2, the Nijmegen case provides empirical evidence that it is technically and politically possible to use a future property tax increment as part of a larger redevelopment project budget. The findings also suggest that there is sufficient space within the institutional context for municipal actors to exert agency and reinterpret how existing instruments are used – in this case, property taxes. However, rather than proving to be an exception, the Nijmegen example demonstrates that project actors are now facing scrutiny over the use of property taxes, despite the limited financial commitment in comparison to the overall project budget. The findings provide an evidence-based counterpoint to conventional practice, but rather than representing an exception to the rule, it illustrates the durability of conventional modes of practice.

This research on TIF as a potential financing instrument in the Netherlands was carried out during weak economic times. As an instrument for the foreseeable future, the notion of basing an investment strategy on future economic growth may be perceived of as out-of-step with shifting ideas about municipal financial risk. Indeed, current debates in the spatial planning sector are focused on identifying alternative strategies that do not rely on real estate value (Savini, Salet, & Majoor, 2014). Nevertheless, it is perhaps not the speculative nature of TIF financing models, but rather that the slow pace of actualizing property tax value that might be out of step with public sector practice of driving the development process. Similarly, if one of the positive attributes that is noted in the TIF literature is the ability to shift a degree of financing risk to the private sector, in the Netherlands, there is a historic tendency of the local authorities towards absorbing risk. Therefore, if a policy objective of using TIF would be to shift financial risk to marketplayers, it is a mechanism that provides ample space for municipalities to continue with similar practices that are currently done with existing tools. That is to say, we cannot assume that by introducing a new tool that modes of practice would necessarily substantially change.

7.0 Reflections and Conclusions

By scaling the assessment of TIF to the Dutch institutional context, this case study illustrates the complexity of operationalising a potential financing mechanism. It also emphasises the need to pay attention to socio-political dynamics rather than limiting analyses to technical considerations. As a potential new financing instrument for the Dutch planning and land development toolkit, the application of TIF may be constrained by socio-political dimensions in comparison to technical dimensions. If we return to our original ascertain that TIF is simply a financial instrument, which has certain characteristics, we can reflect on the degree to which the institutional context informs how it would be used. Indeed, rather than acting as an instrument to
incentivize investment by providing the structural means for market-players to absorb financial risk, such as market-backed TIF financing models (section 2), the corporatist nature of Dutch planning culture implies that the instrument may not inherently facilitate such a shift in practice. Nonetheless, rather than ruling out TIF as a possible mechanism, the findings illustrate the degree of flexibility that is available with the Dutch municipal context to reinterpret the use of existing mechanisms. As suggested by Theonig, (2012) public affairs are co-constructed and public organisations are constantly restructuring in terms of social norms. Together with austerity measures from the national level and discourse around the current planning model we might expect that perspectives may gradually shift thereby creating more space in the use of existing revenue streams, such as property taxes, in alternative applications.

The intersection between the legal administrative apparatus of municipal financing and spatial planning acts as the backdrop to the governance process, which shapes how investment in localize public infrastructure is done at the local level in the Netherlands. The findings contribute to the literature by empirically analyzing the degree to which TIF is applicable to the Dutch institutional context. In doing so, the results provide both theoretical and practical insights about the role of structures and norms. From a theoretical perspective, research about TIF in relation to the Netherlands tells us about the dominate dimensions and dilemmas that shape planning and municipal finance. In a recent article, Savini et al (2014) present a well developed analytical review about the three dilemmas of planning, in terms of the inherent tension and uneasy coexistence between intervention, regulation, and investment. The economic crisis, they contend, highlights the failures of the modernist project to control, regulate, and predictably manages the investment process. The current juncture, they argue, represents an opportunity to re-calibrate towards a demand-led planning model with an emphasis on “…participatory, bottom-up, and adaptive planning…” (p.3) processes. While careful to identify the weaknesses of offering simple answers about how to “navigate the dilemmas” (p.14), there is a predisposition to emphasize the potential of governance (with less government). Yet, we ought not to ignore Pierre’s (2011) contention that often broader governance perspectives tend “…to play down structures, but that doesn’t mean that they disappear” (p.21). Further research should empirically test the degree to which an institutional space is actually opening in the Netherlands and how such change is actualized in structures, planning practice, and policy instruments to deal with current and future challenges. In doing so, such an investigation should explore the degree to which a new financing tool makes a difference or whether enduring institutional norms offer a steadfast resistance to change. Indeed, for Dutch municipalities, that

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13 As noted in section 5.2.2, 44% of the questionnaire respondents expressed interested in finding out more about tax increment financing. This finding suggests an interest in alternative instruments and an opening of a potential institutional space. See appendix 4.
are still looking for alternative financing mechanisms for public infrastructure investments, the ‘negative outcome’ of using a TIF model in the Nijmegen project, and the overall negative assessment by those public officials of the instrument, means that they must still continue with their search for an alternative to the public land development model.
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5

‘Test Driving’ a Financing Instrument for Climate Adaptation: Analyzing institutional dilemmas using simulation gaming

Abstract

Urban physical public infrastructure is a frontline defense mechanism to manage and mitigate climate-related impacts. Market instruments are often cited as possible means to spread risk and reduce financial burdens on the public sector. The authors argue that existing research tends to focus on the technical issues of instruments and neglects considering institutional dynamics that may enable or constrain local market-based financing mechanisms. In this chapter, three core dilemmas (values uncertainty, planning horizon, and indirect benefits) are used to analyze the responses of practitioners to a possible financing instrument. The findings indicate that the practitioner’s responses to tax increment financing were largely shaped by the adaptation dilemmas and not the characteristics of the instrument per se. By mapping the dilemmas onto whether they would recommend it, participants imposed a financial barrier on climate adaptation investments. The authors conclude that a key imperative in the design of policy instruments is to pay attention to the congruency of informal institutions at the ‘street level’ in order to be in-step with the current sociopolitical conditions. The findings also point to four key attributes that a local market-based instrument would need to be aligned and responsive to the Dutch planning and development context.
1.0 Introduction

Physical public infrastructure is a frontline defense mechanism to manage and mitigate climate-related impacts at the urban level. Mounting evidence has demonstrated that climate change will require cities to make investment decisions and allocate resources to modify existing physical infrastructure, which includes conventional ‘grey’ infrastructure such as roads, power grids, piped sewer, and water systems, by introducing new strategies that reduce vulnerabilities and increase resilience to changing weather patterns (Carteret et al., 2015). Revised designed specifications, robust capital planning, and new types of infrastructure will be required to address adverse impacts, such as permeable pavement, renewal of existing systems to separate storm water and sewage, elevation of urban areas, strategically deployed green space and tree planting, additional space for water storage and retention, and enhanced above-grade drainage and grading plans, (Makropoulos & Butler, 2010; Bobylev et al., 2013). Cost-benefit research (Hallegatte et al., 2012) generally indicates that preventing damage through a commitment to upfront capital costs will alleviate higher costs in the future, such as replacing or repairing damaged properties or costs related to social and economic disruption. Despite the data, adaptation remains a periphery issue on local government budget processes, overshadowed by competition for scarce resources of immediate concerns that can be more readily reconciled with prevailing values, planning cycles, render clear benefits and respond to direct service demands. In other words, policymakers are confronted with and confounded by a range of dilemmas about how to finance long-term climate adaptation infrastructure.

1.1. Market-based Financing Instruments: Limits or Opportunities for Local Planning?

The question of how to finance investments in climate adaptation at the local level is not unique to the Netherlands. For example, a 2009 study comparing national adaptation strategies across Europe found that no national strategies considered how policy objectives should be financed (Swart et al., 2009). More recently, according to a 2013 report issued by the European Environmental Agency, while municipalities have some limitations, particularly with respect to interjurisdictional issues (such as broad-scale flooding impacts), local governments are well positioned to undertake concrete implementation actions using municipal resources and/or raising funds from other sources (Isoard & Winograd, 2013). In addition to regulatory solutions, scholarly and policy-oriented research suggests that market-based mechanisms hold some promise to create conditions for efficient and appropriate solutions (Buchner et al., 2011; Heuson et al., 2012; Mathews & Kidney, 2012). Other researchers have analyzed possible incentives to attract private investment at the
local level, which minimally includes a policy framework that is simple, predictable, and protects property rights (Merk et al., 2012). In the aggregate, the research tends to be normative and focused on the technical issues of possible instruments and a dearth that considers behavioral aspects or the role of context. That is, there is little empirical research that focuses on the institutional dynamics that may enable or constrain the application of local-level market-based financing mechanisms in relation to climate adaptation.

Our investigation takes planning and development actors in their institutional context as our starting point to assess the potential of using market-based mechanisms to facilitate investment in climate adaptation. In doing so, we ask: is a local-level market-based mechanism applicable for facilitating investment in climate adaptation? The intention is to generate an actor-centered conceptual understanding about the role of institutional dilemmas in shaping perspectives about the potential application of a market-based financial instrument. The article proceeds as follows: Section 2 sketches out the conceptual framework based on three policy-related dilemmas connected to climate adaptation. These dilemmas get to the heart of the institutional matters concerning financing local-level climate adaptation and are illustrative of how conceptualizations about costs and benefits are embedded within norms and values. Section 3 introduces the Dutch urban planning context from which the empirical data are drawn. As a ‘policy lab’ of urban adaptation, we use simulation gaming to explore the role of the adaptation dilemmas in shaping policy instrument selection in the Netherlands. The methods section includes an overview of simulation gaming and the scenario that was used to engage practitioners; secondly, this section describes the financial instrument, known as tax increment financing (TIF), in which participants were asked to ‘test drive’. Section 4 summarizes the core findings and subsequently applies the institutional dilemmas conceptual framework to analyze the empirical data in more detail. Section 5 offers concluding remarks and points to directions for further research.

2.0 Conceptual Framework

2.1. Institutional Dilemmas: Clustering Uncertainty and Reducing Complexity

In 2003, Adger (2003) explicitly connects the critical role and complex nature of institutions in relation to adapting to climate change by stating ‘… the effectiveness of strategies for adapting to climate change depends on the social acceptability of options for adaptation, the institutional constraints on adaptation, and the place of adaptation in the wider landscape of economic development and social evolution’
Actions, in whatever form, to address climate adaptation are nested within a broader institutional context that is shaped and reshaped by formal and informal institutional rules, norms, and practice. Institutions are often described as either formal or informal: Formal institutions are generally understood as government rules that are enforced by the legal system and are expressed as laws, constitutions, ordinances, and local land-use plans. Informal institutional rules are less explicit and emerge via repetition and solidification of behavior through perceptions, values, beliefs, and norms (Buitelaar et al., 2011). Informal and formal institutional rules are dynamic and the subject of constant negotiation by organizations and the actors that operate within them (Lowndes, 2005; Buitelaar et al., 2011). Institutionalists also acknowledge the role of narratives as a means for people to determine the outer parameters of informal institutions through developing shared understandings and, thus, reducing uncertainty (Lowndes & Roberts, 2013). Narratives also reduce the problem of complexity by clustering knowledge and positions, which function as heuristics (Matthews, 2013). Gigerenzer and Gaissmaier (2011) define heuristics as: ‘a strategy that ignores part of the information, with the goal of making decisions more quickly, frugally, and/or accurately than more complex methods.’ (454). In that sense, clustering knowledge into bite-sized pieces functions as a heuristic to simplify multifaceted problems and to act as shortcuts for organizational decision-making. So, how do policymakers and practitioners make sense of the complexity associated with climate adaptation? What ‘short-cuts’ and rationales do they use to overcome complex problems? We identify three dilemmas that are addressed in the literature (Adger et al., 2009; Haug et al., 2010; Walker et al., 2011; Mees et al., 2012; Preston et al., 2013): value uncertainty, planning horizon problems, and indirect benefits. Figure 1 illustrates our conceptual framework based on three spheres: (1) climate adaptation as a planning issue; (2) uncertainty and complexity as a decision problem; and (3) the decisions problems are bundled into thematic clusters of the institutional dilemmas. These institutional dilemmas are emblematic and a composite of signals from the institutional context in which they are derived from and, thus, function as heuristics.

The remainder of this section outlines the core features of the institutional dilemmas that form the conceptual backdrop for the analysis set out in Section 4.

2.1.1. Values Uncertainty
Uncertainty is a fundamental and broadly accepted conundrum of adapting to climate change. Uncertainties relate to the complexity of the climatic system, the types of impacts that can be expected, and the effectiveness of adaptation strategies to mitigate the wide ranging impacts (Giordano, 2012; Hallegatte et al., 2012). An interconnected issue is the problem of value uncertainty. Adaptation choices are
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Guided by a sense of value and the lack of agreement about how current generations value climate adaptation, let alone future generations, limits our ability to address anticipated problems (Adger et al., 2009; Walker et al., 2011; Preston et al., 2013). Hulme (2009) argues that multiple ways in which individuals, organizations, societies, and cultures have historically valued and understood climate is a challenge, to say the least, to reconcile. While Hulme focuses attention on the global project to govern climate change, local planning offers a granular level of value uncertainty. Adaptation to climate change is intertwined with value conflicts associated with land, environmental protection, health, safety, and resource allocation (Walker et al., 2011).

The lack of agreement on value (material or otherwise) is a core governance challenge. The lack of agreement results in climate adaptation at the local level largely remaining within the government domain, with an undefined set of institutional arrangements. The values uncertainty dilemma positions adaptation as a choice between priorities and the need to make trade-offs between what is ‘valued’. As Adger et al. (2009) state, ‘it all depends on goals, values, risks, and social choice’ (338). Yet without a set of collective values to demarcate choices, values compete in the political arena and, according to Preston et al. (2013), a ‘… persistent bias toward maintaining economic values over social, cultural, or environmental values’ places limits on adaptation (1020). Different approaches to overcome what can be conceived of as the ‘value gap’, such as no-regrets strategies or mainstreaming adaptation into existing processes and policies, are intended to reconcile the values uncertainty dilemma.
2.1.2. Planning Horizon

A second dilemma to adapting to climate change is that the planning horizon is substantially out-of-sync with conventional planning approaches. Indeed, addressing uncertainty in long-term infrastructure investment planning is not a new phenomenon; however, adaptation to climate change adds further temporal and spatial complexity. The planning horizon dilemma is often portrayed as a tension between ethical and classic rational deliberative planning. Alexander (2000) describes the objective of classic rational deliberative planning is ‘… for the actor to decide on the ends of future action and what the course of the action would be most effective’ (247). Ethical arguments suggest that future generations ought to be appropriately considered and sufficient investments made to avoid or limit the adverse impacts of climate change (Preston et al., 2013). From a rational deliberative planning perspective, complex data analyses in cost-benefit research are conducted to assert that investments by current generations will render benefits in the near term and over the long term, particularly given that the life span of land-use planning and infrastructure decisions ranging anywhere from 30 to 200 years (Hallegatte, 2009). The objective of cost-benefit analysis research is to demonstrate that investments need not require large upfront sums, but can be achieved through improved coordination of capital planning and maintenance regimes. As argued by Hallegatte (2009), committing to additional infrastructure costs in anticipation of future climate changes, ‘… may be the only way of avoiding large building and infrastructure retrofitting costs in a few decades’ (241). Other arguments suggest there is a strong economic rationale for using insurance to avoid imposing a financial burden on the current generation (Harrison, 2010), given climate adaptation is a problem with such range of uncertainties. Despite the different positions, it is clear that assembling a package of policy instruments is not a straightforward technocratic undertaking for two core reasons: the long-term planning horizon of climate adaptation is not calibrated to the comparatively short-term capital planning processes and, secondly, political cycles of local government are even shorter than these planning processes. Instead, the dilemma is about making choices between, as Walker et al. commented, ‘… relatively short-term, no-regrets types of strategies’ that are likely to be suboptimal overtime (2011).

2.1.3. Indirect Benefits

In the context of local government, municipalities face political pressures in relation to the degree to which local benefits are rendered in connection to financial risk and the use of local resource. According to the benefits view of public finance (Musgrave & Musgrave, 1989), the costs of local public services ought to be based on the preferences of the benefiting residents. This view establishes a link between the willingness to pay and the constraints placed on local governments by taxpayers to
deliver an acceptable package of local services and programs (Fischel, 2000). In the benefits model of public finance, the principle of equity is achieved if those who benefit from the service also pay for the service. The benefit can be direct or indirect, but a benefit must be derived from the expenditure. The dilemma for adaptation investments is the degree to which clear benefits can be established. Walker et al. argue that facing a choice, ‘... people who are asked to make economic sacrifices today—that may benefit future generations but will not benefit them directly—may lack the incentives to implement long term adaptation strategies’ (Walker et al., 2011). A lack of observable direct benefits is also cited as a reason why the market is comparatively inactive as a player in adaptation, in comparison with the public sector. Several reasons may account for this, including assumptions about the potential constraints, financial, technological, and spatial, that adaptation requirements may impose on private actors and, secondly, the time-lag between bearing the costs and the reaping of benefits of investments (Mees et al., 2012).

We now turn to an overview of the research context and description of the method employed in this study.

3.0 Methodology

This section briefly describes the Dutch case, the simulation game method, and provides background about TIF and the simulation game specifically designed for use in this research.

3.1. Urban Adaptation to Climate Change in the Netherlands: A Policy Laboratory

In the Netherlands, the national government has accepted projections that climate change will take place, as evidenced by the national adaptation program that was launched in 2007 and ongoing development by the Delta Program. The Netherlands is regarded as a front-runner in climate adaptation, particularly with respect to water management, and has attracted international attention with flood risk management approaches such as ‘Room for the River’ and playing a role in the global networking ‘Connecting Delta Cities’ initiative. The Delta Program is responsible for developing recommendations for adaptation to climate change in the Netherlands (Termeer et al., 2011). The urban-focused component, under the New Housing Development and Restructuring Program (Deltaprogramma, 2010, 2012a, 2012b), sets out a direction that local-level climate adaptation-related infrastructure improvements will be delivered using existing spatial planning investments frameworks, which includes coupling adaptation investments with market redevelopment activities overtime.
(Delta Programme, 2014). This outlook is consistent with the characterization of Dutch spatial planning as having transitioned into an era that is heavily focused on market-based processes and principles (Heurkens, 2012). Numerous studies have been commissioned by the national government in the search for possible market models and policy instruments that could be transferred to the Dutch context. In the foreseeable future, however, it is unclear how Dutch municipalities will be able to finance adaptation measures given the stagnate development sector (Deltaprogramma, 2011). Thus, given the active policy process driven by the Delta program and search for the new ‘holy grail’ of planning instruments and financing models, the Netherlands represents a kind of policy laboratory and a fertile research context in which to explore new approaches to financing climate-proofing local-level public infrastructure.

3.2. Simulation Gaming: An Experiential Method
Despite recognition as a forerunner in water-related climate adaptation, policies and governance approaches that are specific to urban adaptation are still in the early stages of formation, which presents a challenge for empirical research (van Buuren et al., 2015). Exploring the application of a policy instrument, firstly, not used in the Netherlands, and secondly, not conventionally applied to the problem of investing in adaption also presents a challenge for social scientists. The question of whether TIF (see Sections 3.3.1 and 3.4.3.2 for background) is a potential instrument for local policymakers to raise funds to support long-term investments in climate adaptation could, on the surface, be assessed based on technical criteria. However, this approach offers a narrow bandwidth on which to address this complex question. The application of simulation gaming, as an actor-centered method, is an effective means to consider the sociopolitical characteristics that play a role in policy instrument selection. As identified in the preceding section, grasping such issues as the planning horizon mismatch, the indirect benefits problem between current investors and future users, and lacking a cohesive set of social values on climate adaptation presents planning practitioners with intractable problems. Drawing from simulation gaming literature (Daré & Barreteau, 2003; Mayer & Veeneman, 2003; Klabbers, 2009; Mayer, 2009; Meijer, 2009; Shubik, 2009; Crookall, 2010), this method was selected because, as a highly interactive format often used in policy-making, it allows researchers to study the behaviors of participants using a specifically designed reference system. Thus, it provides a format to develop an understanding about complex ‘… tacit knowledge’ (Klabbers, 2009) embedded within practitioner’s perspectives that is based on experience, but often difficult to articulate.

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2 See research a website hosted by the National Office for Entrepreneurial Netherlands called the Financial Structure Toolbox, and reports by consultancies and research institutes VROM, C. (2010), ECORYS (2010), Ministry, o. i. A., VNG & NEPROM (2009), Planbureau (2014), Planbureau and Urhahn (2012), and Heijkers et al. (2012).
3.3. ‘Test Driving’ a Financing Policy Instrument: A Novel Policy Instrument

As implied by the metaphor included in the title of this article, participants of the simulation game were asked to ‘test-drive’ a financing instrument. The metaphor makes an explicit connection to the simulation game scenario that provided a setting for participants to experience a novel instrument. The aim was to introduce participants to an instrument that they had no practical experience within a multidimensional format. Thus, the simulation game session provided a decision-making environment to debate and develop opinions without the risk of professional or institutional damage. Given the research objective, participants were asked to consider the use of TIF as a means to facilitate investment in climate adaptation. We conceived of the assignment as an institutional challenge wherein participants were confronted with considering whether existing formal structures and informal institutional norms/values could accommodate TIF. The simulation game was designed to focus on normative issues, rather than technical aspects that may (or may not) impede the application of TIF in the Netherlands. The purpose of the research was to qualitatively explore the sociopolitical dimensions of operationalizing TIF and to consider how participants distinguished their arguments about the applicability of a particular local income stream—namely property taxes.

3.3.1. TIF: A Short Overview

TIF is a bounded value capturing instrument (van der Krabben & Needham, 2008) designed to ‘earmark the related increment of property tax in a proclaimed area to fund public investments’ (Alexander, 2012). While the duration varies, a TIF is typically based on a 25-year time span in a prescribed designated community improvement area. It is premised on the idea that the provision of new infrastructure in a designated area will increase property values. TIF is used in most American states to address stalled local area investment (Lefcoe, 2011). It has also been adopted in Canada within the last 10 years and more recently in the UK, with the policy objective of adding revenue generating tools at the local level (Squires & Lord, 2012).

Extensive research has focused on the strengths and flaws of TIF. Some researchers have identified governance flaws and misuse in relation to public policy objectives, resulting in benefits to developers and cross-jurisdictional tax revenue absorption issues (Weber, 2003). The latter issue is particular to the way in which school districts are funded in the U.S. Others have criticized the degree to which a public policy rationale exists to justify government intervention and financial risk or whether expediential investment attracts business or simply displaces businesses from one area to another (Weber, 2010; Chapman & Gorina, 2012). The purpose was not to investigate the strengths and weaknesses of TIF per se. The assumption is that given
the underlying long-term incremental characteristics of climate change, instruments conventionally used in planning processes in the Netherlands that focus on capturing immediate return on land value are poorly designed to motivate long-term investment commitments. Secondly, autonomous adaptation by municipalities might be enhanced if resources were available at the local level, and thus not dependent on actions from higher orders of government. During the gaming sessions, players focused on the core issues of whether (1) channeling the extra property tax earnings above the pre-investment tax base into a specific area, rather than into the general city budget, was acceptable or not and (2) whether utilizing an instrument that is premised on market growth is appropriate given Dutch municipalities are currently risk adverse in response to a stagnate planning and development sector. The following section identifies the empirical backdrop that underpinned the simulation game scenario and the specific information on TIF that was provided to participants during the simulation session.

3.4. The Watervliet Safe Haven Simulation Game
In the design of the simulation game, we drew from Peters, Vissers, and Heijne’s advice that designers should construct a game ‘… so it is plausible that participants behave more or less the same way as they would in reality’ (1998). The following offers a summary of the systems analysis (Peters & Westelaken, 2014) that underpins the Watervliet Safe Haven simulation game. The design of the scenario draws from scholarly and policy-related research associated with Dutch planning and development, municipal public financing, and the Dutch climate adaptation program (Root et al., 2014, 2015).

3.4.1. Understanding the Institutional Context
As described in Section 3.3, the New Housing Development and Restructuring Program (Deltaprogramma, 2010, 2012a, 2012b) has set out a direction that local-level climate adaptation-related infrastructure improvements will utilize existing spatial planning processes and instruments to lever investment over the long term. The concept of how planning and development processes will be used has been modified since the original conception. The 2008 economic crisis had a profound impact on the Dutch development sector, which stalled many residential and office projects across the country. By way of background, in the Netherlands there has been a historic reliance on real estate value based on what is referred to as the public land development model (Needham, 2007; van der Krabben & Jacobs, 2013). The approach is largely considered unviable in the foreseeable future. It was a model that enabled municipalities to use the market to facilitate community-level investments to deliver a range of public goods (Hartmann & Spit, 2015). This practice resulted in speculative land acquisitions and development projects, which ultimately have left
many municipalities burdened with substantial land holdings, financial exposure, and over-supply of houses and offices in their communities (Janssen-Jansen et al., 2012; van der Krabben & Jacobs, 2013).

In 2011, the Delta Program acknowledged that using existing planning and land development approaches and instruments to facilitate local-level adaptation investments, in the short term, are problematic because many development projects are struggling to remain financially buoyant (Deltaprogramma, 2011). Recently, the 2015 program for urban areas and local adaptation set out a governance agenda that focuses on building a coalition of stakeholders as a step toward gradually embedding adaptation into conventional planning and development practice (Delta Programme, 2014). The approach is an incremental and network-oriented strategy that assumes adaptation is a long-term process that will require broad multi-sectoral participation. The Delta Program’s shift is also consistent with the discourse in the planning and development sector around the idea of ‘organic development’ (Buitelaar et al., 2014). The concept proposes to shift Dutch spatial planning from comprehensive master planning and large-scale redevelopment to exploring strategies that enable incremental small-scale initiatives incorporating multiple stakeholders and shared financial risk models.

The foregoing provided a high-level summary of the institutional context that Dutch spatial planning and development practitioners are currently confronted with. The Watervliet Safe Haven simulation game draws together these elements into a scenario. The next three sections, firstly, provide a brief description of the scenario that participants were faced with, secondly, the sequencing and management of the simulation materials, and, thirdly, the phasing of the game implementation.

### 3.4.2. Simulation Game: Description

- **Scenario:** the ambitious mayor of a fictional city in the Netherlands (aka. Watervliet) invites senior municipal staff and private planning and development practitioners to advise City Council on whether to include TIF in the financing strategy for a large redevelopment planned for the city center.
- **Climate Adaptation Investments:** Watervliet needs to replace existing infrastructure in the central city due to current flooding problems and future projections that expect the flooding impacts to drastically increase due to climate change by 2050. The Mayor was keen to introduce a green and blue infrastructure as a strategy to mitigate flood impacts. The Mayor argues such investments will demonstrate to investors that Watervliet is a dynamic city to invest in.
- **Key Issues:** the project is underfunded by approximately 10%; no funding from the national government is expected; the project is the subject of criticism from local
media; the Mayor sees the initiative as an important legacy project.

- Objective: Each team must make a recommendation to the Watervliet City Council about whether TIF should be used to close the project’s financial gap.

### 3.4.3. Simulation Game Sequencing and Materials

Seven three-hour sessions were held in five different locations in the Netherlands. The simulation game session was advertised via a range of social networking sites, including sites that focus on Dutch spatial planning issues and climate change-related subjects. The result of the outreach strategy was a sampling of 59 experienced spatial planning practitioners and policymakers. The sectoral mix of the participants was a balanced representation of both private sector practitioners and participants that worked for municipalities. The majority of participants were spatial planners, representing process managers, project developers, policymakers, and advisers.

The simulation game sessions were undertaken in several stages. The following is a brief description of pre-game stage and phases within the simulation game itself.

#### 3.4.3.1. Pre-Game

- One week prior: participants received an information package that contained the following:
  - Letter from the researchers confirming logistical details and role description
  - Simulation Material:
    - Invitation from the Mayor of Watervliet
    - Letter from national government
    - Two fictional newspaper articles from a local newspaper

#### 3.4.3.2. Upon arrival to the Simulation Session

- Questionnaire: participants completed it on an individual basis
- Watervliet redevelopment project budget
- Brochures explaining TIF and ‘green’ infrastructure

Given the objective was to elicit perspectives about the application of TIF, participants were provided information both in written form and in the presentation by the ‘mayor’ of Watervliet. The information identified the perceived key strengths and weaknesses of the instrument and conventional policy rationales. For example, participant was informed that a perceived strength is that by recovering value overtime upfront costs are not added (i.e., levy’s) to the development phase and/or immediate profit return is not required. Conversely, it was identified that if used extensively by a municipality, TIF can result in freezing the general tax base for up to 25 years, thus impacting on general revenue that supports other public programs and operations. Other
arguments that support the TIF suggest that the instrument provides a positive market signal, thereby acting as a catalyst for private sector investment to create jobs and expand the city’s tax base. Participants were also informed that given TIF’s rely on a ‘market test’, cash-strapped municipalities are often driven by a public investment program that is based on the ‘highest & best uses’, to the exclusion of other public goods. Three basic financing vehicles using TIF, broadly identified in the literature (Pricewaterhouse Cooper, 2008), were also described. These three models were offered for session participants to consider given they are relatively straightforward in relation to representations about the degree of risk between the public and private sectors, as follows: (1) bond-funded: The municipality issues bonds secured against the projected tax increment, using revenue or general obligation bonds; (2) municipality-funded: the municipality borrows to provide the initial capital; and (3) developer-funded: the developer borrows to provide the initial capital—the municipality then reimburses the developer using the actual tax increment which the developer uses to repay its borrowing. During the gaming sessions, participants considered the advantages and disadvantages of the models, in addition to offering further variations to shift and/or share financial risk between the public sector and market-players.

3.4.3.3. Simulation Session
The simulation game was structured around three distinct phases. The intent was to produce sufficient flow that mimic the policy process to create psychological fidelity2 (Lukosch & Bekebrede, 2014), which includes unexpected events that are beyond the control of the participants (Duke, 1980). The phases were designed to provide participants with sufficient information on which to base their recommendation and to provoke discussion as participants sorted through a thinking process, including introducing a degree of tension. No formal facilitation or intervention by the researchers was included. As a group self-driven process, it allowed sufficient room for participants to work with the materials and to structure the debate without influences arising from the researchers. Yet, the events introduced new information, thereby focusing players’ attention on particular issues, and the distinct phases structured the process around the task of devising a recommendation.

Phase One: Began with a presentation by the Mayor to the group. The purpose of the presentation was to describe the scenario to participants, thereby setting up the problems and tensions. The problems and tensions are nested in the scenario, in what Duke refers to as ‘the pulse’ (1980). According to Duke, the pulse compels players to focus on shared phenomena. The Mayor kept in the role throughout the duration of the simulation in order to maintain what Klabbers (2009) refers to as ‘the magic circle’. This phase of the simulation was styled on a meeting of professionals
wherein the Mayor briefs participants about the project and the new financial instrument that they have been invited to analyze and make a recommendation to the Watervliet City Council.

Phase Two: Participants engaged in a ‘brainstorm’ session wherein they discussed whether property tax, as the income source of TIF, was the right income stream to support localize investments in climate adaptation, whether it was a potential instrument for the Watervliet Safe Haven Project, and whether there was a way to tailor the instrument that is specific to the Dutch sociopolitical context. During this phase, the Mayor provided three pieces of information: (1) a press release from the City’s public relations department announcing the relocation of a large investor into the redevelopment project area; (2) a newspaper article announcing further budget cuts from the national government for city services; and (3) a petition from citizens from the abutting neighborhood protesting that they also experience flooding and it is unfair that only a community with market potential will receive long-term investment to address flooding issues.

Phase Three: The group was asked to make their final recommendation using a report template. A laptop was provided, and the report template was projected onto a screen to facilitate group interaction and discussion over the reasons and final recommendation.

4.0 Summary of Findings

4.1. Using a Market-based Mechanism: Institutional Dilemmas

In the remaining sections, we turn to answering the research question: Is a local-level market-based mechanism applicable for facilitating investment in adaptation? The response to the question is done by mapping the institutional dilemmas from the conceptual framework onto the core findings. The aim is to provide an account about why participants largely agreed that TIF was inappropriate for climate adaptation and to contextualize those perspectives.

4.1.1. Value Uncertainty Dilemma

The simulation scenario confronted all participants with a redevelopment project that required investments in new climate resilient public infrastructure. The scenario was presented as an opportunity to make strategic localized investments, based on a modest budgetary commitment, aimed at reducing future negative impacts of climate change and adding urban design features that improved the built environment. The pre-game questionnaire indicated that 81.5% strongly agreed to agree that there
was enough scientific information to affirm that the climate is changing. The large majority of 83% strongly agreed or agreed that local government should plan now for long-term climate change. Despite the agreement about climate change, participants were not in agreement about when to invest in climate adaptation. The questionnaire found an average split of 29% between those that agreed that it was unclear when to invest, those that were uncertain, and those that thought it was clear when municipalities should invest. The majority, at 67%, agreed that more information is necessary in order for local government to take action. The questionnaire results were consistent with the dialog during the simulations insofar as participants agreed that climate change is a spatial planning policy concern, but perspectives varied from fully accepting that investment in adaptation must be part of contemporary planning practice to those that argued adaptation to climate change was not a critical issue requiring urgent attention.

Participants generally characterized investment in climate adaptation as a type of unclaimed public good that requires the government, as opposed to market-players, to play the primary role. This perspective rested on three questions that informed participants’ discussions, which are also ubiquitous quandaries in climate adaptation policy-making: (1) What are the roles of the public and private sectors?; (2) What are the risks of investing and the risks of not investing?; and (3) Who benefits from investments and are such benefits fairly distributed? Participants generally argued given the answer to these questions remain unresolved, the government ought to play the lead role in facilitating investment in climate adaptation at the local level (i.e., from local, province, national, and waterboards’). The second core issue related to the degree to which property taxes should be used for ‘hard’ investments in a specific area. In the Netherlands, property taxes play a minor role in financing local investments and services due in part that the municipal financing system is largely based on two processes: (1) transfer payments from the national government (Allers, 2012) and (2) public land development practices have been fundamental to facilitating investment in community-based public (van der Krabben & Jacobs, 2013). The Dutch financing system is designed to keep the property tax rate low across the nation (Vermeulen & Allers, 2013) and to act as a modest buffer in municipal budgets. Simulation participants also voiced concern about whether channeling incremental property tax income into a specific area was ‘fair’. This perspective was voiced more strongly by municipal participants based on an overarching concern that the application of TIF would create unequal adaptation results: meaning those in economically disadvantaged neighborhoods would not likely enjoy attention from

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3 According to Lukosch and Bekebrede, psychological fidelity relates to the degree to which a game matches the emotional and cognitive perceptions of the players, which includes, the play process and flow of the game (2014).
the market. As stated in the Amsterdam session: ‘In my perception we [in the Netherlands] have a nicer inclination, the kind of value investment financing using TIF, as in America, … there is something fundamentally cold-hearted about using a tax measure’

The findings from the simulations are consistent with ideas that are part of an emerging narrative in the Dutch spatial planning sector. Over the last several years, practitioners, advisors, and researchers have argued that Dutch spatial planning ought to change from a ‘supply’ model to a market ‘demand’ model (Buitelaar, 2010). Such a model, it is argued, should be based on municipalities facilitating public good investments (rather than financing) and working with stakeholders on ‘bottom-up’ driven planning process (rather than comprehensive master planning). Participants were largely able to align their perspectives (values certainty) by building on a nascent narrative about the transition of Dutch planning toward demand-led practices. This was possible because TIF can be characterized as a demand-led instrument that is fundamentally premised on positive market response to public good types of investments. Such an affirmative narrative was weakly articulated in relation to climate adaptation because the provision of such investments appeared to represent an ‘old-fashioned’ supply-led model. Which is to say, the narrative connected to climate adaptation confirmed and reinforced the values uncertainty dilemma.

4.1.2. Planning Horizon Dilemma: Mismatch with the Market
A consistent concern between participants and the groups, as a whole, was the market-based speculative nature of TIF. Imagining applying a financial instrument that is premised on future earnings from the real estate market was perceived as out-of-step with current political perspectives in the Netherlands. For market-players operating in the post-economic crisis conditions in the Netherlands, participants argued developers are in a good position to resist absorbing additional project costs or risks. The reasoning behind the government remaining as a key actor was twofold: Firstly, participants consistently argued that adaptation likely carries additional costs and any such investments will not be sufficiently valued in the market place. This finding is consistent with Tennekes et al. (2013) who suggest there is no guarantee that adaptation investments will generate higher market value, within the time frame conventionally required by investors. Secondly, the findings also indicate that if the investments are not valued in the market place, then the investments become a nonrecoverable project cost using conventional processes in the Dutch planning regulatory framework. This perspective was stronger with municipal participants than

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4 ‘Dutch water boards (Dutch: waterschappen) are regional government bodies charged with managing water barriers, waterways, water levels, water quality and sewage treatment in their respective regions.’
Source: http://en.wikipedia.org/wiki/Water_board_%28Netherlands%29
nongovernmental participants. The former cited the unlikelihood of political support for such a market-based instrument, given market-driven strategies have resulted in substantial financial challenges for municipalities across the Netherlands (Janssen-Jansen & Lloyd, 2012). As stated by a Nijmegen participant, ‘… it is, of course, the classic mistake that municipalities have ever made. The purchase of land and hope that it will be worth something. The risk lies with the municipalities’. Private sector participants were less pessimistic suggesting that the advantage of TIF was that it might fit well with conventional Dutch planning and development practices because it is consistent with conventional practice of using residual value from the land development process to cross-subsidize a range of public goods (van der Krabben & Jacobs, 2013). The difference between those perspectives is that the latter participants tended to focus on the possible flexible ways in which TIF could be applied to facilitate investment and spread risk between more a diverse range of players—but not for climate adaptation investment, just in general.

The evidence indicates that session participants situated the planning horizon dilemma as a mismatch between two issues: Firstly, there was uncertainty about the investment phase and the degree to which the market would respond sufficiently to render projected value. Secondly, the strong prerogative was to cite the lack of political support to make explicit adaptation investments: In the context of shrinking municipal budgets and competing investment priorities, climate adaptation has insufficient urgency to justify immediate action. As stated by a Den Haag participant: “We have been working on climate adaptation for a few years and we are convinced that climate change adaptation is a topic that generates no extra money. Politicians are not prepared to give extra money because the urgency is still too limited. We do not think of additional budgets. We think of linking them with clever restructuring of existing urban areas. We still have decades of time”.

As crystallized by the above quote, lacking political support and resources, there is little incentive for undertaking immediate substantive actions. Rather, the strategy to overcome such barriers is by incrementally integrating adaptation measures. An incrementalist strategy assumes it can withstand political cycles and gradually integrate climate adaptation into planning and operational routines overtime.

4.1.3. Indirect Benefits Dilemma

We begin this section with two unambiguous quotes made by simulation game participants in different sessions:

• “… if you want housing corporations to invest in climate proofing, that requires a lot of upfront investment. The benefits will not flow back to the corporation, so it is an uneconomic road” (Amsterdam session).
• “I can tell you from experience that most of my buyers and renters do not care much for the word heat-stress or flooding. Everyone thinks we’re safe here. So, I do think there is a big difference between customer perception and actual risks you run. If it does not happen often the client thinks that they are not going to pay for it” (Rotterdam session).

Section 2.1.3 identified a core principle of the benefits model of public financing as needing to successfully make a clear connection between local expenditures and local benefits. This principle is evident in sentiments expressed in the above quotes, which clearly illustrate the dilemma and burden of proof that is required by policymakers to demonstrate the direct benefit of adaptation investments. When considering using finite local resources participants argued that if investments are made in climate adaptation funding will not be available for other investments. Participants, thus, conceived of the problem as having to make decisions between investments that will result in direct benefits and adaptation investments, it was argued, that will result in benefits sometime in the future to unknown beneficiaries.

A strategy to address the indirect benefits dilemma focused on how risks, costs, and benefits could be spread between direct beneficiaries and the public and private sector. For example, as stated by participants:

• “The question is, for private property owners, can you use similar incentives for them to invest in measures to retain more water, perhaps also recovering investments with tax value … you make a combination … because I think it is important that we all shoulder the burden and that we do not say—‘corporations, you do it’” (Amsterdam session).
• “The question is, who will stick their neck out? You do not expect the market to do that, because it does not invest in loss. Do not expect that the government is going to do, because it is in the red and is also limited. How are we going to divide or limit the risk?” (Nijmegen session)

The groups developed variances of how TIF could be applied to balance financial risk between current stakeholders and future beneficiaries. Unsurprisingly, a concise answer as to how different stakeholders could participate in risks and benefits remained unanswered. Drawing from Tenneke et al., discussions about the types of mechanism that could reconcile the indirect benefits dilemma are, in fact, highly charged political discussions. By debating the technical merits of TIF as a potential instrument to facilitate investment in local adaptation participants teased out and engage with contentious issues about ‘… institutionalized distributions of burdens and benefits’ (Tennekes et al., 2013).
5.0 Conclusions and Final Remarks

Lack of funding is often cited as a substantial barrier to making investments in local climate adaptation. Yet, as asserted by Measham et al. (2011), lack of funding is a ‘surface constraint’ (906) and too simplistic of an explanation as to why investments in climate adaptation lose out to other priorities. Similarly, in asking whether a local-level market-based mechanism is applicable for facilitating investment in climate adaptation, we find evidence that, on one level, TIF has more limitations than application opportunities to finance climate adaptation at the local level in the Netherlands. This is due primarily to current economic and political dynamics percolating in Dutch planning based on the reluctance to rely on speculative earnings from real estate. Yet, these reasons may also represent ‘surface constraints’ because the disinclination to use TIF was not specific to TIF as an instrument per se. The three key dilemmas (values uncertainty, planning horizon, and indirect benefits) are evident in the narrative of the participants, which shaped how participants responded to both (1) investing in adaptation and (2) in the use of local income, which is to say, property taxes. While participants found a degree of value certainty about climate change, they struggled to reconcile the degree to which municipalities ought to underwrite long-term investments or whether the market will recognized the added-value in the foreseeable future.

We began the article by asserting that investment in urban public infrastructure will be required in the coming years to mitigate the impacts of climate change at the local level. The findings have produced insights about the relationship of the dilemmas in shaping practitioners perspectives about a possible financing instrument. In doing so, the analysis points to the limited acceptance that a market-based financing instrument is, currently, likely to have in the Netherlands. In contrast, participants appeared to be generally interested in TIF for conventional area investments, with some reservations, insofar institutional space was made available to imprint an incrementalism and customize TIF into a ‘made in the Netherlands’ instrument. As a participant commented, “…. ‘made in the Netherlands’, the Dutch way, can we imagine that kind of TIF? [Yes], for example, stringing together a number of business cases, which are smaller, short-term, and therefore are more manageable in terms of risk and return” (Amsterdam session).

These contrasting perspectives suggest that by mapping the dilemmas onto whether they would unreservedly recommend TIF, participants imposed a financial barrier on adaptation investments. Thus, we learn that the potential financial gap was not necessarily actual, but rather an outcome based on the dynamics of the institutional context and the perceived constraints that were informed by the climate adaptation
dilemmas. A key imperative in the design of financing instruments would be to pay attention to the congruency of informal institutions at the ‘street level’ (Buitelaar et al., 2011). In order to be in-step with the current Dutch sociopolitical conditions, we extrapolate that market-based financing instruments need to be aligned with several attributes. These attributes represent a composite of the final recommendations made by the seven simulation groups. To overcome the project’s financial gap, we learned that the design of a market-based instrument would need to align with the following principles: incrementalism, long-term financial risk management, risk sharing between stakeholders, and be bundled with a diverse package of instruments.

5.1. Final Remarks and Further Research
The state of local climate adaptation policy and planning practice is in its formative years, hence local policy instruments are often crudely formulated (i.e. governmental actions using regulation and/or subsidy) in comparison with the range of options that have been applied to address complex social and physical planning problems—i.e., sophisticated governance strategies from regulatory to financing and management models between government and nongovernmental entities, and communication strategies aimed at behavioral changes, which have been refined through repetition and learning. While the history of urban planning provides evidence of policies and processes that resulted in unanticipated and undesirable outcomes (Jacobs, 1993), these are the instruments of modern planning. Indeed, the research findings reflect Savini’s (2013) observation that the paradox of urban planning is while, on the one hand, it is viewed as a technocratic undertaking, in practice, however, the dilemma is that despite the intention to rationally ‘steer’ change, in reality planning ‘… entails a series of compromises over different trade-offs, based on politically and arbitrary constructed visions of the specific problem at stake’ (336). Secondly, the findings do not provide an answer to those practitioners with a thirst for instruments that will simplify the climate adaptation process. Rather, the analysis identifies an urban planning puzzle wherein a technical fix is only part of the answer to facilitating investment in climate adaptation. Simulation gaming is a method that provides a strategy to sort out the governance puzzle. By examining the interactions between participants and how they made the interconnections between, to some degree, disparate issues (i.e., application for property taxes, investment in local climate adaptation, and TIF), it proved an effective method to uncover the possibilities of achieving an institutional fit.

Methods that enable exploration and organizational learning are a growing area of interest in the field of governance-oriented climate adaptation research (Baird et al., 2014; Jordan & Huitema, 2014). Given the potential cost of failures in the messy world of policy-making, simulation gaming is a platform that enables participants to
‘join-up’ the components of a scenario in a confined and ‘safe’ place in comparison with real-world practice. Further research could aim to explore how planning practitioners interact with different policy instrument arrangements and the degree to which the characteristics of the institutional dilemmas could be overcome, including reducing organizational uncertainty and enforcing affirmative narratives about integrating climate adaptation measures into routines. Indeed, a principle of heuristics is the fluidity in how strategies to reduce complexity in decision-making are selected and learned on an ongoing basis through social processes (Gigerenzer & Gaissmaier, 2011).
References


Chapter 5


Mainstreaming Local Climate Adaptation Investments Using Municipal Income: Analyzing actors, adaptation, and context using simulation gaming\textsuperscript{1}

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Abstract

To overcome barriers to climate adaptation, it is often cited that local governments ought to mainstream measures into existing policies/processes, yet the answer remains incomplete about how this process is achieved. Using a new institutional approach, this study analyzes how practitioners use formal and informal rules to enable or constrain the use of a market-based municipal financing instrument as a possible means to mainstream public infrastructure investments. Based on 21 hours of simulation gaming sessions with professional planners, the findings indicate that the instrument would be confronted with the enforcement of various rules thereby erecting a financial barrier to implementation.
1.0 Situating Mainstreaming: an institutional nexus

To overcome the barriers of adapting to climate change it is often cited that local governments ought to integrate adaptation initiatives by mainstreaming adaptation measures into existing policies and programs (Carter et al., 2015; Moser & Ekstrom, 2010; van Buuren, van Vliet, & Termeer, 2015). This concept is broadly perceived to be the way in which, over the long term, adaptation actions will be implemented. Similarly, Eisenack et al (2014) and Westerhoff et al (2011) assert that barriers to climate adaptation, which includes mainstreaming, are relative to specific situations and local conditions. Barriers may include uncertainty and lack of knowledge about climate change, unclear governance arrangements and ineffective policy frameworks, institutional inertia, and financial and technological limitations (Moser & Ekstrom, 2010; Uittenbroek, Janssen-Jansen, & Runhaar, 2013). Yet, these generic categories remain imperfect as conceptual tools to explain how barriers and stimuli to mainstreaming play out in different ways in different contexts (Berkhout, 2012; Birkmann, Garschagen, & Setiadi, 2014; Keskitalo, Juhola, & Westerhoff, 2011). Moreover, despite the broadly acknowledged subsidiary principle associated with climate adaptation, limited scholarly attention on mainstreaming has focused on the institutional conditions that may constrain or create opportunities to use locally scaled municipal financing instruments as a means to mainstream local adaptation investments (Measham et al., 2011).

A considerable amount of mainstreaming-related research focuses on developing analytical frameworks and sets of indicators as a means to order the complexity of the policy making process. The implication is that once the complexity is sorted out, mainstreaming climate adaptation will be integrated into organizational routines. The underlying assumption is that a certain organizational order exists wherein adaptation actions can be placed into the organizational slipsteam. Others argue that climate change is one of many factors that shape an organization’s response to adaptation, but it is unlikely to be the primary issue that drives adaptation actions (Berkhout, 2012; Tompkins et al., 2010), which is to say policy-making is extremely complex and often a muddled process (Susskind, 2010). In this chapter mainstreaming climate adaptation is conceptualized as occurring within policy-making processes that are polycentric wherein actors are inter-dependent, political support underpins solutions, and facts and values are often intertwined and used strategically (Kornov & Thissen, 2000). A recent definition of barriers to climate adaptation offered by Eisenack et al (2014) is akin to that conceptualization. Eisenack et al provide an institutionally oriented approach that focuses on the conditions in which policy-makers and practitioners (“adaptation actors”) are operating that may either enable or constrain actions. Depending on how a particular barrier is perceived,
there is, according to the positive\(^2\) framing of the definition, the potential to overcome it: a “... barrier to adaptation” is (1) an impediment (2) to specified adaptations (3) for specified actors in their given context that (4) arise from a condition or set of conditions. A barrier can be (5) valued differently by different actors, and (6) can, in principle, be reduced or overcome. In this definition, conditions are the attributes of adaptations, actors, and their context.” (p.868). Drawing from this definition, we focus on the interdependency of the three variables: adaptations, actors, and their institutional context. The chapter is concerned with three questions in relation to these variables: How do institutional rules (formal and informal) shape practitioner’s perspectives about the applicability of certain policy instruments? Secondly, are practitioners willing to reinterpret and reshape such rules in order to mainstream climate adaptation investments? Thirdly, how do practitioners learn the extent to which rules can be changed and which rules cannot? We take this actor-oriented approach to build a richer understanding about the underlying conditions that may help explain the variations to mainstreaming climate adaptation and the recombined forms of adaptation barriers that emerge during policy-making processes (Tribbia & Moser, 2008). Thus, we consider the degree to which mainstreaming climate adaptation using locally scaled financing instruments, which could be part of strengthening local adaptive capacity, is enabled or constrained by socio-political structures and norms (Berkhout, 2012). While our study focuses on the Netherlands, but we believe that the findings and approach is pertinent from an international perspective.

The findings described in this chapter illustrate the degree to which adaptation actors are willing to exert agency to facilitate investment in climate adaptation when confronted with institutionally situated constraints and/or enabling factors (Bell, 2011). We situate the analysis in the realm of financing localized investments. While it appears that planning practitioners currently operate within a limited institutional space when considering possible policy instruments, the findings point to the potential for new ways of using existing instruments. Applying an institutional approach, the objective is to analyze the dynamics of mainstreaming local level adaptation investments in public infrastructure using municipal income, based on an instrument known as tax increment financing (TIF). Rather than assessing TIF’s as an instrument per se\(^3\), the analysis concentrates on the income stream that is earmarked by the instrument, namely, property taxes. A pre-existing literature, mainly based on the US experience with this financing instrument, provides a wide range of debates on this subject.

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2 Eisenack at al characterize the definition used in “Explaining and Overcoming Barriers to Climate Change Adaptation” (2014) as a positive insofar as it aims to be descriptive or explanatory rather than normative.

Turning to the organization of the paper, the following section identifies the conceptual framework that guides the empirical analysis. Section 3 outlines the simulation gaming method and the game that was designed for the purpose of this research: the Watervliet Safe Haven Game. Sections 4 and 5 discuss the findings based on how participants applied informal and formal rules during the simulation game sessions. The final section draws three key conclusions and suggestions for further research.

2.0 Mainstreaming Adaptation: considering the role of organizational uncertainty

In a recent article Lourenco et al (2014) asserts that “despite the need for ‘better’ [climate change] science, [it] is not in itself a sufficient condition of ‘better’ decisions” (p.149). Likewise, we suggest that identifying alternative governance arrangements or promising policy instruments based on ‘best practice’ experiences from different policy contexts misses the point about the challenge faced by policy-makers to integrate new policy requirements into existing processes, with or without the additional uncertainty posed by adaptation to climate change. Climate adaptation research primarily focuses on the degree to which the types of uncertainty associated with climate adaptation is a substantial barrier (ie when to invest, what types of solutions, who should invest, etc). The degree to which uncertainty is a ubiquitous condition of the policy-making process is hardly identified. More knowledge to support a decision, according Kornov and Thissen (2000), does not necessarily correspond to optimal decisions. In practice, organizational actors seek to reduce uncertainty in policy and decision-making processes by using science-based ‘objective’ knowledge and ‘subjective’ knowledge (Kornov & Thissen, 2000). The latter is based on norms and values that are tested in the course of engaging in decision-making processes. Such processes delineate the informal institutional rules about the acceptability of particular decisions4. Institutional rules are not arbitrary insofar as “…rules are shared understandings among those involved that refer to enforced prescriptions about what actions (or states of the world) are required, prohibited, or permitted… all rules are the result of implicit or explicit efforts to achieve order and predictability…” (Mahoney & Thelen, 2010). For example, an organizational actor may ask: what will be appropriate to do in a situation like this (Kornov & Thissen, 2000).

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4 There are both formal (plans, regulations, agreements) and informal (unwritten codes, customs, patterns of behavior) rules (Lowndes, 2005). Lowndes makes a distinction between organizations and institutions wherein institutional rules play a role in shaping the behavior of organizations, which is to say, institutions create the conditions (ie constraints and opportunities) in which organizations must negotiate in order to achieve their objectives (Lowndes, 2009).
2000)? Rules, thus, are not necessarily explicit nor rigid. The fluidity of informal rules requires actors to constantly consider and reconsider how the organizational world functions “…because experience and thereby learning is incorporated into rules, exploration of rules and changes in [informal] rules are an important source for understanding decision-making in organizations” (Kornov & Thissen, p.193). In seeking to determine what institutional rules are applicable, organizational actors must collaborate, which includes engaging in a degree of conflict, by addressing differences of opinion, considering roles and responsibilities, and dealing with power differences to make agreements in order to realize common goals (Huitema & Meijerink, 2010).

Returning to Eisenack et al’s definition of barriers to climate adaptation, the construct proposes a triangulated relationship that is particular to the specific adaptations, the actors, and context. There is, therefore, an interaction and interdependency in policy formation processes and, thus, we argue, in the mainstreaming of climate adaptation. Further, barriers are also not conceived as fixed insofar there is an allowance for agency in the institutional context to engage with other actors to shape and (re)value a barrier. Similarly, Mahoney and Thelen (2010) contend that institutional rules are not fixed and can be reinterpreted by organizational actors. According to this proposition, the reinterpretation process could reshape a barrier to eliminate it as an obstacle or, conversely, to erect a barrier that did not previously exist. For example, Mahoney and Thelen make a distinction between what is referred to as “rules-in-use” and “rules-in-form” and the existence of a “soft gap” of (re)interpretation or ignoring rules until the rules gain broader legitimacy and become part of a shared understanding. Accordingly, significant policy windows of opportunity (Kingdon, 1993) may not be required for actors to effect change. Lowndes also argues, “critical junctures” to provoke change are not necessarily needed, but rather when institutional actors face new problems the ambiguity is an opportunity in itself because the lack of definition of a new problem creates “…critical openings for creativity and agency to establish new precedents for action” (2009).

Based on the theoretical insights thus described, we draw on this institutional approach to analyze how actors use institutional rules to enable or constrain ideas about how to establish a climate adaptation mainstreaming pathway. To do this, we analyze the institutional interdependencies focusing on adaptations, actors, the context and the degree to which actors test and explore the parameters of institutional rules in determining whether applying a market-based financing mechanism (TIF), based on a municipal income stream (property taxes), could be used to mainstream local adaptation-related investments.

The next section describes the simulation game method and the Watervliet Safe Haven game development process (see Appendix 1 for simulation gaming methodological overview and data collection methods).
3.0 Method: Simulation Gaming for Research

3.1 The Method
In the world of policy exercises simulation gaming is a recognized method used to test new ideas and strategies. The game type used in the research described herein is characterized as a policy game. Duke and Geurts (2004) describe this game type as “…explicitly created to aid policy makers [to] study specific issues of strategic management, and it allows the players to experience the complexity of the strategic problems in their environmental setting” (p.38). Contrary to the scientific method of natural science, where controlling variables is required to validate and generalize findings to larger populations (Klabbers, 2006), a characteristics of simulation game is that it offers the ability to, on the one hand, simplify reality, and, on the other, allow for the inherent complexity that actors infuse into the game. Thus, for policy makers and practitioners engaged in the policy and plan-making processes, simulation gaming provides a setting to communicate ideas about complex systems and engage in an experience that cannot effectively be modeled in a laboratory research setting and, importantly, it is relatively safe insofar as there is not a risk of professional or institutional damage in experimenting with novel ideas (de Caluwe, Guerts, & Klienlugtenbelt, 2012).

An experiential method (Straatemeir, Bertolini, & Brommelstroet, 2010), such as simulation gaming, is suited to observing practitioner’s responses to abstract concepts (ie climate adaptation and a novel financing instrument). Secondly, we accept that policy-making is “chaotic and messy”, as Mayer (2009) suggests, and given the complexity of the issue, we accept that practitioners do not have perfect information on which to base decisions nor are they utility maximizers, in the sense of game theoretic modeling (Alexander, 2000). Practitioners do, however, have a significant amount of knowledge and information that needs to be teased out. Simulation gaming is a method that provides a strategy to elicit tacit knowledge (Klabbers, 2009; Meijer, 2009). Tacit knowledge is knowledge that experts have but cannot articulate well to others and is acquired over many years of experience deriving in part “…from activities of the expert that involve thinking, feeling, and acting” (Novak & Canas, 2006). This type of knowledge is important to improving knowledge about the complexity of mainstreaming climate adaptation.

3.2 Simulation Game Development Process
The simulation game design described herein follows the widely held view (Lukosch & Bekebrede, 2014) that a simulation game ought to be constructed “…so it is plausible that participants behave more or less the same way as they would in reality” (Peters, Vissers, & Heijne, 1998). Using a role play format (see Appendix 5)
the simulation was based on the relationship between three poles: observed reality and a controlled experiment that is embedded in a conceptual model (see Figure 1) (Daré & Barreteau, 2003). The game development process is described in the following three sections, starting with a short summary of the climate adaptation policy-making context in the Netherlands wherein we describe the interdependency between the ambitions of the Delta Program and Dutch spatial planning and development practice. Together, these elements form the institutional context on which the conceptual model was designed. The method section concludes with a description of the simulation game scenario before turning to the findings arising from the Watervliet Safe Haven simulation game sessions in section 4.

Figure 1 Watervliet Safe Haven Simulation Game Design: Conceptual Model

3.2.1 Building the Watervliet Simulation Game Scenario: the institutional context Mainstreaming Adaptation in Planning and Land Development Practice:

The Delta Program is responsible for developing recommendations for adaptation to climate change in the Netherlands (Termeer, Biesbroek, & van den Brink, 2011). The urban focused component, under the New Housing Development and Restructuring Program (Deltaprogramma, 2010, 2012a, 2012b), has set out a direction that local-level climate adaptation-related infrastructure improvements will be delivered using existing spatial planning investment frameworks and through coupling adaptation investments with redevelopment activities overtime (Delta Programme, 2014). The concept of how mechanisms and processes will be used has been modified since the original conception. The 2008 economic crisis had a profound
impact on the Dutch development sector, which stalled many residential and office projects across the country. By way of background, in the Netherlands there has been a historic reliance on real estate value based on what is referred to as the public land development model (Needham, 2007; van der Krabben & Jacobs, 2013). The approach is largely considered unviable in the foreseeable future. It was a model that enabled municipalities to use the market to facilitate community-level investments to deliver a range of public goods (Hartmann & Spit, 2015). This practice resulted in speculative land acquisitions and development projects, which ultimately have left many municipalities burdened with substantial land holdings, financial exposure, and over-supply of houses and offices in their communities (Janssen-Jansen, 2012; van der Krabben & Jacobs, 2013).

In 2011, the Delta Program acknowledged that using existing planning and land development approaches and instruments to facilitate local-level adaptation investments, in the short term, are problematic because many development projects are struggling to remain financially buoyant (Deltaprogramma, 2011). Recently, the 2015 program for urban areas and local adaptation, set out a governance agenda that focuses on building a coalition of stakeholders as a step towards gradually embedding adaptation into conventional planning and development practice (Delta Programme, 2014). The approach is an incremental and network-oriented strategy that assumes adaptation is a long-term process that will require broad multi-sectoral participation. The Delta Program’s shift is also consistent with the discourse in the planning and development sector around the idea of ‘organic development’ (Buitelaar, Sorel, & Galle, 2014). The concept proposes to shift Dutch spatial planning from comprehensive master planning and large scale redevelopment to exploring strategies that enable incremental small scale initiatives incorporating multiple stakeholders and shared financial risk models. This conceptualization also runs parallel to similar research that seeks to identify new financing mechanisms and alternative business models that could marshal and stimulate a stagnate development market.

The foregoing provided a summary of the findings of the systems analysis (Peters & Westelaken, 2014) that underpins the simulation game model. The model design draws from scholarly and policy-related and research associated with Dutch planning and development, municipal public financing, and the Dutch climate adaptation program (Root, van der Krabben, & Spit, 2014; Root et al., 2015). The

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5 Numerous studies have been commissioned by the national government, including a website hosted by the National Office for Entrepreneurial Netherlands called the Financial Structure Toolbox and reports by consultancies and research institutes (ECORYS, 2010; Heijkers, van der Velden, & Wassenberg 2012; Ministry, VNG, & NEPROM, 2009; Planbureau, 2014; Planbureau & Urhahn, 2012a; VROM, 2010) that identify planning and financial instruments from other countries as possible tools in the Netherlands to stimulate investment and broader participation from market players in the planning and development process (Heurkens, 2012; van der Krabben & Needham, 2008a).
Watervliet Safe Haven game, thus, sought to conceptually model the challenges and tensions that Dutch spatial planning and development practitioners are currently confronted with, which includes fiscal constraints and greater program and policy delivery requirements at the local level (Roodbol-Mekkes & Brink, 2014).

3.3 Watervliet Safe Haven Game: Scenario and Game Objective

3.3.1 Scenario Description: the fictional city of Watervliet

The ambitious mayor of a fictional city in the Netherlands, named Watervliet, issued an invitation to both senior staff at the City of Watervliet and private planning and development practitioners. The mayor was forming two teams to advise City Council on the redevelopment plan for the city centre. A large-scale plan was announced to revitalize the area by building new housing and commercial space, and to replace aging underground infrastructure. Replacing the infrastructure was identified as vitally important because the central city is increasingly experiencing flooding and future projections anticipate serious flooding impacts due to climate change by 2050. The Mayor was also very keen to introduce an array of green and blue infrastructure as a strategy to mitigate flood impacts. The Mayor argued that such infrastructure strategies, rather than conventional ‘grey’ infrastructure is an opportunity to improve the liveability of the central area, to profile the City as fore-thinking and innovative, and to demonstrate to investors that Watervliet is a dynamic city to invest in. The initiative was praised by a senior minister in the national government as an exemplary project with a smart strategy to address climate change. However, despite such support, funding would not be available from the national government. The Mayor’s project vision faced a modest financial gap and, as a result, was criticized in the local newspaper. The Mayor thought the budget gap could be closed by using a financing instrument often used in the United States, Canada, and more recently, in the UK to finance the climate adaptation-related infrastructure that could not be paid for during the development phase. The instrument is called tax increment financing (TIF). It is not an instrument that is used in the Netherlands, though there are not legal barriers for municipalities should they want to. Tax increment financing (TIF) is a bounded value capturing instrument designed to “earmark the related increment of property tax in a proclaimed area to fund public investments” (Alexander, 2012). While the duration varies, a TIF is typically based on a 25-year time-span in a prescribed designated community improvement area. It is fundamentally premised

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6 “Grey” infrastructure refers to conventionally used roads, power grids, piped sewer and water systems.

7 Value capturing tools are described as “…a group of instruments that enable the increased value of land and property as a result of public investments……to be captured directly or indirectly, so that it [the value] can be used for financing the activities that are responsible for the increased value” (654) e.g. to finance those parts of the plan that are not cost effective during the development phase (van der Krabben & Needham, 2008b).
on the idea that the provision of new infrastructure in the designated area will increase property values and the future incremental value can be captured and redirected to finance area-specific public infrastructure investments (Briffault, 2010). The Mayor suggested that this instrument could be the key to closing the budget gap and moving the project forward.

3.3.2 Simulation Game: Participant Objective
The objective of each team is to consider whether TIF should be used in the project, as part of a bundle of financial strategies that comprise the project budget. Each session group had to reach a consensus, to the degree possible, on whether to recommend that the Watervliet City Council should use TIF for the Watervliet Safe Haven redevelopment project budget, in which form it should take, or whether TIF ought not to be used in any form.

4.0 Research Findings

4.1 Mainstreaming Local Climate Adaptation Investments Using Municipal Income: Shaping the institutional rules
The aim of this research was to determine whether TIF is a potential instrument to mainstream climate adaptation investments. The key variable in this query is whether using property tax would be determined to be appropriate. On the surface the principles and practices associated with TIF are not significantly in opposition to conventional approaches used in the Netherlands, for example: 1) taking advantage of projected future earnings by engaging in the land market; 2) a strong entrepreneurial spirit demonstrated by public and private sector actors and, 3) a demonstrated acceptance of government intervention in the market to facilitate investment in public goods (such as physical and social infrastructure) (van der Krabben & Jacobs, 2013). By digging below the surface of what appears to be a modest question, the use of property taxes as a means to raise funding for climate adaptation investments is a very complex one. We focus on the way in which participants generated an understanding about the use of property taxes when confronted with developing a recommendation about TIF. The findings highlight that the potential acceptance of the TIF and application for climate adaptation investments is inextricably connected to debates that are shaping the discourse about the future of the Dutch planning and development model. Practices that use the market to deliver public goods have been put in doubt and, in relation to climate adaptation investments, additional uncertainty is expressed.

8 Please refer to the extensive research on TIF (Lefcoe, 2011; Root et al., 2015; Squires, 2012; Weber, 2010) and explanations about the diverse range of financing vehicles using tax increment financing, (Pricewaterhouse Cooper, 2008).
4.2 Making Climate Adaptation Investments: Defining roles and responsibilities

The simulation game confronted all participants with a climate adaptation scenario wherein there was an opportunity to make strategic localized infrastructure investments aimed at reducing the negative impacts of climate change. The interventions offered integrated urban design solutions that were explicitly profiled as adding only a modest budget cost. The results from the questionnaires indicate that, overall, participants agreed that climate was changing (81.5% strongly agreed or agreed) and the majority (83% strongly agreed or agreed) that local government should plan accordingly. Perspectives, however, were varied from fully accepting that investment must be made immediately to those that argued adaptation to climate change in the Netherlands was not a critical issue, uncertainty about when to act, and provided a view that adaptation does not require urgent attention (an average split of 29%). The foremost attention was focused on two fundamental questions: 1) what are the roles of different stakeholders? and, 2) who benefits from investments and are such benefits fairly distributed? The strongest and consistent view, despite variations, between all of the simulation sessions was that government ought to take the financial risk with investments associated with climate adaptation. The reasoning behind the role of government was twofold, firstly, a general lack of confidence in the real estate market in the foreseeable future and, secondly, participants consistently argued that adaptation likely carries additional costs and any such investments will not be sufficiently valued in the market place. If the investments are not valued in the market place, then the investments become a project cost that cannot be recovered using conventional processes, as it was argued. The implication is that responsibility and actions remain within the sphere of the government. Municipal participants tended to accept that if the government does not act, nothing will happen. As stated in a Nijmegen session, “I think the government needs to invest in climate adaptation. Otherwise, nothing happens …but how do we pay for it?”. The majority also concurred that there was little political support to make investments, particularly if investments are framed explicitly as climate adaptation, given the perceived lack of urgency for local climate adaptation actions.

This section identified and reinforces findings in the climate adaptation literature that the public sector is perceived as the primary actor respecting climate adaptation actions (Mees, Driessen, & Runhaar, 2012). To take the analysis further, the simulation gaming reveals further considerations regarding the dynamics and the degree to which participants were willing (or unwilling) to reinterpret rules and exert a degree of agency to apply an existing income stream as a means to mainstream local adaptation-related investments. We turn now to a discussion about ‘the rules’ of property taxes. As previously stated, understanding the institutional landscape of property taxes is critical to understanding the institutional fit of tax incremental financing in the Netherlands.
4.3 Openings for Reinterpretation? Enforcing and shaping formal/informal rules

4.3.1 The Rules of Property Taxes

The findings from the simulation game support research about the municipal public finance system and the overall role of property taxes in the Netherlands (Allers, 2011, 2012; Root et al., 2015). In principle, the majority of the participants stayed within the norm of conventional views arguing that the purpose of property taxes was to fill municipal budget gaps to support programs and services if inter-governmental transfer payment from the Municipal Fund9 were insufficient. Property taxes are generally understood to act as a buffer for municipal budgets and applied for general budgetary purposes. Earmarking and channelling incremental property tax income into a specific area confronted participants’ norms about equity and sense of fairness, which is a principle embedded in the Municipal Fund. This perspective was voiced stronger by municipal actors based on an overarching concern that the use of TIF would create unequal results, particularly for those in economically disadvantaged neighbourhoods. Notwithstanding these views, as argued by Lowndes (2005) ambiguity creates spaces for institutional actors to reinterpret rules and to test those reinterpretations against norms and values. The next two sections identify how participants enforced rules, as a means to maintain the status quo, and how others actively engaged in reinterpreting informal and formal rules to explore the institutional fit of TIF.

4.3.2 Enforcing Rules

For those that focused on TIF as a single stand-alone instrument they tended to assume that the government would end up taking the financial risk and, thus, were more likely to view the instrument unfavourably. Several variables likely explain this view. Firstly, as noted in section 3, Dutch municipalities have experienced substantial losses as a result of the 2008 downturn in the market. Municipal borrowing practices10 and appetite for risk have been substantially criticized in both popular media and scholarly research (Allers & Merkus, 2013). Secondly, in addition to views that were sensitive to public discourse about the need to curb municipal financial risk taking activities, participants utilized formal institutional rules as a means to enforce those arguments. For example, one group voiced the concern that generating more taxes (i.e. increasing the tax base) may result in less funding from the national government’s Municipal Fund. As stated by a participant, “...in the current Dutch situation, it might be a recommendation that if we use the TIF tool we might create higher property tax

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9 The main source of income for Dutch municipalities is an inter-governmental transfer system called the Municipal Fund (Allers, 2011).

10 Dutch municipalities are sheltered from bankruptcy under Article 12 of the Financial Relations Act [Wet Financiële Verhoudingen] BNG and Waterschapsbank are the two Dutch banks that specialize in low cost borrowing to municipalities.
Chapter 6

revenue, but it means a lower overall benefit. Which are linked to each other. So we will be punished…” because less funds will be received from the national government (Nijmegen session). The argument assumes that municipalities would receive less funds from the national government if the local tax base increases. This argument underpinned the group’s strong recommendations against TIF. It was the sole recommendation against using TIF, as summarized: “… we can say that we think it is not a good tool, because subsidies will be reduced from the Municipal Fund and there will be no surplus”. The degree to which a municipality would receive less funds from the Municipal Fund requires, however, detailed calculations on a case-by-case basis due to the wide discrepancies between municipalities in relation to ‘need’, as defined by the granting formula, and the local tax base. Nonetheless, this position was presented as an undisputable fact, which was persuasive enough to create a group consensus. Other groups also cited the potential lack of control over local property taxes insofar as the national government could, potentially, interfere by imposing a ceiling or even eliminating property taxes as a source of local income. According to this assertion, those municipalities using TIF would be left without an income stream to support the associated debt. This is not a unique concern and is identified in the property tax research literature as an oft cited issue of local governments that are seeking greater local financial autonomy (Slack & Bird, 2014). Another reason identified by participants why TIF may not be appropriate is also often found in the literature on TIF. It is argued that speculating on future property tax value will tie the hands of future politicians on budgetary matters due to being lumbered by the debt taken on by previous administrations. Finally, the low property tax rate was cited as a substantive obstacle. Participants were largely in agreement that the current rates are unlikely to generate significant revenues to support the financing required to fund infrastructure improvements.

4.3.3 Reinterpreting Rules

Conversely, for those participants that found space for reinterpretation, they conceptualized TIF as a tool that could be bundled in a broader package of planning instruments. In that case, there was less of an assumption that local government should necessarily act as the financial backstop. Rather, there was greater interest in considering the advantages and disadvantages of the TIF financing models (Price-waterhouse Cooper, 2008) as strategies to structure and distance financial risk away from municipalities. Citing the potential for co-creation and co-financing as key

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11 For example, specific and general grants to municipalities from the Municipal Fund are based on a 60 point formula. In addition to a diverse set of needs, including demographic, environmental, and economic needs, a component of the calculation is based on the residential and commercial tax base. In other words, the tax base is a component of the grant formula, but a range of other factors play a role in granting process.
advantage of the instrument, it was argued that TIF could form part of a new alternative model to conventional practice, rather, for example, than municipalities taking on risk through land acquisition and infrastructure provision. TIF could be an instrument that “unlocks” stalled areas with a focus on “value creation” (Den Haag session). This perspective was framed in relation to an approach currently of interest in the Dutch planning sector referred to as ‘organic development’ (Planbureau & Urhahn, 2012b). As a demand-oriented approach, the concept of organic development takes as a starting point that municipal planning processes ought not to be the key driver or shoulder the risk of the development process, but rather the focus should be on building consensus with multi-stakeholders and pursuing new ways of investing that manages long term financial risk. As a Den Haag participant stated, instruments like TIF need to be considered because this way of working is “…not [about] the crisis, it is the new reality”. Accordingly, the use of TIF could be aligned with the trend towards incremental planning based on reduced expectations that the land development process is capable of levering sufficient value during the development phase to deliver public goods. Real estate and property improvements, on the other hand, can build value over a longer term, which, according to the theory of the instrument, can be harnessed under a TIF designation (Briffault, 2010). Finally, although a modest income stream, using property taxes in a project-specific strategic way might (in time) be understood to be less politically risky for two reasons: 1) TIF is not designed as a new tax (imposing a new tax is politically unpalatable) and, 2) TIF could be conceived as less riskier than land acquisition and pre-economic crisis master-planning approaches. However, at the moment, many participants emphasized that the current political environment is unlikely to be receptive to any instrument that may appear to encourage municipal risk taking.

4.3.4 Investing in Climate Adaptation: Shaping the rules

Shaping and defining the institutional rules for climate adaptation is new territory (Termeer, Dewulf, et al., 2011). In the Netherlands, there are no formal rules that expressly relate to long term climate change projections that municipalities must comply with. The ambition of the Delta Program is to define the institutional landscape and establish a formal policy framework. The application of a market-based instrument, such as TIF, as means to mainstream local level investment in climate adaptation is currently confronted with an institutional context that is unstable and ill-defined. Both in terms of the delivery system (the planning and development process) and the policy landscape (climate adaptation as an un-embedded policy issue). Despite differences in how simulation participants imagined applying TIF, there was a general sense that a new instrument could be designed to spread risk between stakeholders. This view was limited to applying TIF for general public goods investment purposes, not climate adaptation.
Using TIF for climate adaptation specific investments returned to the role of local government in underwriting financial risk. Long-term investment strategies, like adaptation, that lock-in financial risk was understood to be out-of-step with current directions in Dutch planning. For example, while earmarking is often considered to be an advantage of TIF, as a designated income stream to fund community-based public goods, participants voiced preferences for keeping budgetary options open rather than pre-defining how future tax earnings would be allocated. Participants emphasized the degree to which earmarking the future tax increment would be a potential disadvantage by reducing budgetary flexibility during the project life-cycle. This concern was mostly directed towards climate adaptation and could be an indication about the ambivalence towards long-term commitment to such investment types.

The findings from the dialog, questionnaires, and recommendations produced by the simulation game participants provide evidence that they attempted to shape a set of the institutional rules to apply TIF as a strategy to mainstream local climate adaptation investments. The shape of the rules broadly reflects current discourse in the planning sector. This is illustrated by the line of thinking that long term climate adaptation investment should be undertaken in phased manageable pieces and sufficient flexibility should be retained in order to manage financial risk at the local level. But, mostly, local government, not market-players, ought to play the primary investor role.

4.3.5 Learning About the Rules: Acquiring instrumental and tacit knowledge
Simulation gaming is a method that is oriented towards social learning (Klabbers, 2009), both in terms of technical information (such as learning operational procedures) and developing knowledge of an emotional nature (such as learning games for children with developmental challenges). For the simulation game participants, our ambitions were not focused on determining whether social learning had occurred as defined by Reed et al: “…social learning may be defined as a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks” (Reed et al., 2010). According to this definition, social learning is truly achieved if the learning extends beyond the individual and is transferred into a deeper level of understanding and behavior change. Instead, we focused on the possible learning effects at the level of the individual as the building blocks for organizational learning. We draw from Reed et al’s characterization of two types of learning through social interaction. The first type is instrumental in nature wherein participants can acquire new knowledge and skills; the second type of knowledge, as previously noted, is what the gaming literature refers to as tacit knowledge that occurs through the exchange of ideas, persuasion through argumentation, and through negotiation of rules and norms (Reed et al., 2010).
The questionnaire findings provide evidence on several fronts in relation to the degree to which participants acquired instrumental and tacit knowledge. The results are based on five point Likert scale\(^\text{12}\) wherein participants were asked the degree to which they agreed with statements that inquired about whether: 1) they thought the recommendation that they made to the Watervliet City Council was realistic; 2) the simulation was sufficient to make a realistic advice; 3) the simulation learning about a new instruments; 4) the simulation enabled learning about the views of peers. The findings illustrate a consistent affirmation that participants broadly agreed that the simulation game process enabled them to gain instrumental knowledge by learning about a new instrument. Secondly, and with a stronger emphasis, the experience enabled them to gain tacit knowledge by learning about the response of their peers to the new instrument in a contextualized format.

We hypothesize that participants expressed these learning effects for several reasons. Rather than a discussion about the pro’s and con’s of investing climate adaptation, or passively receiving information about the technical characteristics of TIF, by triangulating: 1) climate adaptation, 2) a new policy/financing instrument, and, 3) area redevelopment the simulation game provided a multi-dimensional format. The participants were able to intellectually and emotionally engage with peers regarding the institutional fit of TIF, given the policy-making conditions. Secondly, drawing from the gaming literature, one of the characteristics of gaming is that the process provides a setting for the ‘faces of knowledge’(Klabbers, 2009). Accordingly to Klabbers, “...the faces of knowledge provide the context of problem framing linking two heterogeneous elements together: normative elements (norms, values, beliefs) by the social organization and the situation or conditions: empirical or experiential elements that express assertions about how people connect objects and actions to explain services of events” (Klabbers, 2014, p21). The findings from the Watervliet Safe Haven game indicate that participants gained the type of knowledge described by Klabbers. This knowledge would have been difficult to preconceive or to model in the research design. That is to say, in the context of the game, as individuals and as a collective, participants generated and transferred knowledge through social interaction about the formal and informal rules of 1) using a market mechanism and, 2) about using property taxes as a strategy to mainstream local adaptation investments.

The questionnaire results also point to an interesting finding about the gaming process. While participants largely agreed that the advice provided in the recommendation to the Watervliet City Council was realistic, participants also indicated a weaker agreement about the degree to which the simulation model was sufficiently realistic on which to make their advice. While this appears to be

\(^{12}\) With ‘1’ representing strongly agree to ‘5’ being strongly disagree
inconsistent with the fact that participants agreed that that the advice was realistic, we surmise that because the Watervliet game scenario described a large-scale development intervention, based on a master planned approach, participants are likely identifying that this type of large-scale planning model is no longer valid. This perspective was also expressed by a number of participants informally after the simulation session. We think this response provides further validation to the findings described in this section.

The final section returns to the three research questions to summarize the core conclusions and provides suggested directions for further research.

5.0 Conclusions and Suggestions for Further Research

The science is clear: anthropogenic induced climate change poses new governance problems for cities (Bulkeley & Betsill, 2013; McCarney, Blanco, Carmin, & Colley, 2011). The concept of mainstreaming has been identified as a possible strategy to routinize adaptation measures, but the answer remains incomplete about how the process of mainstreaming is achieved (Uittenbroek, 2014). While the ambition of this chapter is substantially more modest in scope than providing further prescriptions, the research contributes to the mainstreaming literature from an institutional perspective by exploring whether barriers to mainstreaming can be overcome through actors actively reshaping existing rules to create an adaptation pathway. We asked the following three questions: 1) How do institutional rules (formal and informal) shape practitioner’s perspectives about the applicability of policy instruments?; 2) Are practitioners willing to reinterpret and reshape such rules in order to mainstream climate adaptation investments? and, thirdly 3) How do practitioners learn the extent to which rules can be changed and which rules cannot?

Beginning with the first two questions, the evidence demonstrates that contextual interdependencies play an influential role by shaping what participants considered to be appropriate (Hartmann & Spit, 2015). In as much as some participants enforced technical rules about why TIF would not be appropriate, the stronger direction, both evidenced by the discussions and the written recommendations by the session participants, was that TIF could be shaped to fit into the Dutch spatial planning toolkit. These arguments picked up on the planning discourse about the conventional planning model being in a state of transition. TIF, if applied judiciously and integrated strategically as part of a bundle of instruments, could be used for facilitating investment in area development. However, as identified in the preceding sections, the institutional space was not quite as available for investing in climate adaptation. We learned that perhaps the use of a market-based instrument to facilitate investment in climate adaptation is not yet appropriate given three factors broadly expressed by
the participants; firstly, climate adaptation is not yet an embedded policy or regulatory requirement, thus there is little incentive for making explicit investments using risk based instruments; secondly, given the economic crisis, the idea of introducing a market instrument for this purpose is ill-timed; and thirdly, given the Dutch planning model is facing a degree of uncertainty and transition the priority is on recalibrating practices to address conventional investments that render clear benefits in relation to financial risk. In sum, the evidence illustrates that the formal and informal rules underpinning the institutional context shaped practitioners perspectives about the applicability and the degree to which they were willing to reinterpret the use of property taxes. If the objective was to use a market-based mechanism based on a local income stream (ie property taxes) to mainstream climate adaptation investments, the findings indicate that this proposal would be confronted with the enforcement of various rules thereby erecting a financial barrier as an obstacle to implementation.

Turning to the third question, the findings draw attention to how individuals actors learn about the appropriateness of policy instruments. On one level, they gained instrumental knowledge, but, perhaps, more importantly, participants strongly agreed that an added value of participating, was not only learning about a new instrument, but learning what others thought. By combining a nexus of actors, adaptation, and context, participants mixed and matched the structures that conventionally guide planning practice with the norms that underpin to determine the institutional fit of TIF for climate adaptation. Further, the findings draw attention to the role of individual learning and, secondly, organizational learning as a messy incremental process that plays a role in reducing, or increasing, uncertainty about the appropriateness of climate adaptation actions.

5.1 Suggestions for Further Research

The findings arising from this research point to several considerations for further mainstreaming-related research. Firstly, institutions are not necessarily inert, which is often cited as a barrier (Moser & Ekstrom, 2010) to climate adaptation insofar as space can be made available to reinterpret rules and for practitioners to exert a degree of agency. Secondly, the findings illustrate the contribution of understanding the deeper origins of potential barriers (Eisenack et al., 2014). By acknowledging that institutions are ontologically prior to individuals (Bell, 2011), and most certainly prior to the idea of mainstreaming adaptation to climate change, it is critical to develop a thick description of the institutional context in which policy actions are taking place. In the case of the Netherlands, a particular suite of historical and contemporary issues (ie the origins) informed the recommendations by the simulation game participants.

At this stage of planning practice in adapting to climate change, we are, arguably, in a phase of experimentation and searching. Berkhout et al (2006)
describe this as the ‘trial and error’ phase of learning. This concept relates to “…semi-automatic stimulus-responses processes and the, mainly tacit, accumulation of experience that occurs incrementally through the enactment of operating routines” (139). Our findings point to the role of individual tacit knowledge in defining the outer perimeter of rules, including space for alternative applications. Practitioners are, thus, currently on a ‘learning curve’ about what type of processes and combination of instruments are most likely to be effective. These choices are critical given policy instrument selection may enhance the mainstreaming process or, conversely, reinforce barriers (Eisenack et al., 2014).

As asserted in section 1, we predicated our research on the assumption that mainstreaming climate adaptation is a policy-process that is nested within complex interdependencies that need to be teased out and identified. Simulation gaming is a strategy that can be used to triangulate key variables and allow participants to ‘play’ with the institutional ‘rules of the game’ (North, 1990). Through the interactive format, the results provide a rich description about how participants learned about under what terms TIF would be acceptable and whether financing explicit adaptation investments using local income would be acceptable. Ultimately, mainstreaming climate adaptation is beyond the capacity of individual actors and requires broader organizational learning. Building more knowledge about the way in which policymakers enforce or reinterpret existing rules may assist practitioners in the development of strategies that shift from trial and error into legitimate organizational routines (Berkhout et al., 2006). Further research in this area would benefit from the use of experiential methods such as simulation gaming, not least of which to allow practitioners to experience novel approaches without the fear of expending valuable personal and organizational resources, ranging from financial to political capital.

Given the formative stage of adaptation policy-processes, we think it would be of research and practice interest to experiment13 with different institutional arrangements using simulation processes to garner insights about where possible spaces for institutional tailoring should be pursued. The aim would be to develop heuristic methods that could help practitioners determine whether the institutional conditions are receptive towards carving out a mainstreaming pathway or whether the policy train14 has arrived too early and with an ineffective arrangement of policy instruments.

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13 Similarly, Termeer et al. (2011) note that conducting empirical research on climate adaptation is a challenge given adaptation policies and governance approaches “are still in their infancy” (177).

14 We have reformulated a quote from Atkinson’s (2011): “If the train of policy change arrives too late it is because the institutional conditions are not suited to the problem solving on time” (14).
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Discussion of Core Findings, Reflections, and Conclusions
1.0 Introduction

The first chapter of this dissertation began with the claim that we are not planning for climate change, but rather, we are planning in times of climate change. Despite the scientific research that has built the case to support this claim, the activity of local climate adaptation planning remains limited and outside of regulatory requirements. For example, although empirical evidence is emerging that adaptation at the local level is gradually edging its way onto policy agendas of municipal governments, explicit actions remain largely at the voluntary level (Bulkeley & Betsill, 2013) or in response to an extreme weather event. Extreme events, such as Hurricane Sandy in New York that caused substantial flooding and damage opened up a policy window prompting political actions, policy shifts, and the allocation of financial resources. Yet, for municipalities that do not experience the material impact of extreme weather events, adapting to climate change remains an abstract issue. Operationalizing measures to adapt to climate change as part of organizational routines to enable long-term local investment planning remains obscured by the lack of a concrete understanding about potential financial benefits to anticipatory actions. Lack of investment planning is often explained as due to the absence of appropriate policy instruments or that insufficient financial resources are available to be allocated towards climate adaptation investments. The point of departure of this dissertation was to consider whether the lack of financing instruments is better understood as an outcome rather than a reason for limited municipal actions. That is, the research explored whether these ‘reasons’ are substantive in nature or represent a “surface constraint” (Measham et al, 2011). In doing so, the aim was to enrich conceptualizations about the role of institutions in shaping urban planning practitioners’ perspectives about the appropriateness of financing instruments in relation to investment in climate adaptation-related public infrastructure investments.

To achieve the aim of the research, four inter-related research questions were identified in chapter 1: 1) What modes of practice and instruments do Dutch spatial planners use to facilitate investment in local public urban infrastructure?; 2) Are new municipal instruments necessary to facilitate investment climate adaptation?; 3) Are spatial planning practitioners willing to reinterpret and reshape institutional rules to enable local investment in climate adaptation? and; 4) How can we conceptualize and explain the role of institutions in facilitating local public investments in climate adaptation, and in shaping practitioners’ perspectives about the applicability of policy instruments?
As described in chapter 2, the research design is based on multiple methods using qualitative strategies for the data collection and analysis. In order to respond to the research questions, four research papers were developed, based on three streams of inquiry: learn; analyze, explore. The objective of ‘learn’ was to consider the role of the Dutch planning and development in adapting to climate change from an institutional perspective. The purpose of this approach was to identify the dynamics and dimensions of Dutch planning and development practices as a fundamental context in relation to whether spaces for adjustments to policy instruments are available for climate adaptation. The second objective was to ‘analyze’ the inter-relationship between institutional structures and norms, and the interface between municipal public financing as well as the planning and development process in the Netherlands. The assumption of this starting point is that understanding how the institutional apparatus intersects is fundamental. By analyzing the intersections, the results of the research provide an empirically grounded explanation about whether institutional informal and formal spaces are available to reinterpret the use of property taxes and apply tax increment financing as a means to facilitate investment in local physical infrastructure. Chapters 3 and 4 provide data for the third ‘explore’ stage using simulation gaming. In this stage, the application of tax increment financing is explored as a possible means for municipalities to allocate local resources to physical adaptation-related investments. This stage also considered how practitioners

Figure 1 Analytical relationship between research questions
learn about the potential institutional fit of the instrument. The analyses in chapters 5 and 6 endeavor to problematize both the oft cited barriers to implementing climate adaptation such as technical limitations, and lack of political will and normative claims about what practitioners ‘ought’ to do. The analyses dig into the institutional context to consider the structures, norms, and the influences that shape perspectives about the potential application of a market instrument, as a means to facilitate physical infrastructural investments in local adaptation to climate change.

In sum, the short answer to the research questions identified above is: yes, the findings indicate that there is institutional space and evidence about the willingness to reinterpret the application of existing mechanisms. However, in the case of utilizing existing municipal income in conjunction with a market-based instrument to facilitate local climate adaptation investments, the willingness is limited. Why is it limited? In what way do institutions matter in shaping practitioners’ perspectives about the type of policy implementation instruments that are appropriate to facilitate investment in local climate adaptation? The purpose of this concluding chapter is twofold: firstly, it provides a response to these queries by summarizing the overall research findings and bridging the analyses, as presented in the foregoing chapters. Secondly, the final two sections offer reflections on the methodology, suggestions for future research, and the implications of this research for practice.

2.0 Discussion of Core Findings

2.1 Understanding the Planning Context: implications for facilitating local investment

As introduced in chapter 3, the discourse about the Dutch planning and development sector forms part of the institutional context on which local adaptation policies and practices, for local level investments, will be formed in the Netherlands. Consistent with the subsidiarity principle broadly acknowledged in the climate adaptation literature, policy directions under the Delta Program indicate that municipal level public good investments required to reduce the physical impact of climate change will be delivered using existing spatial planning frameworks and mechanisms available at the municipal level of government. Practices conventionally used to facilitate investments in a range of local public goods, however, have come under significant scrutiny. More practically, given the over-supply in the residential and office sector, such practices are unlikely to be effective in the foreseeable future. Practices based on the public land development model that positioned municipalities as master developer and primary financial risk taker in the land acquisition and pre-construction phases have resulted in substantial financial losses and have been the subject of political criticism.
In light of unstable economic conditions, Delta Program documents are cited as encouraging municipalities to use existing mechanisms “innovatively” as a means to enable adaptation actions. Despite this encouragement, such actions imply requisite adjustments to organizational routines. The findings from this dissertation illustrate the central role played by both the planning and development institutional context, which is intertwined with the municipal financing system, in delineating the potential institutional action spaces. While the findings could be cast as evidence about limitations imposed by institutions, the case studies, for example, in chapter 3 and 4, illustrate the innovative potential of legal rules (Van Rijswick & Salet, 2012) insofar as new practices were enabled by the dynamics and interplay between the institutional context and governance processes. As illustrated in the Rotterdam Stadshaven case, the governance process can be characterized as an iterative cycle between the policy and the plan making processes, wherein the tension between informal and formal rules of planning practice were responsive to both internal and external pressures. These, in turn, informed the approach to how planning policy in the Stadshaven project unfolded in relation to climate adaptation. As a cumulative process, the trajectory of the Stadshaven process can be traced in relation to the shared narrative about the economic benefits of demonstrating leadership on climate adaptation. The Stadshaven case provides informative evidence about the role of the governance process not simply a means of system coordination nor, secondly, as existing in isolation from institutional norms and values, but rather as an essential process that establishes an internal and external narrative. March and Olsen (2005) observe that institutions are defended by insiders and validated by outsiders. The Rotterdam strategy illustrates the effectiveness of external validation through international recognition as a front-runner in urban climate adaptation, as a means to facilitate internal acceptance. Routinization of internal organizational acceptance is complex but can be connected, to some degree, to the leveraging effect of the external validity that allowed Stadshaven project actors to engage in a phase of experimentation and testing (Berkhout, Hertin, & Gann, 2006). For example, the Stadshaven planning actors overcame the typical implementation barriers by using existing mechanisms and processes: solutions were located in the “soft spot” that was opened up by shifting modes of practice in Dutch planning and a broad agreement about the economic value of climate adaptation as a means to brand Rotterdam as an innovator in urban climate adaptation research and development. By locating the soft spot, actors were able to reinterpret existing rules and develop a mix that could be aligned with emerging norms about tolerance to water in residential areas, which could also be reconciled with current planning discourse about the need for flexibility.

In finding the flexible application of existing mechanisms, the research also revealed that stakeholders do not support new formal mechanisms, such as regulations and
additional requirements. The general reluctance about devising new regulations was accounted for in the analysis with two explanations. Firstly, it reflects the lack of clear understanding about what type of new rules are needed to propel concrete actions. Secondly, a dynamic within Dutch planning culture: on the one hand, there is the desire to open spaces to establish new forms of action (Mahoney & Thelen, 2010) for climate adaptation, as argued above, and on the other hand, conventional Dutch planning culture tends to straddle between a plan-led and a development-led approach. The latter has provided Dutch planners with steering capacity (Buitelaar & Sorel, 2010) to achieve spatial planning objectives by way of negotiated and collaborative processes with key stakeholders, such as private and social housing developers. In the context of adapting to climate change, project actors were unsure of what types of concrete measures are required and how much investment is needed. The two streams flow together insofar as the desire to steer the process is illustrated by the general perception that adaptation implementation will be encouraged by allowing room for reinterpretation of the existing framework, as opposed to additional regulations. Regulations, from this perspective, were portrayed as potentially creating political obstacles, which meant that political will could become a barrier to actualizing local adaptation actions.

In sum, the Rotterdam case is an example of a dynamic process that resulted in the development of a shared understanding and a set of normative rules as a precursor to introducing formal regulatory actions. The findings highlight that the interactions between broader factors influenced local actions. Rotterdam has made significant strides and has attracted international attention for their range of innovative ideas and the proactive policy process. Yet, in terms of operationalization, the findings indicate that the implementation pathway in Rotterdam is far from delineated. Moreover, the current phase can be characterized as in the experimental and testing phase of routinization, which is tuned into the institutional context from which it is taking its cues. The ongoing development of strategies and solutions is linked to an evolution in thinking about climate adaptation on the one hand, and, on the other hand, in response to volatile aspects in Dutch planning and land development practice.

While the Rotterdam case study in chapter 3 focused on the dynamic interplay between institutions and governance in the context of planning and the climate adaptation policy formation process, chapter 4 provides theoretical and empirical insights about the normative underpinnings of the institutional systems that structure and inform municipal investments in local public infrastructure. Here the findings illustrate, as cited above, the innovative potential of legal rules, yet the degree to which caution is exercised in relation to the uncertainty posed when faced with
adjustments to existing policy instruments. In chapter 4, the focus is on building a normative understanding about the use of property taxes in the Netherlands as essential to understanding the applicability of tax increment financing in the Netherlands. The research departs from the literature that offers overviews of potential financing instruments that could be used to enable climate adaptation investment. That research orientation contributes technical knowledge, but socio-political considerations tend to be treated as secondary to the analysis. Turnpenny et al. (2015) observe that research on policy instrument selection is “…treated largely as a ‘given’…” (p. 20) and does not account for the reasons why policy-makers elect for certain instruments and not others. In accordance with this, the focus of chapters 5 and 6 is on whether TIF, as a financial instrument, is institutionally applicable for facilitating local investment in climate adaptation, given the socio-political dynamics related to the Dutch municipal financing system and planning process. Thus, the critical variable in the analysis is whether the use of property taxes for localized public infrastructure investments would be supported institutionally in terms of both structures and norms.

Returning to the findings described in chapter 4, the analyses demonstrate that there is sufficient space within formal structures for municipal actors to exert agency and reinterpret how property taxes are used, as evident in the Waalfront redevelopment case study. Yet, conventional practice, and the norms and values that underpin choices, are likely to place limits on deviations from accepted practice. For example, the Waalfront redevelopment project in Nijmegen tentatively walked through the four tiers (Berkhout et al., 2006) of routinization from experimentation, knowledge articulation, and codification by developing a policy rationale and processes that were organizationally, aligned with political aspirations and supported by broader values and formal financing structures (i.e. property taxes and lending practices). Yet, the alternative application of property taxes proved to be relatively short-lived due to the drastic change in the land market conditions since 2008. The significant value loss changed the business plan fundamentals of the entire initiative. The moment of ‘feedback and iteration’, as the critical last step in embedding changes into organizational routines, was undertaken in the full glare of the budgetary post-mortem, wherein the strategy of speculating on future property tax income, to support public goods investments, drew substantial criticism (despite representing a minor component of the overall budget). The Waalfront case study offers clear evidence that the use of property taxes by the City of Nijmegen, based on a TIF-like conceptualization, is unlikely in the foreseeable future given the ongoing fiscal challenges and the ‘sticker shock’ of speculating on property value that did not materialize.

The analysis described in chapter 4 also included data drawing upon expert interviews and a questionnaire of senior municipal tax officials. The findings reveal
that the application of property taxes retains a certain sticky adhesion to conventional practice, beyond the critical juncture of the economic crisis. That is, conventional practice, and the norms and values that underpin choices, are likely to place limits on substantial deviations. By piecing together the broader institutional story, the findings indicate that the limits to applying TIF in the Netherlands are connected to the broader system of municipal financing. By scaling the assessment of TIF to the Dutch institutional context, the research illustrates the complexity of operationalizing tax increment financing, which will likely be constrained by current views about the need to reduce municipal financial risk taking and deeper socio-political dimensions in comparison to technical dimensions. Nonetheless, rather than ruling out TIF as a possible instrument, the findings described in chapter 3 and 4 also demonstrate that there is a degree of flexibility within the Dutch municipal context to reinterpret the use of existing mechanisms. Together with austerity measures from the national level, critical discourse levelled at the current planning model, and emerging interest in developing new practices we might expect that perspectives may gradually shift. This would create more space in the use of existing revenue streams, such as property taxes, in alternative applications. Secondly, given the way in which the Dutch institutional context informs how property taxes are used, chapter 4 argues that rather than acting as an instrument to incentivize private investment, by providing the structural means for market-players to absorb financial risk, such as market-backed TIF financing models, the corporatist nature of Dutch planning culture implies that the TIF instrument may not inherently facilitate such a shift in practice. That is to say, as argued, we cannot assume that, by introducing a new instrument, modes of practice would substantially change insofar as Dutch municipalities are likely to continue taking risk positions. This can be explained by the durability of norms and values and the structures that operationalize and replicate them. In other words, understanding the configuration of the Dutch planning and public finance governance tells us why the application of property taxes (a seemingly modest proposal) is complex and why the answer to the applicability of tax increment financing is connected to a larger institutional system.

The findings from chapters 3 and 4 provide a partial answer to the broader query articulated in the fourth research question. That is, in what way do institutions matter in shaping practitioners’ perspectives about the type of policy implementation instruments that are appropriate to facilitate investment in local climate adaptation? Chapters 5 and 6 turn to the explore phase of the research design. This phase uses the empirical findings from ‘learn’ (chapter 3) and ‘analyze’ (chapter 4) to develop a simulation game, referred to as the ‘Watervliet Safe Haven Game’. The results arising from the simulation game sessions provided data to develop a multi-dimensional explanation about how practitioners attempt to reconcile institutional dynamics and the dilemmas inherent in climate adaptation. A blend of factors played an influential
role in how practitioners made choices about the suitability of tax increment financing, as a market-based instrument based on local income, to facilitate investments in climate adaptation. The analysis reveals that, indeed, if the issue about investing in climate adaptation is primarily about the availability of financial resources, the answer would be substantially more straightforward.

2.2 If It Was Only About The Money: Institutional dilemmas and the limits to local risk-based financial instruments

The analyses in chapters 5 and 6 are based on data collected from the Watervliet Safe Haven Game simulation sessions. Together, these chapters offer two complementary explanations about the complexity of adjusting existing practices to enable and embed climate adaptation, using an existing municipal financing structure. Chapter 5 undertook a two level analysis. One level addressed the acceptability of using TIF for general investment purposes, and a second level considered applying TIF specifically as a means to facilitate investment in local level climate adaptation-related infrastructure investments. The findings offer a juxtaposition of views. Participants were generally positive, with some reservations, about using TIF as part of conventional practice. This perspective was based on the premise that TIF had a better chance of being integrated into the Dutch urban planning ‘toolkit’ for general purposes than for facilitating investment in climate adaptation. The lack of confidence and weak support about the appropriateness of TIF was in part due to the financial risk and lack of foreseeable benefits of climate adaptation-related investments. The analysis conceptualized these key concerns running through the participants’ narratives as bound up with three fundamental dilemmas. It could be argued that the reluctance to use TIF for climate adaptation investments is attributed to current economic circumstances and weak political support for planning mechanisms that rely on speculative earnings from real estate. However, the findings provide further evidence that such reasons are not sufficient to explain the disinclination to use TIF: the rationales are more complex and not specific to TIF as an instrument per se. Chapter 5 identifies the three climate adaptation dilemmas that underpin the rationales: 1) uncertainty about societal values; 2) the mismatch between the planning horizon of adaptation and that of conventional planning horizons, and; 3) the perceived lack of benefits to contemporary investors. These three dilemmas re-enforced views about the type of financing instruments that would be most appropriate. The three key dilemmas (values uncertainty, planning horizon, indirect benefits) are characterized in chapter 5 as institutional in nature, given the normative and value oriented characteristics. These characteristics form an undercurrent in the narrative of the participants that shaped responses to both 1) investing in adaptation and, 2) in the use of local income, which is to say, property
taxes. While participants found a degree of value certainty about climate change as an abstract issue, to the extent that views were aligned that climate adaptation is an urban planning issue that requires explicit actions, participants struggled to reconcile the degree to which municipalities ought to underwrite long-term investments or whether the market will recognize the added-value of such investments in the foreseeable future.

Leading on from the analysis in chapter 5 that explored how the dilemmas of climate adaptation affect perspectives about investments, chapter 6 considers the application of tax increment financing as a possible instrument to ‘mainstream’ local adaptation investments. Firstly, the empirical premise of this approach is to explore whether property taxes, as a fundamentally local income stream, could be used to enhance autonomous adaptation. Secondly, the theoretical aim was to tease out the institutional dimensions that are often overlooked in the mainstreaming-oriented literature. The concept of mainstreaming is generally conceived of as the integration of climate adaptation policies and actions into existing processes (Eisenack et al., 2014; Uittenbroek, Janssen-Jansen, & Runhaar, 2013). To achieve this goal, emphasis is often placed on the role of policy entrepreneurs and in policy windows of opportunity as drivers in the mainstreaming process. However, the interest of this dissertation is focused on how individual practitioners, acting within an institutional context, actively (re)shape existing rules and what influences inform those choices vis-à-vis financing local adaptation actions. The evidence arising from the Watervliet Safe Haven game simulation demonstrates that the interdependencies within the institutional context play an influential role by shaping what participants considered to be appropriate (Hartmann & Spit, 2015). For example, although some simulation game participants enforced formal rules about why TIF would not be appropriate, the stronger direction was that TIF could be shaped to fit into the Dutch spatial planning toolkit. The affirmative arguments picked up on the planning discourse about the conventional planning model being in a state of transition, which were consistent with the findings in chapter 3. TIF, as asserted by some participants, if applied judiciously and integrated strategically as part of a bundle of instruments, could be used for facilitating investment in area development. However, the institutional space was not quite as available for investing in climate adaptation by way of a risk based market instrument, given three factors broadly expressed by the participants; firstly, climate adaptation is not yet an embedded policy or regulatory requirement, thus there is little incentive for making explicit investments using risk based instruments; secondly, given the economic crisis, the idea of introducing a market instrument for this purpose is ill-timed; and thirdly, as the Dutch planning model is facing a degree of uncertainty and transition, the priority is on recalibrating practices to address conventional investments that render clear benefits in relation to financial risk. In sum, the evidence illustrates that the formal and informal rules underpinning the
institutional context shaped practitioners’ perspectives about the applicability and the degree to which they were willing to reinterpret the use of property taxes. If the objective was to use a market-based mechanism based on a local income stream (i.e. property taxes) to mainstream climate adaptation investments, the findings indicate that this proposal would be confronted with the enforcement of various rules thereby erecting a financial barrier as an obstacle to implementation.

2.3 Triangulating the Data: A concise answer to the research questions

Rather than addressing each research question separately as identified in figure 1, this section draws together the analyses provided in chapters 3 to 6 to offer an answer in the aggregate, as follows:

The modes of practice and instruments used in Dutch planning and development play a fundamental role in facilitating investment in local public infrastructure. Facilitating investment in climate adaptation is, thus, sensitive to how those practices are played out and what instruments are applied in the process. Actions to reinterpret existing rules as a means to facilitate investment in climate adaptation are underpinned by a complex assortment of rationales. In the Rotterdam case, two key enabling factors can be identified. Firstly, organizational support that created the conditions to make experimental modifications to existing rules, thus enabling the ‘climate-proof’ measures to be linked to pragmatic economic objectives, to position Rotterdam as an innovative leader. Secondly, adjustments to existing instruments also reflected the broader shifting landscape of Dutch planning practice, given the public land development model has been rendered ineffective and the subject of substantial criticism. Thus, there are indeed degrees of freedom to reinterpret and shape rules to facilitate climate adaptation-related investments during the planning process. The findings also point to the role of formal and informal institutions in limiting the degrees of flexibility, i.e., agency with constraints. Lacking a cohesive set of informal institutional conditions, it is much less likely that practitioners will be in a position to vary how existing instruments are used or to introduce new mechanisms, such as tax increment financing, to fund local public infrastructure aimed specifically at climate adaptation. Because investing in adaptation confronts practitioners with a set of dilemmas, there is a struggle to reconcile those dilemmas with the need to operationalize adaptation actions using a risk-based instrument. The reluctance to take the plunge of applying a market-based financing instrument is beyond unwillingness to prioritize local adaptation investments, but rather, participants were unable to sufficiently align values and norms with structures that would enable the application of tax increment financing. The question as to whether practitioners

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1 Lack of priority given to climate adaptation is frequently identified as a barrier to implementation.
are willing to reinterpret and reshape institutional rules to enable local investment in climate adaptation teased out a response that provides two stark lessons for climate adaptation policy-makers. Firstly, the empirical evidence points to the limited acceptance that a local market-based financing instrument is likely to have in the Netherlands in relation to facilitating adaptation-related investments. Secondly, in contrast, practitioners appeared able to imprint an incrementalism and customize TIF into a ‘made in the Netherlands’ instrument for investments that were conceived of as non-adaptation specific. Here a distinction is drawn between conventional public goods investments and climate adaptation-specific investments (see appendix 5). The latter provoked participants to simplify the complexity of climate adaptation into a trio of thematic clusters, referred to as institutional dilemmas. The institutional dilemmas functioned as heuristic ‘short-cuts’ by serving as rationales for participants to impose a financial barrier on the climate adaptation investments proposed in the Watervliet Safe Haven game. As argued in the preceding section, the financial gap was not necessarily actual, but rather practitioners were unable to fully accept the choice of a financial instrument that could have been used to augment the project budget. This outcome was based on the dynamics of the institutional context and the perceived constraints that were informed by formal and informal institutional rules and the intersection with the dilemmas of climate adaptation. Together these factors shaped practitioners’ perspectives about the limits to applying tax increment financing as a new financial instrument for the Dutch planners’ climate adaptation toolkit.

3.0 Methodological Reflections

The objective of the research design was to develop an actor-centered strategy that aimed to develop a thick description of the decision-making context in which planning practitioners operate. In doing so, the intention was to produce insights about the dynamic interplay within the institutional context that shapes the degree to which planning practitioners are able to ‘play’ with the rules. The following three sections reflect on the research strategy by situating the discussion on the methodological choices in the governance-related climate adaptation literature, and offers reflections on the implications for practice of this research. The final two sections turn to suggestions for future research and final conclusions.

3.1 Methodological Considerations

As described in chapter 2, the research design integrates a number of methods, which include project-specific case studies, interviews, a questionnaire, and multiple repetitions of a simulation game. The advantage of this strategy is that it created
several angles to develop an understanding about the characteristics of real-life events (Yin, 2013). By developing a research process that was cumulative in effect, it increased the validity of the findings. For example, in chapter 4 the findings in the Rotterdam case study demonstrate external validity in relation to the current conditions of Dutch planning and development, and the literature that specifically focuses on urban climate adaptation. These findings were further validated by the data arising from the simulation gaming sessions (analysis in chapter 5 and 6), both in terms of the participants’ narratives and the questionnaires administered during the game simulation process. That is, responses from the simulation game participants were consistent with views about the need to address adaptation to climate change as an urban planning issue, but the question of how to finance physical investments remained unclear in the minds of practitioners. The validity of the findings was demonstrated by the broad agreement between the participants that the recommendation to the fictional city council of Watervliet regarding tax increment financing was realistic. Similarly, the findings in chapter 4 focusing on the question of the appropriateness of using tax increment financing in the Netherlands was based on three methods: a telephone questionnaire of senior municipal tax officials, expert interviews, and a project-specific case study. The triangulation of these methods yielded empirical findings that are also consistent with existing literature on tax increment financing with respect to how practitioners outside of the Netherlands generally view the instrument. This is particularly the case with respect to the pros and cons. It also generated new data that is particular to the Netherlands. The results of the questionnaire, for example, established an important benchmark about the limited use of property taxes in the Netherlands to finance area specific physical investments. The findings in chapter 4 were further reinforced by the participants of the simulation game, as revealed in the debates about the strengths, weaknesses, risks, and fairness of using tax increment financing.

The following three sections provide a brief discussion about the methodological choices, with a specific emphasis on the building blocks of the case study presented in this dissertation.

3.2 Case Study Construction: Core building blocks
In order to advance scholarship and practice on climate adaptation, recent arguments emphasize the need to shift away from so-called ‘functionalist’ views that are prevalent in the governance literature (Biesbroek et al., 2015). The outcome of such approaches may offer a range of instruments to overcome the barriers to implementation, but neglect the analytical opportunity to embrace the complexity and dynamics of policy and decision-making processes. The result may provide a description of the symptoms that are frequently present when confronted with implementation challenges, but, as implied earlier in this chapter, lacks explanations
about the causes of the various barriers and challenges in the climate adaptation policy and implementation process. Here the strategic construction of a case study is recognized as essential to developing an understanding about what Flyvbjerg describes as the “…the deeper causes behind a given problem…” (2006, p. 229). Indeed, while case study research has been criticized for being too context dependent, thus not possible to generalize for the purposes of science in comparison to, for example, large-n quantitative methods, according to Flyvbjerg the context dependent nature of case studies is the method’s strength: “context dependent knowledge and experience are at the very heart of expert activity. Such knowledge and expertise also lie at the center of the case study method of learning” (Flyvbjerg, 2006, p. 222). Not surprisingly, in the quest to understand in what forms climate adaptation policies are being realized, and what challenges practitioners are confronting, a substantial amount of climate adaptation research, focusing on questions of governance, is based on case studies. Although a critical mass of research based on case studies has been generated over the years (Bulkeley & Broto, 2012), it has also been identified as a weakness of the literature. Eisenack et al. (2014) argue that the literature is sufficiently mature that comparative research focusing on the underlying causes of impediments should be consolidated into transferable knowledge as an important next step for governance research. This dissertation takes a further step in this direction by constructing a case study strategy that gathers information from smaller cases, within the broader Dutch case, as a means to draw together and link evidence in different ways (Flyvbjerg, 2006). While the research does not embark on broader comparative work, in terms of country comparisons, the approach contributes to climate adaptation research in terms of enriching understandings about the underlying institutional attributes in order to explain the dimensions of policy instrument choices that confront planning practitioners.

3.3 Institutional Dexterity: The Rotterdam case
Rotterdam is an interesting case because it is a frontrunner city. But what is interesting, as argued in chapter 3, is not the successes, widely reported in policy and scholarly literature. Rather, it is interesting because despite the successes, it is an organization that continues to work towards embedding climate adaptation as part of routines. Rotterdam has been the subject of urban planning related climate adaptation case studies. These range from a focus on physical measures such as water plazas and floating houses, and specific adaptation policies initiatives (van Vliet & Aerts, 2015); stakeholder engagement and cross-sectoral policy analysis (Kokx & Spit, 2012); and the interface between local and national climate adaptation planning policy visions (Stead & Tan-Kok, 2013). Limited studies focus on the institutional dexterity of the City of Rotterdam by way of cross-programmatic
integration and the challenges presented by organizational and institutional complexities (Lenhart, van Vliet, & Mol, 2015). Also important are, as noted by Ward et al. (2012), the “institutional path-dependency and deep-rooted policy beliefs” that are the common realities that Rotterdam shares with other cities. As has been argued in this dissertation, the empirical findings and theoretical insights contribute to the literature by making empirical connections between the inter-relationship between the structures and norms of Dutch urban planning, municipal financing, and adaptation to climate change. As a single case study, within the research design of this dissertation, the Rotterdam case may bear similar limitations as other small-n research strategies, in terms of transferability of the particular success factors. That is, the results could be construed as offering a tempting example of ‘best practices’ that practitioners can directly draw from and apply in their own context. However, as Yin (2013) points out, the purpose of using cases studies is to develop explanations and identify patterns in order to develop analytical generalizations to explain ‘how’ or ‘why’ certain strategies or programs are successful or not. Thus, the research strategy used here acknowledges the importance of context, not as a weakness, but as a relevant piece in a complex puzzle.

The next section discusses the choice of tax increment financing as a potential instrument to facilitate local investment by Dutch municipalities.

### 3.4 Application of Municipal Income: Instrument diversity within constraints

Financing municipal public infrastructure is achieved using a wide variety means, from government driven funding programs to sophisticated public-private partnerships such as design, build, finance, operate, and maintain contractual arrangements used both in the Netherlands and elsewhere (Lenferink, Tillema, & Arts, 2013). Despite the depth of experience with such models, which offer short and long-term strategies, variations of managing public sector risk, and the means to stimulate private sector investment, actual application for local adaptation investments is limited. The consideration of market-based instruments remains within the realm of research that takes stock of potential instruments, rather than application. A characteristic of this research stream is that it has not yet been scaled to the local level, as few researchers have explored the structural and normative benefits and limitations of potential instruments at the municipal level of government. Drawing from several sources (Butzengeiger-Geyer, Michaelowa, Kohler, & Stadelmann, 2011; Corfee-Morlot et al., 2012; Isoard & Winograd, 2013; Merk, Saussier, Staropoli, Slack, & Kim, 2012; Oberlack & Neumarker, 2011), table 1 summarizes a range of possible mechanisms and financing instruments. The inventory of potential instruments indicates that municipalities have access to relatively few of these. For example, there is a wide accessibility gap between local fees and the use of
sophisticated instruments such as insurance products and private bond financing. Ability to implement these measures may be constrained by regulations, knowledge and experience, and limited local financial resources that could be used to lever alternative funding sources. Table 1 conceptualizes the relative degree of dependence and autonomy municipalities have in relation to accessing global bond markets, reliance on grant programs from senior levels of government or market players that may be limited, subject to the attractiveness of local economic opportunities, and more modest fundraising measures such as local fees and taxes, over which municipalities typically have relative autonomy (Kitchen, 2010; Slack, 2005).

Based on the above argument, in this dissertation the core reason why tax increment financing was selected (see chapter 1 and 4 for more discussion), is that the instrument relies on a pre-existing income (i.e. property taxes) and municipal actors have knowledge about the workings of property tax. These two institutional conditions provide a solid platform on which to develop an analysis of tax increment in relation to its applicability to climate adaptation and its potential use in the Netherlands. By isolating one instrument, the analysis yielded an account about the potential and the limitations of the instrument both in terms of the practical ‘fit’ (for planning practitioners searching for new instruments) and in terms of the theoretical insights about the interplay between structures and norms. The underlying assumption is that certain factors, which Turnpenny et al. identify as actors, venues, and capacities, influence the selection of certain policy tools. The key point here is that the selection of certain policy tools over other policy tools is not a value-free process. Similar to Turnpenny et al.’s trio of variables, chapter 6 identifies the nexus of actors, adaptation, and context (Eisenack et al., 2014) as critical variables that influence how climate adaptation investments are approached. While focusing on a single instrument as the unit of

<table>
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<th>Table 1</th>
<th>Relative Degree of Municipal Autonomy financing instruments</th>
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<tr>
<td><strong>Autonomous</strong></td>
<td>Fees</td>
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<td>Taxes (commercial and property)</td>
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<td>Regulations</td>
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<td>Land development and leasing</td>
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<td>Private financing</td>
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<td>Tradeable bonds</td>
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<td><strong>Dependent</strong></td>
<td>Insurance products</td>
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*Researcher’s conceptualization based on identified sources*
analysis could be a potential weakness, the results provide evidence that the triangulated approach used in this research could also be used to explore other financing instruments. This research goal is in line with practice-oriented interests about the need to identify strategies that would incentivize private sector investment, rather than the public sector remaining the primary investor (Mees, Driessen, & Runhaar, 2012). However, while the answer to what type of financing instruments exist can be found in policy and scholarly literature, as cited above, the answer to how to operationalize them, or why public and private sector practitioners would be more or less receptive to the array of potential instruments, is a multi-dimensional question. As reinforced by the findings reported on in this dissertation, the pathway to discovering what type of instruments are appropriate may be less about the formal content and characteristics of the instrument per se than methodological in nature. With that in mind, the following section provides reflections on the use of simulation gaming as a component of the research design by focusing on its utility to explore socio-political dimensions. This section also draws attention to practical issues that researchers should consider in selecting this method.

3.5 Simulation Gaming: An experiential method to explore policy options

Adaptation to climate change remains a peripheral issue for municipal government. Thus, in comparison to measures to mitigate, which are primarily focused on an array of actions to reduce energy consumption, examples of climate adaptation are comparatively limited (Lenhart et al., 2015; van Buuren, van Vliet, & Termeer, 2015). This is particularly evident with respect to using local market-based financing instruments. If that is the case, then how can we, scientifically and practically, research and learn about how to adapt to climate change? Bulkeley and Broto (2013) present the concept of viewing cities as living laboratories for climate adaptation where we can learn about “climate change experiments” (p.361) undertaken by other cities. The aim should be analyzing the dynamics of the governance process, rather than the particular technical solutions, to consider the ways in which “…existing socio-technical systems establish the possibilities for intervention” (p.372). Furthermore, Bulkeley and Broto argue that in order to understand how cities are engaging with adaptation to climate change through experimentation or, as noted earlier, by ‘trial and error’ (Berkhout et al., 2006), it requires “…alternative forms of in-depth analysis, in particular through the use of detailed case studies” (p. 372). Simulation gaming offers the methodological means to address both of these observations, as can be found in a limited but growing literature that applies gaming to climate adaptation governance research (Eisenack & Reckien, 2013; Juhola, Driscoll, Mendler de Suarez, & Suarez, 2013; Meadows, 2013; Reckien & Eisenack, 2013; Sterman et al., 2014; Zhou, Bekebrede, Mayer, Warnerdam, & Kneple, 2013). The commonality is
firstly the interest in understanding the socio-political dynamics and, secondly, a
general interest in developing ‘bottom-up’ understandings about challenges
presented to practice by climate change. As Zhou et al. (2013) state, gaming “…
allows human players to simulate the real policy-making process and activities…
[and] because participants choose their objectives and decisions, they become part
of the analyzing process” (p. 125). Similarly, in this dissertation, I found that the
interactions between participants produced insights about the interconnections
between, to some degree, disparate issues (i.e. application for property taxes,
investment in local climate adaptation, and tax increment financing). The participants
themselves made the connections and sorted through the complexity to arrive at
outcomes that were similar between the different simulation sessions and consistent
with the findings from the Rotterdam case study (chapter 3) and the separate
research focusing solely on the appropriateness of tax increment financing in the
Netherlands (chapter 4). That is, the simulation gaming process enabled participants
to ‘join-up’ the separate units of analysis. In doing so, the process was a comparatively
expedient means to generate data using a process that was driven largely by the
participants themselves. Here the concept of expedient refers both to the research
process and for the participants themselves. That is, they were able to learn relatively
quickly about technical characteristics of tax increment financing and to grasp the
socio-political subtleties of utilizing this instrument 1) in the Netherlands and 2) in
association with climate adaptation investments. Thus, the process of experimenting
with an instrument was achieved in a confined and ‘safe’ place in comparison to the
real world of practice.

Moving from the reasoning underpinning the choice of simulation gaming, it
would be remiss not to account for several general challenges of using simulation
gaming. This discussion supplements the explanation in chapter 2 about the
strategies used to address validity threats (see table 1, chapter 2). As noted by
Straatemeier, Bertolini and Brommelstroet (2010) experiential methods share a
similar attribute to case studies in terms of the multiple inter-dependencies that could
be the cause of certain results. With respect to analyses based on data arising from
simulation gaming, conclusions are based on tacit knowledge of participants, which
is inherently contextually grounded. Similar to previous cautions about the transfer-
ability of case study knowledge to other situations, it is important to focus on the
broader conceptual findings rather than the particularities or idiosyncratic findings
that might be pertinent to the sectoral or organizational context. The strength of
simulation gaming, particularly using a role play format, is that humans become part
of the model, thereby introducing complexity that is difficult to replicate in controlled
laboratory settings or by using computer modeling (Daré & Barreteau, 2003). The flip
side to the proposition that humans enrich and add complexity to the model is the
question of how to control for risky or out-of-the-ordinary behaviors that may
significantly alter the outcomes of the process. This challenge is recognized in the gaming literature and not a phenomenon limited to simulation game methodology. Given this potential, the research design sought to manage the issue by keeping a sharp analytical focus on a key validity concept underpinning gaming, namely, whether arguments or claims by participants reasonably correspond with the reference system on which the simulation game model was based (Peters, Geert, & Heijne, 1998). In the case of this research described here, this ‘rule-of-thumb’ was helpful, but the resulting analysis did not detect significant anomalies.

The second set of cautions relates to logistical matters. Developing a simulation game is a labour intensive process in terms of creating the content to ensure it is grounded theoretically and empirically. Once the ‘software’ of the game is created, devising the ‘hardware’, in terms of the format and the materials, also requires sufficient time and resources. The game package needs to be designed, produced, and tested to ensure the simulation sessions will function as intended (as described in chapter 2 and the appendix 5). In creating the materials an important logistical issue was also encountered in this dissertation: language. Generating the simulation game materials in Dutch was essential to facilitate robust participation and strengthen the validity of the findings: as I am a non-native speaker of Dutch, this meant that all game materials were translated by a native Dutch speaker and the session recordings were thematically summarized in Dutch based on the conceptual framework and later translated into English for further analysis. The assumption was that by speaking Dutch, rather than English, participants were likely to participate and articulate their ideas in more rich and nuanced way than they could in a second language. The exception was the role of the game master, which was done in English. A third caution is important to highlight for those interested in using simulation gaming. This issue gets to the very core of simulation gaming, without which no data would be possible: the participants. It is widely acknowledged in the gaming literature, as well as in qualitative research more generally, that research strategies requiring human participants (especially busy professionals) are a significant challenge. Secondly, in the case of this research, it was critical to obtain content experts, i.e. sufficiently seasoned urban planning professionals. Given the subject matter and research objectives of this dissertation, using students or non-experts was not appropriate. The strategy used in this research successfully attracted the target group of planning and development professionals, which was based on postings on a range of professional networking websites and a database of contacts. Related to the issue of attracting the appropriate group of participants, the time commitment required by participants is also an important consideration. A three-hour session was deemed

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2 In the pre-game questionnaire 100% of the participants indicated that they were comfortable with the introductory presentation being spoken in English.
the maximum time that professionals could be expected to voluntarily commit to. This time slot was coincident with either a morning or afternoon session. None of the participants were financially compensated for their participation. The time constraint did limit the opportunity to conduct an extensive post-game debriefing session. According to Crookall (2010), debriefing with game participants should ideally be included as part of the process for several reasons which include enhancing or reinforcing learning outcomes, providing a way for participants to ‘cool off’ from the gaming process, particularly if the game created anxiety or other troubling outcomes and, thirdly, for research, debriefing might be an opportunity to gather data that did not emerge in the gaming process. Further iterations of the Watervliet Safe Haven game would benefit from expanding the three-hour time slot to include a greater opportunity to debrief with the participants. The game process required the full three hours, thus leaving little time for further post-game discussion. However, if using debriefing as part of a research focused simulation process, two issues should also be considered in relation to validity and practical matters. With respect to the former, it is important to control the timing of when the debriefing is conducted (Peters et al., 1998). Firstly, debriefing should not be done before post-game questionnaires (as in the case of the Watervliet game) are completed, as the opinion of an individual might be swayed by the group discussion. Secondly, as was the decision of this researcher, the robustness of in-game discussion may, on balance, provide richer data for the purposes of research (which would likely not be the case if the sole purpose of the simulation game was to stimulate social learning).

3.6 Reflections: Implications for practice
The findings described in this dissertation are, ultimately, optimistic. They do not provide an answer to those practitioners that have a thirst for a range of instruments that will simplify the adaptation process. Rather, the analysis identifies a puzzle wherein a technical fix is only part of the answer to identifying the financial means to climate adaptation. That is, knowledge arising from cost-benefit analyses and assessments provides technical rationales for policy-making processes but limited operational direction. The practical value of the findings arising from this dissertation is the emphasis on breaking down the parts from the whole (Healey, 2009) and building them back up again, as key steps in operationalizing an implementation strategy. The findings suggest that an imperative in the design of a financing instrument would be to pay attention to the congruency of informal institutions at the ‘street level’ (Buitelaar, Galle, & Sorel, 2011) and to ensure that sufficient incentives are available to motivate the use of diverse instruments for climate adaptation purposes. In the Dutch context, to be in-step with the current socio-political conditions, I extrapolate that a market-based financing instrument in relation to climate adaptation would need to be aligned with several attributes. That is, to
overcome a financial gap, the design of a market-based instrument would need to align with the following principles: incrementalism; long term financial risk management; and risk sharing between stakeholders. Also, it would need to be part of a diverse bundle of instruments. In that sense, understanding what type of instruments align with those attributes may be a more successful strategy than an instrument and forcing a fit.

Finally, with respect to the practical question of whether tax increment financing is applicable to the Dutch planning adaptation toolkit, TIF might very well be appropriate to facilitate investment in local physical public infrastructure to support adaptation investments in the Netherlands in due course. In the meantime, the findings indicate that the current decision-making environment is not ready for such a market instrument in relation to climate adaptation. The contribution of an in-depth examination of tax increment financing is that we learn municipalities may have more financial opportunities than they are aware of, yet the results come with a forewarning about the need to pay attention to the institutional nexus of factors when endeavoring to reformulate existing instruments for new applications.

4.0 Directions for Future Research: Learning what works

The role of organizational learning in relation to climate adaptation policy-formation processes is a growing area of inquiry in the field of governance research (Baird et al., 2014; Jordan, A., & Huitema, 2014). The findings in this dissertation also reinforce that the answer of how to facilitate investment in the planning process remains very unclear insofar as planning practitioners remain, broadly speaking, in the phase of testing and experimentation. Moreover, in considering how actions should be financed yet more questions arise largely because the pre-conditions for the financing conversation have not been satisfactorily resolved. Discussions about adaptation to climate change remain within the realm of determining sectoral and jurisdictional roles (i.e. ‘the who’ and ‘the where’), and conceiving of possible strategies (i.e. ‘the what’ and ‘the when’) to reduce the impacts of climate change in urban areas. In order to advance knowledge about how investments can be achieved, research that explores ‘how’ and ‘why’ practitioners are able to reduce complexity to facilitate investment in climate adaptation would be a fruitful line of inquiry. How practitioners interact with different financing instruments could provide indicators about the role of both formal and informal institutional rules in shaping what is deemed appropriate (and possible). That is, what does the response to a particular financing instrument tell us about how the institutional context reinforces organizational (un)certainty about investing in adaptation? Why do practitioners
differentiate between affirmative or negative narratives to determine what type of instruments would be deemed appropriate? Do certain financing instruments create dead-ends where other instruments create pathways to implementation? In either case, what do such outcomes tell us about how the institutional dilemmas of climate adaptation could be overcome and why certain governance arrangements would enhance the implementation process?

As implied in the set of proposed research questions, the core aim, and suggestions for future research, is to investigate the process of how decisions about certain financing instruments are arrived at. Indeed, when confronted with a list of possible instruments, methodologies that are designed to connect the institutional puzzle will contribute to a more robust understanding about the complexity of adjusting existing instruments and designing the governance processes that are required for operationalization. Thus, suggestions for future research are methodologically-oriented. Firstly, as experienced in the research process for this dissertation, simulation gaming, as an experiential approach, was a useful strategy to engage practitioners to experiment with a novel financing instrument. The effect was the generation of data for scientific purposes. Secondly, it provided a learning opportunity for participants. Methodologies such as simulation gaming or scenario-building, for example, that are oriented towards participation and co-learning, are promising for several reasons including acting as a ‘reality check’ and as a means to strike a balance between social relevance and making a scientific contribution to knowledge. As noted by Jonsson and Swartling, research processes guided by this perspective may also produce data “…that otherwise would remain unknown or difficult to access” (2014, p. 1). Both from a research and social learning perspective, for scholars interested in how organizations learn, as fundamental to the process of adaptation to climate change (Lenhart, Bouteligiera, Mol, & Kern, 2014), and how to transform research into policy actions (Termeer et al., 2011), methodologies that embrace the messy business of policy-making and consider how practitioners simplify the complexity of a multi-dimensional problem, such as adaptation to climate change, could contribute to the real world of practice and scientific inquiry. Urban planning research and research on the governance of climate adaptation share an overt bias towards enhancing practice through investigating possible spaces for institutional change – both of which have a clear orientation towards improving future outcomes (Healey, 2007). Researchers, thus, should look to the design sciences for strategies that build scientific knowledge and allow for experiential engagement because, as van Aken (2004) asserts, “…understanding a problem is only halfway to solving it. The second step is to develop and test (alternative) solutions” (p.220). The application of such a perspective in the design of governance research just might help practitioners advance systemic adjustments and make advances toward embedding adaptation to climate change into everyday practice.
5.0 Final Conclusions

Rather than offering further diagnoses or prescriptions, this dissertation contributes to scientific research on the institutional dimensions of adaptation in three ways. Firstly, it substantiates findings from other scholars (Burch, 2010; Hulme, 2009; Juhola, Keskitalo, & Westerhoff, 2011; Wejs, 2014) that establishing a means to bridge the so-called implementation gap is largely not a financial issue nor(101,310),(880,896)

1) the dilemmas associated with climate change, and, 2) the degree of boundedness of planning practice, creates institutional conditions that currently do not stimulate substantial innovation in relation to applying a market instrument based on local revenue to facilitate adaptation investments. Secondly, although the Netherlands is recognized as a frontrunner in adapting to climate change, particularly in relation to water management, the institutional landscape of urban planning is fluid and ill-defined. The findings described in this dissertation strengthen the assertion that understanding how organizations are entities embedded within broader institutional structures (Berkhout, 2012) is core to advancing scientific understanding about adapting to climate change. More specifically, organizations develop policy and make choices about instruments within a broad polycentric environment with a pre-existing institutional rationality. From a methodological perspective, the study contributes empirically to the adaptation literature as it is based on a multi-dimensional case study strategy using simulation gaming. This adds an exploratory behavioral dimension to the growing academic interest in understanding how individuals and organizations learn to adapt to climate change. In doing so, the findings point to the dynamic process of organizational learning (Berkhout et al., 2006) and the ‘little ways’ that are applied in the flow of practice that change perceptions and shape decisions (Healey, 2009). In the context of this research, the findings add to knowledge about how practitioners construct meanings in relation to the appropriateness of certain financing instruments.
References


Hartmann, T., & Spit, T. (2015). Dilemmas of Involvement in Land Management: Comparing an active (Dutch) and a passive (German) approach. *Land Use Policy*, 42, 729-737. doi: http://dx.doi.org/10.1016/j.landusepol.2014.10.004


Appendices:
Supplementary Material
per Chapter
Appendix 1: Chapter 3

1.0 Interview Questions Summary: Rotterdam, Stadshaven Case Study

The interview guide was designed to elicit responses to four themes: 1) the degree to which climate adaptation factors into the land and development process in the Stadshaven redevelopment process; 2) to develop an understanding about the inter-organizational interactions with respect to implementing climate adaptation investments during the planning and development process; 3) what financial resources are made available to support the implementation process, and 4) are new mechanisms needed to support investments in climate adaptation. The following identifies the key questions that guided the discussion:

1.1 Climate Adaptation in the Planning and Land Development Process

- How does planning for climate adaptation factor into the current planning and land development process?
- Is the focus on implementation or more long-term vision?
- Do you think climate adaptation is shifting towards being regarded as conventional practice? If so, what is the shift about? Where is the shift coming from? Or, is climate adaptation concerned considered as an outlier issue?
- How, in your experience (ie make reference to sustainability/green as an example) does what was once ‘unconventional’ become ‘normalized’? For example, can you remember when green standards became the norm, for example? What was the driver?

1.2 Inter-Organizational Interaction

- What specific department/individual/organization is driving the climate change/adaptation agenda? What formal authority do they have? Do they play a decision-making and/or implementation role? Has the location of what department that has had the ‘climate file’ changed? Do you think that makes any difference?
- What are the programs and processes that are available to them to assign resources? Are there actual funds? Budgeting processes in which to integrate adaptation requirements?

1.3 Facilitating Investments in Climate Adaptation

- What are the range of different funding sources available, generally, in the planning process for public infrastructure investment (ie public realm investments). Are they
based on local tax revenues? Land development? Regulatory requirements, such as cost recovery? Are there any shifts in practice and/or alternative approaches emerging?

- What is the most important planning instruments (or sets of mechanisms) for extracting funding to support investments in physical infrastructure and public goods that are used in the planning and land development process?
- What are the typical priorities for public investments?
- Does climate adaptation (ie adjustments to infrastructure, green space, etc) factor into current priorities? How are those investments being thought about?
- Do you think integrating climate adaptation measures into the planning and land development process is different than other elements of city planning that are generally considered important to creating good places to live and work? (ie trees for water absorption; water retention capabilities; sensitivity flood prone areas)?
- Is the focus on the financial cost of adaptation to climate change or other issues in relation to this subject?

1.4 Are new mechanisms needed to support investments in climate adaptation

- How do you think you can use existing planning instruments and mechanisms? Do you think that it can be done already with existing standards? Or would changes to standards/regulations be required?
- If you think adjustments to existing mechanism are needed, why is that? What adjustments are required?
- Do you think that there is a consensus that new tools are needed and a general idea about what those mechanisms would be? If not, why do you think some people think new mechanisms are needed, while others think that new mechanisms are not needed?
- What kind of time horizon do existing planning mechanisms operate within? Does the uncertain time horizon (re: climate change) present a challenge? Can you imagine a tool/process that might be more congruent?
- Would new tools or adjustments to existing tools potentially change what players are involved in the process (including decision making and they way planning and land development is currently practiced?). How do you think that would play out?
- How do you view the use of taxes as a potential funding source?
Appendix 2: Chapter 4

The following supplementary material is comprised of three sections: 1) results from the questionnaire administered to 34 senior tax officials from different municipalities across the Netherlands; 2) interview guide used for the expert interviews on Dutch property taxes and municipal funding system, and 3) the interview guide used in connection with the Nijmegen Waalfront redevelopment project.

1.0 Municipal Tax Officials: Questionnaire results

<table>
<thead>
<tr>
<th>Number</th>
<th>Municipality</th>
<th>Response to Survey</th>
<th>TIF is known to respondent</th>
<th>TIF as Instrument for the Future</th>
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<tbody>
<tr>
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<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Nr 2</td>
<td>Almelo</td>
<td>Yes</td>
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<td>No</td>
</tr>
<tr>
<td>Nr 3</td>
<td>Almere</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nr 4</td>
<td>Amersfoort</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
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<td>Nr 5</td>
<td>Amsterdam</td>
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<td>Nr 6</td>
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<td>Nr 7</td>
<td>Arnhem</td>
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<td>No</td>
</tr>
<tr>
<td>Nr 8</td>
<td>Breda</td>
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<td>No</td>
</tr>
<tr>
<td>Nr 9</td>
<td>Delft</td>
<td>No</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nr 10</td>
<td>Den Bosch</td>
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<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Nr 11</td>
<td>Den Haag</td>
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<td>No</td>
</tr>
<tr>
<td>Nr 12</td>
<td>Deventer</td>
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</tr>
<tr>
<td>Nr 13</td>
<td>Dordrecht</td>
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<td>Yes</td>
</tr>
<tr>
<td>Nr 14</td>
<td>Ede</td>
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</tr>
<tr>
<td>Nr 15</td>
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</tr>
<tr>
<td>Nr 16</td>
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</tr>
<tr>
<td>Nr 17</td>
<td>Enschede</td>
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<td>Yes</td>
</tr>
<tr>
<td>Nr 18</td>
<td>Goes</td>
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Table 1 Property Tax Questionnaire: Results
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<tr>
<th>Number</th>
<th>Municipality</th>
<th>Response to Survey</th>
<th>TIF is known to respondent</th>
<th>TIF as Instrument for the Future</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 34/43 = 79% response rate</td>
<td>• 18/34 = 53% know about TIF as an instrument</td>
</tr>
<tr>
<td>Nr 19</td>
<td>Gouda</td>
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<td>Yes</td>
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<td>Nr 20</td>
<td>Groningen</td>
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<tr>
<td>Nr 21</td>
<td>Haarlem</td>
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</tr>
<tr>
<td>Nr 22</td>
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</tr>
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<td>Nr 23</td>
<td>Helmond</td>
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<td>Yes</td>
</tr>
<tr>
<td>Nr 24</td>
<td>Hengelo</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nr 25</td>
<td>Hilversum</td>
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<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nr 26</td>
<td>Leeuwarden</td>
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<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nr 27</td>
<td>Leiden</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nr 28</td>
<td>Lelystad</td>
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<td>Yes</td>
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<td>Nr 29</td>
<td>Maastricht</td>
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<td>Nr 30</td>
<td>Rotterdam</td>
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<td>No</td>
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<tr>
<td>Nr 31</td>
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<td>-</td>
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<td>Nr 32</td>
<td>Sittard-Geleen</td>
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</tr>
<tr>
<td>Nr 33</td>
<td>Spijkenisse</td>
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</tr>
<tr>
<td>Nr 34</td>
<td>Stichtse Vecht</td>
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</tr>
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<td>Nr 35</td>
<td>Tilburg</td>
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<td>-</td>
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<td>Nr 36</td>
<td>Utrecht</td>
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</tr>
<tr>
<td>Nr 37</td>
<td>Veenendaal</td>
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<td>Nr 38</td>
<td>Venlo</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nr 39</td>
<td>Vlaardingen</td>
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<td>No</td>
</tr>
<tr>
<td>Nr 40</td>
<td>Waalwijk</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nr 41</td>
<td>Zaanstad</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nr 42</td>
<td>Zoetermeer</td>
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<td>Yes</td>
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</tr>
<tr>
<td>Nr 43</td>
<td>Zwolle</td>
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</table>
2.0 Expert Interviews: Property taxes, socio-political and technical considerations

2.1 Interview Questions Summary:
The purpose of the expert interviews was to explore the socio-political and technical reasons that may form an obstacle to using tax increment financing in the Netherlands. Open-ended questions were designed to elicit responses based on those key themes, as follows:

2.1.1 Technical Considerations:
• What are the key sources of income for Dutch municipalities?
• Can municipalities set their property tax rate? Is there a technical reason that explains the taxation rate?
• Is there any restriction to how property taxes can be used in relation to financing? For example:
  o Lending & borrowing: Can municipalities float bonds? Would there be time restrictions on holding the debt? Is there a maximum debt level rate? Would municipalities need to seek provincial approval?
  o What is the budget approval process for local municipalities and would they be required to identify use of the TIF-like approach publicly (or would that be based on financial practices of each municipality)?
  o What is a typical risk assessment of a local municipality re: borrowing and lending practices? Can they lend to private operators?
• Are there limitations to how property taxes are used?
• Is there a way to disconnect the future increment from the tax capacity (ie a portion of the property taxes wouldn’t be calculated in the tax capacity), which means a municipality might float above the tax bandwidth and not penalized?
• Would it be necessary to change the tax system pertaining the municipalities to introduce tax increment financing as a formal tool? If so, what would the changes be?

2.1.2 Socio-Political Considerations:
• What are the key debates and trends regarding market-based revenue tools vis-à-vis municipalities and need to raise revenue locally in the face of cuts from national government
• Does this relate to debates regarding decentralization and greater control over locally generated resources?
• What are the issues associated with the idea of increasing the property tax bandwidth?
3.0 Nijmegen, Waalfront Case Study

Interviews were conducted with municipal and project staff that had direct experience on the Waalfront redevelopment project, including the design and application of property taxes as part of the development project budget. The following describes the over-ended questions that formed the basis of the interview:

3.1 Waalfront Financial Strategy: Overview funding / focus on property taxes

- What are the particular funding mechanisms?
  a. What was the mix of cost-recovery?
  b. Grants: Municipal Fund and EU?
  c. Other?
- What types of value capturing mechanisms were used in development budget and what parts of the plan were they meant to be supporting?
- How was the use of property taxes formulated in the budget?
  o What was the policy rationale?
  o How did it work?
    ▪ How long was the future value projected?
    ▪ How does the financing actually work in terms of getting the funds? Was the bank informed for the debt repayment plan?
    ▪ Was the money lent to the developer or does the debt cover the municipality work?
    ▪ Who holds the debt? Municipality? Arms-length? Private?
    ▪ What happens if the value is not realized? Covered by general revenues?
    ▪ Was the potential impact on transfer funds from the Municipal Fund assumed?
  o How was the approval by Nijmegen City Council this mechanism achieved?
    ▪ Did municipal politicians understand it as different than land speculation?
    ▪ Was approval by province required?
- How is the debt identified with the annual budget review by the province?
- Who is involved in the decision making about allocation of budgets?
Appendix 3: Chapter 5 and chapter 6

The following supplementary material provides additional data in connection with chapters 5 and 6. The first section summarizes perspectives between applying tax increment financing for general purposes in comparison to climate adaptation specific investments. The second section provides data from chapter 6 (section 4.3.5). The final section offers a comprehensive description of the Watervliet Safe Haven simulation game package.

1.0 Comparing Responses to Tax Increment Financing: General Purpose vs. Climate Adaptation Specific Investments

As described in chapters 5 and 6, and summarized in chapter 7, the introduction of a market-based mechanism for the purpose of facilitating investment in local adaptation would likely have to be in-step with ‘street level’ informal institutional norms and values. The purpose of the following is to provide clarification in relation to those findings. Chart 1 identifies the five core structural characteristics of tax increment financing and juxtaposes the Watervliet Safe Haven simulation game participants’ perspectives in relation to two distinct categories: 1) using TIF for general investment purposes and, 2) using TIF specifically as a means to facilitate investment in local level climate adaptation-related infrastructure investments. The findings indicate that although participants were generally positive, with some reservations, about using TIF, for climate adaptation specific investments there was a significant lack of confidence about its applicability. The weak support by participants for TIF as a potential tool was primarily due to the potential financial risk and lack of foreseeable benefits of climate adaptation related investments. Conversely, there was a degree of support for TIF as a general purpose instrument because participants considered the possibility of integrating the instrument into the existing Dutch spatial planning ‘toolkit’ to create a ‘made in the Netherlands’ tax increment financing instrument.
<table>
<thead>
<tr>
<th>TIF: Core Structural Characteristics</th>
<th>For General Purposes</th>
<th>Climate Adaptation Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market-Based Mechanism</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Tailor to current ideas about slow-growth/&quot;organic &quot; development (footnote)</td>
<td></td>
<td>- Expectation that climate adaptation investments will not be recognized as adding to market value</td>
</tr>
<tr>
<td>- Speculating on future earnings is politically challenging</td>
<td></td>
<td>- Market has a short-term outlook / climate adaptation has long horizon</td>
</tr>
<tr>
<td><strong>Use of Property Taxes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Modest revenue stream could be integrated with other budgets and programs to stimulate market</td>
<td></td>
<td>- Insufficient revenue as stand-alone instrument to support &quot;hard&quot; infrastructure investments</td>
</tr>
<tr>
<td>- Risk that national government could change tax regime</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Designated Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Could unlock stalled development areas</td>
<td></td>
<td>- May create &quot;winners and losers&quot; between neighbourhoods</td>
</tr>
<tr>
<td>- May indicate an unfunded project</td>
<td></td>
<td>- 'one-neighbourhood-at-a-time&quot; too narrow in scale: broader inter-jurisdictional issues should be considered</td>
</tr>
<tr>
<td><strong>Earmarking Instrument</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Integrate with existing planning instruments to achieve specific investments</td>
<td></td>
<td>- Benefit of climate adaptation investments not recognized by taxpayers/investors</td>
</tr>
<tr>
<td>- May reduce budgetary flexibility during project lifecycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Range of Financing Models</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Design model to spread financial risk to range of beneficiaries to broaden risk holders</td>
<td></td>
<td>+/- Municipality should be the risk-holder for specific adaptation investments</td>
</tr>
<tr>
<td>- Analysis required to determine if reduction from Municipal Funds would result</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.0 Acquiring Instrument and Tacit Knowledge: Indication of social learning effects

Chapter 6 includes a description of the type of learning effects that arose from the simulation gaming process for the participants. Chart 2 provides the results of the post-game questionnaire on which the analysis was based. These findings provide an indication about the learning effects and, as noted in chapter 6, the analysis is limited to the level of the individual with respect to social learning.

Chart 2 Post-Game Questionnaire Summary

<table>
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<td>1.165</td>
<td>1.1195</td>
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3.0 Watervliet Safe Haven Description and Game Material

3.1 Participant List and Locations
Seven three-hour sessions were held in five different locations in the Netherlands. The simulation game session was advertised via a range of social networking sites, including sites that focus on Dutch spatial planning issues and climate change related subjects. The result of the outreach strategy was a sampling of 59 experienced spatial planning practitioners and policy-makers. The sectoral mix of the participants was a balanced representation of both private sector practitioners and participants that worked for municipalities (see chart 3). While the majority of participants had a spatial planning orientation, participants also had a particular disciplinary area of specialization. Chart 3 and chart 4 illustrate the range of specializations. The majority of participants are categorized generally as spatial planners; this category represents process managers, project developers, policy-makers, and advisers.

Chart 3  Sectoral and disciplinary breakdown

![Sectoral and disciplinary breakdown chart]

- Municipal
- Private Sector
- National
- Provincial
- Research/Education

# Participants: Sector/Discipline

<table>
<thead>
<tr>
<th>Sector/Discipline</th>
<th># Participants</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Research</td>
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<td>Real Estate</td>
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<td>Other</td>
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<td>Economic</td>
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<td>Other</td>
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### Chart 4  Participant List and Locations

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<th>Profession/title</th>
<th>Sector</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utrecht: March 28, 2014</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Utrecht</td>
<td>Research Coordinator</td>
<td>Education</td>
<td>Research</td>
</tr>
<tr>
<td>Province North-Brabant</td>
<td>Senior Policymaker</td>
<td>Province</td>
<td>Environmental</td>
</tr>
<tr>
<td>KuiperCompagnons</td>
<td>Adviser Spatial and City Planning</td>
<td>Private</td>
<td>Spatial Planning</td>
</tr>
<tr>
<td>KuiperCompagnons</td>
<td>Planner</td>
<td>Private</td>
<td>Spatial Planning</td>
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<tr>
<td>Metrum</td>
<td>Advisor Land Policy</td>
<td>Private</td>
<td>Spatial Planning</td>
</tr>
<tr>
<td>Stec</td>
<td>Advisor</td>
<td>Private</td>
<td>Spatial Planning</td>
</tr>
<tr>
<td>van der Staak Business Logic bv</td>
<td>Director</td>
<td>Private</td>
<td>Real Estate</td>
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<tr>
<td>Milieuregie</td>
<td>Planning Advisor</td>
<td>Private</td>
<td>Spatial Planning</td>
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<tr>
<td><strong>Amsterdam: April 1, 2014</strong></td>
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<td></td>
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<td>Municipality of Lisse</td>
<td>Project Leader</td>
<td>Municipal</td>
<td>Spatial Planning</td>
</tr>
<tr>
<td>Bureau Het Noordzuiden</td>
<td>Director/Process Manager</td>
<td>Private</td>
<td>Spatial Planning</td>
</tr>
<tr>
<td>Inbo/Universiteit Utrecht</td>
<td>Partner/University Teacher</td>
<td>Education</td>
<td>Spatial Planning</td>
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<tr>
<td>Turner &amp; Townsend</td>
<td>Consultant</td>
<td>Private</td>
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</tr>
<tr>
<td>ARCADIS / MUAD</td>
<td>Senior Advisor / Program Manager</td>
<td>Private</td>
<td>Spatial Planning</td>
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<tr>
<td>PBL</td>
<td>Senior Researcher</td>
<td>Education</td>
<td>Research</td>
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<tr>
<td>Master of Urban &amp; Area Development</td>
<td>Training Manager</td>
<td>Education</td>
<td>Research</td>
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<tr>
<td>Province of North Holland</td>
<td>Policy Advisor</td>
<td>Province</td>
<td>Spatial Planning</td>
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<tr>
<td><strong>Den Haag: April 4, 2014</strong></td>
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<td></td>
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<tr>
<td>National Government, Real Estate Agency</td>
<td>Strategic Real Estate Advisor</td>
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<tr>
<td>Municipality of Westland</td>
<td>Policy Planner Spatial Planning</td>
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<td>Spatial Planning</td>
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<tr>
<td>Municipality of Eindhoven</td>
<td>Strategic Policy Advisor, Land and Real Estate</td>
<td>Municipal</td>
<td>Spatial Planning</td>
</tr>
<tr>
<td>Ministry of Infrastructure and the Environment, Deltaprogramma New Housing and Restructuring Program</td>
<td>Team Member, Climate Proof Cities</td>
<td>National</td>
<td>Spatial Planning</td>
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<tr>
<td>Urhahn Urban Design</td>
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<tr>
<td>Hoogheemraadschap van Delfland</td>
<td>Senior Policy Advisor</td>
<td>Waterboard</td>
<td>Planning</td>
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### Chart 4  Continued

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<th>Specialization</th>
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<td>Zuyd Hogeschool</td>
<td>Portfolio Coordinator, Real Estate Management</td>
<td>Education</td>
<td>Research</td>
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<td>Asset Manager</td>
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<td>Head, Portfolio Management</td>
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<td>Landshapstaal</td>
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<td>Private</td>
<td>Planning</td>
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</table>

**Rotterdam: April 2, 2014**

| Municipality of Papendrecht           | Head of Department of Spatial Development     | Municipal       | Spatial Planning  |
| Municipality of Rotterdam             | City Planner                                 | Municipal       | Spatial Planning  |
| Municipality of Rotterdam             | Policy Advisor                               | Municipal       | Environmental     |
| TU Delft                              | PhD Candidate                                | Education       | Research          |
| Municipality of Papendrecht           | Head of Department of Spatial Development     | Municipal       | Spatial Planning  |
| Municipality of Rotterdam             | City Planner                                 | Municipal       | Spatial Planning  |
| Municipality of Rotterdam             | Policy Advisor                               | Municipal       | Environmental     |
| TU Delft                              | Planning Advisor/PhD Candidate               | Private/Education| Spatial Planning/ Research |
| vA-SAAV                               | Owner                                        | Private         | Spatial Planning  |
| Ecorys                                | Senior Consultant Vastgoed en Gebiedsontwikkeling | Private         | Real Estate       |
| MBDSO | Duurzame Stedelijke Ontwikkeling         | Owner                                      | Private         | Spatial Planning  |
| Municipality of Heerhugowaard         | Strategic Advisor                            | Municipal       | Spatial Planning  |

**Nijmegen: April 9, 2014**

<p>| Municipality of Nijmegen             | Advisor                                      | Municipal       | Spatial Planning  |
| Municipality of Meppel               | Strategic Advisor Sustainability              | Municipal       | Spatial Planning  |
| Municipality of Nijmegen             | Senior Advisor                               | Municipal       | Economics         |
| Municipality of Nijmegen             | Senior Advisor, Environment                  | Municipal       | Environmental     |</p>
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<th>Specialization</th>
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<td>Municipality of Zwolle</td>
<td>Planning Economist</td>
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<td>Economics</td>
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<td>Ixin Vastgoed, Ruimte en Retail</td>
<td>Advisor City Renewal</td>
<td>Private</td>
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<tr>
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<td>Policy Advisor Area Vision</td>
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**Nijmegen: March 21, 2014**

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<td>elings landschap BV</td>
<td>Head Designer</td>
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<td>landscape/arch)</td>
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**Nijmegen: March 21, 2014**

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<td>Vreman Advies</td>
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</tr>
</tbody>
</table>
3.2 Data Collecting Strategies:
The following methods were used to collect the data during the simulation game sessions:

- **Two questionnaires:** Upon arrival each participant was asked to complete a pre-game questionnaire. The purpose of the questionnaire was to obtain demographic information and to probe participants about their view of climate change, how related investments could be funded, the roles of different stakeholders, and to gain an understanding about views related to the use of property taxes. The session finished with a second post-game questionnaire, which focused on opinions regarding tax increment financing. Both questionnaires were based on a Likert Scale, using a five point scale ranging between strongly agree to strongly disagree. A statistical software program (SPSS) was used to analyze the results of the questionnaires using descriptive statistics. The findings from the questionnaires have been used in the analysis to substantiate the discussions and/or whether significantly different views were expressed in the questionnaire than in the group discussions.

- **Audio recording of each 3-hour session:** a written summary of each session was produced identifying the themes, key debates and tensions. In particular, the thematic summaries were alert to points of consensus and key opinion differences in relation to norms, values, as well as technical issues associated with tax increment financing and the degree to which adaptation to climate change inform their deliberations and shaped their perspectives about whether the financial instrument was appropriate.

- **Participant produced report:** Each group produced a brief written report, using the same report template, to make a recommendation to the fictional City of Watervliet. The challenge for each group was to summarize lengthy discussions, the range of issues, and differences of opinions, into a single report. Ultimately, each group had to reach a consensus, to the degree possible, on the recommendation of whether TIF should be applied to the Watervliet Safe Haven redevelopment project budget, in which form it should take, or whether TIF ought not to be used in any form.

3.3 Watervliet Safe Haven Game Role Overview:
In RPG’s, roles provide players with a particular function that refers back to the system that has been model (Os van, 2012). Roles can be written to be open and flexible, thereby giving the player a degree of freedom, or roles can be detailed and specific. In the Watervliet game, each participant was provided with an open role, which to some degree responded to their real life profession and/or the role would not be too much of a ‘stretch’ given their professional experience. Several issues and concerns were included as part of the role description. The purpose was to give
participants a sense of issues and motivations to keep in mind. The role types were
developed to reflect the key players typically involved in Dutch planning and
development processes (Needham, 2007). Thirteen (13) roles were generated:

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<thead>
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<th>Municipal Government Representatives</th>
<th>Non-Governmental Representatives</th>
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</thead>
<tbody>
<tr>
<td>• Community Planner</td>
<td>• Private developer</td>
</tr>
<tr>
<td>• Land use planner</td>
<td>• Economic/investment advisor</td>
</tr>
<tr>
<td>• Development manager</td>
<td>• Planning consultant</td>
</tr>
<tr>
<td>• Chief financial officer</td>
<td>• Social housing developer</td>
</tr>
<tr>
<td>• Neighbourhood liaison officer,</td>
<td>• Neighbourhood association chairperson</td>
</tr>
<tr>
<td>• Environmental planner</td>
<td></td>
</tr>
<tr>
<td>• Planning consultant</td>
<td></td>
</tr>
<tr>
<td>• Climate change policy officer</td>
<td></td>
</tr>
</tbody>
</table>

For illustrative proposes, the community planner role identified that the municipality
was interested in integrating adaptation to climate change when opportunities arise,
but the financial crisis was making it difficult to achieve even basic community
planning goals. The chief financial officer role identified to the participant that this
role had not thought about using property taxes for area-specific investments, but
was interested in finding out more. And, lastly, for example, the private developers
had a range of interests and motivations that were identified, including considering
the market advantages of profiling the project as innovative, yet still concerned about
potential costs. The research design assumed that not all of the participants would
fully adopt the role nor limit their engagement in the session to the role description.
Nevertheless, the role, to some degree, provided a means for participants not be
limited by their ‘real-life’ role to the extent that they may not wish to offer ideas that are
inconsistent with their employer, for example. For research purposes, I were interested
in finding out about the perspectives of the participants so keeping within the realm
of ‘reality’ was essential.

3.4 Background on Tax Increment Financing: Policy rationales
Given tax increment financing is not an instrument used in the Netherlands, it was
essential to provide participants with sufficient information that was quick to grasp.
The written material supplemented and reinforced the information on TIF that was
conveyed in the Mayor’s presentation at the beginning of the session. In a brochure
format (see figure 7), a description of TIF was provided, including an overview of the
strengths and weaknesses of three key principles that underpin the instrument. The
principles were conceptualized as policy rationales:
### Chart 5  Key Policy Rationales of Tax Increment Financing: Different Perspectives

#### Rationale 1: Function

<table>
<thead>
<tr>
<th>Fiscal Tool</th>
<th>Different Perspectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Projected future tax gains are directed to finance area-specific redevelopment programs and infrastructure projects.</td>
<td>● Tax increment financing promotes economic development without tapping into general funds or levying special assessments on property owners. ● Facilitates investment in public goods type infrastructure through private redevelopment (municipal infrastructure, parks, affordable housing, etc).</td>
</tr>
<tr>
<td></td>
<td>● There is often an insufficient public policy rationale to warrant public sector intervention. ● There is often an insufficient public policy rationale to warrant public sector intervention.</td>
</tr>
</tbody>
</table>

#### Rationale 2: Income Stream

<table>
<thead>
<tr>
<th>Future Property Tax Increment</th>
<th>Different Perspectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Recoups value overtime (ie typically 25 years)</td>
<td>● By recovering value overtime upfront costs are not added (ie levy’s) to the development phase and/or immediate profit return is not required</td>
</tr>
<tr>
<td>● Expected increase (ie the increment) in property taxes is used to raise financing</td>
<td>● Potential to manage public sector financial commitment and financial risk by shifting it to the private sector</td>
</tr>
<tr>
<td>● Earmarked income for climate adaptation investments</td>
<td>● If used extensively by municipality: freezes general tax base for up to 25 years, which impacts on general revenue that supports other public programs and operations</td>
</tr>
<tr>
<td></td>
<td>● Public Sector is exposed to financial risk if based on municipal backed borrowing. If the tax increment does not materialize debt is repaid from the city’s general fund.</td>
</tr>
</tbody>
</table>
3.4.1 Financial Models: basic options

The possible financing vehicles using tax increment financing are diverse with a range of variations, however, three basic options are broadly identified in the literature (Pricewaterhouse Cooper, 2008). These three approaches were presented as a point of departure for session participants to consider, given the three models are relatively straightforward in relation to representations about the degree of risk between the public and private sector:

1. Bond-Funded: the municipality issues bonds secured against the projected tax increment. Revenue Bonds can be used wherein the city and taxpayers are not at risk if TIF revenue is less because bond purchasers shoulder the risk. Alternatively, General Obligation (GO) Bonds are backed by the municipality’s general revenue, which means if the TIF revenue is less than expected, the financial risk rests with the municipality.

2. Municipality-Funded: the municipality borrows to provide the initial capital. The authority then repays the borrowing from the actual tax increment.

3. Developer-Funded: the developer borrows to provide the initial capital. The municipality then reimburses the developer using the actual tax increment which

---

**Chart 5 Key Policy Rationales of Tax Increment Financing: Different Perspectives**

<table>
<thead>
<tr>
<th>Rationale 3: Market Stimulation</th>
<th>Different Perspectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Added Value</strong></td>
<td><strong>Strengths</strong></td>
</tr>
<tr>
<td>• Assumes new infrastructure will attract new investment activity and increase property values</td>
<td>• Acts as a catalyst for private sector investment to create more jobs and expand the city’s tax base.</td>
</tr>
<tr>
<td>• Capitalizes investment in property value</td>
<td>• Investments improve local amenities and services</td>
</tr>
</tbody>
</table>
the developer uses to repay its borrowing. This method shifts the risk from the municipality to the developer.

During the gaming sessions participants considered the advantages and disadvantages of the models, in addition to offering further variations to shift and/or share financial risk between the public sector and market-players.

4.0 Simulation Game Sequencing and Materials

The simulation game sessions were undertaken in several stages. The following provides a brief description of pre-game stage and phases within the simulation game itself. Figures 2 to 13 illustrates the simulation game package.

4.1 Pre-Game:
- One week prior: participants received an information package (see figures 2 to 6) up to one week prior to the session. The package contained the following:
- Letter from the researchers confirming logistical details and role description
- Simulation Material:
  - Invitation from the Mayor of Watervliet
  - Letter from national government
  - Two fictional newspaper articles from a local newspaper
- Upon arrival to the simulation session (see figures 7 to 12):
- Questionnaire: participants completed it on an individual basis
- Watervliet redevelopment project budget
- Brochures explaining tax increment financing and ‘green’ infrastructure

4.1.1 Simulation Session:
The simulation game is structured around three distinct phases. The intent is to produce sufficient flow that mimics the policy-process to create psychological fidelity\(^1\) (Lukosch & Bekebrede, 2014), which includes unexpected events (Duke, 1980) that are beyond the control of the participants. The phases are designed to provide participants with sufficient information in which to base their recommendation, to provoke discussion and manage the participants through a thinking process, including introducing a degree of tension, yet it is entirely led by the group itself. No formal facilitation or intervention by the researchers is included. As a group self-driven process, it allows sufficient room for participants to work with the materials and to structure the debate without influences arising from the researchers. Yet, the events

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\(^1\) According to Lukosch and Bekebrede, psychological fidelity relates to the degree to which a game matches the emotional and cognitive perceptions of the players, which includes, the play process and flow of the game (2014).
introduce new information, thereby focusing players attention on particular issues, and the distinct phases structures the process around the task of devising a recommendation.

**Phase One:** begins with a presentation by the Mayor to the group. The purpose of the presentation is to describe the scenario to participants, thereby setting up the problems and tensions. The problems and tensions are nested in the scenario, in what Duke refers to as ‘the pulse’ (1980). According to Duke, the pulse compels players to focus on a shared phenomena. The Mayor kept in the role throughout the duration of the simulation in order to maintain what Klabbers (2009) refers to as ‘the magic circle’. This phase of the simulation was styled on a meeting of professionals wherein the Mayor briefs participants about the project and the new financial instrument that they have been invited to analyze and make a recommendation to the Watervliet City Council.

**Phase Two:** participants engage in a ‘brainstorm’ session wherein participants discuss whether property tax, as the income source of tax increment financing, is it the right income stream to support localize investments in climate adaptation, whether it is a potential instrument for the Watervliet Safe Haven Project, and whether there is a way to tailor the instrument that is specific to the Dutch socio-political context. During this phase, the Mayor provides three pieces of information: 1) a press release from the City’s public relations department announcing the relocation of a large investor into the redevelopment project area; 2) a newspaper article announcing further budget cuts from the national government for city services and; 3) a petition from citizens from the abutting neighbourhood protesting that they also experience flooding and it is unfair that only a community with market potential will receive long term investment to address flooding issues.

**Phase Three:** the group is asked to make their final recommendation using a report template (figure 13), which was based on a conventional government format. A laptop is provided and the report template is projected onto a screen to facilitate group interaction and discussion over the reasons and final recommendation.

![Den Haag Session](image-url)
Figure 2  Pre-Game Package: cover of Watervliet Safe Haven simulation game information package
Geachte Mevrouw Jaffris;

Betrek: Uitnodiging

Gemeenschappelijke Werkgroep Veilige Haven

Op basis van uw vooruitstrevende denkwerk in veel projecten in onze stad nodig ik u hierbij uit deel te nemen aan de Gemeenschappelijke Werkgroep Veilige Haven, voor een uitdagend, nieuw, lange termijn herontwikkelingsinitiatief. Het gaat om een zeer belangrijk project voor onze stad, waarmee wij vele doelen kunnen bereiken die onze lokale economie zullen verbeteren en aangename plekken zullen creëren om te leven, werken en spelen. Dit project is een kans om onze prachtige stad in de schijnwerpers te zetten en innovatief denkvermogen en slimme oplossingen te tonen voor een grote uitdaging: klimaatverandering. We hebben een nieuwe en vernieuwde publieke infrastructuur nodig die veerkrachtig is en gemaakt voor het omgaan met de uitdagingen die extreme weersomstandigheden met zich mee zullen brengen. Alle nieuwe investeringen in de publieke infrastructuur moeten bestaan uit proactieve, duurzame en kostenefficiënte oplossingen die aangepast kunnen worden aan onzekere klimaatinvloeden.

Figure 3  Pre-Game Package: invitation letter from Mayor to participant
Het doel van de Gemeenschappelijke werkgroep is het Speciale Projectteam van de burgemeester te adviseren bij het ontwikkelen van een financiële visie die het ontwikkelingsprogramma zal ondersteunen. Ik ben me ervan bewust dat het vinden van financiering in tijden van economische druk een obstakel kan zijn. Maar dat mag ons niet tegenhouden. Wij moeten creatieve manieren vinden om de middelen en instrumenten die wij in het planningsproces tot onze beschikking hebben efficiënt te gebruiken. Ik ben recentelijk teruggekeerd van een onderzoeksreis naar de Verenigde Staten en het Verenigd Koninkrijk. Ondanks vergelijkbare financiële uitdagingen, vinden gemeenten daar manieren om lange termijn investeringen te stimuleren. Zij gebruiken bijvoorbeeld een financieel mechanisme met de naam tax increment financing. Dit instrument leidt verwachte toekomstige inkomsten uit de OZB terug naar het herontwikkelingsgebied door er onderdelen van het project mee te financieren, zoals de publieke infrastructuur. Misschien moeten wij ook nadenken over hoe wij de OZB effectiever kunnen gebruiken en misschien is er een “Made in the Netherlands” benadering die van betekenis kan zijn voor ons. Echter, ik laat de beoordeling daarvan, en het geven van aanbevelingen, over aan het projectteam en de Gemeenschappelijke Werkgroep. Meer informatie over het mechanisme zal gegeven worden tijdens de bijeenkomst van 1 april.

Bij deze uitnodiging vindt u een brief van Minister van Infrastructuur en Milieu Jos Onderwater, waarin staat dat ons initiatief niet in aanmerking komt voor financiering van het Rijk.

Ik zie ernaar uit op de hoogte te blijven over de voortgang van de Gemeenschappelijke Werkgroep. Ik verwacht dat u een uitstekende vooruitstrevende bijdrage aan dit boeiende project zult leveren.

Met vriendelijke groeten,

Astrid Dijkstra
Burgemeester van Watervliet

Figure 3 Continued
1 Maart 2014

Burgemeester Astrid Dijkstra
Gemeente Watervliet
Watervliet Plein 100
Watervliet

Geachte burgemeester Dijkstra,

_Betreft: Verzoek om financiering: herontwikkelingsproject Veilige Haven_

Het verheugd mij te vernemen dat Watervliet doorpakt met een ambitieus initiatief als project _Veilige Haven_. De projectomschrijving is visionair en de speciale focus op de noodzakelijke investeringen in de publieke infrastructuur om klimaatverandering te adresseren is vooruitstrevend. Het is zeer bemoedigend te weten dat u dergelijke proactieve stappen neemt en belangrijk leiderschap op dit gebied laat zien, aangezien niet alle steden in Nederland inzien dat dit een essentieel onderdeel is van planning voor de toekomst.

Ondanks mijn grote respect voor uw initiatief kan het Ministerie van Infrastructuur en Milieu echter geen budget beschikbaar stellen voor dergelijke investeringen. Op basis van uitgebreid onderzoek en consultatie van belanghebbenden is vastgesteld dat investeringen die klimaatverandering adresseren gefinancierd moeten worden door gemeenten met gebruikmaking van bestaand investeringsbeleid en bestaande processen voor ruimtelijke ordening. Hoewel we ons realiseren dat het een complexe onderneming is, zijn we er zeker van dat gemeenten voldoende financiële instrumenten tot hun beschikking hebben op basis van verschillende inkomstenstromen en effectieve gebruik van onder andere heffingen, belastingen en daaraan gerelateerde marktactiviteiten die beschikbaar zijn in het gebiedsontwikkelingsproces.

Ik vertrouw erop dat u innovatief leiderschap zult tonen en een strategie zult ontwikkelen specifiek voor en passend bij uw stad.

Met vriendelijke groeten,

Minister Jos Onderwater
Ministerie van Infrastructuur en Milieu

_Figure 4_ Pre-Game Package: Letter from Ministry of Infrastructure and Environment to the Mayor of Watervliet
Nieuwsflits: Burgemeester lanceert visionair plan – Project Veilige Haven

Waterschapsbouwer Dijkzaan van Waterfliet, londige vrachtschepen loslatend tegen de havenpoort van Den Haag, volstaat niet met een traditieel havenplan. Een nieuw woningbouw project voor het westelijk deel van de haven. De bouw van de haven kan het initiatief van burgemeester Wouter Bos van Den Haag in zijn voorzitter van een nieuwe haven developpant. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. 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De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieuw concept voor de haven zijn. De bouwplannen voor het westelijk deel van de haven moeten een nieu.
Appendix 3: Chapter 5 and chapter 6 | 235

**Figure 6** Pre-Game Package: Newspaper article/negative
Figure 7  Provided upon arrival to simulation: information on tax increment financing (brochure cover)
Figure 8  Provided upon arrival to simulation: information on green/blue infrastructure (brochure cover)
Begroting Project Veilige Haven: 
Kostenraming en faseringsstrategie

De begroting van Project Veilige Haven geeft een kostenraming voor een periode van 20 jaar, gebaseerd op een faseringsstrategie per 5 jaar. De kosten van de projectontwikkeling zijn gericht op drie investeringsonderdelen:
1) bouwrijp maken van de grond en bouw van conventionele boven- en ondergrondse infrastructuur (grijs);
2) nieuwe wijkvoorzieningen, zoals een wijkcentrum and recreatieszones;
3) nieuwe infrastructuur om de uitdagingen van klimaatverandering het hoofd te bieden (groen/blauw).

De financieringsbronnen die het ontwikkelingsprogramma ondersteunen bestaan uit de opbrengsten uit de verkoop van grond, uit subsidies en de verhurru van onroerend goed. Dit zijn de conventionele onderdelen van het bedrijfsplan. Echter, omdat de interesse van de markt hield de begroting een gat van 10%. Om dat gat te vullen zijn de verwachte toekomstige OZB-inkomsten uit woon- en bedrijfsvastgoed die naar verwachting in de komende 25 jaar gerenoveerd worden in de begroting opgenomen. De strategie zal verwesenlijkt worden met het tax increment financing mechanisme.

Figure 9 Provided upon arrival to simulation: Watervliet Project Budget/10% Gap
Steden in de knel: verdere korting van financiering verwacht

Watervliet - Een decreet van de begane grond van 360 miljoen euro op de infrastructuurzorg in de Nederlandse gemeenten en provincies heeft het verschepen aan verschillende zaken op de agenda van de gemeentenlijst. De bekendste daarvan is de midden van deze zomer al geplaatst: de hernieuwde benadering van de gemeentelijke financiën.

De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieuw en is weer met een nieuwe voorzichtigheid. Nu haastig worden de nummers nog steeds maar al te vaak met een brede kant te maken met de financiële omstandigheden. De benadering trekt al opnieu

Nog 3 aanhoudingen in grote hennep- en witwasaak


Waterliet - Watervliet Boys lijd ruim 24 miljoen verlies

Fië, vandaag zijn de openingen van de nieuwe schooljaar en de reïntegratie van de atleten in de jeugdvoetbal voorbereid. Watervliet Boys lijd ruim 24 miljoen verlies. De club is in financiële zorg, maar de voorspellen voor de komende periode zijn onzeker. De club is in financiële zorg, maar de voorspellen voor de komende periode zijn onzeker. De club is in financiële zorg, maar de voorspellen voor de komende periode zijn onzeker. De club is in financiële zorg, maar de voorspellen voor de komende periode zijn onzeker. De club is in financiëne

Figure 10 Information received during simulation: newspaper article/national government announces reduced funding for Dutch municipalities
PERSBERICHT

ACME N.V. kondigt verhuizing aan naar gebied van Project Veilige Haven

1 april 2014

De voorzitter van de Raad van Bestuur van ACME N.V. vertelde vaar middag op een druk bezochte persconferentie dat de wereldspeler in semiconductortechnologie gaat verhuizen naar het centrum van Watervliet. Naast de opening van een nieuw hoofdkantoor en productievestiging belooft ook het onderzoeks- en ontwikkelingswerk veel nieuwe kenniswerkzaamheden aan te trekken, net als innovatieve spin-off bedrijven.

De directeur Economische Ontwikkeling van Watervliet was zeer verheugd over deze aankondiging en verklaarde dat dit het resultaat was van een proactieve strategie om nieuwe en innovatieve bedrijven naar Watervliet te trekken. "We denken dat de voorzieningen en het leven in Watervliet een enorme aantrekkracht hebben. De nieuwe ontwikkelingsvisie van Project Veilige Haven heeft ons mede geholpen bij het presenteren van onze stad als een toekomstgerichte plek". Het ontwikkelingsplan van Project Veilige Haven is nauw verbonden met de andere kernplannen van Watervliet voor groene, duurzame, sociale en economische ontwikkelingsinitiatieven.

Figure 11 Information received during simulation: City of Watervliet press release/commitment by large investor employer to city centre
Buurtpetitie:

Wij willen nu actie!

Dit is de verwachte overstroming in 2050.
Waarom is er géén geplande investering in onze buurt?

Hier komt Project Veilige Haven.
Investeringen zijn hier wel gepland om bedrijven te beschermen.

Plaats je handtekening en steun deze petitie!

Naam: Karen Vissers .......................... Naam: Peter Bootsma
Adres: Keerkrade 15, Watervliet .......................... Adres: Rivierstraat 103A, Watervliet
Handtekening: ........................................ Handtekening: ........................................

Figure 12  Information received during the simulation: neighbourhood petition against redevelopment project
Datum: 15 april 2014

Item 10:
Wijkherstructureringsproject Veilige Haven

Financiële strategie voor publieke infrastructuur – Gebruik van Tax Increment Financing

Aanbevelingen van de commissie
1. Het special projectteam van de burgemeester adviseert dat:

Samenvatting

Het wijkherstructureringsproject Veilige Haven is aangekondigd op 2 maart 2014. De bedoeling van dit project is om het centrum van de stad te revitaliseren door er nieuwe residentiële en commerciële toepassingen te introduceren, samen met een aanzienlijke vernieuwing en herinrichting van de publieke infrastructuur in het gebied. De lange termijn doelstelling van het plan is te reageren op klimaatverandering, en zeker te stellen dat Watervliet beschikt over een lange termijn investeringsstrategie en profiteert van de kansen die de herontwikkeling biedt om de openbare dienstverlening naar een hoger niveau te tillen. De burgemeester heeft een Speciaal Projectteam geformeerd van senior gemeentemedewerkers om potentiële nieuwe financieringsmechanismen te overwegen voor verbetering van het financiële plan. De medewerkers is gevraagd hun aanbevelingen over de toepassing van een mechanisme met de naam Tax Increment Financing (TIF) direct te rapporteren aan de gemeenteraad. De doelstelling van het creëren van een TIF-gebied is om de toename van OZB-inkomsten, die naar verwachting gegenereerd wordt uit de investeringen in het ontwikkelingsgebied, af te vangen. Dit verwachte inkomsten kan gebruikt worden als hefboom om private financiering bijeen te brengen (gebaseerd op verschillende financieringsmodellen) die wordt terugbetaald uit het toekomstige inkomsten, of er kunnen investeringen gedaan worden op basis van het in de loop der tijd werkelijk bijeengebrachte inkomsten. TIF brengt een aantal risico’s en voordelen met zich mee. De volgende sectie biedt een samenvatting van de beoordeling die bovenstaande aanbeveling ondersteunt.

Figure 13  Information received during the simulation: recommendation to Watervliet City Council template used by participants
4.1.2 Watervliet Safe Haven Simulation Game: Questionnaires

Original English Version: Pre & Post Simulation Game Questionnaires

A. Pre-Game Questionnaire

Section 1

Please circle the category that describes your personal information. In the section identified as “other” please insert a response or indicate that you decline to provide this information.

<table>
<thead>
<tr>
<th>Socio Demographic: base your answer on your personal situation, not based on the your that you will play in the simulation.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Field of Expertise</td>
</tr>
<tr>
<td>Population Size of Municipality</td>
</tr>
<tr>
<td>How long have you worked at the municipal level of government?</td>
</tr>
<tr>
<td>How long have you worked for the municipality where you are currently employed?</td>
</tr>
<tr>
<td>Does the municipality that you work for have a policy framework that specifically recognizes climate adaptation?</td>
</tr>
<tr>
<td>Have you given policy or planning advice in relation to climate adaptation?</td>
</tr>
</tbody>
</table>
Other

<table>
<thead>
<tr>
<th>You work for one of the following governmental organizations.</th>
<th>Municipality</th>
<th>Province</th>
<th>National</th>
<th>Government organization (Which type): None</th>
</tr>
</thead>
<tbody>
<tr>
<td>In which sector do you work&gt;</td>
<td>Private sector</td>
<td>Non-governmental organization</td>
<td>Other, namely:</td>
<td></td>
</tr>
<tr>
<td>Do you advise municipalities on their finances?</td>
<td>No</td>
<td>Yes</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Do you advise developer about financing?</td>
<td>No</td>
<td>Yes</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Have you given policy or planning advice about climate adaptation?</td>
<td>No</td>
<td>Yes</td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

Section 2

Instructions:

This section begins with a brief background statement. Thereafter you find four themes with statements and you are asked to indicate to what extent you agree with them. Please read each statement and put an “X” in the box that most closely reflects your opinion. The answer options range from strongly agree to strongly disagree. For example, if you agree with the statement: “The scientific evidence that the climate is changing is certain” you would put an “X” in the box “Agree”.

Please respond to the statements based on:
• Your professional experience and opinion

Background Information:

Scientific evidence suggests that long-term climate adaptation is needed at the local level. To be more resistant to weather conditions as strong winds, frequent and heavy rainfall and higher temperatures, investments and new forms of physical public infrastructure will be required, though it will not be the same for every municipality. Alternative methods to mitigate future adverse effects, or to exploit potential benefits, such as permeable paving, renovation of existing systems to separate storm and sewage, increase in urban areas, strategic use of green spaces and tree-planting, extra space for water storage and improved surface water drainage will likely reduce the negative impacts of climate change.
2a) Adaptation to Climate Change
(if you do not work for a municipality go to section 2c)

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific evidence has sufficiently demonstrated that the climate is changing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local government should plan for long-term climate change.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We need more information about what we should be planning for in our local area.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is unclear when we should be making investments in adaptation to climate change.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate change is increasingly a consideration in our spatial and capital planning process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The municipal level of government should play a key role in adaptation to climate change in the following areas:

- Policy-making
- Spatial Planning
- Implementation Providing information to citizens
- Providing necessary funding

The remaining statements relate to possible financing instruments that could be used to support or facilitate investment in climate change adaptation. Please tick the answer that is most in line with your views and knowledge as identified in the statement.
**2b) Funding Local-Level Climate Adaptation**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no plans to include new types of public infrastructure or to retrofit existing infrastructure in relation to climate adaptation in our budgeting process.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are plans in our budget that included public infrastructure investments in relation to climate adaptation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Our budgeting priority is focused on delivering services and programs that are regulatorily required by the municipal level of government.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**2c) If you do not work for a municipality**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speciale financiering is niet nodig, aangezien investeringen in klimaatadaptatie moeten worden in het normale budgetteringsproces.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circle the role that you think local government should play in adapting to climate adaptation.</td>
<td>Policy maker</td>
<td>Spatial planning</td>
<td>Implementation</td>
<td>Information to citizens</td>
</tr>
</tbody>
</table>

**2d) Possible Policy Instruments to Fund Climate Adaptation Investments in Public Infrastructure**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Municipally-led actions using one or more income streams</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Development levies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Sewer levies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Advertisement levies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
o Residential property taxes
o Commercial property taxes
o Proceeds from land development
o Proceeds from real estate leasing
o Grants from national government
o Private financing
b. Regulatory requirements in the development process
c. Negotiation and consultation with marketplayers (private contracts)
d. Incentives for private investors
  o Tax rebates
  o Development costs reductions
  o Government Grants

<table>
<thead>
<tr>
<th>2e) Residential and Commercial Property Taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

The role of property taxes is to support local programs and services that cannot be fully funded by the Municipal Fund.

Property taxes are a source of income for area-specific public infrastructure investments.

Property taxes are too low to be a significant investment income stream for public infrastructure.
Property taxes are a stable income source of municipal governments that could support long-term public infrastructure financing strategies. Politicians will not increase the property taxation rate because taxpayers already think rates are too high.

Section 3

<table>
<thead>
<tr>
<th>Language Considerations</th>
<th>No Problem</th>
<th>No Problem (but not optimal)</th>
<th>Rather Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you think if the briefing at the end in English?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What do you think if the briefing at the end in English and you are also free to respond in Dutch?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. Post Game Questionnaire

*Instructions:*
There are four themes for you to respond to. Please read each statement within each theme and put an “X” in the box that most closely reflects your opinion. For example, one of the statements says: “The urgency to invest in climate change drove the rationale”. If you strongly agree with that statement mark the box with an “X”, if you disagree or are uncertain mark one of those boxes with an “X”.

Please respond to the statements based on:
- Your professional experience and opinion
- The experience of playing the simulation game

In the first part we were interested in your opinion what were the main factors to arrive at the recommendations to the Council. The next two sections want to find out about your opinion of Tax Increment Financing, in general, and with respect to the potential to use this tool for long-term investment to mitigate climate change. The statements concern in particular the question of which model of TIF you think is best. We would like to know if your opinion has changed since that planning instruments and whether the workshop for you has been instructive in the latter parts. We ask you to indicate the extent to which the simulation provided a realistic scenario to try out new planning instrument.

<table>
<thead>
<tr>
<th>Reasons for the Recommendation to the City Council</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The urgency to invest in climate change was an important reason for the recommendation to City Council.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The political urgency drove the rationale and recommendation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No strong reason other than we had to get everybody to agree for the report to city council.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: according to you, what the driving force behind the recommendation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Using Tax Increment Financing

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property taxes are not meant to be used for area redevelopment budgets.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Committing future property tax income is too financially risky.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If property taxes were higher, then TIF would be a new effective investment instrument.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spreading the cost into the future makes sense in relation to long-term public investments needed for climate adaptation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Provide Your Opinion: Tax Increment Financing

<table>
<thead>
<tr>
<th>Potential Instrument</th>
<th>Uncertain</th>
<th>No Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area Investments</td>
<td>Climate Adaptation Investments</td>
<td>Klimaat-adaptatie</td>
</tr>
<tr>
<td>Climate Adaptation</td>
<td>Klimaat-adaptatie</td>
<td></td>
</tr>
</tbody>
</table>

Repayment of Debts with Future Value Bonds

- Revenue (private investors bear risk)
- General Obligation (general city budget guarantees debt)

Borrowing

- Developer (tax rebate)
- Municipal (private financing)

Organic and Incremental

- Pay-as-you-go
- Individueel (tax rebate)
- Rainy Day Funds
- Revolving Funds
## Reality Check and Learning Effects

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Uncertain</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The recommendation to the City Council was realistic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The scenario that was used for the simulation was realistic and provided a basis for developing the recommendation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The simulation helped me to learn about…</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A new financing instrument.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How my colleagues responded to this new financing mechanism.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>About the challenges in relation to investing in climate adaptation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Translated into Dutch: Pre and Post Game Questionnaires

**A. Pre-Game Questionnaire**

Nijmegen/9 April/10:00-13:00
Speciaal Projectteam

Vragenlijst vooraf

**Deel 1**

Omcirkel het antwoord die uw persoonlijke situatie het best omschrijft. Een ander antwoord of een weigering te antwoorden kunt u kwijt in de categorie ‘anders’.

<table>
<thead>
<tr>
<th>Sociaal-demografische informatie:</th>
<th>Baseer uw antwoord op uw persoonlijke situatie, niet op de rol die u speelt in de simulatie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leeftijd</td>
<td>20-30</td>
</tr>
<tr>
<td>Geslacht</td>
<td>Vrouw</td>
</tr>
<tr>
<td>Vakgebied</td>
<td>Stedenbouwkunde</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gemeenteambtenaren</th>
<th>Minder dan 20,000 inwoners</th>
<th>20,000 - 50,000 inwoners</th>
<th>50,000 - 100,000 inwoners</th>
<th>Meer dan 100,000 inwoners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoeveel jaar heeft u op gemeentelijk niveau gewerkt?</td>
<td>1-5 jaar</td>
<td>6-15 jaar</td>
<td>16-25 jaar</td>
<td>25+ jaar</td>
</tr>
<tr>
<td>Hoe lang werkt u al bij uw huidige gemeente?</td>
<td>1-5 jaar</td>
<td>6-15 jaar</td>
<td>16-25 jaar</td>
<td>25+ jaar</td>
</tr>
<tr>
<td>Heeft uw huidige gemeente beleid dat specifiek is gericht op klimaatadaptatie?</td>
<td>Ja</td>
<td>Nee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heeft u beleids of planadvies gegeven over klimaatadaptatie?</td>
<td>Ja</td>
<td>Nee</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Anders**

<table>
<thead>
<tr>
<th>Bent u in dienst van een van de volgende overheidslagen of organisaties?</th>
<th>Gemeentelijk</th>
<th>Provinciaal</th>
<th>Nationaal</th>
<th>Overheidsorganisatie (welk type):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nee</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Deel 2

Aanwijzingen:
Dit onderdeel begint met een alinea met achtergrondinformatie. In het vervolg wordt u enkele stellingen voorgelegd, met de vraag aan te geven in welke mate u het hier mee eens bent. Lees elke stelling en zet een “X” in het vakje dat het meest in lijn is met uw mening. De mogelijke antwoorden lopen van sterk mee eens tot sterk mee oneens. Een voorbeeld, als u het eens bent met de stelling: “Er is voldoende wetenschappelijk bewijs voor de stelling dat het klimaat verandert”, zet dan een “X” in het vakje onder “Mee eens”.

Laat uw antwoorden afhangen van:
• uw professionele ervaring en mening

Achtergrondinformatie:
Wetenschappelijk bewijs doet vermoeden dat op de lange termijn klimaatadaptatie op lokaal niveau noodzakelijk is. Om beter bestand te zijn tegen meteorologische omstandigheden als harde wind, veelvuldige en zware regenval en hogere temperaturen zijn waarschijnlijk nieuwe investeringen in en nieuwe vormen van fysieke publieke infrastructuur vereist, al zullen deze maatregelen niet voor elke gemeente hetzelfde zijn. Alternatieve methodes om toekomstige negatieve effecten te ondervangen, of om potentiële voordelen te benutten, zijn doorlatende bestrating, vernieuwing van bestaande systemen om storm- en riolwater te scheiden, verhoging van stedelijke gebieden, strategische inzet van groengebieden en bomenplant, extra ruimte voor wateropslag en verbeterde bovengrondse afwatering.
2a) Aanpassing aan Klimaatverandering
*(Als uw niet een Gemeenteambtenaren, → Deel 2c.)*

<table>
<thead>
<tr>
<th>Sterk mee eens</th>
<th>Mee eens</th>
<th>Onzeker</th>
<th>Mee oneens</th>
<th>Sterk mee oneens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Er is voldoende wetenschappelijk bewijs voor de stelling dat het klimaat verandert.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De lokale overheid moet nu plannen maken voor lange termijn klimaatverandering.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We hebben meer informatie nodig over de vraag waarvoor we in onze gemeente moeten plannen.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Het is onduidelijk wanneer we moeten investeren in klimaatadaptatie.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speciale financiering is niet nodig, aangezien investeringen in klimaatadaptatie moeten worden in het normale budgetteringsproces.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Omcirkel de rol die de lokale overheid volgens u moet spelen bij klimaatadaptatie. Zet geen, een, of meerdere cirkels.

De resterende stellingen gaan over mogelijke financieringsinstrumenten die gebruikt kunnen worden om investeringen in klimaatadaptatie te ondersteunen of faciliteren. U wordt verzocht het antwoord aan te kruisen dat het meest in lijn is met uw mening en kennis van de situatie die wordt geschetst in de stelling.
2b) Financiering van Klimaatadaptatie op Lokaal Niveau

<table>
<thead>
<tr>
<th>Mee eens</th>
<th>Weet niet</th>
<th>Mee oneens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Er zijn plannen om, met het oog op klimaatadaptatie, nieuwe vormen van publieke infrastructuur in ons begrotingsproces op te nemen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Er zijn plannen in onze begroting om, met het oog op klimaatadaptatie, bestaande infrastructuur her in te richten.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onze budgetprioriteit is gericht op het verlenen van diensten en programma's die juridisch vereist zijn door de gemeente, klimaatadaptatie is hierin geen specifieke prioriteit.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2c) Als uw niet een Gemeenteambtenaren

<table>
<thead>
<tr>
<th>Sterk mee eens</th>
<th>Mee eens</th>
<th>Onzeker</th>
<th>Mee oneens</th>
<th>Sterk mee oneens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omcirkel de rol die de lokale overheid volgens u moet spelen bij klimaatadaptatie. Zet geen, een, of meerdere cirkels.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speciale financiering is niet nodig, aangezien investeringen in klimaatadaptatie moeten worden in het normale budgetteringsproces.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beleids-maken</td>
<td>Ruimtelijke ordening</td>
<td>Uitvoering</td>
<td>Informatie-voorziening aan burgers</td>
<td>Voorzien in financiële middelen</td>
</tr>
</tbody>
</table>
2d) Mogelijke Beleidsinstrumenten om Klimaatadaptatie Investeringen in Publieke Infrastructuur te Financieren

<table>
<thead>
<tr>
<th>Sterk mee eens</th>
<th>Mee eens</th>
<th>Onzeker</th>
<th>Mee oneens</th>
<th>Sterk mee oneens</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Door de gemeente geleide actie gebruikmakend van een of meerdere inkomensstromen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Ontwikkelingsheffingen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Riolheffingen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Advertentie heffingen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o OZB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Niet-Woning OZB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Opbrengsten van grondexploitatie</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Opbrengsten uit verpachting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Toelages van centrale overheid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Private financiering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Regelgeving in bouwen ontwikkelingsproces</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Onderhandeling met marktpartijen (private contracten)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Stimuli voor private investeerders</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Belastingteruggave</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Verminder ontwikkelingskosten</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Overheidstoelages</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2e) Belastingen op Woningen en Commercieel Vastgoed

<table>
<thead>
<tr>
<th>Sterk mee eens</th>
<th>Mee eens</th>
<th>Onzeker</th>
<th>Mee oneens</th>
<th>Sterk mee oneens</th>
</tr>
</thead>
</table>
| Het is de rol van de OZB lokale programma’s en diensten te ondersteunen, die niet volledig kunnen worden gefinancierd door het Gemeentefonds.
De OZB is een inkomstenbron voor gebiedsgebonden publieke infrastructuur investeringen. Inkomsten uit de OZB zijn te laag om een significante inkomstenstroom voor investeringen in publieke infrastructuur te vormen. De OZB is een inkomstenbron van lagere overheden die lange termijn publieke infrastructuur financiering kan ondersteunen. De politiek zal de OZB niet verhogen, aangezien belastingbetalers die nu al te hoog vinden.

Deel 3

Taaloverwegingen | Geen probleem | Moet lukken (maar niet optimaal) | Liever niet
--- | --- | --- | ---
Wat vindt u ervan als de debriefing aan het einde in het Engels is?
Wat vindt u ervan als de debriefing aan het einde in het Engels is en u daarnaast vrij bent in het Nederlands te reageren?
B. Post-Game Questionnaire

Nijmegen/9 April/10:00-13:00
Speciaal Projectteam

Vragenlijst #2

Aanwijzingen:
We willen graag uw mening over vijf thema's. Lees elke stelling en zet een “X” in het vakje dat het meest in lijn is met uw mening. Bijvoorbeeld, een van de stellingen stelt: “De urgentie om in klimaatadaptatie te investeren was de belangrijkste reden voor de aanbeveling aan de gemeenteraad”. Als u het hiermee eens bent, zet dan een “X” in het vakje “Mee eens”. Bent u het er niet mee eens, of weet u het niet zeker, zet dan in die hokjes een “X”.

Laat uw antwoorden afhangen van:
• uw professionele ervaring en mening
• uw ervaringen tijdens het doen van de simulatie

In het eerste onderdeel zijn we benieuwd naar uw mening over wat de belangrijkste factoren waren om tot de aanbevelingen aan de Raad te komen. De daarop volgende twee delen gaan over uw mening over Tax Increment Financing, in zijn algemeen en wat betreft het potentieel dit instrument te gebruiken voor lange termijn investeringsplannen om klimaatverandering te ondervangen. De stellingen gaan met name over de vraag welk model van TIF volgens u het beste is. In de laatste delen willen we graag weten of uw mening ten opzichte van mogelijke planologische instrumenten is veranderd en of de workshop voor u leerzaam is geweest. We verzoeken u de mate aan te geven waarin de simulatie een realistische scenario bood om nieuwe planologische instrument uit te proberen.

<table>
<thead>
<tr>
<th>Redenen voor de aanbeveling aan de gemeenteraad:</th>
<th>Sterk mee eens</th>
<th>Mee eens</th>
<th>Onzeker</th>
<th>Mee oneens</th>
<th>Sterk mee oneens</th>
</tr>
</thead>
<tbody>
<tr>
<td>De urgentie om in klimaatadaptatie te investeren was de belangrijkste reden voor de aanbeveling aan de gemeenteraad.</td>
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<tr>
<td>De politieke urgentie was een belangrijke drijfveer voor de aanbeveling.</td>
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</tbody>
</table>
Niet echt een belangrijke reden, behalve dan dat iedereen het er mee eens moest zijn, zodat we een aanbeveling konden maken.

Anders: wat was volgens u de drijfveer achter de reden?

De volgende afdeling presenteert dezelfde selectie beleidsinstrumenten als werd gepresenteerd in de vragenlijst voor de simulatie. We zijn benieuwd of u uw mening wat betreft de rol die de verschillende instrumenten kunnen spelen bij het faciliteren van lokale investeringen in publieke infrastructuur is veranderd.

<table>
<thead>
<tr>
<th>Potentieel Instrument</th>
<th>Onzeker</th>
<th>Geen Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gebiedsgerichte Investeringen</td>
<td>Klimaatgerichte Investeringen</td>
<td>Klimaatadaptatie</td>
</tr>
</tbody>
</table>

**Terugbetaling van Schulden met Toekomstige Waarde**

**Obligaties**

- Revenue (private investeerders dragen risico)
- General Obligation (algemeen budget ter ondersteuning van financiering)

**Lenen:**

- Ontwikkelaar (belastingteruggave)
- Gemeente (private financiering)

**Organisch enIncrementeel:**

- Pay-as-you-go
- Individueel (teruggave)
Het volgende onderdeel vraagt vanuit twee perspectieven uw mening over de mogelijke toepassing van TIF: 1) Als instrument dat geschikt is voor financiering van gebiedsgerichte publieke infrastructuur in zijn algemeen; 2) en meer in het bijzonder, met betrekking op klimaatadaptatie. U hoeft hier niet uit te kiezen, als u denkt dat TIF goed zal werken in beide gevallen, kunt u ook in meerdere vakjes een kruisje zetten.

De toepassing van OZB: TIF als inkomensstroom

<table>
<thead>
<tr>
<th></th>
<th>Sterk mee eens</th>
<th>Mee eens</th>
<th>Onzeker</th>
<th>Mee oneens</th>
<th>Sterk mee oneens</th>
</tr>
</thead>
<tbody>
<tr>
<td>De OZB moet niet geëxporteerd worden voor gebiedsgebonden ontwikkelingsbudgetten.</td>
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<tr>
<td>Het reserveren van toekomstig inkomen uit de OZB is onder alle economische omstandigheden te riskant.</td>
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<tr>
<td>Als de OZB hoger was, dan zou TIF een effectief nieuw investeringsinstrument kunnen zijn.</td>
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<tr>
<td>Het is zinnig de kosten van lange termijn publieke investeringen in klimaatadaptatie te verspreiden naar de toekomst.</td>
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</table>
### Reality Check en leereffecten

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<thead>
<tr>
<th>Sterk mee eens</th>
<th>Mee eens</th>
<th>Neutraal</th>
<th>Mee oneens</th>
<th>Sterk mee oneens</th>
</tr>
</thead>
<tbody>
<tr>
<td>De aanbeveling aan de Raad was realistisch.</td>
<td>Het scenario dat gebruikt werd in de simulatie was realistisch en volledig genoeg om een aanbeveling te doen.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>De simulatie heeft me wat geleerd over...</strong></td>
<td>Een nieuw financieringsinstrument.</td>
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</tr>
<tr>
<td>Hoe mijn collega’s reageerden op die nieuwe planologisch instrument om lokale investeringen te financieren.</td>
<td>Over de uitdagingen verbonden aan investeren in klimaatadaptatie.</td>
<td></td>
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</table>


References:


Summary
Samenvatting
About the author
Summary

The point of departure of this dissertation was to consider whether the lack of financing instruments is better understood as an outcome rather than a reason for limited municipal actions. That is, the research explored whether this ‘reason’ is substantive in nature or represents a “surface constraint” (Measham et al, 2011). In doing so, the aim is to enrich conceptualizations about the role of institutions in shaping urban planning practitioners’ perspectives about the appropriateness of financing instruments in relation to climate adaptation-related public infrastructure investments. To achieve the aim of the research, four inter-related research questions were identified: 1) What modes of practice and instruments do Dutch spatial planners use to facilitate investment in local public urban infrastructure? 2) Are new municipal instruments necessary to facilitate investment in climate adaptation? 3) Are spatial planning practitioners willing to reinterpret and reshape institutional rules to enable local investment in climate adaptation? and, 4) How can we conceptualize and explain the role of institutions in facilitating local public investments in climate adaptation and in shaping practitioners’ perspectives about the applicability of policy instruments?

The short answer to the research questions identified above is: yes, the findings indicate that there is institutional space and evidence about the willingness to reinterpret the application of existing mechanisms. However, in the case of utilizing existing municipal income in conjunction with a market-based instrument to facilitate local climate adaptation investments, the willingness is limited. Why is it limited? In what way do institutions matter in shaping practitioners’ perspectives about the type of policy implementation instruments that are appropriate to facilitate investment in local climate adaptation?

The Longer Answer:

The findings from this research indicate that the modes of practice and instruments used in Dutch planning and development play a fundamental role in facilitating investment in local public infrastructure. Facilitating investment in climate adaptation is, thus, sensitive to how those practices are played out and what instruments are applied in the process. Actions to reinterpret existing rules as a means to facilitate investment in climate adaptation are underpinned by a complex assortment of rationales. In the Rotterdam case, two key enabling factors were identified (chapter 3). Firstly, organizational support created the conditions to make experimental modifications to existing rules, thereby enabling the ‘climate-proof’ measures to be linked to pragmatic economic objectives – which positioned Rotterdam as an innovative global leader. Secondly, adjustments to existing instruments also reflected
the broader shifting landscape of Dutch planning practice, given the public land development model has been rendered ineffective and the subject of substantial criticism. There are, indeed, degrees of freedom to reinterpret and shape rules to facilitate climate adaptation-related investments during the planning process. The findings also point to the role of formal and informal institutions in limiting the degrees of flexibility, i.e., agency with constraints (chapter 4). Lacking a cohesive set of informal institutional conditions, it is much less likely that practitioners will be in a position to vary how existing instruments are used or to introduce new mechanisms, such as tax increment financing (TIF), to fund local public infrastructure aimed specifically at climate adaptation. Because investing in adaptation confronts practitioners with a set of dilemmas, there is a struggle to reconcile those dilemmas with the need to operationalize adaptation actions using a risk-based instrument (chapter 5). The reluctance to take the plunge of applying a market-based financing instrument is beyond unwillingness to prioritize local adaptation investments, but rather, the findings reveal that practitioners were unable to sufficiently align values and norms with structures that would enable the application of tax increment financing. The question as to whether practitioners are willing to reinterpret, reshape, and bend institutional rules to enable local investment in climate adaptation teased out a response that provides two stark lessons for climate adaptation policy-makers. Firstly, the empirical evidence points to the limited acceptance that a local market-based financing instrument is likely to have in the Netherlands in relation to facilitating adaptation-related investments. Secondly, in contrast, practitioners appeared able to imprint an incrementalism and customize TIF into a ‘made in the Netherlands’ instrument for investments that were conceived of as non-adaptation specific (chapter 6). Here the distinction was drawn between conventional public goods investments and climate adaptation-specific investments. The latter provoked participants of the simulations to simplify the complexity of climate adaptation into a trio of thematic clusters, referred to as institutional dilemmas. The institutional dilemmas functioned as heuristic ‘short-cuts’ by serving as rationales to impose a financial barrier on the climate adaptation investments proposed in the Watervliet Safe Haven game. The financial gap was not necessarily actual, but rather practitioners were unable to fully accept the choice of a financial instrument that could have been used to augment the project budget. This outcome was based on the dynamics of the institutional context and the perceived constraints that were informed by formal and informal institutional rules and the intersection with the dilemmas of climate adaptation. Together these factors shaped perspectives about the limits to applying tax increment financing as a new financial instrument for the Dutch planners’ climate adaptation toolkit.
Contribution to Research and Practice:

Rather than offering further diagnoses or prescriptions, this dissertation contributes to scientific research on the institutional dimensions of adaptation in three ways. Firstly, it substantiates findings from other scholars (Burch, 2010; Hulme, 2009; Juhola, Keskitalo, & Westerhoff, 2011; Wejs, 2014) that establishing a means to bridge the so-called implementation gap is largely not a financial issue nor a problem that can be solely addressed with technical fixes. A new institutional approach revealed that implementation barriers are generally normative in nature and the interplay between 1) the dilemmas associated with climate change, and, 2) the degree of boundedness of planning practice, creates institutional conditions that currently do not stimulate substantial innovation in relation to applying a market instrument based on local revenue to facilitate adaptation investments.

The findings in this dissertation reinforce that the answer of how to facilitate investment during the planning process remains very unclear insofar as planning practitioners remain, broadly speaking, in the phase of testing and experimentation. Moreover, in considering how actions should be financed yet more questions arise largely because the pre-conditions for the financing conversation have not been satisfactorily resolved. Discussions about adaptation to climate change remain within the realm of determining sectoral and jurisdictional roles (i.e. ‘the who’ and ‘the where’), and conceiving of possible strategies (i.e. ‘the what’ and ‘the when’) to reduce the impacts of climate change in urban areas. In order to advance knowledge about how investments can be achieved, research that explores ‘how’ and ‘why’ practitioners are able to reduce complexity to facilitate investment in climate adaptation would be a fruitful line of inquiry. How practitioners interact with different financing instruments could provide indicators about the role of both formal and informal institutional rules in shaping what is deemed appropriate (and possible). That is, what does the response to a particular financing instrument tell us about how the institutional context reinforces organizational (un)certainty about investing in adaptation? Why do practitioners differentiate between affirmative or negative narratives to determine what type of instruments would be deemed appropriate? Do certain financing instruments create dead-ends where other instruments create pathways to implementation? In either case, what do such outcomes tell us about how the institutional dilemmas of climate adaptation could be overcome and why certain governance arrangements would enhance the implementation process?

From a methodological perspective, the study contributes empirically to the adaptation literature as it is based on a multi-dimensional case study strategy using simulation gaming. This adds an exploratory behavioral dimension to the growing academic interest in understanding how individuals and organizations learn to adapt to climate change. In doing so, the findings point to the dynamic process of
organizational learning (Berkhout et al., 2006) and the ‘little ways’ that are applied in the flow of practice that change perceptions and shape decisions (Healey, 2009). In the context of this research, the findings add to knowledge about how practitioners construct meanings in relation to the appropriateness of certain financing instruments. The analysis reveals that, indeed, if the issue about investing in climate adaptation is primarily about the availability of financial resources, the answer would be substantially more straightforward. In the Dutch context, to be in-step with the current socio-political conditions, I extrapolate that a market-based financing instrument in relation to climate adaptation would need to be aligned with several attributes. That is, to overcome a financial gap, the design of a market-based instrument would need to align with the following principles: incrementalism; long term financial risk management; and risk sharing between stakeholders. In that sense, understanding what type of instruments align with those attributes may be a more successful strategy than pre-identifying an instrument and forcing a fit.
Samenvatting

Het uitgangspunt van dit proefschrift was de stelling of het gebrek aan financierings-instrumenten eerder dient te worden opgevat als een resultaat van dan als een reden voor beperkte gemeentelijke maatregelen. Er is dus onderzocht of deze ‘reden’ substantief van aard is of een “oppervlakkige beperking” betreft (Matthews, 2013). Het doel hierbij is te komen tot een rijkere beeldvorming over de rol van instanties bij het vormgeven van de standpunten van stedenbouwkundigen over de geschiktheid van financieringsinstrumenten in relatie tot investeringen in de openbare ruimte die verband houden met klimaatadaptatie. Om het onderzoeksdoel te realiseren zijn er vier samenhangende onderzoeksvragen opgesteld: 1) Van welke praktijken en instrumenten maken Nederlandse planologen gebruik om investeringen in de lokale openbare stedelijke infrastructuur te faciliteren? 2) Zijn er nieuwe gemeentelijke instrumenten nodig om de investering in klimaatadaptatie te financieren? 3) Zijn planologen bereid institutionele regels te herinterpreteren en opnieuw vorm te geven om zo lokale investeringen in klimaatadaptatie mogelijk te maken? En, 4) Wat is een goede definitie en uitleg van de rol van instanties bij het faciliteren van plaatselijke investeringen in klimaatadaptatie en bij het vormen van de standpunten van planologen over de geschiktheid van beleidsinstrumenten?

Het korte antwoord op bovenstaande onderzoeksvragen is dat de bevindingen laten zien dat er binnen instanties ruimte en bewijs is voor de bereidheid om de toepassing van de bestaande mechanismen te herinterpreteren. Deze bereidheid is echter beperkt als er bestaande gemeentelijke inkomsten, in combinatie met een markt-instrument, gebruikt moeten worden om lokale investeringen in klimaatadaptatie te financieren. Waarom is deze bereidheid beperkt? Welke rol spelen instanties bij het vormen van de standpunten van planologen over welk type instrumenten voor beleidsimplementatie geschikt zijn voor het faciliteren van lokale investeringen in klimaatadaptatie?

Het langere antwoord:

De bevindingen uit dit onderzoek laten zien dat de praktijken en instrumenten die bij de Nederlandse planning en ontwikkeling worden gebruikt, een fundamentele rol spelen bij het faciliteren van investeringen in de lokale publieke infrastructuur. Het faciliteren van investeringen in klimaatadaptatie is dus gevoelig voor de manier waarop deze praktijken worden uitgevoerd en welke instrumenten tijdens het proces worden ingezet. Maatregelen om bestaande regels te herinterpreteren om zo investeringen in klimaatadaptatie te faciliteren, berusten op een complexe reeks motieven. In het
geval van Rotterdam werden er twee sleutelfactoren vastgesteld (hoofdstuk 3). Ten eerste heeft organisatorische ondersteuning ervoor gezorgd dat de bestaande regels experimenteel gewijzigd konden worden. Hierdoor konden de ‘klimaatbestendige’ maatregelen worden gekoppeld aan pragmatische economische doeleinden, waarmee Rotterdam als wereldleider op het gebied van innovatie kon worden gepositioneerd. Ten tweede vormen de aanpassingen van de bestaande instrumenten ook een weerspiegeling van de bredere verschuiving binnen het Nederlandse planningslandschap, aangezien het model van ruimtelijke ordening niet effectief is gebleken en daarmee het onderwerp van veel kritiek is geworden. Er is inderdaad flexibiliteit om tijdens het planningsproces regels te herinterpreteren en te hervormen om zo investeringen in klimaatadaptatie te faciliteren. De bevindingen wijzen ook op de rol van formele en informele instanties bij het beperken van deze flexibiliteit, d.w.z. keuzebeperking door instanties (hoofdstuk 4). Aangezien er een samenhangende reeks informele institutionele voorwaarden ontbreekt, is het onwaarschijnlijk dat planologen iets te zeggen krijgen over de manier waarop bestaande instrumenten worden gebruikt of nieuwe mechanismen kunnen introduceren, zoals een belastingverhoging als financieringsinstrument voor een lokale publieke infrastructuur die specifiek op klimaatadaptatie is gericht. Investeringen in klimaatadaptatie leiden ertoe dat planologen met een reeks dilemma’s worden geconfronteerd. Er wordt naar gestreefd deze dilemma’s te verzoenen met de noodzaak om adaptatiemaatregelen in de praktijk te brengen met behulp van een risicogebaseerd instrument (hoofdstuk 5). De aarzeling om een op marktwerking gebaseerd financieringsmiddel in te zetten gaat verder dan onwil om prioriteit in lokale adaptatie-investeringen aan te brengen. De bevindingen laten echter zien dat het planologen onvoldoende is gelukt waarden en normen af te stemmen op structuren die financiering door belastingverhoging mogelijk zouden maken. De vraag was ook of planologen bereid waren tot het herinterpreteren, hervormen en ombuigen van institutionele regels om lokale investeringen in klimaatadaptatie mogelijk te maken. Deze vraag bood beleidmakers op het gebied van klimaatadaptatie twee confronterende antwoorden. Ten eerste blijkt uit empirisch bewijs dat een op marktwerking gebaseerd, lokaal financieringsinstrument in Nederland slechts beperkt geaccepteerd zal worden om investeringen in klimaatadaptatie te financieren. Ten tweede bleken planologen echter wel in staat tot incrementalisme en aanpassing van het financieringsinstrument van belastingverhoging tot een ‘typisch Nederlands’ financieringsinstrument voor investeringen die als niet-adaptatiespecifiek werden gezien (hoofdstuk 6). Hierbij werd onderscheid gemaakt tussen conventionele investeringen in publieke goederen en klimaatadaptatiespecifieke investeringen. Deze laatste categorie zette deelnemers aan de simulaties ertoe de complexiteit van klimaatadaptatie terug te brengen tot een drietal thematische clusters, oftewel institutionele dilemma’s. Deze institutionele dilemma’s functioneerden als heuristische ‘short-cuts’ die dienden als redenen om
een financiële drempel op te werpen voor de investeringen in klimaatadaptatie die in het spel ‘Watervliet Safe Haven’ werden voorgesteld. Deze financiële kloof was niet noodzakelijkerwijs realiteit, het probleem was eerder dat planologen zich niet volledig schaarden achter de keuze voor een financieel instrument waarmee het projectbudget verhoogd had kunnen worden. Deze situatie was gebaseerd op de dynamiek van de institutionele context en de vermeende beperkingen die het gevolg waren van formele en informele institutionele regels en het raakvlak met de dilemma’s van klimaatadaptatie. Deze factoren tezamen bepaalden het standpunt van de Nederlandse planologen over de grenzen waarbinnen belastingverhoging kon worden ingezet als nieuw financieringsinstrument voor investeringen in klimaatadaptatie.

Bijdrage aan onderzoek en praktijk:

Dit proefschrift biedt geen verdere diagnoses of oplossingen, maar levert wel op drie manieren een bijdrage aan wetenschappelijk onderzoek naar de institutionele dimensies van adaptatie. Ten eerste onderbouwt het de bevindingen van overige wetenschappers (Burch, 2010; Hulme, 2009; Juhola, Keski-Kuha, & Westerhoff, 2011; Wejs, 2014) dat het tot stand brengen van middelen om de zogenaamde implementatiekloof te overbruggen voor een groot deel geen financiële kwestie of een probleem is dat met uitsluitend technische oplossingen kan worden aangepakt. Uit een nieuwe institutionele benadering kwam naar voren dat obstakels bij implementatie doorgaans normatief van aard zijn en dat het samenspel tussen 1) de dilemma’s die verband houden met klimaatverandering en 2) de mate van begrenzing van planningspraktijken, institutionele voorwaarden schept dat momenteel geen stimulerende werking hebben op belangrijke innovaties ten aanzien van de toepassing van een marktinstrument waarmee met lokale inkomsten adaptatie-investeringen kunnen worden gefinancierd.

De bevindingen uit dit proefschrift beamen dat het antwoord op de vraag hoe investeringen tijdens het planningsproces gefinancierd moeten worden, zeer onduidelijk blijft omdat planologen globaal genomen in de test- en experimentenfase blijven steken. De vraag hoe maatregelen gefinancierd moeten worden werpt bovendien nog meer vragen op, omdat de voorwaarden voor de financieringsdiscussie niet duidelijk genoeg zijn vastgesteld. De discussie over adaptatie aan klimaatverandering gaat niet verder dan het bepalen van sectorale en jurisdictiunele rollen (‘wie’ en ‘waar’) en het opstellen van mogelijke strategieën (‘wat’ en ‘wanneer’) om de effecten van klimaatverandering in stedelijke gebieden terug te dringen. Om meer kennis te krijgen over de manier waarop investeringen gerealiseerd kunnen worden, moet onderzoek worden verricht naar ‘hoe’ en ‘waarom’ planologen de complexiteit van investeringen in klimaatadaptatie kunnen verminderen. De manier waarop planologen
met de uiteenlopende financieringsinstrumenten omgaan, vormt een indicatie voor de rol van zowel formele als informele institutionele regels bij het vormgeven van hetgeen geschikt (en haalbaar) wordt geacht. Oftewel, wat vertelt de reactie op een bepaald financieringsinstrument ons over de manier waarop de institutionele context de organisatorische (on)zekerheid over het investeren in adaptatie versterkt? Waarom maken planologen onderscheid tussen bevestigende of negatieve verhalen om te bepalen welke soort instrumenten geschikt zouden zijn? Vormen sommige financieringsinstrumenten een doodlopend spoor, terwijl andere instrumenten juist mogelijkheden voor implementatie creëren? En wat vertellen de antwoorden op deze vragen ons over de wijze waarop de institutionele dilemma’s van klimaatadaptatie opgelost kunnen worden en waarom bepaalde governanceregelingen het implementatieproces zouden kunnen verbeteren?

Vanuit een methodologisch standpunt levert het onderzoek een empirische bijdrage aan de adaptatieliteratuur, omdat het is gebaseerd op een multi-dimensionele case-study-strategie waarbij een simulatiespel is gebruikt. Dit voegt een verkennende gedragsdimensie toe aan de groeiende academische belangstelling voor de manier waarop individuen en organisaties zich leren aanpassen aan klimaatverandering. Hierbij wijzen de bevindingen op het dynamische proces van organisatorisch leren (Berkhout et al., 2006) en de ‘kleine manieren’ waarop percepties in de praktijkstroom veranderen en beslissingen worden gevormd (Healey, 2009). In de context van dit onderzoek zorgen de bevindingen voor meer kennis over de manier waarop planologen betekenissen construeren in relatie tot de geschiktheid van bepaalde financieringsinstrumenten. Uit de analyse blijkt dat als de beschikbaarheid van financiële middelen inderdaad het grootste struikelblok voor investeringen in klimaatadaptatie zou zijn, dat het antwoord hierop dan aanzienlijk eenvoudiger was. Om rekening te houden met de huidige sociaalpolitieke omstandigheden zou dit, in de Nederlandse context, leiden tot de stelling dat een op marktwerking gebaseerd financieringsinstrument voor klimaatadaptatie met diverse attributen op één lijn moet worden gebracht. Om een financiële kloof te overbruggen, zou het ontwerp van een marktinstrument dus moeten worden afgestemd op de volgende principes: incrementalisme, langetermijnbeheer van financiële risico’s en het delen van risico’s tussen de belanghebbende partijen. In die zin vormt begrijpen welke instrumenten goed bij deze attributen passen een succesvollere strategie dan vooraf een instrument uitkiezen en dit geforceerd toepassen.
About the author

Liz is a professional urban planner with expertise in residential, commercial, and infrastructure development. Before moving to the Netherlands in 2010, over a 15-year career Liz worked in Toronto, Canada in management positions in the public and private sector. Between 2005 to 2010, she was the project director of the Regent Park Revitalization Project, Canada’s first large-scale inner city redevelopment initiative of its kind, which was based on the development of highly energy efficient buildings and low carbon energy production as the cornerstone of the business plan. On the ground experience working with a range of planning instruments and business models, and engaging with different multi-stakeholder partnerships provided a solid basis to embark on the academic research described in this book. Going forward, Liz continues her passion for city building, furthering her contribution to planning practice, and developing places for people to live and prosper that are resilient and responsive to climate change but embrace the multifaceted complexity of building and managing cities.

Liz grew up in a small town on Vancouver Island and has progressively moved eastward on the global map - from Vancouver where she earned a Bachelor of Science from Simon Fraser University (Communications), to Winnipeg for her Masters of City Planning from the University of Manitoba, and to Toronto where she built a career as an urban planning practitioner. She now lives in Nijmegen, The Netherlands with her husband, Andrej, and two boys, Max and Luca who together enjoy a life full of learning, growing, and travelling to their favourite places.