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Liz Root, MCP

PhD Candidate

Knowledge for Climate / Climate Proof Cities

Institute for Management Research

Geography, Planning and Environment

Radboud University Nijmegen

Nijmegen, Netherlands

t: 024 3612988

e: e.root@fm.ru.nl

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Bridging the Financial Gap in Climate Adaptation:

Dutch Planning and Land Development Through a New Institutional Lens

Introduction:

There is a wide consensus in the academic literature that the climate is changing and the need to adapt to those changes is inevitable, despite efforts to reduce greenhouse gas emissions (Swart, 2009; Adger, 2005; Adger, 2009, IPCC 2007). Rising temperatures and higher sea levels will have major impacts on agriculture, water supply and water management, ecosystems, and food supply (Bedsworth, 2010), along with flooding, drought, and a range of natural events that will put a substantial amount of stress on housing and existing and future urban infrastructure. The additional stress related to climate change presents an emerging challenge for urban infrastructure because the adverse impacts are predicted to include multi-hazard simultaneously occurring phenomena, and “creeping” (Birkman et al, 2010) changes to weather patterns, in comparison to historic experience, that will be more frequent and intense and will manifest in sea level rise, river flooding, and urban heat island effects (Katsman, 2009; Birkman 2010; de Bruin et al, 2009; Espace, 2008). In other words, we can no longer assume that the future climate can be predicted on the basis of past patterns (Kabat, 2005). At the local level, that means risks presented by climate change will challenge existing development urban patterns and require new financial investments and adjustments to the built and social environment in order to minimize the negative outcomes of unavoidable climate change.

In the Netherlands, the national government has accepted the projections that climate change will take place, as evidenced by the national adaptation program that was launched in 2007. The challenge of climate-proofing in the Netherlands will be to harmonize the national adaptation policy with its spatial planning policy, institutional approaches, and financial instruments (de Bruin, 2009). However, consistent with the literature on the barriers to implementation (Amundsen et al 2010; Biesbroek et al, 2010; Biesbroek et al, 2011; Birkman et al, 2010; Bedsworth and Hanak, 2010; Burch, 2010), the national strategy explicitly states that there is an implementation challenge by declaring that the appropriate financial instruments do not exist and existing financing instruments must be adapted or new ones developed to enable genuinely climate-proof investment (VROM (a) (b), 2007). The implementation challenge is not unique to the Netherlands (Preston et al, 2011; Wilson, 2006; Biesbroek et al, 2011; Gupta et al, 2007) as the literature indicates there remains substantial gaps on how to deliver climate adaptation responses and more research is needed in relation to the influence that different financing mechanisms, governance structures and institutional models have on strategies to implement adaptation objectives (Carter, 2011, Swart et al, 2009; Amundsen, 2010; Anguelovski, 2011). For Dutch municipalities the financial implementation gap is already evident in relation to facilitating investment in a conventional package of public investments, such as the provision of underground infrastructure, recreation, and green spaces, due to the shift in political appetite away from large national transfer payments for redevelopment schemes and a flat economy that creates challenging conditions in which to generate revenue through leveraging land value through the development process – together, government funds and land value, are key mechanisms. These substantive and practical challenges are further exacerbated by the disjuncture between local level development/political timeframes and the long-term horizon climate change.

Purpose:

The ambition of this paper is to develop a theoretical lens to analyze the interrelationship between institutions and how access to financial resources are structured. This will be used to consider the implications for funding climate adaptation initiatives; in particular, looking at locally-based area redevelopment physical infrastructure investments. In doing so, this paper will consider the dynamics of institutional change as a key variable in relation to the availability of financial resources for climate adaptation and the degree to which there is evidence of institutional change through the modification of existing rules, norms, and practices thereby allowing for the availability of financial resources; or the degree to which institutional inertia acts as an obstacle to closing the financial gap – and what the

dimensions of the inertia are. This approach is informed by the definition of climate adaptation provided by the International Panel on Climate Change International Panel on Climate Change (IPCC) with respect to the adjustment of human systems, as follows: climate adaptation is defined as “the adjustment of systems, natural or human, in response to actual or expected impacts of climate change, such as sea level rise, to reduce vulnerability or increase resilience in response to observed or expected changes in climate and associated extreme events” (IPCC, 2007b). This approach will be undertaken by focusing specifically on Dutch spatial planning as a particular institutional context to consider how spatial planning actors currently use the “rules of the game” to marshal the financial resources in relation to delivering a range of urban infrastructure investments and the implications with respect to the implementation of climate adaptation investments in the context of local planning and land development processes. Urban infrastructure refers to hard infrastructure systems generally owned and operated by municipalities, such as streets, bridges, water distribution, and sewers, in addition to facilities associated with soft infrastructure, such as parks, recreation facilities and libraries.

By using an institutional approach the paper will re-contextualize the implementation “barriers” within the “rules of the game” (North) in terms of analyzing: 1) how Dutch spatial planning actors use instruments/mechanisms within the context of planning and land development processes; 2) to consider the role of institutions (both informal and formal) and; 3) the degree to which there is a causal relationship between institutional inertia or change in relation to the availability of financial resources¹. By addressing these issues the paper will attempt to contribute to the search for a clearer understanding about the complexity and dynamics of implementation. This builds on Mahoney and Thelen’s contention 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). Similarly, this approach endeavors to move beyond a one dimensional view of institutions as inert and inflexible obstacles that is frequently applied in the climate adaptation literature, which is what Lowndes refers to as “vulgar” institutionalism (2001). In that sense, the subtext to this approach is to consider whether there is an “institutional void” (Termeer et al, 2011; Measham, 2011; Hajer, 2003) or whether climate adaptation is better understood as a complex problem in the process of *gradually* embedding itself in an institutional context.

¹ In that sense the financial gap is not limited to being understood as the lack of money, but recognizing that there are a number of financial sources that need to be accessed. Such sources are available through formal annual budgeting processes, mandatory service requirements that are associated with direct funding sources, such as water levies to fund water infrastructure, regulatory requirements set out in planning and development processes, or one-off grants and programs.

Against that background, the purpose of this paper is to build a preliminary response to the research question: What role do institutions play in organizing and distributing financial resources in relation to investing in climate adaptation through planning and land development processes? In doing so, this research has two sub-objectives:

- To investigate how Dutch spatial planning actors use existing instruments and mechanisms within the context of area redevelopment planning and implementation processes in order to make financial resources available to support a range of urban infrastructure investments;
- To consider the role of spatial planning as particular type of institution and the degree to which there is a causal relationship between, and evidence of, institutional inertia or change in Dutch planning and land development processes in relation to the availability of financial resources for climate adaptation.

The paper has three sections. First, it reviews the extant governance literature that endeavors to explain the key components of the implementation “gap”. Building on those contributions, the paper articulates a case for focusing an institutional lens on the implementation gap, as a broader analytical framework, particularly with respect to its relevance to planning and land development processes. In doing so, the discussion will highlight conceptual strands in the governance literature, namely network-based mainstreaming and policy integration approaches, which are located both on a horizontal axis, and multi-level governance which tends to be situated on a vertical axis. After outlining the theoretical framework, the paper will briefly discuss the Dutch national adaptation strategy and the role of Dutch municipalities, and the planning and land development process in particular, in that process. The discussion will then turn to Dutch spatial planning practice. This will be undertaken by using with the preliminary findings from interviews with spatial planning actors from three Dutch municipal ‘hotspots’² and the literature to outline the mode of practice, the “rules of the game” that are in-use, and current challenges with respect to delivering the range of public goods that has been conventionally accomplished using what is known as the “public land development model”. The paper will conclude by suggesting that despite the declaration in both scholarly literature and policy documents that new institutions and new financial mechanisms are required, a more nuanced approach is an alternative way

² The research programme Knowledge for Climate/Climate Proof Cities develops scientific and applied knowledge needed for climate proofing the Netherlands. The research focuses on specific locations in the Netherlands which are particularly vulnerable to the consequences of climate change. These locations are called Hotspots and function as real life laboratories where knowledge is put to practice. In the Hotspots mixed teams of policy makers, businesses and scientists work together (Source: Knowledge for Climate website).

to conceptualize the role of institutions. Theoretically this paper utilizes the new institutionalist ideas of Mahoney and Thelen (2010) , Lowndes (2001, 2005, 2009), Hall (2010), that suggests institutional change occurs in more subtle ways and, in that regard, we need to look for signals and underlying causal factors to consider how, and the degree to which, the practice of climate adaptation is embedding itself within existing institutional contexts.

A Governance Lens on Climate Adaptation:

For the climate adaptation literature, governance is a conceptual framework that has provided an approach to analyze complex interactions around policy making, but also in proposing alternative strategies for policy making (Termeer, 2009). Indeed, the distinctive characteristic of the governance literature is that it looks at the range of stakeholders, the structures, and modes of practices that shape decisions (Slinger et al, 2011), in comparison to the so-called hard science of climate change that concentrates on collecting and analyzing data about, for example, the physical impacts and projections of changing weather patterns. This literature (Hallegatte et al, 2011; Hunt and Watkiss, 2011) provides projections about the rising sea levels, predicted changes in temperature, and quantifies the adverse impacts and costs; this body of research, however, provides little guidance on how to effect decisions and mobilize resources, how to assess social sensitivity to climate risks (Adger et al. 2007), or how non-climatic drivers affect climate vulnerability (Glaas, et al 2010). Whereas, the commonality of the governance literature is that it acknowledges the multi-faceted nature of climate adaptation by considering the social, political, and economic dimensions of addressing climate adaptation. By acknowledging the substantive level of complexity by looking at multi-actor settings, cross jurisdictional issues, this literature recognizes the inherent implementation challenge given the long timeframe and incomplete scientific data on how the climate system will react to ever increasing greenhouse gas emissions (Bedworth, 2010). In that sense, as argued by Peltonen et al (2010), governance is a conceptual lens that can be used to explain the complexity in decision making given the diverse partnerships and networks of actors that are participating in designing and implementing measures to adapt to climate change (Wilson and Termeer, 2011; Corfee-Morlot et al, 2009; Bulkeley, 2009; Termeer et al, 2011)³.

³ The focus on understanding the role of governance is consistent with other social science literature (Rhodes 1997; Pierre 2000; Blatter 2003; Arts and van Tatenhove 2005; Klijn 2005) over the last decade that argues that the dominant position of government has changed, whereby it is now more a co-producer of policy together with other public and private parties (Buitelaar et al, 2009). The shift away from centralized top-down modes of governance towards both a vertical and a horizontal governance axis is also connected to the devolution of responsibilities, financial sources, and decision making away from tradition government wherein there is a significant increase towards a range of different agencies being involved in shaping and delivering public policy (Lowndes, 2011 p60).

The Barriers to Implementation:

By framing climate adaptation as a governance issue, the literature positions climate adaptation as more than a technical problem that requires technical solutions insofar as the challenge of adapting to climate change is not limited to scientific solutions. To account for the limited action on implementing climate adaptation the governance literature provides a range of explanations that are described as “barriers” to climate adaptation (Amundsen et al, 2010; Biesbroek et al 2010; Carter, 2011; Corfee-Morlot et al, 2009; Biesbroek et al, 2011; Kamal-Chaoui and Roberts, A, 2009; Swart et al, 2009). These barriers typically are identified as distinct and separate packages of problems that constrain adaptation planning and implementation processes. While there are variations in the literature, six key barriers can be distilled: 1) the level of *uncertainty* about whether climate change is a threat or not; about the accuracy of climate science; and what solutions are appropriate and the underlying assumptions of the climate science. The other barriers are identified as: 2) *governance*: insufficient engagement coordination between stakeholders and attention to cross-jurisdictional issues ; 3) insufficient *capacity* and *knowledge* at the local level and with policy-makers and practitioners; 3) lack of *authority* in terms of unclear responsibility and legitimacy between levels of government (and within governments’) and lack of devolved authority to local level; 4) insufficient *policy environment*, including the absence or weak support from central governments and lack of alignment of policies; 5) lack of *financial resources* to support the required investments; 6) and *institutions*, which are viewed as acting as inert obstacles that create blockage between and within governments (Corfee-Morlot et al, 2009).

The answer to overcoming the barriers resides on a continuum between vertical and horizontal governance oriented explanations. Multi-level governance figures prominently in the literature and leans towards emphasizing the relative importance and centrality of government as a key actor in the adaptation process, while at the same time acknowledging that a range of organizational actors operate beyond the parameters, influence, and control of traditional forms of government. Therefore, the idea that “good governance” is a necessary condition “to ensure successful regional and local implementation of national climate policy goals throughout the country, systematic efforts are needed to align incentives across sectoral and cross sectoral policy areas”(Corfee-Morlot et al, 2009 p10). As argued by Amundsen, “...policies at the national scale could constrain adaptation at the local level by

limiting the ability of local governments to respond to the challenges....[and that]... a combination of local and national level activity, in which the local levels organise their own planning, which is their area of expertise, while the national government [typically] prioritise their efforts on policy foci” (Amundsen, 2010). In other words, adaptation to climate change involves a complex field of governance as national policies, laws and regulations either collide or support day- to-day decisions on where to locate houses and what pipe dimensions to choose and how local goals are funded (Amundsen, 2010). In the context of climate adaptation, multi-level governance can be thought of as a framework that sets out clearly defined roles and sets of responsibilities between different levels of government, thereby providing authority and legitimacy on which to implement actions; coordination, therefore, and locating responsibility and accountability at the appropriate level of governance informs much of the multi-level governance findings. More broadly, Bulkeley has characterized the current state of urban climate governance as located between horizontal networked forms of authority and vertical divisions of responsibilities between parts of the state, which together are encapsulated within the processes of multi-level governance (2010).

Other network-oriented explanations about how to overcome the implementation barriers identify the need for alternative governance and modes of practice, both from a policy formation and implementation perspective. The first concept, policy formation, is found in the encompassing concept of policy integration; this concept is defined as comprehensively incorporating the aims of climate adaptation into policy-making processes (Lafferty and Hovenden, 2003). The policy integration process is divided horizontally, as a cross-sectoral process⁴, and vertically, as a sectoral specific process (Bommel and Kuindersma, 2008). This approach is typically ambitious in the level of coordination that is required between multiple actors, the level of knowledge and expertise, as well as authority and political capabilities to manage multiple priorities. Similar to policy integration, the idea of mainstreaming is associated with the “normalization” of climate adaptation by “....connecting imperatives of future adaptation to more familiar sets of issues, and to existing decision making and policy processes... that are mutually supportive of other social and political goals [as well as climate adaptation]” (Dover, 2009, p. 4; Fussel, 2007; Smith 2009) . This could be achieved by, as Brugmann suggests, thinking of climate adaptation as an opportunity to undertake an overall renewal of urban assets by aligning and

⁴ An example of cross-sectoral integration is Finland’s method integrating adaptation into existing national plans and policies thereby ensuring that all ministries are responsible for adaptation, removing the responsibility for adaptation from the realm of a single ministry such as environment ministries (Westerhoff et al, 2011 p.1082)

strategically bundling a broader urban development mandate with the adaptation agenda (Brugmann, 2011).

While it seems it seems a 'common sense' approach to integrate climate adaptation policy into policy formulation processes and to mainstream it into implementation process, these approaches tend to be predisposed to position institutions as obstacles and to decontextualize actors from the institutions in which they are operating. By remaining at the macro level, it begs the question – how does integration and mainstreaming actually happen? How does adaptation become 'normalized'? The lack of contextualization is evident in the often decoupling of governance and institutions as separate standalone barriers to implementation, which tends to keep the analysis at a high level of abstraction. Whereas, as Lowndes suggests, institutions create the platform in which actors operate that is informed by multiple sources, fluidity, and norms by stating that "the rules of the local governance game are not free-floating. They are 'nested' or embedded within wider institutional frameworks that exist above, below and alongside local government itself. The institutions of local governance are shaped by rules that emanate from higher tiers of government (national legislation, EU directives), by 'institutional templates' that circulate in the wider society and economy (media, business, education), and by locally specific cultures and conventions ('how things are done around here')." (2005, p.294). Approaches that draw from an institutionally oriented governance perspective consider the role of institutional arrangements and different combinations of markets, states, communities, and associational orders (Helderman, 2007, p. 38) and the degree to which institutions facilitate, enable, or constrain public and private actors. This perspective is consistent with the third stream of literature (Adger, 2000; Termeer, 2009; Glaas et al, 2010; Storbjork et al, 2011; Gupta et al, 2011; Inderberg, 2011; Burch, 2011; Anguelovski and Carmin, 2011) in climate adaptation research that makes an explicit link between governance and institutions: "Governance is about institutions. [With respect to] how actors in society shape institutions and what institutions are suitable modes of governance in given circumstances"(Slinger et al, 2011, p.38). Similarly, Birkman et al argue, that while a governance approach provides an analytical approach to address the multiple levels and multiple actors that are engaged in climate adaptation, it should also focus on the manner in which institutions exercise authority and manage common affairs at the interface of the public, civil society, and public sector, which includes the mechanisms through which individuals, groups, and official entities articulate their interests, exercise their legal rights, meet their obligations and mediate their differences (2010).

This paper fits into the institutional literature on climate adaptation because, as it argued, while the aforementioned package of implementations barriers represent high level analytical filters, a deeper consideration of institutions suggests that there is a broader interconnectivity between the barriers that play out in different ways in different contexts (Keskitalo et al, 2011; Westerhoff et al, 2011) with institutions playing a critical underpinning role, particularly given the role played in brokering the different barriers (ie knowledge, policy, governance, authority, financial resources); or, as Keskitalo et al argue, the challenge can be reconceptualised not as barriers per se, but rather a broader system-wide “logic” in which organizational rationalities may continuously to shape the form of new policy initiatives (2011).

Van Hal et al summarize the general theoretical understanding of institutions used in this stream of literature by stating that “institutions are all those conventions and rules – written and unwritten, formal and informal, explicit and tacit – that direct our daily behaviour. We take the existence of these organisations and the rules according to which they operate for granted, and by doing so, institutions facilitate our interactions in society. Institutions are therefore often referred to as ‘the rules of the game’”(2012). How that plays out in practice is through structuring how legitimacy and authority are manifested in legal frameworks, policies and programs, and how knowledge is framed (Fungeld et al, 2011), dispatched and managed. And, as Adger suggests (2000), institutions play a critical role in the structure of power relationships in determining the course of decisions and non-decision-making. Hence, there is a framing effect that institutions have on the barriers as a whole insofar as they constraint or enable the capacity of actors (which could be both at the level of the individual and organization) in the institutional context to deal with conflicting agendas, values and in setting priorities (Storbjork and Hedren, 2011). This latter finding by Storbjork and Hedren suggests a strong relationship between structure and agency thereby adding an additional dimension to the literature to what they argue is the tendency to overemphasize the importance the capacity of key players (ie internal champions) and the vertical/horizontal networking capacity of institutional actors (2011).

Drawing from a new institutionalist approach the following section will provide a brief literature review to further substantiate the theoretical orientation. We will do this by considering the institutional context that sets the playing field for the actors to operate within and the degree to which institutions, and the actors within those spaces, play a critical facilitative role in the implementation process or conversely the degree to which the institutional context can be an obstacle in relation to accessing financial resources. When specifically considering the role of institutions in relation to accessing

financial resources, which is the purpose of this paper, it is useful to consider what Giddens (1984) refers to as the link between structure and agency and the division between allocative (resources) and authoritative (rules) which is the basis of power in society (Healey, 1992, p.35). That is to say, the connection between institutions and availability of resources can also be understood in relation to the way in which “any given set of rules or expectations – formal or informal – that pattern action will have unequal implications for resource allocation” (Mahoney and Thelen, 2010, p.8). In that sense, institutions influence adaptation to climate change in three critical ways: (a) they structure impacts and vulnerability, (b) they mediate between individual and collective responses to climate impacts and thereby shape outcomes of adaptation, and (c) they act as the means of the delivery of external resources to facilitate adaptation and thus govern access to such resources (Agarwal, 2008). These three points synthesize the role institutions play in defining the problem and organizing the solution, which includes creating a means and access to financial (re)sources.

Planning and Land Development Processes: a particular institutional context

An institutional approach is relevant to planning and land development processes because these processes occur within a particular institutional order, as Madanipour notes: planning and land development “is a formal instrumental process that seeks to shape and manage the future of spatial conditions and relations” (2010). Alexander also makes the point that spatial planning takes place in a specific institutional context and that when new policy and program dilemmas emerge, planners are confronted with what he refers to an ‘institutional design’ challenges with respect to new inter-organizational and coordination decisions and actions in terms of devising and realizing the rules, procedures, and organizational structures that enable and constrain behavior according values and objectives (Alexander, 2005 p.213). In other words, when considering implementation of climate adaptation through planning and land development processes we are endeavoring to undertake an objective within a complex institutional context with multiple institutional contexts interacting. Similarly, Healey operationalizes the connection between spatial planning and institutions in her definition of the 'development process', she states: “It is taken to be the transformation of the physical form, bundle of rights, and material and symbolic value of land and buildings from one state to another, through the effort of agents with interests and purposes in acquiring and using resources, operating rules and applying and developing ideas and values.” Healey (1992 p.36). Finally, Buitelaar et al make a distinction between informal and formal institutions thereby illustrating the role that institutions play in structuring the process and, at the same time, the agency that planning actors bring to the process,

which is referred to as the “planning culture”; Buitelaar et al argue that planning is a “....set of informal institutions that guide, and are (re)produced by decisions by government, private actors, and citizens on the ends and means of planning. Formal institutions, such as land-use regulations, are connected to planning cultures in important ways: they constitute each other.” (2011, p.930). In that way, which is the conceptualization of planning that is used in this paper, those structures and decisions by actors, in their aggregate, tell us something about how planning actors both define and are defined by the institutional context in which they operate. This conceptualization, therefore, suggests that the configuration of the institutional dynamics that underpin planning and land development processes ultimately informs the way in which public policies are implemented and the degree to which the rules are applied in order to assign financial resources.

Conceptualizing Institutions Using a New Institutionalism Lens

As has been identified in the preceding sections, institutions are identified as one of the key barriers to adaptation to climate change. The idea that institutions are *inert* underpins the reason why institutions are conceived of as a barrier. However, perhaps institutions are not as inert as some of the climate adaptation literature suggests. New institutional theories have 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 explanations about the factors that inform institutional change that we can draw from. Though they have different approaches to describing institutional change and inertia, the commonality between the approaches is that institutions do change; for example, as Buitelaar et al argue, despite practices and policies becoming 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’”⁵ (2007, p. 905).

An institutional approach is rooted in classical political economy (e.g., Hobbes, Montesquieu, Hume, and Tocqueville), neoclassical microeconomic theory, institutional economics (e.g., Coase, Williamson), and public choice theory (e.g., Downs, Olson) (Edelendbos, 2005). In the 1960’s and 1970’s new institutionalism emerged as a reaction to the dominance of ‘under socialised’ (Lowndes, 2001) accounts of social, economic and political behavior; the commonality between the different approaches is the intention to explain the role that institutions play in the determination of social and political outcomes

⁵ Buitelaar et al (2007) refer to Chase Smith et al (2001, p. 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.895)

(Hall and Taylor, 1996). By infusing institutional analysis with agency, new institutionalists' challenged the idea that institutions were somehow immovable and limited to government-based activity. Lowndes (2009) identifies three key points to distinguish 'old institutionalism' from new institutionalism: 1) "it is not concerned with only formal rules and structures but also with informal conventions and coalitions that shape political behavior; 2) it does not take political institutions at face value but rather looks at the way in which they embody values and power relationships; and 3) it rejects the determinism of previous approaches" (p.92).

The metaphor the 'rules of the game' (North) encapsulates and describes what is referred to as the dynamic process of how people interpret and use rules, norms, and practices, which are the key components of what is conceived as an institution. The idea is that the 'rules of the game' are not fixed insofar as they change through use and "...are therefore dynamic and emerge, evolve and disappear over time through usage, negotiation, violation, or lack of use". Therefore, despite the common view that institutions are inflexible and lack human agency, which has been described as "vulgar institutionalism [that] treat institutions as 'facts of life'" (Lowndes, 2001), institutions change and evolved over time and largely reflect contemporary socio-political norms, which is sometimes referred to as 'patterns of social rules'(Dembski et al, 2010, p.617). Though new institutionalist approaches⁶ conceptualize institutions in different ways, in terms of their relative economic, political, and sociological perspectives, as Dembski notes, "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, p.614). The analyses emphasize the relative importance of the social context that shape the actions of individuals and organizations, which are considered in the context the norms, values, habits and routines, formalized and informal, which shape social practices. Rather than solely focusing on individual decisions, institutional analyses also consider those decisions in the aggregate in relation to other decisions and actions that shape and regulate behaviour (Merrey et al, 2012; Healey, 2005). Another way of thinking about institutions, as suggested by Hall, is that institutions are "resources" that function as facilitators to, for example, broker knowledge and legitimize patterns of behaviour as "appropriate" but "...not be taken to imply that all or even most in that culture adhere slavishly to it" (2009, p.10), which is distinct from so-called old institutionalism. That is to say, new institutionalists allow for a dynamic that makes a distinction between formal and informal institutions wherein the formal are conventionally considered government rules which are enforced by the legal system, such as

⁶ Often referred to as a set of three schools of thought: historical institutionalism, rational choice institutionalism, and sociological institutionalism.

laws, constitutions, ordinances, and local land-use plans (ie legislation, regulations, policies), which can also be understood as the institutional order. The formal institutional order interacts with informal institutions, which have less explicit rules that emerge as a result of repetition and solidification of behaviour through perceptions, values, beliefs, and norms (Buitelaar et al, 2011). Other authors also make a further distinctions between organizations and institutions wherein institutions 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.

Using a new institutionalist theoretical lens has implications on how to conceptualize the role of institutions in relation to adapting to climate change. For example, in an attempt to bridge the policy-science gap, the governance literature provides a range of different climate adaptation conceptual frameworks, toolkits, lists of best practices, and models, on which to base programs and strategic action plans, which Funfgeld (2010) refers to as the “first generation” of plans. This research can be grouped into what Healey conceptualizes as “goal-driven rational analysis of action possibilities” (2005). However, this accumulation of knowledge has to contend with what Mahoney and Thelen refer to as the “wedge of certainty”⁷, meaning that the status quo and existing modes of practice is typically favoured in the face of the possibility of change (ie new ways of doing things), which is typically received as a major threat given the anticipated instability that modifications to processes and actions would bring and the risk presented by unknown outcomes and unproven benefits (2010). In the context of climate adaptation, this is particularly relevant given the burden of proof that challenges adaptation initiatives. Secondly, while climate adaptation literature often refers to seeking “windows of opportunity” on which to push through adaptation measures, Mahoney and Thelen (2010) suggest that obvious windows of opportunity might not occur or might not be necessary. They suggest that institutional change is generally more gradual and less dramatic insofar as it occurs through a combination of endogenous and exogenous factors and happens slowly and often in less apparent or predictable ways; moreover, that institutional change may not emerge from actors with transformational motives insofar as change might be an unintended product.

A common position in the climate adaptation governance literature, and policy documents, is that new institutions and better coordination between stakeholders is required in order to implement climate adaptation, as noted in the previous section. However, insights from Mahoney and Thelen, Lowndes,

⁷ The “wedge of certainty” is an interesting concept to use in contrast to the concept of “uncertainty” that is used in the climate change literature

and Hall on the dimensions of institutional change suggests that institutional change does not necessarily require overt abolishment of institutions, but rather can occur via reinterpretation and different application of rules and practices. Similarly, while rules have an obvious connection to power and privileging certain positions, there is 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. This is where agency of actors is factored into the institutional analysis wherein actors seek to adapt “rules of the game” in order to meet the demands of uncertain and changing environments and to protect (or further) their own interests. Connected to that idea, Mahoney and Thelen also make a distinction between a range of types of actors and their particular motivations; the authors contend that there are several different types of actors; for example, some actors need to be reassured that existing institutions will continue to serve their interests and that better alternatives are not available or, alternatively, some actors probe the outer limits of existing rules and take risks about how rules are applied to achieve their personal or organizational objectives. That is to say, there is a level of fluidity emerging from everyday practice that can be viewed as institutional change. Moreover, Mahoney and Thelen suggest that institutional innovation may come in more banal forms than creating new institutions and novel instruments in their proposition that institutional entrepreneurs will modify their modes of practice and norms in order to achieve their goals by: 1) “borrowing” practices from other arenas; 2) “remembering” past practices and applying them to new uses; and, 3) by “sharing” the outcomes of institutional experimentation within their wider networks. These theoretical insights offers a broad scope for understanding the role of institutions in the implementation of climate adaptation than as narrowly defined inert objects. More particularly, these theoretical propositions offer a level of agency to planning and development implementers to effect change while at the same time acknowledging that they operate within an institutional context in which they must navigate complex informal and formal “rules of the game” .

The following section provides a brief overview of the Dutch national climate adaptation strategy. Like other European national adaptation strategies (Swart, et al, 2009; Greiving, S. and Fleischhauer, 2012), the national government has acknowledged climate change and has set out a public policy rationale and institutional response, which includes articulating the role of the national and sub-national levels of government. In doing so, the strategy clearly identifies the role of spatial planning as the key institutional delivery platform for local level climate adaptation. However, as noted in the second section, simply “plugging” into the existing institutional context and applying the “rules of the game” as

a means to rallying investment in local area climate adaptation measures might not be as easy as originally conceived.

Dutch National Adaptation Strategy: the Role of Planning and Land Development to Facilitate Investment in Climate Adaptation

Dutch urban areas are particularly vulnerable to the anticipated impacts of climate change given that The Netherlands is one of most densely populated and urbanized countries in the world with about 89% of the population living in urban areas, of which about 25% of the land is below sea level (Bommel, 2008). Overall, according to the Deltaprogramma (2012), about 59% of the country is sensitive to flooding. The expected sea level rise of between 35cm to 85 cm by 2100, not including other factors such soil subsidence (i.e. compaction of peat) (VROM, 2007) or if the Greenland and West Antarctic ice sheets melt on a large scale indicating that a rise of several metres is expected over a period of a few centuries (VROM, 2007). These projections suggest that there is a clear social, economic, political, and ecological imperative to invest in climate adaptation. Moreover, the level of risk presented by climate change suggests that while adaptation is often considered a local issue in contrast to mitigation, which is often referred to as an issue for national and international players (Tol, 2005), in the Netherlands actions, and related investment, at the local level may have wider implications than the immediate area.

In 2007, the Dutch national adaptation strategy program launched⁸. At that point, The Netherlands embarked on the development of a detailed climate adaptation strategy focusing on five specific national focal points (PBL): 1) long-term safety from flooding; 2) reducing the vulnerability of transport networks and energy supply; 3) freshwater supply; 4) climate-proof nature development; and 5) developing climate resilient urban areas. The key focus of the Dutch approach to climate adaptation is centred around the idea of becoming “climate-proof”. This is the umbrella concept that is based on developing resistance, resilience and adaptive capacity through the implementation of strategic, integrated spatial planning processes, and by combining multiple policy goals of urban development. Spatial planning, therefore, is a key driver and institutional platform for the implementation of climate adaptation.

⁸ The idea is to build a comprehensive flexible strategy and to create a broad sectoral awareness of the issues, which was initially led by the Departments of Housing, Spatial Planning and the Environment (VROM), Transport, Public Works & Water Management (V&W), Agriculture, Nature and Food Quality (LNV) and Economic Affairs (EZ) and in cooperation with the Associations of Provincial Authorities (IPO), Netherlands Municipalities (VNG) and Water Boards (UvW). Together, they formulated a formal Dutch National Adaptation Strategy entitled “Make Space for Climate!” (VROM, 2007b), which was followed by two policy documents entitled National Programme on Climate Adaptation and Spatial Planning (Policy Memorandum and the Inter-Administrative Policy paper). Much of the technical substantiation for the program was provided by the ‘Routeplanner’ partnership of the Climate for Space (Klimaat voor Ruimte), Living with Water (Leven met Water) and Habiforum research programmes.

Managed by the Delta Commission, the Dutch national adaptation strategy is comprised of nine subprograms with specific themes, including coast, flooding, heat, specific focuses on particularly vulnerable areas of the country, and urban areas. The latter is referred to as the New Housing Development and Restructuring Program. Policy research and details on precise instruments is ongoing, with the objective of clearer articulation in a national policy framework by 2013; nevertheless, the clear direction is that climate adaptation will be delivered at the local level using existing frameworks on spatial investments (Klimaatwijzer, 2011). This multi-level approach to climate adaptation reflects the decentralized nature of the Dutch state insofar as it is described as a decentralized unitary state with three-tier administrative structure (Huiteima et al 2003), namely the national, the provincial, and municipalities⁹. In the context of the adaptation strategy, the national government generally understands its role as preventing large scale flooding disasters and the local level of government as being suited to minimize the effects of flooding through planning and construction practices¹⁰. The expectation is that improved coordination between the provinces and the waterboards¹¹ will occur both in terms of long range planning and investments and in relation to emergency planning. However, according to Ministry staff¹², no additional funds will be provided as the focus will be on improved coordination and the use of existing cost recovery and cross-subsidization mechanisms conventionally used in Dutch planning and land development practices, as will be outlined in the section. These findings reiterate Gupta et al's findings back in 2007 that stated a designated source of funding does not exist for municipalities for climate adaptation initiatives (2007).

In addition to acknowledging the relevance of locating implementation at the local level, given the role of Dutch municipalities in area redevelopment and the provision and maintenance of infrastructure (Knelpuntenanalyse, 2011), the national strategy also recognizes that the climate adaptation investments will be unique to the characteristics of the urban area, given the context specific building types, densities, presence of green space, and existing underground infrastructure (Klimaatwijzer, 2011). However, consistent with the literature on the barriers to implementation, the initial strategy published in 2007 explicitly stated that the appropriate financial instruments do not exist and/or financing instruments must be adapted or new ones developed to enable genuinely climate-proof investment

⁹ The Dutch state is described as decentralized because the national government delegates responsibilities to the lower tiers and the former is meant to provide the appropriate regulatory and administrative framework for the lower tiers to relatively autonomously implement plans and programs, accordingly.

¹⁰ Key Informant Interview, Ministry of Infrastructure and the Environment

¹¹ Dutch water boards (Dutch: *waterschappen* or *hoogheemraadschappen*) are regional government bodies charged with managing water barriers, waterways, water levels, water quality and sewage treatment in their respective regions. These regional water authorities are among the oldest forms of local government in the Netherlands, some of them having been founded in the 13th century. (source: Wikipedia)

¹² Interview conducted September, 2011

(VROM). For example, the inter-related strategy documents (see footnote 8) identifies several possible mechanisms: 1) market-based, which includes public-private partnerships; 2) policy and regulatory mechanisms, in the form of requirements in neighbourhood restructuring programs, using climate proof criteria in relation to planning decisions, and the use of taxation instruments (VROM, 2007; and, 3) governance, which is taken to mean the assignment of responsibility for implementation to appropriate level of government and through coordinated investments between governments and stakeholders, rather isolated sectoral projects (VROM, 2007). Together, these directions highlight the inclination towards market and development growth-oriented solutions as potential sources by which to facilitate financial resources to support adaptation investments. The financial resource that is absent is the transfer of subsidies from the national government to the local level to close the financial gap. In the context of neighbourhood restructuring initiatives, lack of financial support for climate adaptation investments from the national government is consistent with current practice. That is to say, over the past decade the dependence of Dutch spatial planning and development practice on a level of national government subsidy has been eroded with, at the same time, a growing reliance on market mechanisms to generate the necessary funding. As Priemus describes, this new course has had a fundamental impact on the Dutch mode of practice that has gone from "...public dominated spatial planning to public-private partnerships in area development" (2007, p.1004). And while a buoyant economy through the first quarter of the 2000's¹³, made it possible to extract public investments from the market through the real estate development, the economic downturn in 2008, and the resulting stagnation of the building sector, along with the associated trouble in accessing financing capital, the idea that much of the local level investment in climate adaptation will occur based on quick return investments from development processes and, more particularly, through integrated area restructuring projects presents a challenge at the current juncture. In response, a 2011 document, "Klimaatwijzer: GPS voor een klimaatwijze inrichting van Nederland", suggests that "creativity" and the efficient use of scarce resources will be necessary: what that means in practice, is unclear in the document. Similarly, Knelpuntenanalyse: Waterveiligheid en Bouwen en Klimaatadaptatie in de gebouwde omgeving (2011) notes that while land development practices, and through the use of existing approaches and instruments, such as the public land development model, prescriptive zoning (Structuurvisies), and cost recovery mechanisms are existing land development mechanisms that can be applied to facilitate local

¹³ Between 1999 and 2000 growth in house construction rates had a two-digit growth rate in house prices, this growth became more moderate and by 2003 house-price growth was at around 2%. In 2004 and 2005 this was 4%, in 2006 it reached 5%, and in 2007 growth decreased to 3.5% (Korthals Altes, 2010 "Financial Estimates....")

level adaptation investments¹⁴, in the short term these strategies appear to be less promising given the drop in demand due to the economic crisis, which means that financing infrastructure using these practices “...will not be as easy as in the past” (author’s translation). Secondly, in practice there is also a reluctance to use legal tools that are provided in the revised Spatial Planning Act (2008), which improved the bargaining position of municipalities, relative to commercial developers, to extract investments in planning goals (van der Krabben, 2013). Several reasons are cited in the literature and by practitioners, including the limited scope of possible items, as predefined in the Spatial Planning Act, and due to the length of time it typically takes to come to an agreement¹⁵. Moreover, the Land Development Act (2008) (*Grondexploitatiewet*) regulates the redistribution and cost recovery between municipalities and developers based on the principles (Janssen-Jansen, 2010) of proportionality (ie how much must be paid by the developer in relation to the benefits) and profitability (ie short-term return) also introduce a level of complexity in relation to climate adaptation investments that are inherently long-term and have possible ‘free-rider’ issues. That is to say, there is a possible incompatibility between the available cost recovery mechanisms in terms of demonstrating how the investment and the benefits of the particular development are manifested, both in terms of time and spatial considerations. As the Knelpuntenanalyse document acknowledges, municipalities face a complex tension between providing long-term strategies and “hard” physical investments, while keeping a sharp focus on fiscal limitations that constrain the delivery financially feasible projects, in large part due to the disjuncture of planning for climate adaptation (ie 100 year horizon) and the timing of project developers and investors, which is typically three to fifteen years (page).

As will be described in the following section, while the Dutch planning and land development process is broadly acknowledged as an approach that has successfully delivered a broad range of public urban infrastructure investments (ie. infrastructure, green space, community facilities, social housing); and indeed, the Dutch planning system has been considered as a “planners paradise”(Faludi, 1994). However, some scholars argue that there are “cracks in the myth” (Buitelaar, 2010; van der Krabben; Needham, 2007) and that the Dutch “planning doctrine is in disarray” (Roodbol-Mekkes, et al, 2012) insofar as the mechanisms that have been used, are no longer viable and that the planning system has lost its ability to innovate; both of which imply that the addition of climate adaptation will increase the challenge faced by Dutch planning and development actors to access and facilitate financial sources.

¹⁴ Key Informant Interview, Ministry of Infrastructure and the Environment

¹⁵ Key Informant Interview, Rotterdam Project Management Bureau

The next section will outline the mode of practice, known as the *public land development* model, that has played a major role in delivering a range of public investments and that has driven the Dutch planning and land development process. As will be argued, the financial challenge that additional costs, represented by climate adaptation measures, particularly given the proposition by the Dutch national strategy that local level investments will be delivered by integrating climate adaptation measures with (re)development projects, will test the ability of existing institutional order to fund a new set of urban public infrastructural investments.

Delivering Urban Infrastructure Investments: the Role of the Dutch Planning and Development Process

For over 40 years the Dutch spatial planning system has used unique mode of practice that has distinguished it from the western world (Needham, 2007). The distinguishing feature is the practice of the *public land development* model (also known as the active land model). After World War II most building took place on serviced land that was supplied by the municipality, which was a response to the housing shortage resulting from the war (Needham, 2007; Korthals-Altes, 2005). As Korthals-Altes notes, municipalities considered that "...it was their duty to supply serviced land as it was needed" (2005, p140). According to the literature (Buitelaar, 2011; Needham, 2006; van der Krabben, 2010), despite being no legal obligation for municipalities to pursue an public land development model, the original focus on housing supply evolved into an accepted approach to direct, control and heavily intervene in the land development process by assembling land, undertaking the servicing, and ultimately selling the lots to the developers, for both commercial, industrial, and residential purposes. The perceived advantage of this approach in the Netherlands 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 investments; moreover, when the market was strong, they were able to make a profit (van der Krabben and Jacobs, 2013). As Needham notes, the tradition of the public land development model has been the dominant approach for financial reasons because municipal development plans were largely meant to be self-sufficient insofar as "...the content of planning is often influenced by the wish either to make money for the municipality (through land ownership) or by the wish to get private interests to pay for things which otherwise the municipality would have to pay for..." (Needham, 2007 p.41).

In 2008 the *Land Development Act* was introduced into the new *Physical Planning Act* with the goal of improving the public sector's ability to steer the development process, to reduce the amount of risk that municipalities traditionally took on, and to offer new public law instruments on which to lever financing of public infrastructure and facilities, which were primarily achieved through the public land development model. (Buitelaar, 2010 p.60). The Dutch Land Use Plan (Bestemmingsplan) and the Development Contribution Plan (Exploitatieplan), as part of that new legislation, made it possible to impose a set of legally binding rules by containing more options for public cost recovery and for the provision of collective goods than the previous legislation (Buitelaar, 2010); the Act also provided for more opportunities for public-private partnerships and private finance than previously possible, rather than continuing to rely heavily on public subsidies (Priemus, 2007). Yet, despite the tools being available through public law to recover costs, the practice of public sector funded infrastructure continues (Gielen and Tasan-Kok, 2010). That is to say, the conventional mode of Dutch planning and land development practice that has a speculative pattern of financial risk-taking, and depended on a level of national government subsidy, largely continues. However, circumstances are challenging for this mode of practice. Dutch planning and area redevelopment processes are now confronted with less funding from the national government and, in its current cycle, a weak economy that has severely dampened market-demand and the appetite of private sector investment. However, this emerging reality has been gradual over the past decade insofar as there has steady shift towards a development-led approach that has been characterized as a movement away from "welfare state spatial planning" to "development planning" (Nadin and Stead, 2008). This shift largely depends on continued market growth to lever resources to replace the subsidies that have diminished from the national government, which had supported a range of local redevelopment public infrastructure investments (Gielen and Tasan-Kok, 2010).

New Financial Challenge: adaptation to climate change

The preceding two sections outlined the key thrust of the Dutch national adaptation, which is to deliver local level adaptation to climate change through planning and land development processes and, secondly, it summarized the conventional mode of practice and 'rules of the game' of Dutch planning and land development processes; which is to say, Dutch planning culture employs both an entrepreneurial approach through leveraging value using the development process, thereby using adding value and investing the profit into a range of public benefits; and, at the same time, until relatively recently, the national government had provided a level of subsidies to support additional investments in

local area redevelopment projects. Despite the dwindling ability to lever investments, the national strategy has identified local area redevelopment processes as the context that is best suited to deliver investments in local climate adaptation. The implementation of adaptation local area redevelopment public investments, it appears, based on the emerging policy framework, will largely be executed using existing planning mechanisms, despite original aspirations in 2007 to develop new financial mechanisms. At the same time, dynamics have emerged in the planning and land development sector over past five years that suggests this strategy might be lagging behind and backward looking. That is to say, the resilience of the New Housing Development and Restructuring Program to deliver local level investments over the short to medium term is uncertain given the 2008 economic downturn. For example, a Deloitte Real Estate Advisory report in 2011 estimates that Dutch municipalities collectively could lose over €3.0B in relation to public land development ventures and that many municipalities are at the risk of bankruptcy due to speculative practices as a result of having to carry large land holdings without the projected market demand.

From a local climate adaptation investment perspective, the directions set out in the national adaptation strategy and the conventional approach of the Dutch planning and land development practice, both in terms of the institutional order and the application of rules and modes of practice, is focused on a growth oriented development model; that is to say, the institutional context is organized in a particular way, which sets out the terms and, therefore, has implications for access to resources. For climate adaptation investments in local area redevelopment in the Netherlands, there are several issues to consider: 1) there is an ongoing dependence on a strong market to generate sufficient financial capital and to motivate investments decisions; 2) the tension between priority setting and trade-off's between the type of investments that will lever market value versus investments that will contribute to climate adaptation¹⁶; 3) the inherent tension between real estate development timelines and return-on-investment assumptions vis-a-vis long-term investments; and 4) the degree to which investments will be enjoyed by those outside of the investment area (ie free rider issue).

Conclusions and Future Research

Like many national adaptation strategies, it is early days yet to evaluate the effectiveness of the Dutch strategy from an implementation perspective given there are limited cases of local implementation through area redevelopment processes. As Termeer et al point out, the Dutch government has only

¹⁶ This is not to say that investment in climate adaptation will not create value, but rather the value might be realized further into the future than is conventionally acceptable.

relatively recently moved forward on developing a full policy and the engagement between public, civic, and private actors regarding climate adaptation has just started (2011). However, based on an overview of the evolution of the national strategy and the suggested institutional delivery platform for local area redevelopment, the findings suggest that there will be challenges to simply “plugging” into the established institutional order of spatial planning for planning and development implementers at the local level. In doing so, the Dutch national adaptation strategy may have plugged into an institutional context that is, as some literature suggests, already in state of inertia before climate adaptation was even formulated into a public policy agenda item. To be sure, as Gupta et al suggest, “the effectiveness of institutions often depends on its ability to generate resources...” and therefore the success of the social actors within that institutional context is defined on the ability to raise the appropriate level of resources to carrying out their objectives (2010). Given the issues confronting Dutch planning and land development actors to raise sufficient resources to support even a conventional package of public infrastructure goods, the addition of incremental costs to incorporate climate risks (Smith, 2009) potentially represent greater project costs in terms of both hard and soft costs, and may continue to face the desire for institutional ‘certainty’ on the path to normalizing climate adaptation.

The preceding conclusions imply agreement with research in the climate adaptation literature that new institutions and new financial mechanisms are required in order to bridge the financial gap or, moreover, that the state of Dutch spatial planning practice, as being in a state of institutional inertia, according to the literature, will represent a long-term obstacle to adaptation implementation. However, in light of the broader theoretical propositions outlined in this paper, which is largely based on Mahoney and Thelen, Lowndes, and Hall, further research will take a more nuanced approach to that contention. This will be done by exploring the degree to which there are signals of innovative practices emerging in relation to implementing climate adaptation by considering the ways in which planning and land development actors are modifying existing modes of practices, reinterpreting rules and, specifically drawing from Mahoney and Thelen, 1) "borrowing" practices from other arenas; 2) "remembering" past practices and apply them to new uses; and, 3) by "sharing" the outcomes of institutional experimentation within their wider networks. If such signals exist, the research will consider to what degree the modifications are occurring in practice and whether is there an emerging reapplication or reformulation of the formal ‘rules of the game’ such as, for example, greater cost and risk sharing between the public and private sector with respect to urban infrastructure investment; and, in that regard, inclusion of climate adaptation measures as part of the investment package. In doing so, these ‘signals’ may indicate a gradual institutionalization of climate adaptation measures using existing

mechanisms and processes. Methodologically, the investigation will utilize causal process-tracing to investigate the Stadshaven¹⁷ area of Rotterdam as a means to determine if there evidence of climate adaptation preliminarily becoming embedded as process of gradual institutional change, thereby starting to fill the so-called institutional void. Causal process tracing is used to search for necessary or sufficient conditions that lead to a certain outcome and takes as a given that causality takes place over time and space (ie. it is a process) (Blatter and Haverland, 2012). The findings will be considered in relation the implications for marshalling financial resources for investment in climate adaptation through the planning and land development process. While this is a modest conception of creating “new” institutions, the approach will be attuned to looking at the conditions that underlie the outcome both in terms of the actors, which has both network and multi-level governance implications, and the institutional order in which the players are operating.

¹⁷ Stadshavens is the largest inner city development in the Netherlands, covering 1,600ha, in the centre of Rotterdam. This initiative has a long-term vision up to 2040 with an explicit objective of integrating a diverse and multifaceted development agenda, including climate proofing. The agenda is embedded within a complex governance model with multiple organizational actors and cross-jurisdictional complexities.

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