



Alleviating barriers to urban climate change adaptation through international cooperation



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ABSTRACT

International cooperation on climate change adaptation is regarded as one of the major avenues to reduce vulnerability in developing countries. Nevertheless, it remains unclear which design properties of international arrangements match with specific problems in local adaptation processes. This paper analyses conditions and institutional design options under which international cooperation can facilitate climate adaptation in urban areas in developing countries. We conduct a qualitative meta-analysis of empirical evidence from 23 cases. Using the archetype approach, we identify re-appearing barriers and change factors in urban squatter settlements and municipal public sectors in developing countries. We characterise five generic modes of international cooperation for climate adaptation based on UNFCCC documents, process observation, and literature review. Combining these analyses, we develop testable propositions that explain how specific design options of international arrangements can alleviate barriers and make use of change factors for urban adaptation in developing countries. We find, first, that international cooperation has the most potential to tackle adaptation barriers in squatter settlements if its institutional mechanisms support improvements of procedures and rights in localised state–society interactions. Second, national or regional centres of competence may foster endogenous dynamics in municipal public sectors. Third, national adaptation policies can enable and incentivise municipal adaptation. Fourth, flexible indicators of adaptation benefits are instruments to tailor international decision making and monitoring systems to local needs. We conclude that these insights, the archetypes approach, and a multi-level study design can be used to advance research on international cooperation, barriers, and success factors for climate change adaptation.

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1. Introduction

Most impacts of climate change manifest at the local level. This suggests to take adaptive action at comparatively local scales to ensure that social responses fit the climatic impact (Füssel and Klein, 2006; Adger et al., 2007; Young et al., 2008). However, at the same time adaptation to climate change has become a major agenda item in international climate policy, in particular under the UN Framework Convention on Climate Change (UNFCCC). This paper links the global to the local perspective by investigating how international cooperation might address specific barriers to, and change factors of, urban adaptation.

At least three perspectives provide a rationale for cooperation on climate change adaptation at the international level. First, support by the global north for adaptation in the global south can

be considered as a moral obligation arising from three inequalities: developed and developing countries are perceived highly unequal in terms of their historical responsibility for, risks of impacts from, and capacity to adapt to climate change (Roberts, 2009). Second, developed country parties might use adaptation support in international negotiations as a confidence building negotiation strategy and incentive for developing country parties to join a global climate agreement (Rübelke, 2011; Eisenack, 2012a). Third, international cooperation on climate adaptation may pave the way to provide a range of international public goods such as projections about climate change and future impacts as well as reduced international migration and conflicts (Aakre and Rübelke, 2010).

Consequently, adaptation has become a key building block in the UNFCCC. Currently, major ongoing work under the Convention includes inter alia the evolving climate finance architecture, the work programme on loss and damage, the technology mechanism, the architecture on National Adaptation Plans and National Adaptation Programmes of Action, and the reform of the Nairobi Work Programme on impacts, vulnerability and adaptation. One of

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the multiple challenges in this process is the design of channels for facilitating adaptation at local, national and regional governance levels.

The literature on international agreements for climate adaptation focuses on means to raise adaptation finance (e.g. Müller, 2008; Bowen, 2011; Eisenack, 2012a), to govern and monitor funds (e.g. Müller, 2010; Horstmann, 2011) and the strategic interaction effects of adaptation with mitigation in international negotiations (e.g. Zehaie, 2009; Rübbecke, 2011; Eisenack and Köhler, 2012). It investigates guidelines for spending adaptation funds based on normative premises (e.g. Grasso, 2010) and based on general characteristics of the adaptation challenge such as deep uncertainty (e.g. Burton et al., 2006; Fankhauser and Burton, 2011). Tompkins and Amundsen (2008) and Stecker et al. (2012) examine effects of international arrangements on national and regional adaptation policy. Other contributions trace the conceptual history and framing of adaptation in the UNFCCC process (e.g. Schipper, 2006; Horstmann, 2008), describe the legal framework (e.g. Mace, 2006), and investigate the interaction of adaptation and development (e.g. Smith et al., 2011).

This literature is mostly unconnected to research on adaptation at the local level. The latter one has predominantly been conducted in the form of contextualised case-studies of adaptation in specific economic sectors (e.g. fisheries: Kalikoski et al., 2010), regions, geographical areas (e.g. dryland: Eriksen and Lind, 2009) or by particular actors (e.g. local public administration: Roberts, 2008). In this context, barriers or constraints to adaptation are increasingly observed and examined as impediments to adaptation (e.g. Adger et al., 2009; Moser and Ekstrom, 2010; Biesbroek et al., 2013). Most of this research presents insights for one or a few cases without examining repeating patterns across cases. In addition, to the best of our knowledge there is no study yet that systematically assesses which kind of international cooperation fits to which local impediments to adaptation. This is problematic as interests of actors in international arenas may contradict with how adaptation problems are perceived in local realities. Specifically, there are concerns about additionality since local actors frequently experience climate risks in an 'integrated' manner as one among multiple stressors to their livelihoods. While donor countries might fear that funds are not channelled to their intended purpose, beneficiaries in recipient countries might be forced to actions that do not fit their actual needs. Moreover, the original focus on mitigation in the UNFCCC supported a focus on technical solutions in many adaptation projects whereas vulnerability has its root causes often in political, institutional, and social deficiencies (Fankhauser and Burton, 2011; Khan and Roberts, 2013). High-level international mechanisms run the risk of being not able to adequately consider local level realities. In sum, there is a clear lack of multi-level studies which model processes of climate adaptation at lower governance levels to analyse how international cooperation may alter these processes. Consequently, it remains largely unclear by which design properties international cooperation may effectively facilitate adaptation at the local level, where most of the adaptation challenges manifest.

This article explicitly addresses this gap. It utilises the concept of barriers to climate adaptation to investigate design properties of international arrangements that are capable to address specific impediments to adaptation. To provide focus, the paper is restricted to two important settings in urban areas in low- and middle-income countries: adaptation in urban squatter settlements and adaptation by municipal governments and public administration. The first setting covers a particularly vulnerable group (urban poor) while the latter considers a potentially important operator of adaptation (municipal authorities).

The applied methods and core concepts are described in Section 2. Subsequently, three sections present the results. Section 3 provides a qualitative meta-analysis of climate adaptation in urban squatter settlements and formal public sectors in low- and middle-income countries. It identifies archetypal patterns of barriers and change factors for adaptation in both settings. Section 4 systematises modes of international cooperation on climate adaptation based on policy documents, process observation and scientific literature. Section 5 combines both elements to analyse under which conditions and design options international arrangements are likely to support local adaptation processes. Section 6 concludes.

2. Methods and concepts

We define adaptation as actions undertaken by individual or collective actors with the intention to ultimately respond to observed or anticipated climate-related changes of environmental conditions (Eisenack and Stecker, 2012). A barrier is an impediment that either limits the actors' set of available means for adaptation or restricts actors from realising their adaptive capacity. A change factor is a condition, strategy or process that alters barriers and fosters adaptation processes. The effectiveness of international cooperation for adaptation is defined as the suitability of the international arrangement to alter adaptation problems (Young, 2011). The research of this study comprises three interrelated parts.

In part I (Section 3) we conduct a meta-analysis of case studies to model archetypal barriers and change factors of climate adaptation in urban areas in low- and middle-income countries. The large diversity of local adaptation contexts is a clear challenge for building empirically validated theories of how international arrangements work for local adaptation as well as for designing effective international institutions for adaptation. The meta-analysis approach is one way to contribute to theory building, while remaining rooted in empirical evidence (from secondary sources). This task requires a comprehensive and flexible notion of climate adaptation to adequately capture the case study diversity. There seems to be a trade-off between the generality of concepts and theories on the one side and their case-specific applicability on the other side (Young et al., 2006; Romero Lankao and Qin, 2011). The notion of archetypes has been suggested as a heuristics to solve this apparent trade-off (Eisenack, 2012b). Archetypes of adaptation are patterns that describe or explain climate adaptation in more than one, but not necessarily in all cases. The explanation of one case, in turn, can include more than one archetype and potentially a set of case specific attributes. In other words, the heuristics of archetypes directs attention to conceptual and functional similarities across cases while allowing, first, that an explanation of one case may require multiple archetypes as well as a set of case-specific assumptions and, second, that one archetype usually does not appear in all cases. The underlying hypothesis is that transferring insights from one case to another is valid if these cases share archetypes. Thus, the notion of archetypes provides this study with a heuristics to tailor concepts and models of adaptation barriers and change factors at an intermediate level of generality.

We use the diagnostic framework of climate adaptation (Oberlack and Neumärker, 2013) as a conceptual basis for comparing and translating different case study results. This multi-tiered framework adapts Ostrom's Institutional Analysis and Development Framework (Ostrom, 2005) and Social-Ecological Systems framework (Ostrom, 2009) to particularities of climate adaptation. It explains manifestations of climate adaptation processes (e.g. timing, extent, types of adaptation) and outcomes

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