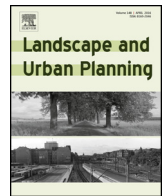




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Research paper

Coping with the wicked problem of climate adaptation across scales: The Five R Governance Capabilities

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ABSTRACT

Adapting social-ecological systems to the projected effects of climate change is not only a complex technical matter but above all a demanding governance issue. As climate change has all the characteristics of a wicked problem, conventional strategies of governance do not seem to work. However, most conventional governance institutions are poorly equipped to enable, or at least tolerate, innovative strategies. This paper analyses the various strategies used to cope with the wicked problem of climate adaptation across scales, and the institutional conditions that enable or constrain such strategies. For this, it relies on a theoretical framework consisting of five governance capabilities that are considered crucial for coping with wicked problems: reflexivity, resilience, responsiveness, revitalization and rescaling. This framework is used to analyse the governance of adaptation to climate change at three different levels: the United Nations Framework Convention on Climate Change and its activities to assist adaptation; the European Union and its climate adaptation strategy; and the Netherlands and its Delta Program. The results show that conventional governance strategies are rather absent and that mixtures of reflexive, resilient, responsive, revitalizing and rescaling strategies were visible at all levels, although not equally well developed and important. In contrast to the literature, we found many examples of enabling institutional conditions. The constraining conditions, which were also present, tend to lead more to postponement than to obstruction of decision-making processes.

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1. Introduction

Climate change is expected to have serious impacts on socio-ecological systems throughout the world (Rockström et al., 2009). These systems are facing the challenge of adapting to climate change, defined as “the adjustment in natural or human systems in response to actual or expected stimuli, which moderates harm or exploits beneficial opportunities” (IPCC, 2007). Adaptation involves both infrastructural adjustments, such as flood defences or water storage capacity, and broader processes of societal change, such as adjusted land use planning or agricultural transitions. Because climate change exhibits many features of wicked problems (Rittel & Webber, 1973), it has been called a ‘wicked problem par excellence’ (Jordan, Huitema, van Asselt, Rayner, & Berkhout, 2010; Termeer, Dewulf, & Breeman, 2013). Adaptation is highly

interconnected with many different policy fields as varied as water management, spatial planning, infrastructure, agriculture, energy, industry, nature and health. Important uncertainties persist about the nature and scale of risks, and the effectiveness of solutions (Dewulf, 2013). Adaptation has no “stopping rule” (Rittel & Webber, 1973, p. 162), particularly because the benefits of adaptation can take a considerable time to become evident, so it is very hard for actors to assess how much adaptation is enough. What is more, adaptation strategies can result in unintended dynamics in other parts of the socio-ecological system, often triggering new problems. Obviously, disagreement on both goals and facts makes climate adaptation prone to controversies which inevitably result in power plays, as stakes are high (Hoppe, 2011).

The wicked problem of adaptation to climate change poses considerable governance challenges. We define governance as the interactions between public and/or private actors ultimately aimed at addressing collective issues. It is now widely recognized in the literature that conventional governance approaches are not suitable for addressing wicked problems (Head, 2008; Rittel & Webber, 1973). To fill this gap, scholars have provided various alternative strategies (Duit & Galaz, 2008; Head, 2008; Koppenjan & Klijn, 2004; Roberts, 2000). When these strategies are used in practice,

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tensions often emerge between these new approaches and the formal and informal rules and values of existing governance systems, reflecting complex power configurations (Hendriks & Grin, 2007). In general, most conventional governance institutions are poorly equipped to enable, or at least tolerate, alternative strategies (Head & Alford, 2015; Hendriks & Grin, 2007). We assume that this is especially true in the case of climate adaptation, because most governance institutions date back to a time when the climate issue was of hardly any importance (Gupta, 2010).

To analyse these specific challenges of wicked problems, we developed the theoretical framework of the Five R Governance Capabilities (Termeer, Dewulf, Breeman, & Stiller, 2015; Termeer & Dewulf, 2014). A governance capability is defined as governance actors' ability to act wisely when facing wicked problems, and the ability of the governance system to enable such acting. The framework consists of five capabilities, namely, reflexivity, responsiveness, resilience, revitalization and rescaling, and of several characteristic strategies and enabling institutional conditions linked to each capability (Termeer & Dewulf, 2014; Termeer et al., 2015). This framework is expected to aid analysis for the following reasons. First, it addresses both the various governance strategies to cope with wicked problems and the hindering or enabling conditions of the governance institutions that constrain or encourage these strategies, as well as their mutual interplay. Second, it acknowledges that a single approach is not sufficient to cope with wicked problems. Therefore, it relies on a set of five governance capabilities, each based on a different strand of literature and addressing a different feature of a wicked problem. Third, it starts from the criterion of wisdom (Weick & Sutcliffe, 2001; Weick, 1984). One of the most demanding characteristics of wicked problems is that they cannot be solved once and for all and that people thus have to develop modes to live with, or even embrace, them (Rittel & Webber, 1973; Xiang, 2013). As a consequence, the usual criteria to objectively evaluate governance strategies and institutions, such as good and bad or effectiveness and efficiency, do not make sense (Churchmen, 1967; Rittel & Webber, 1973; Wexler, 2009). To cope wisely with wicked problems, one must acknowledge one's limited understanding, take multiple perspectives for analysis and interventions, be sensitive to institutional complexity, and recognize and appreciate small wins (Termeer et al., 2015; Weick & Sutcliffe, 2001; Weick, 1984).

This capabilities framework is used as an analytical lens through which to analyse the governance of the wicked problem of adaptation to climate change. Given the multi-level nature of this issue and the existing governance activities in different jurisdictions, we analyse governance institutions and strategies across three different levels: the United Nations Framework Convention on Climate Change, its approach and associated activities to assist adaptation; the European Union and its climate adaptation strategy; and the Netherlands and its Delta Program. This paper thereby aims to address two research questions: (1) What insights does the framework provide into the strategies to cope with the wicked problem of climate adaptation and into the institutional conditions enabling or hindering these strategies? (2) To what extent is the framework useful for analysing wicked problems in multi-level contexts?

2. Adaptation to climate change at three different levels

In this section, we briefly introduce the adaptation policies at the three chosen levels. We discuss both the main adaptation policies and the institutional characteristics of the broader governance system at each level. The descriptions and analyses are based on earlier work by the authors based on interviews, participatory observation and document analysis (Boezeman, Vink, & Leroy, 2013; Dewulf, 2013; Termeer, Biesbroek, & van den Brink, 2011; Vink et al., 2015;

Vink, Boezeman, Dewulf, & Termeer, 2013) and additional document analysis.

2.1. The United Nations Framework Convention on Climate Change and its adaptation policy

The United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol are treaties agreed after negotiations among participating parties (states). After their adoption, climate mitigation took centre stage, and adaptation was very much backstage for almost twenty years (Biesbroek, Swart, & van der Knaap, 2009). The first concrete action under the UNFCCC was the setting up of three funds in 2001 to support adaptation: two administered by the Global Environment Facility and one financed by proceeds from the Clean Development Mechanism of the Kyoto Protocol (Verschuuren, 2013). Their priority is to channel resources to the most vulnerable countries for adaptation planning processes and concrete projects. Additional resources are supposed to be added via the Green Climate Fund. This fund was conceived at the Copenhagen summit in 2012, and developed countries promised to mobilize a flow of 100 billion USD per year to this fund by 2020 (Verschuuren, 2013).

In order to access adaptation funds, developing countries have to identify projects for adaptation. National Adaptation Programs of Action (NAPAs) support the least developed countries in doing this. As of May 2012, 49 countries had submitted NAPAs to the UNFCCC Secretariat (http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/7572.php). In 2010, the parties to the UNFCCC adopted the Cancun Adaptation Framework under which all parties are expected to plan, prioritize and implement adaptation actions, strengthen institutional capacities for adaptation, and build the resilience of socio-economic and ecological systems. An Adaptation Committee was established to support implementation of this framework and to function as an overall advisory board. The following year, the parties decided on the parameters for National Adaptation Plans (NAPs) (Decision 7.CP.7 FCCC/CP/2011/13 Add. 1. 43–45). The decisions to develop more detailed recommendations on how countries should work on adaptation and to set up an institutional structure on adaptation within the UNFCCC regime have laid the foundation for strong and continued attention to this theme.

2.2. The European Union (EU) and its climate adaptation strategy

In April 2013, the European Commission presented its strategy on adaptation to climate change (European Commission, 2013). Until then, the EU focus had been on encouraging and supporting member states to develop and implement adaptation strategies. The overall aim of the 2013 Adaptation Strategy is “to contribute to a more climate-resilient Europe” (European Commission, 2013). This is split into three goals, supported via eight actions. The first goal is to promote and support member states to develop national adaptation strategies and take concrete actions via the provision of guidelines and funding to support capacity building. The second is to ensure better informed decision making by filling knowledge gaps on adaptation costs and benefits, risk assessments, decision support models, tools and frameworks, monitoring and evaluation methods, as well as further developing the CLIMATE-ADAPT portal (a web-based portal that helps member states to access and share information on climate adaptation). The third is to climate-proof EU action by mainstreaming climate adaptation in EU policies and programs. For this third purpose, the strategy is accompanied by documents on adaptation in specific sectors and policy areas, such as migration, marine and coastal areas, health, infrastructure, agriculture, cohesion policy and insurance. In the near future, other

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