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Understanding the transition to integrated flood risk management in the Netherlands

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ABSTRACT

The multi-pattern approach (MPA) is a new method that has been applied to understand the transition to integrated flood risk management (IFRM) in the Netherlands. This paper presents a detailed analysis of the outcomes of the 2.3 billion Euro flood safety programme Room for the River (RftR). 2 years of research, 55 interviews, a survey of 155 respondents and elaborate document analysis, provided in-depth evidence of how the transition occurred in practice. Experiments were scaled-up, IFRM was consolidated in national policies, and the implementation of RftR further adapted the functioning of the societal system. Lessons are drawn that enrich the MPA framework and that can help its further development and application. The MPA provides scientists with a method to analyse transition dynamics as a chain of patterns that occur under certain conditions. Policy makers can shape and monitor the outcomes that are to be generated to support a transition.

1. Introduction

The frequency and consequences of extreme flood events have rapidly increased worldwide in recent decades (e.g. Bouwer et al., 2007; Kron, 2009) and climate change is likely to exacerbate this trend in the near future (e.g. IPCC, 2007). The key factors for this increase in flood risk are global population growth and the increase in socio-economic activities in flood prone areas, together with their growing interdependency on flood protection and drainage infrastructure of which a significant

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part is of unknown or poor condition (Ashley and Cashman, 2006; National Committee on Levee Safety, 2009). It is increasingly recognised that engineering responses alone cannot accommodate the future frequencies and impacts of flooding and a shift in emphasis is required from hard structural solutions to a mixed integrated approach that consists of both structural and non-structural responses (Zevenbergen et al., 2008).

Many scholars call for a transition to policies that actively manage flood risk to reduce flood impacts and accommodate floods: 'living with water', rather then a mere focus on flood protection: 'fighting against water' (e.g. ibid; Zevenbergen et al., 2013; Newman et al., 2011; White, 2010; Dawson et al., 2011). In the recent past, major flood disasters have acted as drivers for changing flood risk management policies (Mauch, 2009). The rethinking of and change in the traditional approach is included in integrated flood risk management (IFRM) policies such as: the EU Flood Directive (EC, 2006); the source-pathway-receptor framework as used by the Environment Agency in England and Wales (EA, 2000); and the multi-layer safety approach in the Netherlands (V&W, 2008). Many experiments, such as research projects, policy pilots, and demonstration projects have been conducted based on IFRM (e.g. Farrelly and Brown, 2011; Van Herk et al., 2011a; Hegger et al., 2012; van den Brink et al., 2013). An integrated approach to flood risk management set within land use planning processes is now seen as an effective way of minimising flood risk, although this has not always been recognised in practice and implementation is often still lacking (e.g. Watson and Adams, 2010; DCLG, 2012). Implementation of IFRM faces multiple barriers such as: technical lock-in to structural solutions (Walker, 2000) such as defence measures; lack of understanding of the effectiveness of non-standard response measures (Adger et al., 2005). Also spatial planning has many drivers other than flood risk that do not always give IFRM priority consideration (Van Herk et al., 2011a). A transition or regime change is required to overcome these and other barriers (e.g. Van der Brugge and Rotmans, 2007). The implementation of new integrated policies will have to address these and possibly other as-yet unforeseen barriers. We pose the hypothesis that investment programmes that embrace a new IFRM approach would contribute to a transition to IFRM. By their implementation, such programmes would not only deliver on their objectives (output), but would also generate outcomes that have an impact beyond the scope of the programme and are sustained after the delivery of the programme. These programmes need to be monitored and evaluated to document and draw lessons on the impact of these processes in supporting a wider transition. Those managing, or rather, contributing to a transition, need to understand these processes for iterative adjustment of the governance practices that are needed for such transitions (Loorbach, 2007).

This paper uses as a case study the transition to IFRM in the Netherlands as described by e.g. Van der Brugge et al. (2005) and focuses on the large-scale implementation programme Room for the River (RftR). The paper presents results from 2 years of case study research that aimed to analyse RftR's contribution to a transition to IFRM in the Netherlands through the generation of outcomes. A detailed analysis of the outcomes of RftR is used here to provide in-depth evidence of how the transition occurred in practice during the implementation of the RftR programme. RftR was selected here as a case study, because it is an exemplary project for IFRM in terms of integrated outputs and collaborative processes (Rijke et al., 2012) and because RftR was positioned as an iconic project in the transition in Dutch water management (Warner et al., 2012). RftR was launched when the dominant flood management paradigm was shifting from 'flood defence' with a sectoral and technological focus, to an integral and spatial focus (Zevenbergen et al., 2013; Van der Brugge et al., 2005). As a response to the floods of 1993 and 1995 in the Netherlands, the 2.3 billion Euro flood safety programme RftR was approved by Dutch parliament in 2006 to increase flood safety by giving the rivers in the Netherlands more room instead of merely reinforcing the defence systems (PKB, 2006). The programme is to be delivered by 2015 to increase the river discharge capacity to 16,000 m^3/s in Lobith (where the Rhine crosses the German-Dutch border) by implementing river widening measures. The Programme comprises of 39 measures or projects for giving more room for the rivers Rhine, IJssel, Waal and Lek. The concept of river widening comprises measures, such as flood by-passes, excavation of flood plains, and dike relocation. 'Room for the River' explicitly aims to increase flood safety combined with increased spatial quality of landscape, nature and culture (Schut et al., 2010).

The Multi-Pattern Approach (MPA) (De Haan and Rotmans, 2011) is a new method to describe and understand the dynamics of societal transitions as a sequence of patterns (Section 2.2). The MPA is