



ELSEVIER

Contents lists available at SciVerse ScienceDirect

Environmental Innovation and Societal Transitions

journal homepage: www.elsevier.com/locate/eist



Understanding the development of flood management in the middle Yangtze River

Chun Xia^{a,*}, Claudia Pahl-Wostl^b

^a Wuppertal Institute for Climate, Environment and Energy GmbH, Germany

^b Institute for Environmental Systems Research, University of Osnabrueck, Germany

ARTICLE INFO

Article history:

Received 2 April 2012

Received in revised form 3 October 2012

Accepted 3 October 2012

Available online 30 October 2012

Keywords:

China

Flood management

Learning

Transition

Yangtze River

ABSTRACT

This study aims to investigate whether, to what extent and how a transition toward integrated flood management has taken place in the Dongting Lake area at the middle Yangtze. Accordingly, we conducted a longitudinal research of its flood management (1949–2009). We developed an analytical framework linking regime components to two societal learning types (double and triple-loop learning) that are key to a regime transition. Our study shows that the transition toward integrated flood management has already started, but the whole regime transformation will still take time to complete, due to, for example, the not-yet-ready decision-making processes that shape the structure changes as well as the incompatibilities between what is on paper and real implementation. To understand how the regime transition took place, we investigated where and how triple-loop learning was initiated as well as how so-called “informal learning processes” has contributed to the transition of Dongting flood management.

© 2012 Elsevier B.V. All rights reserved.

1. Introduction

Flood control has long been an engineering-centered approach that aimed at lowering the probability of flooding and reducing society's exposure to floods, within a paradigm of “absolute protection” (Schanze, 2006). By realizing the complex nature of flood disasters and impacts of flood control measures, the international community has increasingly committed itself to an integrated approach for flood management to address risk management as well as the economic, social, and environmental effects of different measures (Schanze, 2006; APFM, 2009).

* Corresponding author at: Wuppertal Institut fuer Klima, Umwelt, Energie GmbH, Döppersberg 19, 42103 Wuppertal. Tel.: +49 02 02 24 92 257; fax: +49 02 02 24 92 250.

E-mail address: chun.xia@wupperinst.org (C. Xia).

The Yangtze, the longest river in China, has been subjected to flooding throughout history. Especially the development of the provinces and municipalities at its middle and lower reaches, which are of great economic importance for China, have been hampered by disastrous floods. Thus, dealing with floods has been the major concern of not only these local riparian governments but also the central government. Following the disastrous floods in the Yangtze and other major rivers in 1990s, the Chinese government has also realized that engineering-centered flood control alone is not sufficient to deal with the complex flooding system and expressed the need of a paradigm shift from traditional flood control to an integrated approach of flood management (E, 2004).

Extensive research has contributed to the knowledge base of integrated flood management in China and the Yangtze River Basin, ranging from delivering a theoretical framework of flood management strategies (e.g. Cheng, 2004) and innovative policy instruments (e.g. Xiang, 2002) to flood risk management (e.g. Gemmer, 2004). However, the developments that have really taken place in flood management have received far less attention (Te Boekhorst et al., 2010). Given the persistent nature of water problems (Van der Brugge and Rotmans, 2007), the investigation of the flood management development should take a system perspective, i.e. the structural change of a regime, including its management paradigm, policies, physical infrastructures, multi-actor decision-making processes, etc. Pahl-Wostl (2007) claims that improving the understanding of such a development is essential for supporting the transition toward a desired regime, e.g. integrated flood management. A vast array of studies have provided theoretical bases and heuristic frameworks for studying transition (e.g. Geels, 2002; Elzen et al., 2004; Loorbach, 2007; Rotmans, 2005). However, transition research has focused largely on socio-technological systems in the context of developed countries where transitions are often driven by technical innovations. Transition in societal systems that fulfill specific functions, such as water management, or transition in the context of developing countries, such as in China, may involve different kinds of dynamics and be driven by other key factors and deserves in-depth study. Thus, investigating the development process of a societal system in China will broaden the perspective of the current transition research.

Accordingly, this study aims to investigate whether, to what extent and how the transition toward a regime of integrated flood management (IFM) in the middle region of the Yangtze River has taken place. To this end, we conducted a longitudinal study (1949–2009) of flood management for the Dongting Lake area, which is mainly located in Hunan Province at the Middle Yangtze. Dongting Lake is a retention lake naturally connecting to the Yangtze River and is very important for storing excessive flood water from the main channel of the Yangtze, and has thus been designated by the central government as a key national Flood Retention and Storage Area (FRSA). On the other hand, the lake is also key for the socio-economic and cultural development in its surrounding area, due to its rich natural assets. However, its development has also long suffered from disastrous floods (Lai and Mo, 2004).

2. Analyzing the transition of a flood management regime

Prior to exploring a regime transition, we first present what is meant by the term “regime” in this paper. No single standard definition of “regime” is widely accepted (Holtz et al., 2008). Generally, the notion of regime can be distinguished between two schools. The first conceptualizes regime as a socio-technological system that centres on technologies. The second elaborates regimes tailored to a sub-societal system that fulfils specific functions, such as water management (Van der Brugge, 2009; Holtz et al., 2008). The “regime” in this paper follows the later conceptualization. We applied the regime concept described by Van der Brugge (2009) to support the empirical analysis of a regime development by unfolding regime components and their internal dynamics. He characterizes a regime as a system containing interactions of three components: actor,¹ process,² and regime structure and further distinguishes three interconnected *components in the regime structure*:

¹ According to Van der Brugge (2009), the “actor” component includes both individuals and organizations.

² The “process” component connects “the sphere of actors to the sphere of structures” of the regime (Van der Brugge, 2009). It can include management practices such as strategic planning as well as initiatives outside the government agencies.

Download English Version:

<https://daneshyari.com/en/article/108219>

Download Persian Version:

<https://daneshyari.com/article/108219>

[Daneshyari.com](https://daneshyari.com)