

# Integrated and Participatory Analysis of Water Governance Regimes: The Case of the Costa Rican Dry Tropics

CHRISTOPHER KUZDAS<sup>a,b</sup>, ARNIM WIEK<sup>b</sup>, BENJAMIN WARNER<sup>b,c</sup>, RAFFAELE VIGNOLA<sup>a,e</sup>  
and RICARDO MORATAYA<sup>d,\*</sup>

<sup>a</sup> *Tropical Agricultural Research and Higher Education Center, Turrialba, Costa Rica*

<sup>b</sup> *Arizona State University, Tempe, USA*

<sup>c</sup> *University of Massachusetts, Amherst, USA*

<sup>d</sup> *Universidad Nacional de Costa Rica, Nicoya, Costa Rica*

<sup>e</sup> *University of British Columbia, Vancouver, Canada*

**Summary.** — We present a comprehensive analysis of water governance in Guanacaste, Costa Rica. Methods included interviews, workshops, and participatory processes. The study zooms in on water-related rules and regulations, people's actions, and the physical water system that people depend on. The results indicate complex governance problems and provide focal points for sustainable governance efforts. Focal points include: respecting scarcity and the limits of groundwater availability; building broad governance capacity; reconciling disenfranchised rural groups; and supporting creative local leadership. The study asserts the need for combining critical governance analysis with transformational and solution-oriented research in support of sustainable water governance efforts.

© 2014 Elsevier Ltd. All rights reserved.

**Key words** — sustainable water governance, leadership, polycentric systems, social network analysis, Costa Rica, Latin America

## 1. INTRODUCTION

Evidence shows many socio-ecological systems may be nearing boundaries, beyond which, system damage may be irreparable (Rockström *et al.*, 2009). Water systems and people in rural developing semi-arid regions such as the Central American dry tropics may be particularly vulnerable (Ballesteros, Reyes, & Astorga, 2007). These regions face challenges such as extended dry seasons, poverty, violence, political exclusion, and unjust water access and service distribution (Barten, Montiel, Espinoza, & Morales, 2002; Casas-Zamora, 2011). Over the last two decades, research has identified general design features of governance regimes that can support people in their collective efforts to address such challenges and sustainably govern their resources (Folke, Hahn, Olsson, & Norberg, 2005; Ostrom, 1990). However, current water governance in many places may actually be worsening rather than solving problems (Bakker, Kooy, Shofiani, & Martin, 2008). Put simply, people must ultimately 'govern water differently' if they are to resolve problems and achieve positive sustainability outcomes (Wiek & Larson, 2012).

The emphasis on governance (rather than management) is well established and represents a shift from traditional resource management paradigms of hierarchical state-controlled models toward those with political and decision-making authority exercised through interlinked groups of diverse actors (Hall, 2002; Rhodes, 1996). We view water systems as complex socio-ecological systems governed by intricate sets of rules, rights, and decision-making processes (e.g., institutions) that involve state, private, and civil society actors (Kemp, Parto, & Gibson, 2005). Successfully meeting water-related development needs and sustainability goals – such as equitable access, sanitation targets, reliable service provision, and fair deliberative processes – is beyond the capacity of governments alone. Thus, the contributions of actors from across public, private, and civil society sectors are critical for achiev-

ing positive outcomes (Franks & Cleaver, 2007). These actors have diverse values, capacities, and policy influences, and they align themselves through various social arrangements and networks (Lemos & Agrawal, 2006). *Governance* provides a way to conceptualize social arrangements among relevant sectors, groups, and interests, which enables researchers to analyze how society organizes itself to address water-related challenges, to meet development needs, and to define and reach collective goals (Rogers & Hall, 2003). In this article, we understand governance as the set of collective actions that steer water systems toward shared goals and are coordinated among diverse actors (Wiek & Larson, 2012).

Within new institutional economics, some resource governance studies have used common pool resource (CPR) theory to better understand the failures and successes of people's collective actions to sustainably govern the resources that they depend on (Agrawal, 2001; Ostrom, 1990; Wade, 1988). Generally in the CPR theory – and particularly in Ostrom's body of work – trust, reciprocity, and communication are viewed as critical 'building blocks' for people to successfully take collective action (Agrawal, 2014). For effective governance of larger CPR systems, research in this vein theoretically

\* We are thankful for our partners in the *Comisión para el Manejo de las Sub-cuenclas Potrero y Caimital* and the many outstanding study contributors in Guanacaste. Heiner Rosales and Gabriela Morera provided assistance with interviews. Mariel Yglesias provided excellent project support. Helpful comments from Professor Dan Childers and two reviewers improved this article. Research presented here was financially supported by the Organization for Tropical Studies, Arizona State University, and the Tropical Agricultural Research and Higher Education Center. Christopher Kuzdas acknowledges support from a 2013–14 U.S. Fulbright fellowship to work and study in Costa Rica. The findings and views expressed in this article are the responsibility of the authors. Final revision accepted: August 30, 2014.

suggests ‘multiple layers of nested enterprises’ where smaller organizations are nested with larger organizations in polycentric (as opposed to mono-centric) systems (Ostrom, 2010). Concepts of polycentric systems originally developed apart from CPR theory (i.e., Ostrom, Tiebout, & Warren, 1961), but they have become increasingly deliberated in order to help explain large and complex resource governance systems (i.e., Gruby & Basurto, 2013; Marshall, 2009; Ostrom, 2010). In the water governance field, some studies have further built on ideas from CPR theory and polycentricity to explain and develop water governance in practice (i.e., Neef, 2009; Pahl-Wostl, Holtz, Kastens, & Knieper, 2010; Wiek & Larson, 2012).

Polycentric systems contain many interconnected – as opposed to relatively few – centers of decision-making authority or power (Ostrom *et al.*, 1961). They disperse this authority across locations and nested scales and they allow governing actors to self-organize (Andersson & Ostrom, 2008). In theory, polycentric systems are thought to allow for less risk of overall system failure in the event of shocks *vs.* more centralized or technocratic systems. This relative advantage is due to the large number, diversity, and redundancy of connections and hubs in the system, which may be advantageous in promoting trust, reciprocity, and communication among governing actors (Marshall, 2009; Ostrom, 2007). Because of these systemic interconnections, polycentric systems are also theorized to allow for local knowledge to inform the design of context relevant institutions and for larger organizations (i.e., state agencies) to support and guide resource and information intensive processes such as capacity building, monitoring, and cross-boundary coordination (Gruby & Basurto, 2013; Mansbridge, 2010). Some water governance research has generally proposed that, due to the uncertainty and complexity of water systems, polycentric systems (as opposed to centralized or rigid management schemes) that effectively engage stakeholders in deliberative processes may be best able to cope with water-related stress and resolve problems (Neef, 2009; Svendsen, Wester, & Molle, 2005). Thus, in some cases, such systems are theorized as robust options for people to sustainably govern their water under high uncertainty (Pahl-Wostl & Kranz, 2010).

In practice though, most water governance regimes have at least some mix of ‘polycentric’ features, they face system fragmentation issues to at least some extent, and the outcomes they produce vary (Huitema *et al.*, 2009; Teisman & Edelenbos, 2011). For example, some studies have found that more dispersed models of governance can aggravate problems in cases where alternative governing systems were imposed, i.e., via neoliberal economic reform, and where structural inequality, social tension, or stakeholder power asymmetries are present (Ribot, 1999). In addition to governance system design, politics (including power relations) also plays a role in determining or choosing ‘who gets what’, and in some cases may undermine good intentioned governance schemes (Fox, 1995; Lemos & Oliveira, 2004). However, politics among other things, may also afford creative leaders the maneuverability, assets, and capacity needed to make positive improvements and to implement new and sustainable governance systems (Merrey & Cook, 2012). Ultimately, the relevant literature largely agrees on the importance of understanding and formulating new systems of water governance, systematically accounting for people’s actions and water-related activities, and addressing underlying structural inequality issues that deter improving the well-being of marginalized populations (Kuzdas & Wiek, 2014; Lemos, Boyd, Tompkins, Oshbar, & Liverman, 2007; Rogers & Hall, 2003).

There is a need for additional critical understanding of how polycentricity (and other structures of water governance) may

or may not support people’s efforts to achieve sustainable water governance and meet water-related development needs in different places (Molle, Wester, & Hirsch, 2007; Neef, 2009). Addressing this need will help clarify knowledge of complex water problems and which types of water governance systems may be beneficial for people to sustainably govern their water in challenging contexts. This need is important in developing regions like the Central American dry tropics that are underrepresented in the literature and that face urgent and interlinked sustainability challenges (ISSC/UNESCO, 2013, p. 605). There is also a need to advance our ability to understand interconnectedness in water governance systems, which may help prepare for subsequent constructive research efforts to determine what people could strategically do, given available resources and the current-state, to achieve sustainable water governance and meet water-related development needs (Kuzdas, Wiek, Warner, Vignola, & Morataya, 2014).

In this article, we begin to address the above research needs using the case of Guanacaste Province in Northwest Costa Rica. We use a recently proposed analytical framework to investigate: key governance actors, their water-related activities, and their roles in the water governance system; why actors do what they do with water; and how they relate to each other within the governing domains of water supply, delivery, use, and outflows (Wiek & Larson, 2012). With this framework we expect to better understand water governance systems with varying degrees of polycentricity and their outcomes. We do this to answer the following research questions:

1. What is the structure (or extent of polycentricity) of relevant institutions and the governance actor network (overall and for each water governance domain), and how do these structures influence water governance outcomes? (RQ1).
2. How do individual actors influence water governance and its outcomes in the region? (RQ2).
3. How do collective knowledge gaps about the water system affect its governance? (RQ3).

Answering these questions allows us to critically examine current water governance. On this basis, we explore integrative prospects, beyond general polycentricity, for people to achieve sustainable water governance in the Central American dry tropics.<sup>1</sup> The case affords a systematic understanding of water governance in rural and semi-arid developing regions.

## 2. SYSTEMS FRAMEWORK FOR ANALYZING WATER GOVERNANCE REGIMES

In this study, we used the ‘systems framework’ for analyzing water governance regimes proposed by Wiek and Larson (2012). The framework builds on the institutional analysis and development framework (IAD Framework) and its later iterations as the diagnostic framework for analyzing socio-ecological systems (SES) (Ostrom, 2007, 2009). The IAD and SES frameworks have been previously used to understand water governance (Imperial, 1999; Meinzen-Dick, 2007). The systems framework we used here structures analysis in a way that mimics regional water systems across four domains: water supply, delivery, use, and outflows. The framework allows for analyzing water governance as a dynamic process focusing on what people actually *do* with water. This focus allows two advantages. First, abstract water policies and politics are reviewed in light of what people actually do and what they do differently (and with what outcomes) (Clement, 2010). Second, a view toward people’s activities provides a way to conceptually link the governance system to the physical water

Download English Version:

<https://daneshyari.com/en/article/7394448>

Download Persian Version:

<https://daneshyari.com/article/7394448>

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