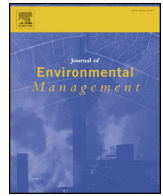




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Review

Adaptive governance good practice: Show me the evidence!

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ABSTRACT

Adaptive governance has emerged in the last decade as an intriguing avenue of theory and practice for the holistic management of complex environmental problems. Research on adaptive governance has flourished since the field's inception, probing the process and mechanisms underpinning the new approach while offering various justifications and prescriptions for empirical use. Nevertheless, recent reviews of adaptive governance reveal some important conceptual and practical gaps in the field, particularly concerning challenges in its application to real-world cases. In this paper, we respond directly to the empirical challenge of adaptive governance, specifically asking: which methods contribute to the implementation of successful adaptive governance process and outcomes in practice and across cases and contexts? We adopt a systematic literature review methodology which considers the current body of empirical literature on adaptive governance of social-ecological systems in order to assess and analyse the methods affecting successful adaptive governance practice across the range of existing cases. We find that methods contributing to adaptive governance in practice resemble the design recommendations outlined in previous adaptive governance scholarship, including meaningful collaboration across actors and scales; effective coordination between stakeholders and levels; building social capital; community empowerment and engagement; capacity development; linking knowledge and decision-making through data collection and monitoring; promoting leadership capacity; and exploiting or creating governance opportunities. However, we critically contextualise these methods by analysing and summarising their patterns-in-use, drawing examples from the cases to explore the specific ways they were successfully or unsuccessfully applied to governance issues on-the-ground. Our results indicate some important underlying shared patterns, trajectories, and lessons learned for evidence-based adaptive governance good practice within and across diverse sectors, issues, and contexts.

1. Introduction

Adaptive governance has emerged in the last decade as an intriguing avenue of theory and practice for the holistic management of complex environmental problems (Dietz et al., 2003; Folke et al., 2005; Walker et al., 2004). In response to the failure of previous management regimes to implement governance structures robust enough to achieve ecological sustainability and build community capacity under conditions of uncertainty, adaptive governance expressly refuses a narrow focus on linear management for ecosystem outcomes (Brunner et al., 2005; Pahl-Wostl, 2009). The field instead reflects a growing need for environmental and resource management regimes which include concepts of flexibility, resilience, and capacity for change in the planning and implementation process.

Research on adaptive governance has flourished since the field's inception. With failed environmental outcomes increasingly acknowledged as governance, and not only management, failures (Pahl-Wostl,

2009), Dietz et al. (2003), Folke et al. (2005), Plummer et al. (2013), and others noted adaptive governance's expansion of the adaptive management concept to incorporate the social context and conditions necessary for sustainable social-ecological landscapes. Early work on adaptive governance explored the process and mechanisms underpinning the new approach, then theorised and tested prescriptions for practical application (Folke, 2006; Folke et al., 2005; Gunderson and Light, 2006; Walker et al., 2004). A growing body of empirical literature has since taken up the challenge of adaptive governance in practice, offering individual and comparative insight on the successes and failures of adaptive governance in cases transitioning to or already practicing an adaptive governance framework (Boyd and Folke, 2011; Brunner et al., 2005; Olsson et al., 2006; Scholz and Stiffler, 2005). Though case study findings reflect mixed success and numerous contextual obstacles to adaptive governance on the ground, these and other studies reiterate the continuing need for innovative approaches to management under conditions of environmental change.

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We turned to adaptive governance in the context of an action research project exploring novel methods to support environmental decision-making in a severely eroded catchment area in New Zealand. Erosion in the Waiapu catchment on New Zealand's North Island is the result of a decades-long history of detrimental land-use exacerbated by a series of ongoing social-ecological shocks (Scion, 2012; Warmenhoven et al., 2014). The main parties engaged in management of the catchment, including central and regional administrative bodies and the local indigenous governing entity, have already agreed on the need for action, as formalised in a 100-year Memorandum of Understanding for erosion control (Ministry of Primary Industries, Te Runanganui o Ngati Porou, & Gisborne District Council, 2014). However, the parties are finding *implementation* of concrete management solutions a more complicated task, and progress currently remains slow. Similar to most other global environmental problems, barriers include the multiple, interlocking causes and impacts of erosion across dual social and ecological domains; the number, diversity, and spread of affected stakeholders; and the sheer scale and unpredictability of the erosion issue coupled with the 100-year timeframe of the Memorandum of Understanding.

Based on the principles of adaptive governance theorised and tested in earlier work, Edwards et al. (2018) hypothesises that the application of an adaptive governance approach in the Waiapu erosion case will potentially facilitate effective environmental decision-making and practice where traditional approaches have failed. We proposed to implement a suite of adaptive governance methods most relevant to the case to facilitate supported environmental outcomes for ecological sustainability and community resilience, before extending the adaptive governance approach up and out for use in other cases across New Zealand. Our initial task was therefore to assess and analyse specific pathways for the empirical implementation of adaptive governance to help guide evidence-based good practice for the Waiapu catchment's real-world governance dilemma.

We nevertheless found recent reviews of the adaptive governance literature (Chaffin et al., 2014; Karpouzoglou et al., 2016; Wyborn, 2015a) to reveal some important conceptual and practical lacunae concerning challenges in the operationalisation of adaptive governance within and across empirical cases. These gaps most notably concern a lack of understanding of the mechanisms, preparation, and frameworks necessary for the transition to adaptive governance in practice (Clark and Clarke, 2011; Huitema et al., 2009; Rijke et al., 2012) alongside limited knowledge on the barriers within existing institutions and regulatory frameworks to successful planning and implementation of adaptive governance frameworks (Chaffin et al., 2014; Olsson et al., 2006). Wyborn (2015a,c) likewise flags a larger trend in the adaptive governance canon in which abstract work on design principles and governance conditions impedes 'situated' or relational perspectives more sensitive to different contexts. So far, the adaptive governance literature would appear to lack much comprehensive direction for the messy, on-the-ground work of governance application.

In this paper, we thus respond directly to the empirical challenge of adaptive governance, specifically asking: which methods contribute to the implementation of successful social-ecological adaptive governance process and outcomes in practice and across contexts and cases? Chaffin et al. (2014) previously suggested the need for further empirical and case work to explore current challenges to successful adaptive governance practice. However, Pahl-Wostl (2009) and Wyborn (2015a) cautioned that an overemphasis on the empirical context of adaptive governance systems potentially hinders development of cross-case insight while more generic or abstract approaches bypass the situated character of adaptive governance on the ground. To address this tension, Pahl-Wostl (2009) developed an 'intermediate'-level conceptual framework to analyse governance dynamics and change, while Wyborn (2015a) combined adaptive governance with a co-production frame to balance normative with relational- or process-based governance dimensions.

What is needed in addition to these new or alternative conceptual adaptive governance frameworks is an exploration and analysis of the growing range of cases of successful or failed adaptive governance processes and implementation which already exist. Empirical work in the adaptive governance field has primarily been conducted on an individual level; the multiple-case comparisons which do exist, while insightful, usually remain confined to particular sectors, contexts, or aspects of adaptive governance (e.g., Cosens et al., 2014; Olsson et al., 2006; Pahl-Wostl et al., 2012). We argue that synthesis across cases might offer more advanced generalisable insight on the methods which best support successful adaptive governance approaches alongside the critical enabling and/or constraining role of diverse governance contexts.

We subsequently adopt a systematic literature review methodology (Higgins and Green, 2008; Jones, 2004; Petticrew and Roberts, 2006) which considers the extant body of case-based literature on adaptive governance of social-ecological systems. Systematic reviews differ from traditional literature reviews in their transparent collection, treatment, and reporting of data and methods. In a systematic review, the research question is developed and defined at the beginning of the project and the search parameters, process, and methods are explicitly documented and reported as research progresses. This allows the validation and replication of results as well as development of new knowledge across existing individual studies. While Karpouzoglou et al. (2016) and Plummer et al. (2013) have conducted systematic reviews on adaptive governance and adaptive co-management, respectively, neither review has exclusively emphasised the growing range of empirical work on adaptive governance to date, nor explored specific methods or conditions for implementation.

The remainder of the paper describes the results of a systematic review of adaptive governance methods in practice. The next section outlines the paper's methodology and research design based on the systematic review approach outlined above. The following section summarises the trends, patterns, and characteristics of the literature before noting some important methodological and contextual considerations emerging from our analysis of the cases. Drawing from our synthesis of methods, outcomes, and context, the paper's conclusion considers insights offered for theory and practice from the case-based literature on adaptive governance.

2. Methods & research design

2.1. Search criteria & document selection

We developed the paper's primary research focus on the exploration and analysis of methods for successful empirical adaptive governance implementation following an exploratory literature scoping exercise and the identification of practice and knowledge gaps in the adaptive governance literature. We further refined the research question and document search criteria using the project's deliberate emphasis on empirical cases in which a successful or failed social-ecological adaptive governance outcome was explicitly noted. Table 1 summarises the inclusion and exclusion criteria used for the literature search and document selection process.

2.2. Literature search & refinement

After we developed the research question and search criteria, we searched the Scopus, Web of Science, and ScienceDirect databases using the keyword, title, abstract, and topic term 'adaptive governance'. Adaptive governance is a relatively new field with the literature base continuing to grow, so we initially kept the search parameters broad to ensure we included all potentially relevant data. We conducted a Google Scholar search using the same key term. Keywords, titles, and abstracts were scanned for the phrase 'adaptive governance'. If the phrase was present in any of the search fields, we included the result in

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