



Organizational drivers that strengthen adaptive capacity in the coastal zone of Australia



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ABSTRACT

Governance has long been identified as a crucial part of solving environmental problems. Effective governance supports and encourages adaptive capacity to maintain or improve the conditions of socio-ecological systems. As coastal zones are among the most vulnerable systems to climate change impacts (e.g. sea-level rise), the adaptive capacity of coastal communities to climate change threats will be critical. Human populations will respond both directly and indirectly to these threats and impacts; for instance by adapting resource use and practices (e.g. changing fish targets). In this paper, we apply definitions of resilience, adaptive capacity and vulnerability to the coastal zone socio-ecological system. We focus on organizations and management aspects of governance in coastal Australia. Our approach combines a literature review that highlights key organizational drivers that supports adaptive capacity with interview data from senior resource managers from organizations from across Australia to test the validity of such drivers. The key drivers related to organizational and management issues that are required to build and strengthen the adaptive capacity of Australian coastal communities are: (a) Leadership; (b) Clear responsibilities and flexible organizational framework; (c) Effective integration of knowledge and insights; (d) Learning approach to natural resource management; and (e) Human capacity and coordinated participation in decision-making. Our study showed that natural resource management organizations are clearly concerned about future changes and uncertainties and recognize the need for cooperation and good organizational drivers. However, integration of knowledge and long-term planning to deal with predicted changes in climate is largely lacking; and mismatches between management, organizational and ecosystem boundaries and processes also exist.

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1. Introduction

Worldwide governance has been identified as a crucial element of addressing sustainability in social-ecological systems (SES; referred to as the integrated concept of humans-in-nature (Berkes et al., 2003:3)) (see Acheson, 2006; Ludwig, 2001; Olsen, 2003; Smith, 2004). Effective governance can support socio-cultural and

economic processes and substantially alter ecological dynamics (Cannon and Muller-Mahn, 2010; Folke et al., 2007). Governance systems set up to manage coastal resources, such as fisheries, have evolved over centuries. They have given communities the capacity to adapt to fish stock dynamics and environmental variations in the coastal zone (Barnes et al., 2013).

Governance consists of two interacting components: institutional (rules) and organizational (people) (Fig. 1). Institutions are the laws, policies, regulations, norms, customs, cultural processes and other rules that shape human action. Organizations are the actors, which can be broadly defined as an organized body of

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people with a particular purpose, where its members develop rules for collective decision delegation and membership (Argyris and Schön, 1978:28).

A community, a natural resource management (NRM) body or a business company are examples of organizations. Institutions define opportunities and constraints within which governance actors work, whereas governance actors may shape and alter institutions (Hodgson, 2006). In this paper, we focus on organizational and management aspects related to governance and for this reason the words ‘governance’ and ‘organizations and (management) routines’ are used as synonyms.

From an organizational and management perspective, few studies identify governance attributes that are necessary to build and strengthen the adaptive capacity of coastal communities (Dale et al., 2013). In this paper we identify the key organizational drivers that strengthen adaptive capacity in coastal communities by focusing on coastal management and organizations in SES in Australia. Fisheries and climate change were used as particular examples that depict existing issues or challenges. We combine a literature review that highlights key governance attributes with interview data testing the validity of such attributes.

We organize our discussion as follows. First, we provide the definitions of governance, resilience, vulnerability and adaptive capacity, and how they relate to governance. Second, we provide the methodological framework, which includes: (i) methods used to characterize coastal SES in Australia, highlighting the links between governance and socio-ecological issues at multiple levels, and (ii) interview methods. Third, we offer the results of our analysis and review, which includes (i) the governance dynamics in coastal SES in Australia, (ii) the key factors that challenge governance and adaptive responses in the coastal zone, supported by examples from the interviews, and (iii) the governance attributes that are necessary to build and strengthen adaptive capacity of coastal communities, also supported by interview examples.

2. Key definitions

2.1. Governance

‘Governance’ is the process of making decisions and power sharing where actors (e.g. government, individuals, industry) and market, education and regulation incentives cooperate to guide society towards desirable outcomes and away from harmful ones (Bronzizio et al., 2009; Hajer, 2003; Jones et al., 2013a; Selnes et al., 2006). The catch-all phrase of governance describes ‘who’ makes decisions, has powers and responsibilities, and ‘how’ they exercise this (Borrini-Feyerabend et al., 2006:116; Argyris and Schön, 1978:28; Hodgson, 2006). As discussed above, the focus of our research is on organizational and management aspects of

governance.

Organizations in charge of managing natural resources (mostly government, but also non-government, such as industries and NGO that are often involved in coastal management issues, especially where co-management arrangement exists; see Gutierrez et al. (2011)) create and implement rules and management routines that guide the interactions between actors to coordinate actions to deal with issues affecting SES (Folke et al., 2005; Stoker, 1998). Management is known to be effective when it defines and transforms behavior required to achieve the organization’s objectives (Argyris, 1999:54). Examples of these organizations are fisheries management authorities, such as Australian Fisheries Management Authority (AFMA), forestry commissions, and water board and water management bodies in the coastal zone (Ostrom et al., 1994). Such organizations evolved over centuries to cope with and adapt to environmental changes and developed formal and informal rules (e.g. acts and legislation, traditional practices) to govern natural resource use. Such capacity to adapt is crucial for dealing with the future threats associated with climate change as communities will need to modify the way they have historically used natural resources (Barnes et al., 2013). Organizations and the management routines they create therefore support, encourage, and enable the capacity of people to adapt to changing circumstances (Clarke et al., 2013; Grech et al., 2013).

2.2. Socio-ecological resilience

‘Socio-ecological resilience’ describes the capacity of ecosystems to sustain societal development and progress with essential ecosystem services (Berkes et al., 2003). ‘Resilience’ describes the capacity of SES to persist in the face of shocks and disturbances without changing fundamental structures and functions (Gunderson and Holling, 2002; Holling, 1973). Resilience is often associated with ‘resistance’, ‘return to a previous state’, ‘transformation’ as well as combinations of these three terms (Dale et al., 2011). ‘Resistance’ refers to the capacity of the SES to resist to shocks (Holling, 1973). ‘Return to a previous state’ means that SES can shift to another equilibrium state after shocks alter their structure and dynamic. If the SES is resilient it will return to its previous state after a disturbance (Walker et al., 2004). ‘Transformation’ refers to the capacity of individuals, organizations, or the whole SES to deal with challenges and persist, perhaps in an altered or novel state, despite adversities (Kirmayer et al., 2009).

Berkes et al. (2003:15) emphasize that operationalizing resilience in SES means not pushing the system to its limits; rather it should maintain diversity and variability leaving some slack and flexibility. It also means learning how to enhance adaptability, and understanding when, how and where it is possible to intervene in management.

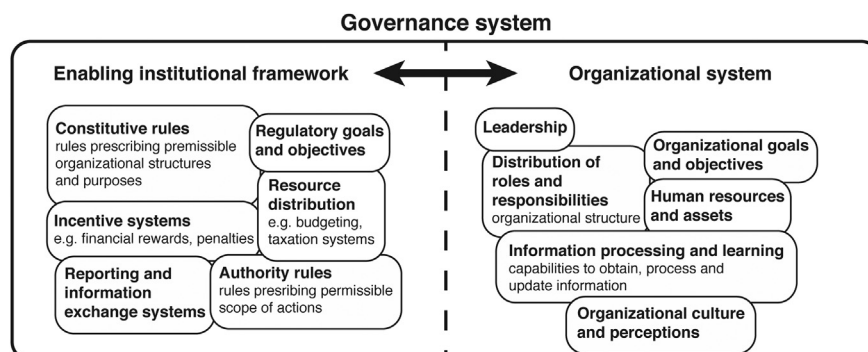


Fig. 1. Opportunities and constraints from the interaction of the two components of governance systems: institutions (rules) and organizations (people).

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