



The institutions-adaptive capacity nexus: Insights from coastal resources co-management in Cambodia and Vietnam



Pedro Fidelman^{a,*}, Truong Van Tuyen^b, Kim Nong^c, Melissa Nursey-Bray^d

^a Sustainability Research Centre, University of the Sunshine Coast, Australia

^b Hue University of Agriculture and Forestry, Vietnam

^c General Department of Administration for Nature Conservation and Protection, Ministry of Environment, Cambodia

^d Department of Geography, Environment and Population, University of Adelaide, Australia

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ABSTRACT

Responding to the unprecedented social-environmental change facing humankind will require responsive and flexible governance institutions (i.e., systems of rules and social norms) that facilitate adaptive capacity of individuals, groups and organisations. This may explain the sustained interest in the institutional dimensions of adaptive capacity. However, a better understanding of how institutions may enable adaptive capacity is still evolving. The literature is yet to clearly articulate how institutions relate to attributes of adaptive capacity. This study contributes to address this knowledge gap; it employs an evaluative approach that underscores the relationship between types of institutions and attributes of adaptive capacity (i.e., variety, learning capacity, autonomy, leadership, resources and fair governance). Such approach is used to examine how institutions enable adaptive capacity in the context of coastal resources co-management in the Peam Krasaop Wildlife Sanctuary (Cambodia) and Tam Giang Lagoon (Vietnam). In this study, complexity emerges as a defining feature of adaptive capacity. It results from the relationship between institutions and adaptive capacity and the contextual factors in which such relationship takes place. Exercises aiming to assess adaptive capacity should consider the institutions-adaptive capacity nexus together with the embedding social, cultural and political context.

1. Introduction

Overexploitation of natural resources, biodiversity loss and climate change illustrate the unprecedented fast pace at which humankind is experiencing social-environmental change. Adaptation – e.g., measures to minimise expected adverse impacts and/or take advantage of opportunities – is an important societal response to such change (Smit and Wandel, 2006). Critical to adaptation is the institutional and governance context. Anticipating and responding to social-environmental change will require governance institutions (i.e., systems of rules and social norms) that facilitate adaptive capacity of individuals, groups and organisations (Nelson et al., 2007; Engle, 2011; Agrawal, 2008; Adger et al., 2005). This will involve responsive and flexible institutions that support the ability of social actors to respond through both planned and spontaneous processes (Gupta et al., 2010). Similarly, more responsive and flexible institutional arrangements are deemed to be necessary to address pressing natural resources management issues (Carlsson and Berkes, 2005). Examples of such institutions include those that support collaborative decision-making and actions involving

a range of stakeholders (e.g., government, resource users and non-government organisations), also known as collaborative natural resources management, partnership and co-management (Plummer and Armitage, 2007; Carlsson and Berkes, 2005).

There has been a sustained interest in the institutional dimensions of adaptive capacity (Gupta et al., 2016; Van Den Brink et al., 2014; Engle and Lemos, 2010). In this regard, adaptive capacity is understood as the institutional preconditions that enable or constrain adaptation (Mandryk et al., 2015). However, a better understanding of how institutions may enable adaptive capacity is still evolving (Gupta et al., 2010, 2013; Berman et al., 2012; Berman et al., 2012; Mandryk et al., 2015; Termeer et al., 2011). However, the literature is yet to clearly articulate how institutions relate to attributes adaptive capacity. This study contributes to address this knowledge gap; it employs an evaluative approach that underscores the relationship between types of institutions and attributes of adaptive capacity. Such approach is used to examine how institutions enable adaptive capacity in the context of coastal resources co-management in the Peam Krasaop Wildlife Sanctuary (PKWS, Cambodia) and Tam Giang Lagoon (TGL, Vietnam).

* Corresponding author.

E-mail addresses: contact@pedrofidelman.com, pedro@fidelman.me (P. Fidelman), tvuyen@huaf.edu.vn (T. Van Tuyen), moepmcr@gmail.com (K. Nong), melissa.nursey-bray@adelaide.edu.au (M. Nursey-Bray).

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Table 1
Adaptive capacity attributes, evaluative criteria and relevant institutional rules/conditions (after Gupta et al., 2010; Ostrom and Crawford, 2005).

Attribute	Definition	Evaluative criteria	Relevant rule/condition
<i>Variety</i>	The ability of institutions to encourage the involvement of a variety of actors, perspectives, and solutions. Because environmental change problems are complex and unstructured (lacks agreement on values), embedding diverse interests and perspectives, dealing with such problems requires multiple perspectives and solutions. This includes the participation of relevant stakeholders across different sectors and levels of governance in problem framing and formulation of solutions.	Inclusive participation of relevant actors Diversity of actions and issues addressed	Position, boundary, choice, scope
<i>Learning capacity</i>	Learning is critical for dealing with uncertainty, surprises and changes that characterise environmental change. There is an ongoing need to revise existing knowledge and understanding to enable adaptation. Learning allows actors to reformulate knowledge and understanding based on experiences. Adaptive institutions are therefore those that enable social actors to continuously learn and experiment to improve their institutions.	Activities that entail learning (e.g., meetings, decision-making, monitoring and enforcement etc.)	Information, choice
<i>Autonomy</i>	The ability of social actors to autonomously review and adjust their institutions in response to environmental change. Adaptive institutions allow and motivate actors to self-organise, design and reform their institutions. Authority (legitimate or accepted forms of power) for decision-making and implementation is supported (or at least not undermined) by actors and other decision-making entities.	Authority to make and implement decisions Authority is not undermined by other actors/ decision-making entities	Aggregation, choice, payoff
<i>Leadership</i>	Leadership may be regarded as a driver for change when it points to (a) direction(s) and motivates others to follow. Institutions supporting adaptive capacity are those that can mobilise leadership qualities of social actors in the process of (re)designing institutions.	Ability of actors to direct and motivate others to follow	Position, boundary, choice
<i>Resources</i>	Resources are critical in generating incentives and reducing transaction costs for actors to engage in collective decision-making and action. Therefore, adaptive institutions have the capacity to mobilise resources (human, financial, technical) for making and implementing decisions (e.g., adaptation measures).	Human, financial and technical resources	Payoff
<i>Fair governance</i>	Fair governance includes institutions that are accepted and supported by their constituents (legitimacy), considered to be fair (equity), responsive (responsiveness), and/or accountable to social actors (accountability).	Legitimacy, equity, responsiveness, accountability	Boundary, choice, aggregation, information

Next, section 2 discusses the concepts of adaptive capacity and institutions and describes the nexus between them. Section 3 describes the approach to assess adaptive capacity and its relations to institutions. The subsequent section describes the case study context; and is followed by the results section. Sections 7 and 8 discuss the main findings and make concluding remarks, respectively.

2. Adaptive capacity and the role of institutions

The notion of adaptive capacity – in conjunction with that of adaptation – has gained considerable prominence in recent years. Adaptive capacity refers to the preconditions that enable adaptation, including resources (e.g., social and physical elements) and the ability to mobilise these resources to anticipate or respond to environmental change (Nelson et al., 2007; Engle, 2011). Adaptive capacity is, therefore, a critical property for fostering adaptation; the higher adaptive capacity of a system, more likely such a system will adapt (Engle, 2011).

Scholarship on adaptive capacity has particularly been developing in the context of the vulnerability framework. In this context, adaptive capacity is regarded as a critical system property for reducing vulnerability by modulating exposure and sensitivity (Engle, 2011). However, the concept of adaptive capacity has also been developing in the domain of the resilience framework, where it is often referred to as ‘adaptability’ to describe the capacity of actors to manage and influence resilience. The presence of adaptive capacity is believed to increase resilience (Engle, 2011; Nelson et al., 2007; Hill and Engle, 2013). Further, related themes have been addressed by other theoretical perspectives, e.g., adaptive governance, adaptive co-management and earth system governance (Folke et al., 2005; Armitage et al., 2009; Biermann et al., 2010). In this study, we draw particularly on the vulnerability framework. Such framework presents a more developed conceptualisation of the relationship between adaptive capacity and other elements of vulnerability (i.e., exposure and sensitivity).

Nevertheless, this study does not claim that the other theoretical perspectives noted above are less important. In fact, they may provide complementary contributions to the study of adaptation and adaptive capacity (see e.g., Nelson et al., 2007).

The determinants of adaptive capacity include general categories, such as information and technology; material resources and infrastructure; organisation and social capital; political capital; wealth and financial capital; and, institutions and entitlements (see e.g., Eaking and Lemos, 2006; Engle and Lemos, 2010; Engle, 2011). Noteworthy is an increasing number of studies on institutional determinants (Hill and Engle, 2013). This reflects, in part, the critical importance of these determinants for building adaptive capacity.

Institutions are systems of formal rules and social norms that constrain and extend behavioural options available to individuals or organisations in a given setting (Ostrom, 2005). They cause social practices, assign roles to participants in such practices, and guide interactions among occupants of relevant roles (Young, 2005). Therefore, institutions play a critical role in how societies respond to social-environmental change (Young, 2002; Gupta et al., 2010). In fact, institutions comprise resources actors use in responding and adapting to such change (Nelson et al., 2007). In this regard, institutions can be conceptualised in terms of “...*formal and informal rules, rule-making systems, and actor networks at all levels of human society (from local to global) that are set up to steer societies towards preventing, mitigating, and adapting to global and local environmental change*” (Biermann et al., 2009). Particularly important in this study is the concept of institutional rules (Crawford and Ostrom, 1995), as explored below. In this context, and for the purpose of this study, adaptive capacity is defined as the institutional preconditions that enable adaptation to social-environmental change. These comprise the “... *the inherent characteristics of institutions that empower social actors to respond to short and long-term impacts, either through planned measures or through allowing and encouraging creative responses from society both ex ante and ex post* (Gupta et al., 2010). Based on a literature review, Gupta et al. (2010) propose

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