



Priming adaptation pathways through adaptive co-management: Design and evaluation for developing countries



J.R.A. Butler^{a,*}, W. Suadnya^b, Y. Yanuartati^b, S. Meharg^c, R.M. Wise^c, Y. Sutaryono^d, K. Duggan^e

^a CSIRO Land and Water Flagship, EcoSciences Precinct, GPO Box 2583, Brisbane, QLD 4001, Australia

^b Faculty of Agriculture, University of Mataram, Jl. Majapahit 62, Mataram 83127, Nusa Tenggara Barat Province, Indonesia

^c CSIRO Land and Water Flagship, Black Mountain, Canberra, ACT 2911, Australia

^d Faculty of Animal Sciences, University of Mataram, Jl. Majapahit 62, Mataram 83127, Nusa Tenggara Barat Province, Indonesia

^e Griffin NRM, Suite 15 Baileys Corner, Arcade 143, London Circuit, Canberra, ACT, Australia

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ABSTRACT

Mainstreaming climate change and future uncertainty into rural development planning in developing countries is a pressing challenge. By taking a complex systems approach to decision-making, the adaptation pathways construct provides useful principles. However, there are no examples of how to operationalise adaptation pathways in developing countries, or how to evaluate the process. This paper describes a 4 year governance experiment in Nusa Tenggara Barat Province, Indonesia, which applied adaptive co-management (ACM) as a governance approach to 'prime' a transformation to adaptation pathways-based development planning. The project's Theory of Change (ToC) consisted of three causally-linked phases which mirrored the evolutionary stages of ACM: priming stakeholders, enabling policies and programs, and implementing adaptation. The first phase established a trans-disciplinary research team to act as facilitators and brokers, a multi-stakeholder planning process demonstrating adaptation pathways practice, and trialling of 'no regrets' adaptation strategies in case study sub-districts. A participatory evaluation method was designed to test the ToC's assumptions and measure ACM outcomes. Stakeholder interviews at the project's closure indicated that through ACM, stakeholders had been successfully primed: leaders emerged, trust, cross-scale social networks and knowledge integration grew, communities were empowered, and innovative adaptation strategies were developed and tested. However, there was limited evidence of institutional change to existing planning processes. This was attributed to the absence of policy windows due to ineffective and insufficient time for political engagement, and the fluid institutional environment caused by a national decentralisation policy. To enhance the priming of adaptation pathways into development planning under these conditions, three recommendations are made: (1) provide long term support for emergent leaders and brokers to become 'policy entrepreneurs' who can capitalise on policy windows when they appear, (2) establish and support local livelihood innovation niches as 'bridgeheads' for ACM, and (3) maintain participatory evaluation amongst primary stakeholders to re-kindle ACM.

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* Corresponding author. Tel.: +61 2 6776 1358; fax: +61 2 6776 1333.

E-mail address: james.butler@csiro.au (J.R.A. Butler).

Introduction

Mainstreaming climate change into decision-making to achieve ‘climate compatible development’ for vulnerable rural communities in the developing world is a pressing challenge (Mitchell and Maxwell, 2010). The process is complicated by the uncertainties in climate change projections and impacts (Ranger and Garbett-Shiels, 2012), and the multi-stakeholder and cross-sectoral nature of adaptation (Conway and Mustelin, 2014). Population growth, market volatility and modernisation driven by globalisation also interact with climate change to generate non-linear and unexpected outcomes and shocks for livelihoods (Scoones et al., 2007; Leach, 2008). Ramalingam (2013), p. 361 recently argued that as a consequence, development planning and evaluation requires a more “systemic, adaptive, networked, dynamic approach” based on complex systems thinking and governance.

By taking a complex systems approach, the construct of adaptation pathways provides a useful framework for integrating climate adaptation into decision-making under future uncertainty (Wise et al., 2014), and is potentially applicable to rural development planning in developing countries (Butler et al., 2014, 2016a). There are three central principles. First, climate change impacts and responses cannot be considered in isolation, but instead are components of dynamic, multi-scale social–ecological systems. Second, planning should design incremental adaptation strategies to address the proximate symptoms of communities’ vulnerability, plus transformative strategies to tackle the underlying systemic causes, which in developing countries are often institutional and political (Lemos et al., 2007; Pelling, 2011; Rodima-Taylor et al., 2012). Third, to avoid mal-adaptation (i.e. actions that impact adversely on or increase the vulnerability of other systems, sectors or social groups; Barnett and O’Neill, 2010), strategies should yield benefits under any future conditions of change, and therefore be ‘no regrets’ (Hallegatte, 2009).

The process of implementing these principles requires multi-stakeholder engagement and adaptive governance (Butler et al., 2014), whereby stakeholders voluntarily coordinate action through self-organisation (Folke et al., 2005). Adaptive co-management (ACM) is a novel manifestation of adaptive governance tailored to the stewardship of complex social–ecological systems, where multi-stakeholder collaboration is required to match the ecological scale and dynamics of a system (Armitage et al., 2009). By integrating the iterative learning, knowledge generation and problem solving of adaptive management with the power-sharing and negotiated decision-making of co-management (Olsson et al., 2004a; Armitage et al., 2007; Plummer et al., 2012; Fabricius and Currie, 2015), ACM fosters stakeholders’ adaptive capacity (Plummer, 2013), defined here as “the potential for actors within a system to respond to changes, and to create changes in that system” (Chapin et al., 2006, p. 16641).

ACM is potentially applicable to climate change adaptation because of the necessity to engage private and public actors across societal levels, to build their adaptive capacity, and to develop and implement policy and collective action through collaboration (Plummer, 2013). ACM’s characteristic focus on learning is especially relevant because both individual and social learning are pre-requisites for adaptation (Pelling, 2011). Within this, double-loop (re-visiting of assumptions about cause and effect) and triple-loop learning (re-assessing underlying values and beliefs, potentially resulting in changes to institutional norms; Pahl-Wostl, 2009; Reed et al., 2010) are particularly important because they can identify and challenge the systemic causes of communities’ vulnerability to climate change (Pelling, 2011; Rodima-Taylor et al., 2012). In addition, interventions which apply ACM principles to link actors across sectors and scales can ‘prime’ them to implement adaptation processes (Baird et al., 2014).

Hence ACM may facilitate the implementation of adaptation pathways, particularly for rural communities in developing countries which are dependent on ecosystems and often excluded from government planning processes (Butler et al., 2014). Nonetheless, this context also presents several challenges for successful ACM. Stakeholder capacity is low at all societal levels, constraining collaboration, and without long term resourcing and facilitation, self-organisation dissipates (Cundill and Fabricius, 2010). Participatory planning aiming to empower communities is often dominated by more powerful government and expert stakeholders’ agendas (Sherman and Ford, 2013), requiring approaches that can account for power asymmetries (Armitage, 2008). Also, rapid economic and cultural change continually re-shapes the political and institutional environment, undermining trust and cooperation between stakeholders (Wollenberg et al., 2007).

In this paper we present a governance experiment which applied ACM principles as a means to prime stakeholders in developing countries to integrate adaptation pathways principles into rural development planning. Using the example of a 4 year project in Nusa Tenggara Barat Province (NTB), Indonesia, we demonstrate the project’s design, and a participatory evaluation methodology which tracked project outcomes in terms of ACM. The results assess the applicability of ACM as a mechanism for establishing climate compatible development in developing countries. We also discuss the implications of our results for the design of future adaptation initiatives in similar social and political contexts.

Attributes and evolution of ACM

The evolution and maintenance of ACM depends upon a combination of endogenous and exogenous system characteristics (Plummer, 2009; Plummer et al., 2012), summarised from the literature in Table 1. Endogenous factors are the combined attributes of individuals, organisations, social networks and governance processes which together yield ACM outcomes. However, power asymmetries often marginalise communities and individuals in negotiated decision-making and knowledge exchange with more powerful actors (Nadasdy, 2007; Armitage et al., 2008; Plummer et al., 2012), and in a development

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