



Contents lists available at ScienceDirect

Journal of Environmental Management

journal homepage: www.elsevier.com/locate/jenvman

Research article

Monitoring and evaluation to support adaptive co-management: Lessons learned from the Millennium Villages Project

Sarah Chapman^{a, *}, Clare Sullivan^b, Cheryl Palm^b, Uyen Huynh^c, William Diru^d, Jessica Masira^d^a Institute for Monitoring and Evaluation, School of Management Studies, University of Cape Town, Rondebosch, 7708, Cape Town, South Africa^b Agriculture and Food Security Center, The Earth Institute, Columbia University, Lamont Campus 61 Route 9 W, Lamont Hall, 2G, P.O. Box 1000, Palisades, NY, 10964, USA^c Center on Globalization and Sustainable Development, The Earth Institute, Columbia University, 535 West 116th Street, New York, NY, 10027, USA^d World Agroforestry Centre, Consultative Group on International Agricultural Research, United Nations Avenue, Gigiri, PO Box 30677, Nairobi, 00100, Kenya

ARTICLE INFO

Article history:

Received 25 June 2015

Received in revised form

5 August 2016

Accepted 6 August 2016

Available online 31 August 2016

Keywords:

Adaptive co-management

Community based natural resource management

Monitoring

Process evaluation

Agroforestry

Tree nurseries

Millennium Villages Project

ABSTRACT

This article focuses attention on monitoring and evaluation approaches that will help resource managers to manage for change and uncertainty in adaptive co-management (ACM). ACM is a learning-by-doing approach that aims to build flexible community-based natural resource governance systems through collaborative or otherwise participatory means. We describe the framework for monitoring and evaluation that we developed and applied in ten African countries, which includes fixed indicators and measures for co-management performance monitoring, a process evaluation element, a platform for repeat ecological surveillance, and a longitudinal household survey. We comment on the usefulness of this framework, and its applicability to a wide range of geographic contexts. We then present a four step model to assist managers in applying the framework to specific co-management problems. The model suggests a cascade approach to defining key evaluations questions at a systems, network, individual and synthesis level. We illustrate the application of our model and framework by means of a case study of a co-managed agroforestry program in western Kenya.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

The idea of collaborative natural resource governance, particularly within the discourse of adaptive co-management (ACM), has gained considerable popularity in recent years (eg. Cundill and Rodela, 2012; Muro and Jeffrey, 2008; Reed et al., 2010), and one area of keen debate has been around monitoring and evaluation approaches needed to support ACM (see for example Carlsson and Berkes, 2005; Conley and Moote, 2003; Cundill, 2010; Cundill and Fabricius, 2009; Hermans et al., 2012; Hickey et al., 2007; Plummer and Armitage, 2007; Plummer et al., 2012). Like its

forerunner adaptive management (Holling, 1978; Walters, 1986), adaptive co-management is essentially a learning by doing approach that recognizes the need for continuous and effective assessment to guide iterative cycles of reflection and learning (Bellamy et al., 2001; Campbell et al., 2001; Stem et al., 2005). With co-management, assessment is arguably even more critical to ensure that individual learning is shared at a broader social level (Berkes, 2009). But whereas historically learning-by-doing in adaptive management has occurred through a comparison of computer model-based predictions against observed responses in the natural resource system (Williams, 2011), human system dynamics are far too complex to be reflected upon in this way, and new assessment approaches are therefore required (Berkes, 2009).

This paper provides insights into developing assessment approaches to support adaptive co-management. These insights are based upon the experience of the Millennium Villages Project, which is a multi-sectorial rural development program that aimed to help targeted communities achieve the Millennium Development Goals (MDGs) by 2015 (Sanchez et al., 2007). Achieving MDG 7

* Corresponding author. Institute for Monitoring and Evaluation, School of Management Studies, Leslie Commerce 4th Floor, University of Cape Town, Rondebosch 7708, Cape Town, South Africa.

E-mail addresses: s.kaschula@gmail.com (S. Chapman), csullivan@ei.columbia.edu (C. Sullivan), cpalm@ei.columbia.edu (C. Palm), ukhuynh@gmail.com (U. Huynh), willy.diru@millenniumpromise.org (W. Diru), j.masira@cgiar.org (J. Masira).

(ensuring environmental sustainability) by means of community-based interventions was a guiding principle in the development of the project, and a strong emphasis was placed on building the natural resource governance capacity of local constituents. Since 2005, the approach with its accompanying monitoring and evaluation platform has been implemented in over 12 sites in 10 sub-Saharan African countries. A full description of the Millennium Village Sites, their agro-ecological context, as well as the Millennium Villages approach, is provided elsewhere (<http://millenniumvillages.org/the-villages/>).

The objectives of our paper are two-fold. First, we aim to provide generic guidelines that might assist environmental managers working across global contexts to develop a monitoring and evaluation platform that supports ACM. We do this by describing the data collection procedures, protocols, indicators and measures that were developed and applied in Millennium Villages. We comment broadly on the strength and limitations of these approaches. Secondly, we aim to show how the routine monitoring and evaluation data collected from such generic platforms might be used to address specific environmental co-management problems. These problems are inevitably country and context specific, and to further this aim, we present a problem solving model we developed which we found useful to guiding the application of data to aid decision-making. We illustrate the use of this model by means of a case study of one agroforestry farming system in western Kenya.

1.1. Adaptive co-management

Adaptive co-management is an approach to natural resource management that aims to integrate heterogeneous actors into a flexible community-based system of natural resource governance (Folke et al., 2005, pp. 130–131). Proponents of ACM suggest that when people work collaboratively, iteratively and reflectively in this way, “social learning” is likely to occur (Folke et al., 2005; Olsson et al., 2004a,b), taking learning and behaviour change “beyond the individual to networks and systems” (Van Epp and Garside, 2014, p. 7). When implemented correctly, this process might bring about what Reed et al. (2010) refer to as “pro-environmental behaviour”, and what Pahl-Wostl et al. (2008) describe in terms of positive transformations in identities, institutions and individual capacities that are more able to contribute towards a shared goal of sustainability in natural resource management. This might be done by means of improved decision making, greater collective action, desirable changes in perceptions, attitudes and beliefs, and a corresponding increase in stakeholders’ natural resource management capacity (Cundill and Rodela, 2012).

1.2. Monitoring and evaluating adaptive co-management

Developing monitoring and evaluation approaches for ACM can be challenging. Socio-ecological systems are both complex and adaptive in nature (Holling, 2001, 2007), and outcomes seldom follow actions in a predictable manner (Bellamy et al., 2001; Campbell et al., 2001). In complex adaptive social systems, the specific behaviour of individual agents also cannot be predicted in a reliable, linear fashion (Eoyang, 2007). This poses challenges to evaluation, because we “can’t determine in advance what will happen, so evaluator’s can’t determine in advance what to measure” (Patton, 2011, p. 126).

Responding to these concerns, a number of authors have called for more practical guidelines to support the evaluation of co-management initiatives (Armitage et al., 2008; Cundill and Fabricius, 2009; Hermans et al., 2012; Izurieta et al., 2011), with a few key authors drawing on complex adaptive systems theory and theories of organizational change as a starting point (Carlsson and

Berkes, 2005; Conley and Moote, 2003; Cundill and Fabricius, 2009; Pahl-Wostl, 2009; Plummer and Armitage, 2007; Walker et al., 2006). But while a number of good theoretical papers now outline clear variables, indicators or assessment criteria for co-management initiatives, the actual task of operationalizing this theory into a cogent monitoring and evaluation approach is complicated by the wide range of variables that potentially underscore a social learning initiative. These include contextual or conditional factors such as the history of the case and stakeholder capacity (Chuenpagdee and Jentoft, 2007; Monroe et al., 2013); the mode of program planning and delivery (Carlsson and Berkes, 2005); the way in which environmental behaviours and activities were adjusted or modified during the process of implementation (Plummer and Armitage, 2007; Plummer et al., 2012); the manner in which continuous problem-solving processes enacted within learning networks results in changes to the attitudes of individuals, networks and social systems (Cundill et al., 2014; Olsson et al., 2007; Rodela et al., 2012); as well as the socio-ecological outcomes of ACM itself (Berkes, 2009; Conley and Moote, 2003; Folke et al., 2005; Innes and Booher, 1999; Plummer et al., 2012; Schultz et al., 2011). A recent CGIAR working paper on monitoring and evaluation to support social learning summarises these multiple dimensions succinctly; suggesting that process indicators focus on capturing no less than iterative learning, capacity building, engagement, challenging of system and institutional barriers and norms; whereas outcome monitoring focuses on both learning change outcomes and changes to the values or practices across individuals, networks, institutions and systems (Van Epp and Garside, 2014). The “positive impact on sustainable development” also needs to be monitored at the level of systemic environmental and/or institutional program impacts (Van Epp and Garside, 2014, p. 14).

1.3. Existing monitoring and evaluation approaches

There are very few case studies documenting monitoring and evaluation approaches for ACM. The CGIAR, for example, outlines eight different methodological approaches, but examples showing application of these approaches are limited to vague hypothetical narratives (Van Epp and Garside, 2014). Formative case studies in ACM are also notoriously obscure on the subject of monitoring and evaluation, typically describing a somewhat ad hoc process by which key individuals (and sometimes organizations) use participatory engagement, collaborative feedback and their own expert judgment to intuitively monitor the emergence of governance capacity or the development of social learning (Fabricius et al., 2007; Folke et al., 2005; Olsson et al., 2004a,b). When specific examples of data collection measures and procedures are provided, indicators of participation can be quite crude, for example simple measures reflecting gender or demographics of participants (Fraser, 2002), or simple process “signposts” of successful adaptive co-management such as the number of procedures started by municipalities, or the area of land dedicated to conservation (Hermans et al., 2012).

One of the better documented attempts to develop a more nuanced system that monitors indicators of participation, social learning and the emergence of collaborative governance comes from a series of South African case studies (Cundill, 2010; Cundill and Fabricius, 2010). In these examples, indicators of governance and social learning were pre-defined by means of a critical literature review, and then repeatedly measured by means of a rating system administered to elected community committees over the course of a co-management intervention. Future challenges include how these data should be interpreted in conjunction with feedback from a broader ecological monitoring system. Because measures are only taken at the level of the community committees elected to

Download English Version:

<https://daneshyari.com/en/article/5117298>

Download Persian Version:

<https://daneshyari.com/article/5117298>

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