



Ecosystem- and community-based adaptation: learning from community-based natural resource management

Hannah Reid

To cite this article: Hannah Reid (2016) Ecosystem- and community-based adaptation: learning from community-based natural resource management, *Climate and Development*, 8:1, 4-9, DOI: [10.1080/17565529.2015.1034233](https://doi.org/10.1080/17565529.2015.1034233)

To link to this article: <https://doi.org/10.1080/17565529.2015.1034233>



© 2015 The Author(s). Published by Taylor & Francis.



Published online: 01 May 2015.



Submit your article to this journal [↗](#)



Article views: 14528



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 42 View citing articles [↗](#)

VIEWPOINT

Ecosystem- and community-based adaptation: learning from community-based natural resource management

Hannah Reid*

Climate Change Group and the Biodiversity Team, Natural Resources Group, IIED, 80–86 Gray's Inn Road, London WC1X 8NH, UK

(Received 15 May 2014; accepted 20 January 2015)

Ecosystem-based adaptation (EbA) and its sister community-based adaptation (CBA) have gained traction over recent years, and policy-makers and planners are increasingly promoting 'integrated' EbA and CBA approaches. Improved learning from older natural resource management disciplines such as community-based natural resource management (CBNRM), however, could help inform EbA and CBA practice and policy-making. This viewpoint describes key lessons from CBNRM that EbA and CBA should address as they mature, including the need for EbA and CBA to ensure: communities are central to planning; the institutional, governance and policy context of initiatives is addressed; and, incentives and the need for better evidence of effectiveness is considered. The viewpoint argues that opportunities for scaling up EbA and CBA through mainstreaming and also replication and diversification to other sectors need exploring to reach the millions of poor people facing a climate change-constrained future. This is particularly important for the world's poorest people who are worst hit by climate change and also disproportionately reliant on ecosystems and their services.

Keywords: adaptation; ecosystem-based adaptation; community-based adaptation; community-based natural resource management

EbA and CBA: adopting an integrated approach

Communities throughout the world have been using genetic diversity and traditional knowledge about native species to adapt to climate variability for generations. This is proving increasingly valuable in the context of climate change adaptation. Well-managed, stable and diverse ecosystems are also providing adaptation benefits (Reid, Phillips, & Heath, 2009). Coastal mangroves provide protection against cyclone damage and storms, wetlands act as floodwater reservoirs and well-vegetated hillsides reduce risks from erosion, landslides and downstream flooding when rain comes in heavy bursts. The United Nations Convention on Biological Diversity (CBD) defines these ecosystem-based approaches for adaptation as 'the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change' (CBD, 2009, p. 41). Ecosystem-based adaptation (EbA) is more than ecosystems substituting for built infrastructure to protect against damage; it is increasingly clear that ecosystems and the services they provide can increase local resilience and adaptive capacity especially when managed appropriately (Millennium Ecosystem Assessment, 2005; Reid & Alam, 2014). There is also some evidence to suggest

that EbA can be a cost-effective approach to adaptation (Rao et al., 2013) and considerable evidence to suggest that it can generate a multitude of social, economic and environmental co-benefits (Doswald et al., 2014).

Community-based adaptation (CBA) can also offer a cost-effective, sound way to tackle climate change by capturing the wealth of knowledge and experience that communities have on dealing with climate variability and change. CBA is 'a community-led process, based on communities' priorities, needs, knowledge and capacities, which should empower people to plan for and cope with the impacts of climate change' (Reid, Alam, et al., 2009, p. 13). It builds on human rights-based approaches to development that target the most vulnerable people and fully includes them in all levels of adaptation planning and implementation. In recent years, CBA has shown that it can also operate at scale but with communities remaining central to planning and action, for example through mainstreaming into government processes.

CBA has been primarily championed by development practitioners, and EbA by environment/conservation practitioners. These groups have different values, institutional agendas and funding sources. There is, however, substantial conceptual overlap between these two approaches.

*Email: hannah.reid@iied.org

Both are people-centred. Good EbA should (but does not always) have a strong community/participatory focus. Good CBA should (but does not always) have a strong consideration of ecosystems and ecosystem services. In the field, local adaptation activities tend to combine both approaches, and EbA is often indistinguishable from CBA.

It is now increasingly common to find environment and development-oriented organizations integrating both CBA and EbA into adaptation policy, planning and implementation (Girod et al., 2012). Such ‘integrated approaches’ break down the artificial divide between CBA and EbA and build on the strengths of both to address the shortcomings of mainstream top-down, hard infrastructure-based approaches to adaptation.

Better integration is also occurring at international and national levels. For example, United Nations Framework Convention on Climate Change processes such as the Cancun Adaptation Framework, Nairobi Workplan, Adaptation Fund, REDD+ planning, National Adaptation Plans and National Adaptation Programmes of Action (NAPA) guidance and implementation increasingly recognize and support the role of natural resource management as an adaptation strategy. Some national climate change policies and strategies, and sector-based policies (e.g. on water, forests and coastal zone management) also recognize the role ecosystems play in adaptation.

CBNRM: lessons for EbA and CBA

In the 1970s and 1980s, CBNRM was promoted as an alternative to conservation approaches involving national park establishment, fences, armed rangers and the separation of natural resources from the local people who had hitherto relied on them (Roe et al., 2000). It emerged amid growing concern about the social injustices associated with the establishment of some national parks; a growing body of international human rights law; increasing evidence that many ‘undisturbed wilderness areas’ had a history of human occupation; a growing body of literature celebrating indigenous management skills; increasing

demand for natural resources to ‘earn their keep’; and, an acknowledgement of the limitations of protected areas alone in terms of meeting conservation goals (Pimbert, 2004). These factors set the stage for the introduction of more bottom-up approaches to conservation based on the notion that if local people were allowed to manage the land and its resources, both conservation and local development goals could be met.

Conservation and donor agencies developed a range of community-based models linking conservation and development, and a number of core principles emerged (Table 1). Some of the key lessons that newer disciplines such as CBA and EbA can learn from these are as follows (Chishakwe, Murray, & Chambwera, 2012).

Avoid re-labelling old approaches: ensure communities are central to planning

CBA and sometimes EbA are often heralded as ‘bottom-up’ approaches to adaptation. So too was CBNRM in the context of its approach to conservation. Whether this was always the case, however, is contested. In the 1990s, after more than a decade of experience with CBNRM, there was a backlash against such approaches, which many observers claimed were not working. Responding to these criticisms, Murphree observed that community conservation ‘has to date not been tried and found wanting; it has been found difficult and rarely tried’ (2000, p. 12). His point was that in practice, many approaches labelled as ‘community-based’ were in fact externally initiated and used as a veneer for top-down management, and that genuine systematic attempts to adopt participatory planning methods were rare. Dressler et al. (2010) also comment on how CBNRM emerged with promise and hope but often ended in less than ideal outcomes when institutionalized and reconfigured in design and practice. They add, however, that CBNRM still holds much potential in terms of ensuring social justice, material well-being and environmental integrity. Learning from this, we need to be clear that communities should be central to any planned CBA

Table 1. CBNRM principles developed from experiences in Southern Africa.

-
1. The unit of production should be the unit of management and benefit
 2. Producer communities should be small enough that all households can participate face-to-face
 3. Community corporate bodies should be accountable to their constituency
 4. Functions should be conducted at the lowest appropriate level
 5. The link between production and benefit should be transparent and immediate
 6. Communities must have full choice in the use of wildlife revenues
 7. All marketing should be open and competitive and done by the wildlife producers themselves
 8. The rate of taxation for wildlife should be similar to that for other resources
 9. Activities or investment should not be undertaken unless they can be managed and sustained locally
 10. Government is the ultimate authority for wildlife, but should accept the principle of subsidiarity
 11. Devolving authority and developing community management capacity is a process
 12. Co-management is necessary, especially in the shift from central to community management systems
-

Source: Child (1996) and Murphree (1997).

or EbA intervention, and assess whether this principle is applied.

Some organizations have historically sought to re-label their development work as CBA, perhaps to secure climate change donor funding. Similarly, conservation or CBNRM projects dealing with conservation or resource challenges have been re-labelled EbA. There are also merits to mainstreaming adaptation into existing development planning as opposed to considering it as a separate ‘sectoral’ issue (Klein, Schipper, & Dessai, 2005; Reid & Huq, 2014). While development and conservation-oriented activities can teach us much about adaptation, however, practitioners must be wary of discrediting the EbA and CBA concepts by labelling other activities as such. Genuine CBA or EbA initiatives require climate change risk and vulnerability to be central to planning (Reid & Schipper, 2014).

Demonstrate evidence of effectiveness

The backlash against CBNRM in the 1990s was led by scientists who argued that CBNRM’s focus on economic benefits and development had been a conservation disaster, stimulating rather than reducing demand for natural resources. They argued that preservationist approaches had been effective at conserving important biodiversity as national parks could guarantee that land uses did not change in the face of local economics and politics. Critics accused CBNRM of being politically motivated and unsupported by evidence (Oates, 1999; Terborgh, 1999). Proponents of CBNRM had to respond to these criticisms with evidence-based counter arguments.

The lesson here relates to the importance of boosting the evidence for CBA and EbA. This is not easy given the inherent uncertainties associated with climate change, but there is a growing body of work on the monitoring and evaluation of adaptation effectiveness, which can be drawn on (see, e.g. Brooks, Anderson, Ayers, Burton, & Tellam, 2011; Brooks et al., 2013; CARE, 2014; Dixit, McGray, Gonzales, & Desmond, 2012). Both CBA and EbA have energy and momentum associated with them now, but they are relatively new disciplines without years of experience to learn from, and they need more analytical rigour in order to assess whether they really work or not, how to measure this, what their merits are, what their limitations are, and under what circumstances they are no longer effective (Reid, 2011). Without this analysis, CBA and EbA risk losing credibility before they have had the chance to genuinely prove themselves or otherwise. A recent review of the published literature relating to EbA found a lack of consistent use of terminology, which makes it harder to recognize existing evidence and answer these questions (Munroe et al., 2012).

Many of those currently involved in CBA and EbA activities are practitioners working at field level, and while learning must go hand-in-hand with doing, anecdotal

evidence from field-level activities currently far outweighs the objective analysis needed. EbA, for example, is often described as more effective and cheaper than hard engineered approaches to adaptation, but strong scientific evidence confirms that this is lacking, and while much literature focuses on the benefits of EbA and CBA interventions, there is little detail on the social, economic and environmental costs (Doswald et al., 2014) or avoided losses due to disaster risk reduction (Renaud, Sudmeier-Rieux, & Estrella, 2013).

Address the institutional, governance and policy context

Like CBA and EbA, CBNRM was initially seen in part as a response to an environmental problem – in this instance biodiversity loss as opposed to climate change. Over time, however, it evolved into an approach with acknowledged rural development co-benefits, and it is now viewed as an institutional or organizational development programme whereby natural resources are utilized to economically empower local people. One of its most remarkable attributes has been the processes and institutions it has established in order to achieve this. This includes the creation of space for the direct and practical involvement of communities; the devolution of rights and management authority from central government to communities recognized by policy and law (Borrini-Feyerabend et al., 2007); collective ‘ownership’ of these natural resources by well-defined local communities and the establishment of mechanisms to ensure the provision of tangible benefits for communities from conservation initiatives. Central to this is engagement with effective legitimate local institutions that incorporate – or are based on – appropriate traditional forms of governance (Chishakwe et al., 2012).

CBA and EbA now need to address the institutional, governance and policy context in which initiatives operate more thoroughly because their ultimate success is likely to hinge on this context. This is true both at the local level – where capable local institutions are needed to make decisions and ensure active community participation – but also for the higher level institutions and policies on which communities depend.

CBA to date has emphasized the importance of participatory tools, but because activities are often implemented by local practitioners, links with political structures above the level of the settlement have been weak (Dodman & Mitlin, 2013). Building the capacity of practitioners to integrate CBA into broader programmatic planning is needed to address this. While CBA is grounded in community values, coping strategies, priorities and decision-making structures, it cannot operate exclusively at the community level, because other external factors can increase a community’s vulnerability to climate change. For example, African pastoralists are particularly well adapted to life in some of

the world's most variable and unpredictable environments, but they have long suffered at the hands of widespread government policies supporting land uses such as large-scale irrigation, forestry or livestock ranching (Hesse, 2011).

Evidence on how EbA interventions contribute to or are supported by particular policies is also weak (Doswald et al., 2014). Some EbA theorists argue that flexible management structures are central to EbA (Andrade et al., 2011), and those promoting integrated solutions to CBA and EbA stress the importance of engaging with institutions operating at the ecosystem level (e.g. the watershed management scale) as well as at the level of the community and the social and administrative structures in which it lies (Jeans, Oglethorpe, Phillips, & Reid, 2014). But both disciplines need stronger consideration of the institutional, governance and policy context in which initiatives lie.

Secure impact at scale

Scaling up is central if benefits from planned adaptation are to extend beyond the beneficiaries of isolated initiatives to reach the millions of poor people facing a climate change-constrained future. This is a key challenge for CBA and EbA initiatives, many of which are localized project or programme-based activities that do not focus on broader institutional and governance issues needed to secure impact at wider scales. Even those initiatives that do work closely with governments lack the multi-sectoral engagement at higher levels needed to maximize impact. Extending beyond the project scale requires embedding activities in an enabling institutional and policy framework that facilitates replication in different contexts, and it requires dialogue and collaboration between different sectors and ministries. Ayers, Huq, Wright, Faisal, and Hussain (2014) review the four-step framework developed by Ayers and Huq (2008) for building national capacity on adaptation mainstreaming and conclude that while addressing some of the preconditions necessary for mainstreaming, experiences in Bangladesh reflect 'a much more complex patchwork of processes and stakeholders' than the framework provides. Regmi and Star (2014) emphasize the importance of 'community-centric provisions' to empower local institutions and encourage inclusive decision-making and benefit-sharing for such mainstreaming in Nepal.

In the context of CBNRM securing impact at scale involved embedding empowered local institutions in a broader institutional and policy framework that supported devolution of rights and responsibilities to local people when it came to wildlife management. Land tenure (or the lack thereof) was often central to whether the goals of CBNRM could be achieved. This approach provided opportunities for replication and diversification to other sectors.

Systematically mainstreaming local adaptation approaches into local, regional and national government structures, policies, laws and planning processes is

usually the best way to support the wide-scale replication of local approaches and achieve impact at scale. In Nepal, for example, Local Adaptation Plans of Actions (LAPAs) are embedded in the NAPAs. This can be challenging, however, because approaches to adaptation planning – led by central government in particular – can be top-down and out of touch with realities on the ground. Experiences from CBNRM remind us of the importance of retaining the direct and genuine involvement of empowered communities while addressing the issue of scale. The climate change advocacy toolkit developed by the Southern Voices on Climate Change Programme provides some guidance on how to do this (Reid, Chandler, Jarrah, & With, 2014).

Provide incentives

Under CBNRM, communities received long-term non-cash benefits from sustainable resource management, but these less tangible benefits had to be complemented by more visible direct household benefits to incentivise sustainable behaviour. CBA and EbA practitioners need to consider such incentives. Both disciplines aim to improve resilience and adaptive capacity, but the longer term nature of these benefits combined with the fact that there is considerable uncertainty regarding exactly what risks lie ahead in any given location mean that short-term co-benefits (such as provision of food from EbA interventions) or compensation for short-term losses (including the time and resources spent on adaptation activities) may be needed to motivate the community to adopt adaptive practices (Chishakwe et al., 2012).

CBNRM initiatives sometimes provided short-term cash-in-hand to local communities, but in the case of local-level adaptation activities it is less clear where funding might come from. Schemes involving microfinance, payments for environmental services, or revolving funds provide opportunities here, but in most cases, international and national systems for financing local adaptation are absent or in their infancy.

What next?

The world's poorest people will be worst hit by climate change because they live in vulnerable areas and have the least capacity to cope. Poor people are also disproportionately reliant on natural resources such as timber, fish, grazing and wild medicines for their subsistence, well-being and livelihoods. Those working in the field of climate change adaptation are therefore increasingly looking to bottom-up nature-based solutions such as CBA and EbA that can help these people adapt. These solutions must build on learning from older disciplines such as CBNRM, which has had 40 years to mature in terms of both theory and practice. CBNRM developed under

conditions of climate variability, if not change, but lessons are still relevant. CBNRM activities to improve networks and increase ecological resilience in Trinidad and Tobago, for example, improved human resilience to climate change (Tomkins & Adger, 2004), and CBNRM activities in Ethiopia built resilience to climate change by empowering local people and improving institutional governance (Reid et al., 2013). But adaptation practitioners and planners must also look ahead and acknowledge that the goal posts are moving, the environment is no longer static as climate change advances and in many places people will have to adapt to conditions beyond anything experienced in living memory. In some places this may require transformational rather than incremental approaches to adaptation (Kates, Travis, & Wilbanks, 2012).

Acknowledgements

Many thanks are due to Ed Barrow, Pascal Girot, Shaun Martin, Rob Munroe, Musonda Mumba, Judy Oglethorpe, Jo Phillips, Tine Rossing and Ole Vestergaard for comments on earlier drafts of this paper.

Disclosure statement

No potential conflict of interest was reported by the author.

References

- Andrade, A., Córdoba, R., Dave, R., Girot, P., Herrera, B. F., Munroe, R., ... Vergar, W. (2011). *Draft principles and guidelines for integrating ecosystem-based approaches to adaptation in project and policy design: A discussion document*. Turrialba: IUCN-CEM, CATIE.
- Ayers, J., & Huq, S. (2008). *Taking steps: Mainstreaming national adaptation* (IIED briefing). London: IIED.
- Ayers, J., Huq, S., Wright, H., Faisal, A. M., & Hussain, S. T. (2014). Mainstreaming climate change adaptation into development in Bangladesh. *Climate and Development*, 6(4), 293–305.
- Borrini-Feyerabend, G., Pimbert, M., Farvar, M. T., Kothari, A., Renard, Y., Jaireth, H., ... Warren, P. (2007). *Sharing power: A global guide to collaborative management of natural resources*. London: Routledge.
- Brooks, N., Anderson, S., Ayers, J., Burton, I., & Tellam, I. (2011). *Tracking adaptation and measuring development* (IIED Climate Change Working Paper). IIED: London.
- Brooks, N., Anderson, S., Burton, I., Fisher, S., Rai, N., & Tellam, I. (2013). *An operational framework for Tracking Adaptation and Measuring Development (TAMD)* (Climate Change Working Paper No. 5). IIED: London.
- CARE. (2014). *Participatory monitoring, evaluation, reflection and learning for community-based adaptation: A revised manual for local practitioners*. London: CARE International.
- Child, B. (1996). The practice and principles of community-based wildlife management in Zimbabwe: The CAMPFIRE programme. *Biodiversity and Conservation*, 5(3), 369–398.
- Chishakwe, N., Murray, L., & Chambwera, M. (2012). *Building climate change adaptation on community experiences: Lessons from community-based natural resource management in southern Africa*. London: International Institute for Environment and Development.
- Convention on Biological Diversity. (2009). *Connecting biodiversity and climate change mitigation and adaptation: Report of the second ad hoc technical expert group on biodiversity and climate change*. CBD Technical Series No. 41. Secretariat of the Convention on Biological Diversity, Montreal, Canada.
- Dixit, A., McGray, H., Gonzales, J., & Desmond, M. (2012). *Ready or not: Assessing national institutional capacity for climate change adaptation*. Washington, DC: World Resources Institute.
- Dodman, D., & Mitlin, D. (2013). Challenges for community-based adaptation: Discovering the potential for transformation. *Journal of International Development*, 25(5), 640–659.
- Doswald, N., Munroe, R., Roe, D., Giuliani, A., Castelli, I., Stephens, J., ... Reid, H. (2014). Effectiveness of ecosystem-based approaches for adaptation: Review of the evidence-base. *Climate and Development*. doi:10.1080/17565529.2013.867247
- Dressler, W., Büscher, B., Schoon, M., Brockington, D., Hayes, T., Kull, C., ... Shrestha, K. (2010). From hope to crisis and back again? A critical history of the global CBNRM narrative. *Environmental Conservation*, 37(1), 5–15.
- Girot, P., Ehrhart, C., Oglethorpe, J., Reid, H., Rossing, T., Gambarelli, G., ... Phillips, J. (2012). *Integrating community and ecosystem-based approaches in climate change adaptation responses*. ELAN, unpublished. Retrieved from www.elanadapt.net
- Hesse, C. (2011). *Ecology, equity and economics: Reframing dryland policy* (Sustainable Development Opinion Paper). London: IIED.
- Jeans, H., Oglethorpe, J., Phillips, J., & Reid, H. (2014). The role of ecosystems in climate change adaptation: Lessons for scaling up. In E. L. F. Schipper, J. Ayers, H. Reid, S. Huq, & A. Rahman (Eds.), *Community based adaptation to climate change: Scaling it up* (pp. 253–265). London: Routledge.
- Kates, R. W., Travis, W. R., & Wilbanks, T. J. (2012). Transformational adaptation when incremental adaptations to climate change are insufficient. *Proceedings of the National Academy of Sciences of the United States of America*, 109(19), 7156–7161.
- Klein, R. J. T., Schipper, L., & Dessai, S. (2005). Integrating mitigation and adaptation into climate and development policy: Three research questions. *Environmental Science & Policy*, 8, 579–588.
- Millennium Ecosystem Assessment. (2005). *Ecosystems and human well-being: Synthesis*. Washington, DC: Island Press.
- Munroe, R., Roe, D., Doswald, N., Spencer, T., Möller, I., Vira, B., ... Stephens, J. (2012). Review of the evidence base for ecosystem-based approaches for adaptation to climate change. *Environmental Evidence*, 1, 13. <http://www.environmentalevidencejournal.org/content/pdf/2047-2382-1-13.pdf>
- Murphree, M. W. (1997). Articulating voices from the commons, interpretation, translation and facilitation: Roles and modes for common property scholarship. *Society and Natural Resources*, 10, 415–421.
- Murphree, M. W. (2000). *Community-based conservation: Old ways, new myths and enduring challenges*. Key address at the conference on African wildlife management in the new millennium. College of African Wildlife Management, Mweka, Tanzania, 13–15 December 2000.

- Oates, J. F. (1999). *Myth and reality in the rainforest: How conservation strategies are failing in West Africa*. Berkeley: University of California Press.
- Pimbert, M. (2004). *Institutionalising participation and people-centered processes in natural resource management: Research and publications highlights*. London: IIED.
- Rao, N. S., Carruthers, T. J. B., Anderson, P., Sivo, L., Saxby, T., Durbin, T., ... Chape, S. (2013). *An economic analysis of ecosystem-based adaptation and engineering options for climate change adaptation in Lami Town, Republic of the Fiji Islands*. Apia: Secretariat of the Pacific Regional Environment Programme (SPREP).
- Regmi, B. R., & Star, C. (2014). Identifying operational mechanisms for mainstreaming community-based adaptation in Nepal. *Climate and Development*, 6(4), 306–317.
- Reid, H. (2011, November). *Improving the evidence for ecosystem-based adaptation*. IIED Opinion: lessons from adaptation in practice series. London: IIED.
- Reid, H., Alam, M., Berger, R., Cannon, T., Huq, S., & Milligan, A. (2009). Community-based adaptation to climate change: an overview. *Participatory Learning and Action* 60, 11–33. London: IIED.
- Reid, H., & Alam, S. S. (2014). *Ecosystem-based approaches to adaptation: Evidence from two sites in Bangladesh* (IIED Working Paper). London: IIED.
- Reid, H., Chandler, I., Jarrah, R., & With, P. (2014). *Supporting local voices*. Climate Change Advocacy Toolkit No. 8. London: IIED.
- Reid, H., Faulkner, L., & Weiser, A. (2013). *The role of community-based natural resource management in climate change adaptation in Ethiopia* (Climate Change Working Paper No. 6). London: IIED.
- Reid, H., & Huq, S. (2014). Mainstreaming community-based adaptation into national and local planning. *Climate and Development*, 6(4), 291–292.
- Reid, H., Phillips, J., & Heath, M. (2009, December). *Natural resilience: Healthy ecosystems as climate shock insurance* (IIED Briefing). London: IIED.
- Reid, H., & Schipper, E. L. F. (2014). Upscaling community-based adaptation: An introduction to the edited volume. In E. L. F. Schipper, J. Ayers, H. Reid, S. Huq, & A. Rahman (Eds.), *Community based adaptation to climate change: Scaling it up* (pp. 3–21). London: Routledge.
- Renaud, F. G., Sudmeier-Rieux, K., & Estrella, M. (Eds.). (2013). *The role of ecosystems in disaster risk reduction*. Tokyo: United Nations University Press.
- Roe, D., Mayers, J., Grieg-Gran, M., Kothari, A., Fabricius, C., & Hughes, R. (2000). *Evaluating Eden: Exploring the myths and realities of community-based wildlife management*. London: IIED.
- Terborgh, J. (1999). *Requiem for nature*. Washington, DC: Island Press.
- Tompkins, E. L., & Adger, W. N. (2004). Does adaptive management of natural resources enhance resilience to climate change? *Ecology and Society*, 9(2), 10. <http://www.ecologyandsociety.org/vol9/iss2/art10/>