



Integrating Community and Ecosystem-Based Approaches in Climate Change Adaptation Responsesⁱ

This paper is the result of extensive discussions led by adaptation professionals coming from different backgrounds and facilitated by the Ecosystem and Livelihoods Adaptation Network (ELAN).ⁱⁱ ELAN is an innovative alliance between two conservation organisations (International Union for the Conservation of Nature [IUCN] and WWF) and two development organisations (CARE International and the International Institute for Environment and Development [IIED]). The objective of ELAN is to establish a global network to develop, evaluate, synthesize and share successful strategies for adapting to climate change, build capacity for such strategies to be assessed and implemented at national and sub-national levels, and advance policies and knowledge sharing platforms that will facilitate the scaling up of effective strategies.

Two emerging approaches to adaptation have gained currency over the past few years, namely Community-based Adaptation (CBA) and Ecosystem-based Adaptation (EBA). Each has its specific emphasis, the first on empowering local communities to reduce their vulnerabilities, and the latter on harnessing the management of ecosystems as a means to provide goods and services in the face of climate change. In this paper, ELAN argues for a more truly “integrated approach” to adaptation that addresses and seeks to reconcile differences between CBA and EBA. ELAN has developed a conceptual framework for an approach to adaptation, which empowers local communities to manage ecosystems under resilient governance arrangements that can provide the ecosystem services on which they depend.

KEYWORDS: Climate Change, Adaptation, Human Rights, Livelihoods, Communities, Ecosystems, Integrated Approaches

LEAD AUTHORS: Pascal Girot (CARE), Charles Ehrhart (CARE) and Judy Oglethorpe (WWF)

CONTRIBUTING AUTHORS: Hannah Reid (IIED), Tine Rossing (CARE), Gretel Gambarelli (IUCN), Helen Jeans (WWF), Edmund Barrow (IUCN), Shaun Martin (WWF), Ninni Ikkala (IUCN) and Joanna Phillips (WWF)

ⁱThe views expressed in this publication do not necessarily reflect those of CARE, WWF, IUCN and IIED. They are the exclusive responsibility of the authors. Photo by: ©CARE/Hoang Gia Hai Hoang.

ⁱⁱSee the ELAN website at <http://www.elanadapt.net>.



1. Introduction

Climate change poses one of the greatest threats in history to the realisation of sustainable development, as climate hazards are increasingly impacting human communities and ecosystems alike. The world's poorest people and communities are most vulnerable to the impacts of climate change; they are on the frontline of a changing climate with everything to lose and little to cushion the blow. Climate change is having and is projected to impact the livelihood assets and to affect the rights of vulnerable people, especially those that are dependent on biodiversity and ecosystem services for food, water and shelter, and particularly in times of need or to meet contingencies. Climate change is also having a negative impact on traditional coping mechanisms and food security¹ thereby increasing the vulnerability of the world's poor to famine and perturbations such as droughts, floods and diseases. Finally, likely climate change impacts on natural resources,² species and ecosystems will reduce options for local and national development, and increase the pressure on the remaining terrestrial, freshwater and marine habitats. Losses in land fertility and landscape-level productivity through forces such as erosion and salinisation will affect rural and coastal communities' livelihoods, further reducing opportunities for sustainable development and exacerbating poverty through reduced income opportunities. Vulnerable communities are already being pushed backwards into greater poverty and insecurity and this is projected to get worse, reversing decades of development gains.

The Intergovernmental Panel on Climate Change (IPCC) has warned that if current trends in emissions continue unabated, global warming will continue to be a reality. A recent report on extreme events by the IPCC suggests that some changes in the climate may already be irreversible, and even if some of the more critical changes will occur in the future, adaptation to the inevitable impacts of climate change is essential.³ There is no "one size fits all" approach to adaptation and testing the most appropriate adaptation measures and processes for a given situation has proven challenging. National and local decision makers have available to them a range of adaptation pathways, one of which is to support planning processes and large-scale investments to pre-empt climate change impacts. This pathway carries the risk of allocating significant adaptation resources to large-scale infrastructure projects, such as dams and dikes, with the objective of reducing people's vulnerability to climate change hazards. However, evidence from decades of experience in development and disaster risk reduction (DRR) shows that these large-scale, hard infrastructure interventions are especially costly and very often only provide a partial solution to meeting people's livelihood needs.⁴ In some cases they can even worsen the conditions of local populations. Changes in the natural frequency of floods in floodplains as a consequence of dam construction have often hampered agriculture production and affected local livelihoods, as in Senegal for example.⁵ In many cases, large scale infrastructure projects place additional stresses on ecosystems which are already facing climate change impacts, and reduce their ability to help local people to adapt,⁶ as the most vulnerable are most often left out from the more top-down approaches to development.

The Hyogo Framework for Action for reducing disaster risk, agreed upon in 2005, includes clear reference to actions needed to address the underlying drivers of disaster risk.⁷ In this paper, we argue that there is a pressing need for more

¹Pisupati, B. and E. Warner, 2003. Biodiversity and the Millennium Development Goals. IUCN/ UNDP.

²Climate Change Action Network Australia (CANA). Social Impacts of Climate Change: Impacts on Millennium Development Goals. Accessed online at <http://www.cana.net.au/socialimpacts/global/millennium-development-goals.html>.

³IPCC 2011 Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX).

⁴Blaikie, P; Cannon, T, Davis I and B. Wisner 1997 At Risk: Natural Hazards, People's Vulnerability and Disasters, London: Routledge.

⁵Ibid.

⁶See N. LeRoy Poff; J. David Allan; Mark B. Bain; James R. Karr; Karen L. Prestegard; Brian D. Richter; Richard E. Sparks; Julie C. Stromberg The Natural Flow Regime. BioScience, Vol. 47, No. 11. (Dec., 1997), pp. 769-784.

integrated approaches to adaptation that adhere both to human rights-based principles and principles of sound environmental management and propose ways to bridge the artificial divide between adaptation approaches that focus on the role of ecosystems and those that support the role of communities and human rights.⁸ Increasing the resilience of both social and ecological systems is therefore imperative in the face of a changing climate. Recently, there has been a surge in interest surrounding adaptation approaches, but these have tended to be dispersed and narrow in focus. There is room for a greater articulation and use of these approaches as this paper will show.

1.1 Rationale and purpose of the paper

This paper is the result of extensive discussions led by adaptation professionals coming from different backgrounds and facilitated by the Ecosystem and Livelihoods Adaptation Network (ELAN).⁹ ELAN is an innovative alliance between two conservation organisations (International Union for the Conservation of Nature [IUCN] and WWF) and two development organisations (CARE International and the International Institute for Environment and Development [IIED]). The objective of ELAN is to establish a global network to develop, evaluate, synthesize and share successful strategies for adapting to climate change, build capacity for such strategies to be assessed and implemented at national and sub-national levels, and advance policies and knowledge sharing platforms that will facilitate the scaling up of effective strategies.

Two emerging approaches to adaptation have gained currency over the past few years, namely Community-based Adaptation (CBA) and Ecosystem-based Adaptation (EBA). Each has its specific emphasis, the first on empowering local communities to reduce their vulnerabilities, and the latter on harnessing the management of ecosystems as a means to provide goods and services in the face of climate change. In this paper, ELAN argues for a more truly “integrated approach” to adaptation that addresses and seeks to reconcile differences between CBA and EBA. Towards this end, the paper provides a conceptual framework for such an interdependent and integrated approach, which is applicable to all types and levels of climate change adaptation. Arguably, the most important discussion surrounds core principles. As a result, EBA is being pushed to consistently incorporate human rights-based principles while CBA is pressed to integrate an environmental perspective and principles. While these efforts are works in progress, in practice, local adaptation approaches tend to address both issues of environmental stewardship and the intricacies of social dynamics. Consequently, there are clearly more commonalities than differences, although the differences this paper discusses are critical and need to be addressed. As a means to stimulate this discussion, a lead question provides the background and justification for this paper:

Why should practitioners from the development and conservation sectors challenge and change their way of “doing” adaptation and take a more integrated ecosystems/rights-based approach?

The next section provides an overview of some of the concepts behind existing adaptation approaches. The following discussion will be divided into four sections. Section 2 will outline the conceptual framework for Human Rights based approaches, Community-based Adaptation and Ecosystem-based Adaptation. Section 3 proposes an analysis of similarities and differences between Community-based Adaptation and Ecosystem-based Adaptation approaches, from a practical standpoint. Finally a fourth section seeks to propose a mutually supportive approach to adaptation that bridges the sometimes artificial divide between CBA and EBA.

⁸ISDR, 2005.

⁸Ibid.

⁹See the ELAN website at www.elanadapt.net.

2. Understanding the Concepts

2.1 Combining top-down and bottom-up approaches

Top-down development responses are less likely to reach the most vulnerable people and take into account the ecosystem services they are dependent on, given that these people are often socially marginalised and live in remote areas beyond the reach of government services.¹⁰ Instead, past experience has shown that interventions have the most impact when they are designed and implemented at the lowest appropriate level, while taking into account national priorities and strategies.¹¹ However, local-level interventions may not always be the best, at least not in isolation. For example, planning at the river basin level can help to avoid maladaptation at the local level (e.g. building a dam to provide a community with water, that negatively affects others downstream, or lots of communities digging wells that lower the water table and affect everyone adversely resulting in maladaptation).

This lesson is particularly relevant to the challenges of adapting to climate change, since effective responses must be location-specific, and yet be contextualized to wider landscapes or ecosystems, as the river basin example below demonstrates. Such responses need to be cross-cutting and integrated. To facilitate the expansion of such an approach, there is a growing need for practical knowledge to scale-up integrated and participatory field-level methodologies and tools.¹² Yet, promoting lessons learned is often hampered by a significant gap in capacities to prepare for the impacts of climate change, not only at the household and community levels, but also at watershed and landscape level.

Approaches to adaptation are still incipient despite a growing body of literature and a wide range of emerging assessment and screening tools to help identify and prioritise the most vulnerable human groups, communities, ecosystems, geographical areas and sectors—whose proliferation is likely to confuse more than help potential users at the local level. However there is a rich knowledge and institutional base to build on with respect to indigenous risk management and resilience enhancement approaches, especially for those peoples living in particularly risk prone environments (for example the dry lands, and areas prone to flooding). While such traditional approaches may not provide sufficient resilience for present day climate change projections, they are one sound basis to build on. Among these various approaches, there has been mounting interest amongst governments, donors, multi-lateral institutions and civil society organisations in “community-based” (CBA) and “ecosystem-based” (EBA) approaches to adaptation—both of which balance the need for hard and soft interventions while reflecting local conditions and incorporating local knowledge.

ELAN has developed a conceptual framework for an approach to adaptation, which empowers local communities to manage ecosystems under resilient governance arrangements that can provide the ecosystem services on which they depend. This new integrated approach, which seeks to combine Ecosystem-based Adaptation and Community-based Adaptation, refers to an *“adaptation planning and action that adheres both to human rights-based principles and principles of environmental sustainability, recognizing their inter-dependent roles in building resilience of both human communities and ecosystems to climate variability and long-term change.”*

¹⁰See Levine, S. 2011 and DfID, 2010.

¹¹Convention of Biological Diversity 2000 The Ecosystem Approach. Decision V/6. Secretariat of the Convention on Biological Diversity, Montreal, Canada.

¹²Rossing, T, A. Otselberger and P. Girot 2012 Scaling- up the use of tools for community-based adaptation: Issues and challenges, Proceedings of the 5th Community-Based Adaptation Conference, Dhaka, Bangladesh, April 2011, London: IIED.

2.2 Human Rights-Based Approaches to development

Human Rights-Based Approaches (HRBA) provide a conceptual framework for development based on human rights standards as stipulated in international treaties and declarations. These aim to promote and protect human rights by integrating the norms, standards and principles of the international human rights system into the plans, policies and processes of development.¹³ Guiding principles of HRBA, as set out in the *UN Statement of Common Understanding*, embody decades of lessons learnt and shift away from a “needs -based approach.” They clarify the ultimate objective of development as a “greater realisation of rights,” and they promote strategies that strengthen both the capacity of rights-holders to claim their rights and duty-bearers to fulfil their obligations.¹⁴ Accordingly, human rights have come to inform both the ends and means of development just as they condition human vulnerability. These collective rights include land rights and right of access to common property resources and the participation by rights holders in decisions that affect these rights. As such they also condition social vulnerability, in that they determine the degree of control of natural resources, and their uses. Human rights based approaches can potentially include elements from both community-based and ecosystem-based approaches to adaptation when they establish a framework in which communities can exercise their rights over land and resources, and their responsibility for sound stewardship.¹⁵ The starting point for such approaches, however, is people rather than the environment. Rights based approaches can help mediate how ecosystems are managed, who has rights to manage and benefit, and the equitability of the institutions which support such management.¹⁶

Amongst those core principles identified in the UN’s *Statement of Common Understanding* on HRBA, the following exert an especially strong influence in the discourse and design of CBA:

1. Non-discrimination, equality and the special needs of marginalised social groups;
2. Active, free and meaningful participation;
3. Empowerment; and
4. Accountability.

The principle of *non-discrimination, equality and special attention to the needs of marginalised social groups* is central to the international human rights framework. Increasingly applied to development policy and practice during the past twenty years, it has fundamentally shaped how many development actors see the challenge of adaptation—and their role in meeting it. Integrating this principle into adaptation efforts entails explicit steps to:

- Identify especially vulnerable individuals and marginalised social groups;
- Fully include them in all levels of adaptation planning, as well as implementation processes (by providing, for example, information in minority languages);
- Understand and address their unique needs through targeted and differentiated interventions (reaching poor women, the elderly, geographically isolated communities, and politically marginalised Indigenous Peoples);
- Ensure that adaptation activities do not inadvertently worsen their vulnerability;
- Redress power imbalances and other underlying structural causes of differential vulnerability within and between households.

¹³What is a rights-based approach to development? 1996. Office of the United Nations High Commissioner for Human Rights. Geneva, Switzerland. www.unifem-ecogov-apas.org/...RightsBasedApproachToDevelopmentOct03.doc. Accessed February 2, 2011.

¹⁴See United Nations 2003. *UN Statement of Common Understanding* and Jones, A. n.d.

¹⁵McCaston, K. 2005.

¹⁶See Ostrom, E. 1990.

Many development and humanitarian actors apply a rights-based approach to their programmes and projects, including CARE,¹⁷ Oxfam,¹⁸ and the International Federation of Red Cross/Crescent Societies,¹⁹ while some conservation organizations (e.g. IUCN) are increasingly embracing rights based approaches. It also clarifies why the UK Department for International Development (DfID)²⁰ places so much importance on differentiating between social groups in its climate change vulnerability assessments. It further explains its commitment to targeting especially vulnerable social groups (e.g. poor women) and its concern with structural injustice.

Active, free and meaningful participation in development decision-making is a fundamental right. It is also good practice, since neglecting to include intended beneficiaries in key decisions increases the risk that interventions will not match people's priority needs, be culturally or ecologically inappropriate, or that services (e.g. healthcare or water) will prove too costly.

In the context of adaptation, this principle is commonly interpreted as meaning people have the right to influence adaptation plans, policies and practices at all levels. It has resulted in interventions facilitating timely, and transparent information flows about climate change,²¹ and aiding often vulnerable sub-groups, such as women, youth and indigenous people (through training and mentoring) to take on leadership roles in community and local government organisations;²² while nurturing and enhancing traditional knowledge.

Empowerment is about treating people as the rightful directors of their future –with regards to both development and adaptation to climate change. This principle is interpreted as a mandate to help people gain the power, capacities, capabilities and access (political, economic, etc.) necessary to adapt their households, communities and societies to the impacts of climate change.

In South-western Bangladesh, for example, participatory vulnerability assessments have highlighted the special risks that climate change poses to women, in part due to cultural norms that limit their mobility and decision-making power. In addition to improving women's livelihood security through climate-resilient, income-generating strategies (such as duck rearing), CARE and partners have tackled underlying constraints on women's power.²³ As a result of project activities, women's participation in community organisations and local government institutions has increased. Women involved in the project reported greater confidence to speak out in public and negotiate important household decisions with their husbands.²⁴

Accountability is another core, rights-based principle affecting how development actors approach the adaptation challenge. It is about increasing people's capacity to claim their rights, as well as the state's capacity to be held accountable (through more accessible and responsive public officials/institutions, etc). In the context of climate change,

¹⁷See CARE International 2010-2014 Climate Change Strategic Plan.

¹⁸See Oxfam, 2007 OXFAM International Strategic Plan 2007-2012, London: Oxfam.

¹⁹See International Federation of Red Cross/Red Crescent Societies, 2011 World Disasters Report 2011, Focus on hunger and malnutrition, Geneva: IFRC

²⁰See DfID 2010 Saving Lives, Preventing Suffering and Building Resilience: The UK Government's Humanitarian Policy, London: DfID.

²¹Global Information Society Watch, 2010 ICTs and Environmental Sustainability, see <http://giswatch.org/en/2010>

²²CARE Ghana case study, see www.careclimatechange.org/files/adaptation/ALP_Ghana_Saamini_Nov2011.pdf

²³See Aguilar, L. 2009.

²⁴CARE Bangladesh 2010 Chameli Begum's Story of Livelihood Adaptation: Duck Rearing in the face of Climatic Vulnerability (See www.careclimatechange.org/files/stories/Chameli_Begum_Duc_%20Rearing.pdf)

this principle is frequently evoked to justify downward accountability for the flow and allocation of adaptation funding. In general, however, CBA proponents do not link this principle to the responsibility of communities, civil society organisations or local authorities to account “upwards” for the efficacy of their actions or spending. In a word, accountability is not a two-way street. Though extremely important, these issues are often perceived as good operating procedures rather than fundamental rights.

2.3 Community-based Adaptation

The term “Community-based Adaptation” was first used in 2006 and is still young (Huq and Reid, 2007). Nonetheless, it has rapidly matured on the basis of principles and best practices gleaned from the last half-century of development experience. This heritage has many implications for how CBA is currently understood and applied.²⁵ One of the most significant legacies shaping CBA is the widespread adoption of Human Rights-Based Approaches (HRBA, or RBA) to development and even wider acceptance of its participatory, process-oriented principles that also characterise the design of most contemporary disaster risk reduction and community-based natural resource management initiatives.²⁶

Community-Based Adaptation (CBA) has been defined as, “**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.**”²⁷ It refers to an evolving yet distinct set of principles and practices that consistently target the most vulnerable populations and focus on activities with the greatest direct impact. This targeting and focusing, embedded in participatory situational analysis and action-planning processes, distinguishes it from development business-as-usual, which is often top down and does not focus on the most vulnerable. Increasingly, development projects are re-branded as CBA without addressing the underlying drivers of climate related risk, nor contributing to significantly reduce the vulnerability of communities—in short not really addressing the principles of CBA. Adaptation strategies are generated through participatory processes that build on existing cultural norms and address the underlying causes of poverty that render some people especially vulnerable to the impacts of climate change.

CBA projects characteristically entail a combination of the following types of activities, as prioritised by community members and implemented with them:²⁸

- Livelihoods resilience (promoting, for example, hardier seed varieties, drip-irrigation, expanded access to weather forecasting services, or income diversification);
- Disaster risk reduction to minimise the impact of hazards, particularly on the most vulnerable households and individuals;
- Capacity strengthening of local civil society and government institutions so that they can more effectively support community, household and individual adaptation efforts; and
- Advocacy and social mobilisation to address the underlying causes of vulnerability, including poor governance, inequitable control of resources, limited access to basic services, discrimination and other social injustices.

²⁵Dodman, D. and D. Mitlin 2011 *Challenges for community-based adaptation: discovering the potential for transformation*, *Journal of International Development* DOI: 10.1002/jid.1772

²⁶Many principles enshrined in the *UN Statement of Common Understanding* on a HRBA reflect what was, by the time of its formulation, widely regarded as essential practices. Many development organisations have formally committed themselves to a Human Rights-Based Approach. Regardless, its principles are so deeply engrained in development education and organisational cultures, that it mightn’t be necessary—its principles saturate the way most development actors understand their work. It has “become the sea they swim in,” omnipresent yet often invisible.

²⁷Reid, H., M. Alam, R. Berger, T. Cannon, S. Huq, and A. Milligan. 2009. Community-based adaptation to climate change: an overview. In *Participatory Learning and Action*, issue 60, pg. 13.

²⁸See Huq and Reid, 2007; CARE Bangladesh, 2010; Dodman and Mitlin, 2011.

CBA projects sometimes include consideration of ecosystem goods and services, when local people and livelihoods clearly depend on them, and plan for them. For example, increased use of natural resources—such as collecting of forest products, honey production, etc - is a common intervention for alternative livelihoods in case of crop failure and to meet contingencies (for example from effects of drought, or from home needs). Other activities use ecosystem services to reduce hazards, such as mangrove restoration to reduce flooding from storm surges, and restoration of forests on steep slopes to reduce risk of landslides. For example in 1985 Shinyanga was declared the “desert” of Tanzania. Since then approximately 500,000 Ha of woodland have been restored by farmers, groups and villages in over 825 villages. This restoration is worth nearly 1.5 times agriculture per unit area. More important this restoration has spread risk and made the overall system more resilient and adaptable to shocks and disturbances.²⁹ However, this is not a prerequisite for CBA, and to date CBA guidance for practitioners does not explicitly deal with ecosystem goods and services.³⁰

2.4 Ecosystems-based Adaptation

Similar to CBA, ecosystem-based adaptation (EBA) is a young concept. It has been defined 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.**³¹

Under this definition, EBA uses a range of opportunities for the sustainable management, conservation, and restoration of ecosystems to provide services that enable people to adapt to the impacts of climate change. It aims to maintain and increase the resilience and reduce the vulnerability of ecosystems and people in the face of the adverse effects of climate change. However, while EBA focuses on maintaining ecosystem functions and services, it is an integral part of any broader strategy for human adaptation. EBA can be cost-effective and generate social, economic and cultural benefits, including disaster risk reduction, livelihood sustenance and food security, carbon sequestration and sustainable water management.³² By protecting and enhancing the natural and managed ecosystem services that support livelihoods, vulnerable communities can maintain local safety nets, increase the buffering capacities of local ecosystems and expand the range of options for building resilience and adapting to disruptive shocks and trends (Berkes and Folke, 1998). These local safety nets are often couched in traditional, customary laws, which determine access rights to resources, and the capacity for communities to maintain exclusive rights over resources, the absence of which often leads to the tragedy of the commons,³³ and the loss of ecosystem services. These community rights and their recognition by broader polities, such as national and sub-national governments, are also critical to adaptation. Many land and resource uses will have to adjust to changing climate conditions, and these bundles of rights will evolve. Over the past 1000 years, the most robust and long-lived common property management organisations, as, for example, the *Huertas* irrigation system in Valencia, Spain, have incorporated customary norms and regulations to incorporate climatic disturbances such as drought (Ostrom, 1990). The ecosystem approach must therefore build on these experiences and explore a range of governance options in order to best manage land and resources in the face of a changing climate.

²⁹See: Barrow, E. and W. Mlenge (2003), and Monela, G. C., S. A. O. Chamshama, R. Mwaipopo and D. M. Gamassa (2005).

³⁰Ibid.

³¹See Secretariat of the 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. Montreal, Technical Series No. 41, 126 pages, The World Bank, 2009, Convenient Solutions to an Inconvenient Truth: Ecosystem-based Approaches to Climate Change; IUCN.

³²Secretariat of the CBD 2009. Op cit. and A. Colls, N. Ash and N. Ikkala. 2009. *Ecosystem-based Adaptation: a natural response to climate change*. Gland, Switzerland: IUCN. 16pp.

³³The term “Tragedy of the Commons” was coined by Garrett Hardin (1968) in a controversial paper in which the author predicted that herders using open-access pastures would automatically lead to overgrazing and would be driven to collective ruin in spite of rational individual decisions.

2.5 Ecosystem principles in EBA

Just as human rights principles have informed CBA, some key principles on the ecosystem approach to conservation inform EBA. These principles were adopted by the United Nations Convention on Biological Diversity in 2000³⁴ and endorsed by the World Summit on Sustainable Development in 2002, and have been in use for the last decade. A subset of ecosystem principles, based on the former, and particularly relevant to EBA, are listed and discussed below in the context of climate adaptation. They fall into four main categories:

1. Maintaining ecosystem services by conserving ecosystem structure and functioning, recognising that ecosystems have limits, undergo change and are interconnected
2. Using appropriate time and spatial scales
3. Ensuring participatory decision-making and decentralised, flexible management; and
4. Using information from all sources including traditional, local and scientific information.

A recent publication by IUCN's Commission on Ecosystem Management, also provides key lessons from the field on ecosystem based adaptation approaches.³⁵ This report reminds us that ecosystems have limits beyond which they cannot function effectively; these limits are complex and not always predictable. In many cases it is not yet known exactly how climate change will affect specific ecosystems and, if and when, it will tip them beyond these limits. That said, ecosystem resilience to climate change is generally higher, if the system is in good condition and non-climate stressors such as habitat destruction, overharvesting of resources, and pollution are minimised.³⁶ Hence promoting healthy and flexible ecosystems and reducing non-climate stressors are important approaches in maintaining ecosystem services for human adaptation and helping their component parts to adapt. For example, reforestation and conserving intact forests, maintaining or restoring connectivity between natural spaces, avoiding over-use of resources and reducing risk of forest fires can help increase resilience to climate change. This, in turn, helps to ensure continued availability and access to natural resources that support people's livelihoods, and to reduce their vulnerability to shocks, and ultimately to adapt to changing conditions. It can also reduce the risk of natural disasters such as landslides that may be triggered by more intense rainstorms.

Ecosystems function at different scales, from local (for example, the catchment of a small pond) to very large (e.g. an international river basin). Very often their boundaries do not correspond with political boundaries (e.g. village, district, province, or national boundaries). It is important that adaptation planning takes into account and ensures harmonisation between scales of critical ecosystem function and political scales of intervention. Taking a systems approach (a holistic approach that takes into account interactions and interdependencies at different levels) rather than a singular, project-level approach –integrating local planning with broader river basin planning, for example–will likely yield better, long-term results.

Similarly, it can take time for climate impacts on ecosystems to manifest themselves. EBA also takes temporal aspects into account, supporting adaptation to both current and future climate conditions, and promotes “no-regrets” strategies that make sense and provide tangible benefits with or without the impact of climate change. Participatory

³⁴Ecosystem Approach Principles. Endorsed at the fifth Conference of the Parties to the Convention on Biological Diversity (CoP 5 in Nairobi, Kenya; May 2000/Decision V/6). www.cbd.int/decision/cop/?id=7148.

³⁵Andrade, A. et al 2010.

³⁶*Buying Time: A User's Manual to Building Resistance and Resilience to Climate Change in Natural Systems*. Ed. L Hansen, J.L. Biringer, and J. Hoffman. World Wildlife Fund. 2003.

learning as well as monitoring and evaluation with feedback to a flexible management system (PLM&E) are, in this sense, very important for adaptation to be grounded in best practice.

Examples of the long timeframes that are sometimes necessary in EBA come from projects aimed at restoring mangroves for adaptation purposes. Mangroves can buffer the effects of storm surges resulting from more extreme storms, providing protection to vulnerable coastal communities and, infrastructure, as well as supporting important fisheries. In the longer term, though, mangroves will be affected by sea-level rise and risk being submerged and lost unless they can move inland keeping pace with rising water, if the topography is suitable. In some countries, such as Vietnam and Australia, communities are setting aside areas behind existing mangroves so that they have space to move inland and continue this important ecosystem function.

The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge.³⁷ EBA should therefore be decentralised to the lowest appropriate level, avoiding top-down approaches that may not take local interests fully into account, and ensuring that responses are culturally appropriate. EBA should also encourage gender-sensitive, community engagement—which is a very important aspect given the particular vulnerability of women and their high dependence on ecosystem services in resource poor communities. Moreover, in many communities, women play an important role in natural resource management.³⁸

Climate adaptation will inevitably involve trade-offs as demand and competition for natural resources and ecosystem services increase (due to factors such as ongoing climate change, resource use, economic growth, globalization, migration and globalisation, as well as population growth), and environmental change continues unabated. Such trade-offs will vary depending on the given context. While EBA does not provide a way to avoid difficult choices, if appropriately applied, it can help in some cases to identify options that maximize longer-term benefits. Adaptation decisions should therefore be based on risk assessment, scenario planning and adaptive management approaches that recognise and incorporate these potential trade-offs, seeking to obtain a sound balance between human and ecosystem concerns, and fair conflict resolution among different stakeholders.³⁹ It can also help to promote participatory decision-making, ensuring that the needs of poor and vulnerable people are heard as well as to larger economic interests, which can result in more equitable benefits sharing.

Under EBA, local communities and indigenous peoples can contribute valuable traditional knowledge and practices for adaptation, based on their past experience of coping with climate variability, that can be applied—with full participation and free prior and informed consent—to current adaptation with good effect.⁴⁰ This includes, for example, using local crop varieties and cultivation methods that can withstand extreme weather conditions, and locally appropriate methods to store seed stocks. At the same time, some of the changes that are being experienced now by local communities and are most likely in the future, go beyond living memory and adapting to them may require technological solutions that come from outside the communities. Local observation of changes in weather, hazards and impacts, along with scientific projections of future changes and scenario planning, can contribute to assessing current and future vulnerability and planning responses.

³⁷Ecosystem Approach Principles. Endorsed at the fifth Conference of the Parties to the Convention on Biological Diversity (CoP 5 in Nairobi, Kenya; May 2000/Decision V/6).

³⁸See Aguilar, L. 2009.

³⁹Secretariat of the CBD. 2009. op cit; International Union for Conservation of Nature (IUCN). 2009. *Ecosystem-based Adaptation (EbA)*, Policy Briefing, Fifth session of the UNFCCC Ad Hoc Working Group on Long-Term Cooperative Action under the Convention (AWG-LCA), Bonn, March-April.

⁴⁰Secretariat of the CBD. 2009. op cit.

2.6 EBA policy and approaches

The Cancun Adaptation Framework, adopted under the United Nations Framework Convention on Climate Change (UNFCCC) at the 16th Conference of the Parties (COP16) in December 2010 (Decision 1/CP.16) recognises the role of natural resource management as an adaptation action that increases resilience of socio-economic and ecological systems (1/CP.16. 14 d). The Framework supports gender-sensitive and participatory approaches to adaptation, taking into account vulnerable groups, communities and ecosystems. The importance of ecosystems in adaptation approaches has also been highlighted under the Nairobi Work Programme of the UNFCCC, a multi-stakeholder platform that disseminates information and knowledge on adaptation.

At COP 10 in October 2010, the United Nations Convention on Biological Diversity (UNCBD) adopted decision X.33 (8. J-I) which acknowledges that ecosystem-based approaches to adaptation can be managed to limit climate change impacts on biodiversity and to help people adapt to the adverse effects of climate change.

Several national climate change policies and strategies, including the National Adaptation Programmes of Action (NAPAs) and sectoral policies (including water, forests, and coastal zone management) recognise the role of ecosystems in enabling livelihood adaptation.⁴¹

The EBA approach has now been widely endorsed by multinational and environmental and conservation organisations including the International Union for the Conservation of Nature (IUCN), the World Bank and UN agencies such as United Nations Environmental Programme (UNEP). These organisations often apply EBA to meet their missions and activities. For example, the World Bank, in its strategy for adaptation to climate risks under its development agenda, considers the protection, restoration and sustainable management of ecosystems critical to adaptation from the perspective of sustaining the wide range of goods and services they provide. It promotes the incorporation of “ecosystem-based approaches” into broader strategies for climate change adaptation at various scales. Examples of World Bank project activities that are supportive of this approach include the use of ecosystems and ecosystem services for maintaining the provision of water resources, serving as coastal barriers, reducing pollution, controlling invasive alien species, supporting fisheries and maintaining genetic diversity.⁴² There are also many examples of community-based forestry or community managed fisheries that have demonstrated sound natural resource management, as well as successful governance models. These and other best practices in Ecosystem-based Adaptation will be critical to replicate and scale up under National Adaptation Plans (NAPs), which are emerging following the Cancun Framework on Adaptation, agreed upon by parties at the UNFCCC COP 16 in December 2010⁴³.

EBA was also the focus of an international workshop held in Costa Rica in November 2008 that brought together a diverse group of stakeholders to debate the application of EBA in addressing climate risks. The outcomes from this workshop highlighted the important linkages between major stakeholder groups (i.e. scientists, policy-makers and civil society), synthesised key roles for these groups and underscored the need for communication and collaboration between them for the effective implementation of EBA and the mainstreaming of the EBA approach into policy initiatives (see Vignola et al, 2009). A more recent workshop in June 2011, attended by several ELAN partners, discussed

⁴¹See Reid, H., Philips, J. and M. Heath, 2009.

⁴²See Crooks, S., D. Herr, J. Tاملander, D. Laffoley, and J. Vandever 2011 Mitigating Climate Change through Restoration and Management of Coastal Wetlands and Near-shore Marine Ecosystems: Challenges and Opportunities, World Bank Environment Department Papers, Marine Ecosystem Series, No. 121.

⁴³See Andrade, A. et al 2011

principles for integrating ecosystems in adaptation, to be presented later that year at the UNFCCC COP17 in Durban, South Africa.

3. Discussing Synergies, Similarities and Differences

3.1 Real-world similarities and differences between CBA and EBA

To date, there is little peer-reviewed literature available for either CBA or EBA. The existing literature typically addresses one or the other, providing limited analysis of synergies between them and also how they differ—much less critically assessing the validity of such claims. Just as the HRBA informs the Community-based Adaptation approach, the Ecosystem Principle informs much of EBA. Meanwhile, organisations and individual practitioners are struggling to better define and communicate their unique contributions to meeting the challenges of adaptation.

To illustrate this, four of the most commonly cited differences and similarities between CBA and EBA, as identified through literature review and discussion with participants in the Fourth (2010) and Fifth (2011) International Conferences on Community-based Adaptation, are examined.

3.2 Ecosystem goods and services in people-centred adaptation

EBA is largely defined and distinguished on the basis of its recognition that ecosystems deliver services on which people depend and therefore ecosystem management has an essential role to play in successful people-centred adaptation.⁴⁴ CBA literature and case studies contain examples demonstrating widespread agreement in theory and practice. This is unsurprising since many proponents of CBA have a long history of implementing natural resource management projects—including community-based forest management, rangelands management, fisheries management, holistic water resource management and conservation agriculture—as fundamental to their development and/or risk reduction goals. Building on experiences like these, a growing number of development and humanitarian organisations are already planning and implementing bottom-up adaptation programmes and projects that incorporate ecosystem goods and services in community-based adaptation plans. Reid *et al.* (2009) express surprise about the preponderance of CBA submissions focusing on natural resources. In addition, some interventions that claim to be CBA projects are traditional community-based natural resource management projects, as they do not take their starting point in a climate vulnerability analysis, but merely deal with resource challenges.

An adaptation project review presented at the Fifth Community-based Adaptation conference in Dhaka, Bangladesh⁴⁵ partially confirms these assumptions. The review found that activities integrating ecosystem approaches and community benefits are already being implemented, even if they are not very common, and they are labeled in various ways. Of these, some practices weren't originally conceived as climate change adaptation but are possibly very useful to increase resilience to expected climate change impacts. Their contribution to adaptation should be further examined.

In other words, it would be erroneous to distinguish between EBA and CBA on the basis that one recognises a role for ecosystems and their management/adaptation in successful people-centred adaptation while the other does not. For example, it is easy to find projects under either the EBA or CBA (or other) banner that:

⁴⁴See Vignola, R. et al 2009

⁴⁵Pauline Buffle and Gretel Gambarelli (IUCN): "Integrated Ecosystems & Livelihoods Approaches: Preliminary findings from a projects' review"

- Conserve or restore coastal wetlands, mangrove forests and/or woodlands;
- Improve grassland/rangeland management;
- Take a holistic approach to watershed management;
- Employ “natural solutions” to reducing hazards (e.g. increasing vegetation on steep slopes to reduce the risk of landslides);
- Promote agroforestry; or
- Increase urban vegetation and green spaces.

It is clear from the above that EBA and CBA projects can and do embrace activities that are both community and ecosystem focused. These commonalities are most apparent when these approaches are put into practice. The differences between these approaches relate more to the original objectives (to enhance livelihoods or to enhance ecosystem functionality), set by those who adopt one approach or the other.

3.3 Scaling up and community-driven

Some EBA proponents suggest that scale is a major difference—and cause for concern—with CBA. Focusing on the interconnectivity of ecological processes, environmental scientists and conservationists frequently stress that sustainable management of natural resources or ecosystem services can only be achieved by working at multiple scales that include large scales (e.g. landscapes or watersheds). However, “community-based” approaches do not work exclusively at the community level, rather they are “community-led” or “community-driven” (referring to an operational methodology and rights-based principle rather than an operational approach). This is born out in practice, as donors, governments and civil society organisations often build on communities’ economic, ecological and administrative interconnectivity to work at higher levels as appropriate. Working through networks of local community-based organisations (CBOs) tends to lower transaction costs and allow for the scaling-up of lessons learnt within larger, more diverse project areas. These scaled-up community-based initiatives can often provide the staging ground for broader policy advocacy work, with significant impacts in terms of social and environmental governance. Finally, they can be focused on natural units such as river basins where joint management efforts by multiple communities and jurisdictions can promote increased ecosystem resilience and services, while reducing the risk of maladaptation.

Just as it is erroneous to suggest that CBA approaches do not have any ecosystem components to them, it is also incorrect to distinguish between EBA and CBA on the basis that only the latter is bottom-up and really centred around community priorities and processes. Some (although not all) ecosystem-based approaches engage participatory processes and place local communities at the centre of planning. Examples of EBA grey literature from IUCN,⁴⁶ Wetlands International⁴⁷ and WWF⁴⁸ mirrors the importance that CBA practitioners place on local ownership and leadership. These values have resulted in some EBA projects incorporating the rights-based processes and design choices characteristic of CBA. For example, the Water and Nature Initiative (WANI)—an initiative of IUCN in partnership with UNEP and the Climate Action Network (CAN) implemented in four Andean countries—aims to make government adaptation planning and integrated water resources management systems—at all levels—more responsive to people’s needs at all levels by increasing participation, transparency and accountability. As in many CBA projects, the initiative will employ a range of processes including advocacy to increase direct participation in government planning processes,

⁴⁶Ibid.

⁴⁷Eijk, P. van and R. Kumar, 2009 Bio-rights in theory and practice: A financing mechanism for linking poverty alleviation and environmental conservation, Wetlands International, Wageningen, The Netherlands.

⁴⁸Buying Time: A User’s Manual to Building Resistance and Resilience to Climate Change in Natural Systems. Ed. L Hansen, J.L. Biringer, and J. Hoffman. World Wildlife Fund. 2003.

in particular watershed management planning and participatory research to build adaptive capacity and inform national and sectorial adaptation policies.

Where, then, are the clear and consistent differences between CBA and EBA? There might not be any. In practice, however, there seems to be a continuum of CBA and EBA approaches applied in the field with substantial overlap at the centre. And further analysis of CBA and EBA projects reveals some important differences between the two approaches as well as within them.

3.4 Accounting for ecological and social complexity

Many initiatives fail to fully account for complexity in their vulnerability analysis, implementation, monitoring and/or evaluation. This happens in both ways for CBA and EBA projects. For example, CBA projects may not reflect ecological complexities or the nuances of ecosystem resilience thinking. While CBA projects often address the degradation of soils, watersheds, forests, etc., practitioners tend to view adaptation threats and solutions in terms of natural resources rather than complex ecosystems. This can be problematic because natural resource-thinking—with its focus on agricultural yields, water, forest products, fisheries, etc.—rarely considers crucial “second-tier” ecosystem goods and services such as pollination, climate regulation, or genetic diversity;⁴⁹ the interconnections between different natural systems; trade-offs between different users of ecosystems (upstream and downstream users). Few CBA vulnerability assessments look at potential indirect impacts on ecosystems including larger scale effects, and the risk of maladaptation from these.

Moreover, while some EBA projects incorporate social complexities, others do not. Particular challenges for EBA include understanding and failing to consider the unique needs of marginalised social groups, making project design choices that exacerbate local power imbalances; applying token versus meaningful participation and the capture of benefits only by local elites.

3.5 Accounting for ecological and social complexity

EBA, based on the UNCBD definition, is about using biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse impacts of climate.⁵⁰ On occasions its name has been used in the promotion of alternative livelihoods or community labour for the primary purpose of helping endangered species or biological communities adapt to the impacts of climate change.⁵¹ The former is people-centred, while the latter is biodiversity-centred. Kenneth Hewitt (1997:58) provides, however, perhaps the best argument for a symbiotic approach to adaptation in his seminal book, *Regions of Risk*, “*the separation of society and environment in the hazards paradigm creates geographical and ecological fiction (...) a natural force is not dangerous in itself but becomes so in relation to human activities and values.*”

The artificial separation between community-based and ecosystem-based approaches to adaptation is misleading, as in practice, ecological concerns are often at the heart of efforts by local community organisations endeavouring to secure

⁴⁹Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Biodiversity Synthesis*. World Resources Institute, Washington, DC. / TEEB (2010) *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB*.

⁵⁰Secretariat of the Convention on Biological Diversity. 2009.

⁵¹WWF, English Nature, RSPB and IUCN, 2005 *Climate Change and Nature: Adapting for the Future*, Gland, Switzerland: WWF-International.

their rights over land and resources. Similarly, sound governance of ecosystems and natural resources often hinges on robust community-based organisations and institutions capable of excluding outsiders and of defining and defending limits, rights and obligations of resource users.

As Blaikie, P. et al (1997:37) suggest, *“a safe environment is the goal (...) but it is also the means. Reducing vulnerability to disasters will be shown to be tied with increased resource access and empowerment of marginal groups.”* So adaptation to climate change will hinge on empowering local marginal groups to secure access to resources and adequately manage the ecosystems on which they depend, thus helping build resilience. This will allow communities to facilitate adaptation of their natural systems so that they can continue to provide ecosystem services in a changing world. In short, ecosystem based adaptation can be considered a means to an end.

4. Conclusions

4.1 A symbiotic approach to people- and ecosystem-centred adaptation

As lessons from the field suggest, the similarities and opportunities for shared learning between the two emerging approaches to adaptation may be far more significant than their differences. Indeed, to the extent that both CBA and EBA stress the relevance of local specificities; recognise the role of ecosystem goods and services in people-centred adaptation; and operate at scale, building from the bottom up, there should not be fundamental tensions between the two. Together, both approaches have a better chance to forcefully address short-comings of the mainstream top-down, “hard” infrastructure-based approach to adaptation, and promote more balanced and integrated approaches.

A growing number of organisations are converging at the centre of a conceptual continuum between CBA and EBA, and ELAN is a good example of this. In that space, they are promoting a critical and constructive dialogue about how to improve their effectiveness in climate adaptation and there are valuable opportunities for cross-learning and improvement. For instance, practitioners using the ecosystem approaches can learn how to better understand and address socio-economic complexities in vulnerability assessments; build on the priorities and capacities of local people including mobile groups not locally represented; identify, test and validate traditional knowledge; strengthen the social aspects of their M&E systems; and ensure that interventions build rather than undermine social capital (a key constituent of adaptive capacity). Meanwhile, practitioners focusing on communities in their development work can learn how to better understand and respect ecological complexity (including climate-induced changes to ecosystems); incorporate ecosystem goods and services in community-led adaptation strategies and build ecosystem resilience; adapt management systems to ecosystem or landscape scales; incorporate the latest science on climate change impacts on social and environmental systems in participatory vulnerability analyses; build environmental integrity into M&E systems; ensure that interventions build rather than undermine natural capital (another key constituent of adaptive capacity), and help facilitate adaptation of natural systems. Finally, by abating environmental degradation it is also possible to minimise some of the indirect negative socio-economic impacts of climate change, such as decreases in health conditions and increases in conflicts over scarcer resources, such as water, or climate-induced migration to urban areas ill-equipped to handle rapid population growth.

While there is much that CBA and EBA practitioners should teach each other, no single organisation can do everything. Collaborative partnerships are becoming more important than ever before, due to the scale, complexity, urgency and uncertainty of the challenges that ecosystems and poor people are facing in a changing world. There is also scope for collaborative learning. For instance, many CBA and EBA practitioners are trying to mainstream adaptation into pre-existing decentralised development, conservation and/or disaster risk management planning processes. This provides programmes and projects with ready-made platforms for bottom-up adaptation planning and action, as well as structured articulation within large-scale government systems. An agenda for collaborative learning about mainstreaming, for instance, could prove invaluable. Such an agenda could contribute to overcoming the artificial divide between the Human Rights-based and Community-based Adaptation approaches from the Ecosystem-based Adaptation approach, thus complementing the dominant infrastructure-based approach to adaptation (hard adaptation) espoused by many major international financial institutions. A common agenda is probably the best way of making the case for an

inclusive approach to adaptation which is respectful of human rights, which empowers communities, and manages ecosystems in a way that enhances resilience and adaptation over time.

Some obstacles to closer cooperation between CBA and EBA practitioners remain. These include differences in epistemologies and professional vocabulary; differences in values; erroneous assumptions about what others do and do not do; and organisational agendas, and perceptions that funding is limited. One way forward may be to demonstrate the practical challenges and the very real advantages of a bottom-up, localised and collaborative approach to adaptation.

4.2 Towards an integrated approach to adaptation:

Reflecting consensus between several leading conservation and development practitioners, this article defines an integrated approach as:

“adaptation planning and action that adheres both to human rights-based principles and principles of sound environmental management, recognising their inter-dependent roles in successfully managing climate variability and long-term change.”

This working definition provides a conceptual framework applicable to all types and levels of people-centred adaptation. Hence, this paper clearly points to the need for a symbiotic approach to adaptation which truly empowers local communities to manage ecosystems under resilient governance arrangements that can provide the ecosystem services on which they depend.

Key steps to achieve such a symbiotic approach to adaptation should build on the experiences gained in the field of disaster risk reduction (DRR), human migration, and other disciplines like community-based natural resource management (CBNRM), community forest/fishery management, and ecosystem management principles. Adaptation will require addressing both climatic and non-climatic drivers of risk.

Finally, a definition here proposed for an integrated approach to adaptation that synthesises lessons from practice in the field of development and conservation, practice can be based on the following statements:⁵²

- Promote localised and forward-looking adaptation solutions that enhance the adaptive capacity of ecosystems on which people depend, providing security in the longer term to both people and ecosystems. In other words, it is possible to promote rights-based, community-based adaptation that is environmentally sound;
- Develop compelling arguments to privilege funding for community-led, environmentally appropriate approaches to adaptation in the face of “hard” adaptation policies that prioritise short-term, high-cost infrastructure, often to the detriment of long-term sustainable human development approaches;
- Embrace opportunities offered by natural infrastructure for adaptation and disaster risk reduction, which—if combined with or implemented as an alternative to hard infrastructure - can in many cases be less costly and/or more effective than relying solely on hard infrastructure;
- Plan natural resource-based adaptation interventions while considering the fact that ecosystems are also subject to change, and may not be able to provide the hoped-for goods and services in the future;

⁵²This also concurs with: Andrade, A., Córdoba, R., Dave, R., Girot, P., Herrera-F, B., Munroe, R., Oglethorpe, J., Pramova, E., Watson, J., and Vergara, W. 2011. Draft Principles and Guidelines for Integrating Ecosystem-Based Approaches to Adaptation in Project and Policy Design: A Discussion Document. CEM/IUCN, CATIE. Kenya.

- Focus on building resilience and promoting adaptation for natural systems and species by promoting healthy, flexible ecosystems and reducing non-climate stressors, while at the same time assessing and addressing vulnerabilities and adaptation needs of people living in the area currently, those using it periodically or of those who may have to move into the area in the future. This reinforces the need for community-based conservation and rural development efforts, thus providing livelihood opportunities that work to minimise new pressures on ecosystems and reduce existing ones in an effort to adapt to advancing climate change;
- Tackle fundamental justice and governance issues in terms of climate justice, access rights to natural resources such as water, and other resources critical to local livelihoods. Secure access to other public goods, recognizing that significant changes may be necessary in future governance arrangements and institutions in order to achieve adaptation in a changing world;
- And, finally, proactively develop and enhance cross-sectoral partnerships and rapid learning to promote integrated approaches to adaptation, building on community innovation and sharing successes.

References

- Aguilar, L. 2009. Training Manual on Gender and Climate Change, IUCN, UNDP and GGCA, Gland, Switzerland.
- Andrade, A, Córdoba,R., Dave,R., Girot, P., Herrera-F, B., Munroe, R., Oglethorpe, J., Pramova, E., Watson, J., Vergara, W. 2011. Draft Principles and Guidelines for Integrating Ecosystem-Based Approaches to Adaptation in Project and Policy Design: A Discussion Document. CEM/IUCN, CATIE. Kenya.
- Barrow, E. and W. Mlengi (2003). Trees as Key to Pastoralist Risk Management in Semi-Arid Landscapes in Shinyanga, Tanzania, and Turkana, Kenya. International Conference on Rural Livelihoods, Forest and Biodiversity, Bonn, Germany, CIFOR.
- Berkes, Fikret and Carl Folke, 1998. Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience, Cambridge: Cambridge University Press
- Blaikie, P.; Cannon, T., Davis I. and Wisner, B. 1997. At Risk: Natural Hazards, People's Vulnerability and Disasters, London: Routledge.
- CARE International 2010. *2010-2014 Climate Change Strategic Plan*.
- CARE Bangladesh 2010. Chameli Begum's Story of Livelihood Adaptation: Duck Rearing in the face of Climatic Vulnerability, See www.careclimatechange.org/files/stories/Chameli_Begum_Duc_%20Rearing.pdf.
- Colls A., N. Ash and N. Ikkala. 2009. Ecosystem-based Adaptation: a natural response to climate change. Gland, Switzerland: IUCN. 16pp.
- Convention of Biological Diversity 2000. The Ecosystem Approach. Decision V/6. Secretariat of the Convention on Biological Diversity, Montreal, Canada.
- Crooks, S., D. Herr, J. Tamelander, D. Laffoley, and J. Vandever 2011. Mitigating Climate Change through Restoration and Management of Coastal Wetlands and Near-shore Marine Ecosystems: Challenges and Opportunities, World Bank Environment Department Papers, Marine Ecosystem Series, No.121.
- DfID 2010. Saving Lives, Preventing Suffering and Building Resilience: The UK Government's Humanitarian Policy, London: DfID.
- Dodman, D. and D. Mitlin 2011. Challenges for community-based adaptation: discovering the potential for transformation, Journal of International Development DOI: 10.1002/jid.1772.
- Dudley, N., S. Stolton, À. Belokurov, L. Krueger, N. Lopoukhine, K. MacKinnon, T. Sandwith and N. Sekhran [editors] 2009. Natural Solutions: Protected Areas helping people cope with climate change, IUCN-WCPA, TNC, UNDP, WCS, The World Bank and WWF, Gland, Switzerland, Washington DC and New York, USA.
- Eijk, P. van and R. Kumar, 2009. Bio-rights in theory and practice: A financing mechanism for linking poverty alleviation and environmental conservation, Wetlands International, Wageningen, The Netherlands.

- Hardin, G. 1968. The tragedy of the commons Science, New Series, Vol. 162, No. 3859. (Dec. 13, 1968), pp. 1243-1248.
- Hewitt, Kenneth 1997. Regions of Risk: A geographical introduction to disasters, London: Longman Ltd.
- Huq, S. and H. Reid 2007. Community-Based Adaptation: A Vital Approach to the Threat Climate Change Poses to the Poor. An IIED briefing paper. IIED, London.
- Intergovernmental Panel on Climate Change (IPCC) 2011. Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX), Summary for Policy Makers, Kampala: IPCC.
- International Federation of Red Cross/Red Crescent Societies, 2011. World Disasters Report 2011, Focus on hunger and malnutrition, Geneva: IFRC.
- International Strategy for Disaster Reduction-ISDR-2005. Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, Geneva: ISDR.
- International Union for Conservation of Nature (IUCN). 2009. Ecosystem-based Adaptation (EBA), Policy Briefing.
- International Union for the Conservation of Nature (IUCN) 2010. Integrated Ecosystems & Livelihoods Approaches: Preliminary findings from a projects' review. Ed. Pauline Buffle and Gretel Gambarelli, Gland: IUCN.
- Jones, A n.d. Incorporation of a Rights-Based Approach into CARE's Program Cycle: A Discussion Paper for CARE's Program Staff. CARE International: Geneva.
- LeRoy Poff, N., J. D. Allan, M. B. Bain, J. R. Karr, K. L. Prestegard, B. D. Richter, R. E. Sparks, J. C. Stromberg 1997. The Natural Flow Regime. BioScience, Vol. 47, No. 11. (Dec., 1997), pp. 769-784.
- Levine, S, E. Ludi and L. Jones 2011. Rethinking Support for Adaptive Capacity to Climate Change: The Role of Development Interventions, ACCRA, London: ODI.
- McCaston, K. 2005. Moving CARE's Programming Forward: Unifying Framework for Poverty Eradication & Social Justice and Underlying Causes of Poverty, CARE International: Geneva.
- Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Biodiversity Synthesis. World Resources Institute, Washington, DC.
- Monela, G. C., S. A. O. Chamshama, R. Mwaipopo and D. M. Gamassa (2005). A Study on the Social, Economic and Environmental Impacts of Forest Landscape Restoration in Shinyanga Region, Tanzania. Dar-es-Salaam, Tanzania, Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism, United Republic of Tanzania, and IUCN - The World Conservation Union Eastern Africa Regional Office: xvii +205.
- Ostrom, Elinore 1990. Governing the Commons: The evolution of Institutions for Collective Action, New York: University of Cambridge Press.
- Oxfam, 2007. OXFAM International Strategic Plan 2007-2012, London: Oxfam.
- Reid, H., M. Alam, R. Berger, T. Cannon, S. Huq and A. Milligan 2009. Community-based adaptation to climate change: an overview in Community-based adaptation to climate change. Participatory Learning and Action 60: 11-33. IIED, London.
- Reid, H., J. Phillips and M. Heath 2009. Natural Resilience: Healthy ecosystems as climate shock insurance. IIED Briefing, December 2009. IIED, London.
- Rossing, T, A. Otzelberger and P. Girot 2012. Scaling- up the use of tools for community-based adaptation: Issues and challenges, Proceedings of the 5th Community-Based Adaptation Conference, Dhaka, Bangladesh, April 2011, IIED, London (in press).
- Secretariat of the Convention on Biological Diversity 2000. Ecosystem Approach Principles. Endorsed at the fifth Conference of the Parties to the Convention on Biological Diversity (CoP 5 in Nairobi, Kenya; May 2000/Decision V/6).
- Secretariat of the 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. Montreal, Technical Series No. 41, 126 pages.
- Secretariat of the Convention on Biological Diversity 2009. Op cit.

Secretariat of the Convention on Biological Diversity 2009. op cit; Fifth session of the UNFCCC Ad Hoc Working Group on Long-Term Cooperative Action under the Convention (AWG-LCA), Bonn, March-April.

Supati, B. and E. Warner, 2003. Biodiversity and the Millennium Development Goals. IUCN/ UNDP.

TEEB 2010. The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB.

UNIFEM www.unifem-ecogov-apas.org/...RightsBasedApproachToDevelopmentOct03.doc. Accessed February 2, 2011.

United Nations 2003. UN Statement of Common Understanding.

United Nations High Commissioner for Human Rights 1996. What is a rights-based approach to development? Geneva: Office of the United Nations High Commissioner for Human Rights.

Vignola, R. et al 2009. Adaptación al cambio climático y servicios ecosistémicos en América Latina, libro de actas del seminario internacional SIASSE 2008, Turrialba, CR : CATIE, 2010 144 p. : il.-(Serie técnica. Manual técnico / CATIE ; no. 99).

The World Bank 2009. Convenient Solutions to an Inconvenient Truth: Ecosystem-based Approaches to Climate Change, Environment Department, The World Bank, Washington D.C.

World Wildlife Fund 2003. Buying Time: A User's Manual to Building Resistance and Resilience to Climate Change in Natural Systems. Ed. L Hansen, J.L. Biringer, and J. Hoffman. World Wildlife Fund.

World Wildlife Fund, English Nature, RSPB and IUCN , 2005. Climate Change and Nature: Adapting for the Future, Gland, Switzerland: WWF.

Ecosystem & Livelihoods Adaptation Networks

Building poor and marginalized people's resilience to the impacts of climate change by promoting sound ecosystem management within an integrated approach to adaptation policy and practice.

www.elanadapt.net
info@elanadapt.net



MacArthur
Foundation
Italian Development
Cooperation