

# Principles and Guidelines for Integrating Ecosystem-based Approaches to Adaptation in Project and Policy Design:<sup>1</sup>

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Ecosystem-based approaches to reduce social vulnerability are a promising option for sustainable and efficient adaptation to climate change. Ecosystem based Adaptation (EbA) is part of overall adaptation, and takes into account multiple social, economic and cultural co-benefits for local communities. EbA encompasses adaptation policies and measures that take into account the role of ecosystem services in reducing societal vulnerability, through multi-sectoral and multi-level approaches.

## Core Principles for Ecosystem Based Approaches to Adaptation (EbA)

1. Is about promoting the resilience of both ecosystems and societies.
2. Promotes multi-sectoral approaches.
3. Operates at multiple geographical scales.
4. Integrates flexible management structures that enable adaptive management.
5. Minimizes tradeoffs and maximizes benefits with development and conservation goals to avoid unintended negative social and environmental impacts.
6. Is based on best available science and local knowledge, and fosters knowledge generation and diffusion.
7. Is participatory, transparent, accountable, and culturally appropriate and actively embraces equity and gender issues.

## Core Guidelines for Ecosystem Based Approaches to Adaptation (EbA)

1. Prepare project scope and structure.
2. Gather data and expertise relevant to the scope of the project.
3. Conduct integrated vulnerability assessments and impact projections with flexible criteria that address the linkages between human and environmental systems.
4. Locate projects within national and sub-national development frameworks to enhance long-term chances of sustainability and leverage nationally and internationally.
5. Proceed with integrated planning
6. Ensure the sustainability of monitoring and adaptive management.

This paper is a summary of a longer and fully referenced document by the same authors (available at <http://www.iucn.org/about/union/commissions/cem/>). These draft guidelines were developed by this group at a workshop and meeting held in Costa Rica in June 2011 to initiate a more formal and iterative process for Ecosystem Based Adaptation Guidelines which can be discussed at various international and regional events. Clearly there is a need to do further work to develop 'step by step' guidance that can direct readers to appropriate sources of information and recommended tools. If you wish to comment and provide input to this draft please send them to Angela Andrade ([a.andrade@conservation.org](mailto:a.andrade@conservation.org)) or Bernal Herrera-F. ([bernalhf@catie.ac.cr](mailto:bernalhf@catie.ac.cr)).

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## Introduction and Background

Since 2009, many members of IUCN have promoted the use of EbA as a practical tool for climate change adaptation. The term EbA refers to 'the use of biodiversity and ecosystem services to help people adapt to the adverse effects of climate change', and was added at CBD COP10, Nagoya, 2010, with decision X/33 on Climate Change and Biodiversity. It stated that ecosystem-based approaches for adaptation may include sustainable management, conservation and restoration of ecosystems as part of an overall adaptation strategy that takes into account the multiple social, economic and cultural co-benefits for local communities.

EbA can help to maintain and restore 'natural' or 'green' infrastructure such as mangroves, coral reefs and watershed vegetation to reduce vulnerability to storm surges, rising sea levels and changing precipitation patterns. It also works to conserve biodiversity and make ecosystems more resistant and resilient in the face of climate change so that they can continue to provide the full suite of natural services. This is particularly important for sustaining natural resources on which vulnerable communities depend for their subsistence and of providing alternative livelihoods in the face of climatic uncertainty.

Interest in EbA amongst Parties at the UNFCCC has grown, and at SBSTA 35, June 2011, Bonn, under the Nairobi Work Programme on impacts, vulnerability and adaptation to climate change, SBSTA requested the UNFCCC Secretariat to compile information on ecosystem-based approaches to adaptation for COP17.

This paper proposes a set of draft principles and guidelines to act as a foundation for planning EbA. They are intended for use when undertaking national adaptation planning; by financial institutions; and in project and research design.

## Principles for Ecosystem-based Approaches to Adaptation

The principles proposed can be a foundation for considering EbA in overall policy making and planning, and they build on the Cancun Adaptation Framework Principles established at the UNFCCC COP16.

### 1. Is about promoting the resilience of both ecosystems and societies. This means:

- Understanding what makes ecosystems -- and the services they supply -- resilient;
- Working with rural communities and vulnerable peoples to create local ownership and resilient local institutions; and
- Ensuring that local stewardship enhances both livelihoods and ecosystem management.
- Ensuring that national institutions and key decision-makers at different levels promote EBA

### 2. EbA promotes multi-sectoral approaches, and will ensure:

- Collaboration between sectors managing ecosystems and those benefiting from ecosystem services;
- Cooperation across multiple levels and sectors to avoid conflicting priorities and mandates; and
- Multi-stakeholder processes being established when developing adaptation policy.



### 3. EbA operates at multiple geographical scales. To do this

- Landscape-scale approaches and impact assessments are important to identify cumulative and indirect drivers of vulnerability;
- Lessons from integrated approaches for natural resource and ecosystem management should be drawn upon<sup>14</sup>; and
- Institutions involved should develop strong and linkages, as ecosystems do not necessarily relate to political or administrative units, or to the scale in which the private sector operates.<sup>15</sup>

### 4. EbA integrates flexible management structures that enable adaptive management, and these include:

- Decentralized management to the lowest appropriate level to foster greater efficiency, effectiveness, equity and ownership, as advocated by the ecosystem approach of the CBD;
- Addressing the lack of resources at these levels of management to ensure ecosystem processes and services are not adversely affected;
- Enabling local institutions, both private and public, NGOs and civil society to be key actors in adaptation planning. They have the greatest understanding of their environment and ability to detect changes in vulnerability. While informal institutions are rarely properly supported, they may nonetheless be powerful vehicles for supporting EbA; and
- Sustainable, long-term monitoring systems to enable multi-stakeholder reflection, learning and adoption of new management decisions.

<sup>14</sup> Community Based Natural Resource Management (CBNRM), Integrated Water Resources Management (IWRM), the Ecosystem Approach, Integrated Coastal Zone Management (ICZM), the Forest Landscape Restoration approach (FLR) etc.

<sup>15</sup> e.g. ecosystems may cover areas that fit neatly administrative boundaries, or of a nation's territory, but these may not be where the decisions are made on EbA.



- Planning should focus on equality and the special needs of marginalized social groups and promote active, free, meaningful and full participation of stakeholders;
- Vulnerability assessment processes and adaptation measures must be gender sensitive; and
- EbA should aim to empower people as rightful directors of their own future in the face of climate change and development.

## Guidelines for designing projects with ecosystem-based approaches to adaptation

The following draft guidelines are suggested as an initial framework of best practice to be taken into account when designing EbA projects, and to also address issues of scale and sequence.

### 1. Prepare an appropriate project structure to

- Define core multi disciplinary teams;
- Identify ecosystem and ecosystem boundaries; and
- Scope potential climatic threats and non climatic threats that together contribute to vulnerability.

### 2. Gather relevant data and expertise to

- Synthesize available information and knowledge from different disciplines and sectors on important socio-ecological system components;
- Obtain or develop climatic projections, focusing on ecologically and socially relevant variables, and suitable spatial and temporal scales;
- Obtain science-based information and traditional and local knowledge on past and current climate variability, as well as impacts;
- Identify key ecosystem services and stakeholders through, for example ecosystem service mapping;
- Map, model and evaluate the multiple flows of ecosystem services to the diverse users and sectors on a national and sub-national levels;
- Develop an understanding of the key social processes between system components and the institutions that govern them;<sup>16</sup>and
- Evaluate data on ecosystem services and climate change impacts to identify gaps for research and specific elements to monitor.

### 3. Conduct integrated vulnerability assessments and impact projections that address the linkages between human and environmental systems, to

- Determine the exposure, sensitivity and adaptive capacities of vulnerable groups, and ecosystems to climate variability and change;
- Analyze past and current coping strategies to assess their sustainability under climate change and for their long-term direct and indirect effects on critical ecosystem services and other processes, such as power relationships;

<sup>16</sup> e.g. the usage of services, entitlement to resources, institutions regulating resource use, migration, etc.

### 5. EbA minimizes tradeoffs and maximizes benefits with development and conservation goals to avoid unintended negative social and environmental impacts. Because of this:

- Participatory planning, recognizing the needs of the poorest and most vulnerable is essential. Current vulnerabilities and needs for resources and development need to be balanced with the preparation for longer-term climate change impacts, which take into account the limits of ecosystem functioning and the varying temporal scales and lag effects of ecosystem processes; and
- The different and multiple benefits of EbA are channeled to the stakeholders and local communities concerned, and that the benefits are based on sustainable management.

### 6. EbA is based on the best available science and local knowledge, and should foster knowledge generation and diffusion. For this to happen:

- Agencies implementing EbA should facilitate networks to ensure that information is regularly updated and provided in easily usable forms, and that the media used for knowledge sharing are culturally appropriate and understandable;
- The best available scientific knowledge and climate modeling should be used in conjunction with local knowledge; and
- Sharing and incorporating indigenous and local knowledge in ways that comply with the principles of free, prior, and informed consent, is critical to ensure effective and locally appropriate adaptation.

### 7. EbA is participatory, transparent, accountable, culturally appropriate and actively embracing equity and gender issues. For this to happen:

- EbA should recognize the underlying causes of vulnerability such as power imbalances and entitlements to resources;

### Box 1. Examples of Short Term EbA Measures

Case studies from the longer paper demonstrate a number of short term results including information gathering, spatial modeling, and vulnerability assessments, which help:

- 1) Empower communities to develop joint activities and management practices to enhance food security and livelihood resilience, particularly for marginalized groups.
- 2) Map important habitats which may be vulnerable to change, for example the extent and duration of annual floods.
- 3) Support sustainable strategies to cope with climate hazards (e.g. drought, floods, sea level rise), and use ecosystem-based management approaches.
- 4) Design vulnerability assessments to capture differences in understanding, so that interactions are analyzed at all levels. It is important to use different tools to elicit people's understanding and views on ecological, social, economic and political factors, as well as being gender-sensitive.

### Box 2. Examples of Long Term EbA Measures

Case studies from the longer paper demonstrate long term EbA measures such as strengthened decision-making, educating local people, integrating adaptation into local-level planning, and developing approaches to improve food security and environmental protection. Such activities illustrating these EbA measures include:

- 1) Developing ecological indicators for monitoring with practitioners and experts from different fields.
- 2) Developing effective social institutions, socio-ecological data, and planning mechanisms where EbA is integrated into development planning and implementation.
- 3) Training to build local capacity to monitor change (social and environmental), and so be better able to make the case about the importance of climate change, and of EbA approaches.
- 4) Building capacity at government and local community levels, so they can better incorporate adaptation into local planning.
- 5) Advising communities on the importance of diversifying strategies to improve food security.
- 6) Supporting communities to better diversify their use of natural resources to ensure flexibility and resilience.

- Assess overall vulnerability of vulnerable groups, communities and ecosystems to multiple stressors;
- Identify feedback linkages and loops between ecosystems and people<sup>17</sup>;
- Analyze existing policy and institutional frameworks in the context of adaptation and EbA, to identify strengths, constraints and opportunities;
- Conduct participatory scenario exercises to consider how vulnerable groups, communities and ecosystems might fare under different development, management, and climatic projections; and
- Document the levels of confidence or uncertainty in assessments.

#### 4. Projects should be located within robust national and sub-national frameworks so as to enhance the long terms chances of success, and to

- Understand national and sub-national frameworks;
- Share results with those coordinating and facilitating these frameworks; and
- Ensure that planned activities are recognized in relevant strategies<sup>18</sup>.

#### 5. Proceed with integrated planning, so as to

- Consider the maintenance of ecosystem services and biodiversity in plans based on people's needs for livelihood improvement;
- Share assessment results with stakeholders and decision-makers;
- Agree on the spatial and temporal scales for plans, which may require refining system boundaries;

- Identify adaptation measures using, for example vulnerability ranking tools;
- Ensure that short term adaptation measures (Box 1)<sup>19</sup> do not compromise long term options (Box 2)<sup>20</sup>, which should focus on building resilience;
- Ensure that adaptation strategies and plans are coherent with other sector policies and convention action plans (e.g. CBD NBSAPs); and
- Make EbA resilience focused, or based on transformative change.

#### 6. Ensuring the sustainability of monitoring and adaptive management, and

- Ensure sufficient resources for monitoring and supporting "learning-by-doing";
- Design monitoring systems to cover an adequate time period and operate at the most appropriate scale to assess project effectiveness
- Involve local communities in monitoring to enhance efficiency, local capacities and learning;
- Choose indicators that reflect resilience of all the components of the human-environment system and their inter-linkages;
- Regularly evaluate and adapt the effectiveness of adaptation actions<sup>21</sup> by using monitoring results, and use a participatory process; and
- Design knowledge dissemination and learning mechanisms for effective learning.

<sup>17</sup> e.g. analyze current land use practices and compare with climate change predictions and analyze how changes in flows of ecosystem services affect adaptive capacities of vulnerable populations.

<sup>18</sup> e.g. National Adaptation Plans; National Adaptation Programmes of Action-NAPAs, Pilot Programmes for Climate Resilience-PPCR, Strategic Programmes for Climate Resilience-SPCR, other adaptation plans and strategies.

<sup>19</sup> e.g. working on current pressures, water availability, Disaster Risk Reduction, food security.

<sup>20</sup> e.g. adaptation of ecosystems by enhancing connectivity and refugia; increasing thermal resilience of coral reefs to secure fishery productivity; increasing water and carbon regulation in mountainous systems through restoration; water rights and land tenure reform.

<sup>21</sup> For aspects to consider in this evaluation see Cambridge Conservation Initiative Collaborative Fund *Effectiveness of ecosystem-based approaches to adaptation: critical review of current evidence* project 'assessment framework' – results of this project will be presented at Durban.