

ECOSYSTEM- BASED ADAPTATION HANDBOOK

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INTRODUCTION

As stated by the Convention on Biological Diversity (CBD), Ecosystem-based Adaptation to climate change (EbA) sets the “sustainable management, conservation and restoration of ecosystems” as corner stone of an “overall adaptation strategy that takes into account the multiple social, economic and cultural co-benefits for local communities”¹. This involves promoting robust natural and production landscapes to bring about safer communities capable of thriving under environmental and socio-economic change.

EbA is based on “the use of biodiversity and ecosystem services to help people adapt to the adverse effects of climate change”².

People’s wellbeing and security depend on equitable, continuous and environmentally sound access to the benefits that forests, wetlands, savannas and sustainable agricultural lands provide. For the most part, these benefits or ecosystem services certainly play a key role in climate change adaptation either by (i) providing people with food and clean water – thus reducing vulnerabilities and boosting livelihoods - or (ii) by regulating climate and controlling floods, thereby weakening actual or potential climate-related hazards.

OBJECTIVE

This handbook is meant as a step-by-step guide for setting up an EbA intervention. It promotes an integrated approach to EbA with the ultimate goal of “building resilience of socio-ecological systems”³. Additionally, the handbook introduces the reader to the building blocks of an EbA strategy and how these can be developed.

TARGET AUDIENCE

The handbook is intended for a broad audience of people who work in a variety of development fields and are not necessarily experienced in ecosystem management.

APPLICATION

The handbook can be used to get started on EbA at the community, municipal or regional/catchment levels and is most useful when there is a real interest in deploying cost-effective adaptation approaches.

NOTES

¹ CBD: 2010
² CBD, 2009:41
³ UNEP, UNDP, IUCN, 2010:3

The guidelines in this handbook are based on the following underlying principles:

- Equitable stakeholder engagement is required at all stages of the EbA intervention.
- Synergies between EbA, Community-based Adaptation (CbA) and climate change mitigation strategies (such as REDD+) must be acknowledged.
- The ecosystem approach and the landscape approach must be considered.
- Uncertainty on future climate risks and climate change effects on socio-ecological systems call for preference being given to: (i) “low regrets” adaptation options that

increase resilience and adaptation capacities even in the absence of climate change; (ii) an inclusive adaptive development planning process at various geographical and time scales.

- Sound scenarios of future climate, socio-economic and socio-ecological conditions must be taken into account in order to minimize possible drawbacks and maximize opportunities in the face of change.
- Capacity building, learning, inclusive and cross-sectoral policy dialogue and sound land use governance are needed to create an enabling environment for EbA.

Preliminary Stage: Exploring viability of EbA

Outcome: Go or no-go decision

STEP 1	Understanding the geographical context and defining EbA goals
OUTCOME:	Go or no-go decision
STEP 2	Assessing vulnerability: climate risks vs. adaptive capacity
OUTCOME:	Vulnerability profile
STEP 3	Rapid ecosystem services appraisal
OUTCOME:	Map of adaptation services, main drivers and actors of land use change
STEP 4	Developing an EbA strategy and adaptation measures
OUTCOME:	Ready-to-use EbA strategy taking into account possible synergies, cost-efficiency and trade-offs
STEP 5	Monitoring & Evaluation for learning
OUTCOME:	Monitoring & Evaluation framework
STEP 6	Mainstreaming EbA and promoting synergies
OUTCOME:	Action plan to mainstream EbA into climate-sensitive sectors and policies, plans and strategies

PRELIMINARY STAGE: EXPLORING FEASIBILITY OF EbA



GOAL

The goal of the Preliminary Stage is to verify whether EbA could be a suitable option for the site under consideration. In order to do so one has to carry out a rapid scoping to assess whether the target site, its people, and existing institutions and policies allow for the implementation of EbA. The outcome of this stage is a yes or no on the suitability of the site to apply EbA.

Important to note is that the ultimate aim of EbA is to contribute to increasing people’s climate resilience through the delivery of ecosystem services. The focus should be on securing those ecosystem services that benefit communities by reducing vulnerabilities or by mitigating hazards that can be triggered by changing climate patterns and extreme events.

Ecosystem services that are useful in terms of climate resilience – hereafter referred to as ‘adaptation services’^{4,5} – include for instance freshwater supply, flood control and protection against storm surge. Adaptation services are at the core of any EbA intervention and are to be maintained by means of an adaptation strategy that involves sound environmental governance, wise land use practices, and ecosystem protection, restoration and sustainable management.

NOTES

⁴ A wide variety of ecosystem services can be considered as being “adaptation services”, i.e. ecosystem services that are useful for adaptation purposes in addition to other purposes. The local context will largely determine whether an ecosystem service should be considered or not as an “adaptation service” for the area under consideration.

⁵ This is not a new, formal category of ecosystem services; adaptation service is just a term used in this document for easy reference.

GUIDING QUESTIONS

- Are the landscape and its land uses capable of delivering sufficient adaptation services (as will be detailed in Step 3)?
- Are actors aware of the adaptation services delivered by ecosystems and do they value these?
- Is there a social and institutional framework which can be strengthened and given responsibility in relation to EbA? Examples are institutions in charge of development planning, Disaster Risk Reduction (DRR) or water resources and ecosystem management.
- Within this framework, is there experience and willingness to generate policies and actions to keep the aforementioned ecosystems in good health and able to supply key adaptation services?
- Could the role particular ecosystems play in delivering key adaptation services be acknowledged and valued in spiritual, aesthetic, ecological and economical terms?
- Are actors and decision makers willing to strengthen development planning policies with adaptation strategies that take adaptation services into account?

If the answer to the majority of these questions is no, then EbA would not be a suitable option for the site under consideration. If the answer to the majority of these questions is yes you can proceed with the following six steps in this guide to set up an EbA strategy.

If EbA is a suitable option for the area being considered, then multi-stakeholder engagement should be planned at the onset of the whole process. In order to ensure equitable stakeholder engagement at all stages make sure EbA workshops are timely programmed during each step of the process, aiming at:

- Convening actors from the EbA target site -and its catchment area- besides local and national experts of interest for EbA;
- Having sessions on e.g.: (a) mapping and spatial analysis; (b) risk profiling; (c) stakeholder identification; (d) institutional and policy screening; (e) ecosystem services appraisal; (f) evaluating and deciding on adaptation measures and defining M&E indicators.

See **Annex 1** for a list of some useful sources of information to use during meetings and workshops.

STEP 1: UNDERSTANDING THE GEOGRAPHICAL CONTEXT AND DEFINING EBA GOALS



GOAL

This step will provide understanding of the context at the EbA target site.

The intermediate outcomes are

- (A) a spatial and qualitative analysis of the landscape and its land use including key ecosystems.
- (B) a quick overview of the stakeholders at risk, and of relevant institutions and land-use policies.
- (C) a climate risk profile.
- (D) an analysis of the institutional and policy environment for EbA.

At the end of Step 1, you will have the basic elements to design a preliminary Theory of Change for your EbA intervention.

Final outcome:

- (E) Preliminary Theory of Change.

A) LANDSCAPE ANALYSIS

Why is this important?

A land use analysis at the target site is needed to understand some of the development processes in the area. Basic spatial and qualitative analysis of the landscape (including key ecosystems) and its land uses will shed light on the adaptation services.

GUIDING QUESTIONS

The main question to be answered here is whether the ecosystem can and will continue to provide current adaptation services if the current rate of change in land uses is maintained or increases.

Through the analysis of both official and community maps – i.e. resource maps⁶ – and information that can be provided by key stakeholders, we can obtain a spatial overview and understanding of the landscapes at the target site:

- Are major land uses, including natural ecosystems and agricultural systems, that are potentially providing key adaptation services mapped, and can changes (trends) affecting them be observed: i.e. which land uses are receding and which ones are becoming predominant? Can we clearly see and understand the main trends in land use?
- Would ecosystems be able to keep on providing adaptation services in the future if these trends persist?

NOTE

⁶ “Resource maps” or “Spatial maps”: these are community maps including features such as the arrangement of houses, fields, roads, rivers and other land uses and which resources are assessable and owned by the community or individuals (IFRC, 2007:77).

B) STAKEHOLDER OVERVIEW

Why is this important?

EbA interventions are to be designed with the participation of all actors at the target site (e.g. farmers) and, if relevant, in the wider region (e.g. Ministry of Agriculture). Their timely and continuous engagement is essential for the success of EbA, as they are the ones who have the knowledge, experience, capacities, and resources; they also run the institutions dealing with land use and climate risks on site.

Who are involved and what is their role?

GUIDING QUESTIONS

The two following types of actors are essential to any EbA intervention:

- (I) Actors who have an influence on land use changes and risk factors at different levels, from the community to the national level:
 - Which stakeholders –from community to national level- are changing land uses in a way that promotes the delivery of adaptation services (i.e. they are improving the environment through sustainable land use and ecosystem restoration)?
 - Which stakeholders –from community to national level- are causing ecosystem degradation and, as a result, undermining the delivery of adaptation services?
- (II) Vulnerable stakeholders who are exposed to hazards and only have limited resources and capacities:
 - Which (groups of) vulnerable stakeholders would benefit from EbA: e.g. those exposed to drought, storms, landslides and floods; those with unstable livelihoods, depending on threatened ecosystems for their living; etc.?
 - How are these vulnerable actors currently coping with climate variability? How are they organized and politically positioned? How do institutions, policies and funding, assist them?

For each type of stakeholder, determine their roles and the organization, sector or community they represent or belong to.

C) CLIMATE RISK PROFILE

Why is this important?

Awareness on current climate variability and potential climate change is central to any EbA intervention. We need to understand the current climate risk and the likely impacts faced by different social groups, land uses (including natural ecosystems), livelihoods and economic sectors.

Focus must be on understanding the risk factors of the highest relevance for the sector, resource or activity targeted by your EbA intervention (e.g. agriculture, water resources, coastal development, urban planning, etc.).

GUIDING QUESTIONS

- Have climate variability and change been observed at the scale of the target site: is there any record on changes in weather patterns and historical trends; which extreme weather events have occurred in the past 25 years?
- What do the (most recent) IPCC Assessment Reports state on predicted climate change in the region in which the target site occurs?
- Do we have basic maps identifying climate-related hazard zones? Are there data on the frequency and intensity of hazards and their impacts?
- Do we have local climate change models?
- Do we know how climate-related hazards may affect resource availability, sectors and livelihoods?
- Do we have basic risk profiles of vulnerable actors, assets and land uses of interest for the EbA intervention?

If the answer to any of these five questions is no, proceed to fill in the information gaps. Then use this information to draw up a brief risk profile by answering the following questions:

- How do hazards affect the most vulnerable people?
- Could assets, sectors, land uses, natural ecosystems and livelihoods be affected by climate hazards? How?
- Where and when do impacts strike, particularly on those vulnerable sectors of interest for EbA?
- Have climate impacts been increasing? Why?

D) INSTITUTIONAL AND POLICY ENVIRONMENT ANALYSIS

Why is this important?

Environmental governance is central to any EbA intervention. We need to know which local actors have a say in decisions on development planning, land use and access to resources.

In addition, we should list and understand the scope of main development policies that influence the landscape, such as policies dealing with farming, biodiversity conservation, water resources management, and health and food security; or with Disaster Risk Reduction (DRR) and urban zoning; etc.

GUIDING QUESTIONS

Identify institutional actors at different levels:

- Which are the relevant institutional actors, their main field of work and their levels and scopes of action (community, municipal or national)?
- Which role do local organizations (e.g. cooperatives, organized women groups and risk management committees) play in the regulation of resource use, land tenure, etc.?

Identify policies, initiatives and development projects:

- Which are the relevant policies at different levels that influence the landscape and society under consideration?
- Which are the major private sector initiatives having an impact on the target site? (i.e. agriculture, irrigation, energy, mining, tourism, etc.)

All these policies, initiatives and projects should be linked to your own EbA targets in order to begin identifying either potential conflicts or likely synergies.

Which are the relevant policies that influence the landscape and communities under consideration?

E) PRELIMINARY THEORY OF CHANGE

Why is this important?

Once you have a clear view regarding (A) land use changes and trends, (B) stakeholders’ roles, (C) their climate-risk profile and their adaptation needs, and (D) the policy environment, you can start defining the key objectives of your EbA intervention, i.e. the adaptation goals.

A Theory of Change⁷ (ToC) is a useful tool for this. Use all information produced up to now to draft a preliminary ToC and complete your ToC as you move down the next five steps proposed in this handbook. Table 1 presents a quick guide for the development of a ToC.

Table 1. Guidance for the formulation of a Theory of Change and the definition of adaptation goals

Aspects to be considered when formulating a Theory of Change (ToC)	
ASPECT	MEANING FOR YOUR EBA STRATEGY
What are the issues to be addressed?	Natural and socio-economic context, sectors / actors, resources at risk (Steps 1 & 2) and adaptation goals.
What are the foreseeable changes in climatic and socio-economic conditions?	Current trends and future scenarios for land uses, socioeconomic and climate risk projections (Steps 1, 2 & 3).
How will the projected changes impact the area under consideration?	Land use trends, risk profile and vulnerability assessment (Steps 1, 2 & 3).
What will this mean for the delivery of ecosystem services in your context?	Assess what would happen with / without EbA measures in a changing climate.

Aspects to be considered when defining adaptation goals as part of your ToC	
ASPECT	YOUR EBA STRATEGY WILL INCLUDE ACTIVITIES TO
What is your problem: what should you adapt to and how?	Address detrimental land use change; reduce current and future climate risk (Steps 1 & 2).
What would your preferred future look like?	Envision achievable climate resilience through adaptation including EbA.
How would you get there?	Formulate EbA measures, a M&E framework and an action plan for mainstreaming EbA (Step 3 to 6)

Source: Adapted from UNEP 2012



OUTCOME

After completing this step, you have a snapshot of the context in which the EbA intervention will take place. You have a good understanding of the landscapes, land uses and stakeholders at risk as well as institutions and land-use policies. You can begin to outline a preliminary Theory of Change, defining the adaptation goals of your EbA intervention.

RESOURCES AND REFERENCES FOR STEP 1:

1. Anderson, A. 2013. The community Builders’ Approach to Theory of Change: A practical Guide to Theory Development. The Aspen Institute. Roundtable on Community Change. New York. <http://www.aspeninstitute.org/publications/community-builders-approach-theory-change-practical-guide-theory-development>
2. UNEP, 2012. Ecosystem-based Adaptation Guidance: Moving from Principles to Practice. Working document. UNEP Division of Environment Policy Implementation. University of Sunshine Coast, Australia.

NOTE

⁷ According to Anderson (2013) a Theory of Change explains how a group of early and intermediate accomplishments sets the stage for producing long-range results. It articulates the assumptions about the process through which change will occur, and specifies the ways in which all of the required early and intermediate outcomes related to achieving the desired long-term change will be brought about.

Creating a snapshot of your target site will help you define future adaptation measures.

STEP 2: ASSESSING VULNERABILITY: CLIMATE RISKS VS. ADAPTIVE CAPACITY

GOAL
In step 2, we focus on the vulnerability⁸ to climate variability and change that different stakeholders, sectors and livelihoods may be facing at the target site. We also determine the adaptive capacity.

GUIDING QUESTIONS

Before you start, think about the format in which you want to present the vulnerability profile (e.g., a map of vulnerability hotspots, a ranking of vulnerable sectors/livelihoods, etc.).

When answering the questions below, please ask yourself the following: are changes on local living conditions, land uses and ecosystems mainly driven by climatic or by non-climatic factors?

Determine exposure. Using results from Step 1c address the following questions:

- To which climate-related hazards is your system exposed?
- Which people, economic sectors, livelihoods and assets are in a situation or location in which they could be affected by climatic hazards and impacts⁹? Indicate their importance.

Determine sensitivity. Using results from Step 1c address the following questions:

- What characteristics make your EbA target (people, sectors, livelihoods, etc.) sensitive to changing climate conditions?
- Which characteristics make zones with a high exposure particularly prone to disaster?

Determine adaptive capacity. Adaptive capacity refers to capacities and resources used to deal with impacts and recover from damage. The key questions here are:

- Which adaptive capacities increase resilience to adverse climate change impacts? Consider among others:
 - Knowledge: is there knowledge or expertise, which might support adaptation?
 - Technology: are there technical options to enhance adaptive capacity?
 - Institutions: Is the institutional environment contributing to adaptive capacity?
 - Economy: which economic and financial resources are available for enhancing adaptive capacity or implementing adaption measures?

OUTCOME
After completing this step, you have a vulnerability profile available that is ready for validation. This profile can be used to start informed discussion on vulnerability hotspots¹⁰.

RESOURCES AND REFERENCES FOR STEP 2:

1. CRiSTAL. Community-based Risk Screening Tool: <https://www.iisd.org/cristaltool/>
2. GIZ, 2014. The Vulnerability Sourcebook. Concepts and Guidelines for Standardized Vulnerability Assessments. BMZ, Adelphi, EURAC. <https://www.adelphi.de/en/publication/vulnerability-sourcebook-concept-and-guidelines-standardised-vulnerability-assessments>
3. USAID, 2014. Spatial Climate Change Vulnerability Assessment: A Review of Data, Methods and Issues. USAID-ARCC. Tetra Tech ARD. http://www.researchgate.net/publication/266967551_Spatial_Climate_Change_Vulnerability_Assessments_A_Review_of_Data_Methods_and_Issues

NOTES

⁸ "Vulnerability –or the predisposition to be adversely affected-, is influenced by climatic and non-climatic factors and depends on economic, social, institutional and environmental factors among others" (modified after IPCC, 2012).

⁹ GIZ, 2014: 63.

¹⁰ USAID, 2014:04.

In what way is your social-ecological system vulnerable for climate change?

STEP 3: RAPID ECOSYSTEM SERVICES APPRAISAL



GOAL

In step 3, our goal is to understand which services are provided by ecosystems, how these services contribute to climate resilience at the landscape and local scales, and how these services are changing.

GUIDING QUESTIONS

The aim is having a spatial understanding of the relationships between land uses, people, assets at risk and ecosystems delivering services, making use of all information and maps available in the previous steps, particularly in section 1a. Taking the EbA target site and its surrounding catchment area into consideration:

- Describe the main characteristics of the landscape and the key ecosystems
- Indicate which ecosystems provide services that are vital for coping with current climate extremes (variability) and for recovering after a (potential) disaster?
- List all adaptation services provided by the key ecosystems, e.g. freshwater supply, flood control, erosion control, etc.
- What are the main drivers of change affecting these services (besides climate change), and which plausible trends can be expected for the

ecosystems providing these adaptation services in two, five and ten years from now?

- Which ecosystems are the most important when considering the current and future dependence of livelihoods and sectors on their services (owing to their role in food security, disaster risk reduction, adaptation capacity etc., or for cultural reasons)?
- Locate these key ecosystems on a convenient map of the area.

In case additional information on ecosystem services must be generated, the *rapid appraisal method for site-scale ecosystem services assessment* introduced in the TESSA Toolkit¹¹ can be used to identify (i) habitats and drivers of change and (ii) ecosystem services and their beneficiaries. This toolkit also may provide you with some tables that can help you organize the information.

NOTE
¹¹ Peh, K.S. et al., 2013.



OUTCOME

After completing this step, you have identified and mapped the relevant adaptation services at your target site along with the main drivers and actors of land use change. This will help you develop your strategy.

RESOURCES AND REFERENCES FOR STEP 3:

1. Peh, K.S. et al., 2013. Toolkit for Ecosystem Service Site-based Assessment (TESSA). Cambridge, UK.
<http://www.birdlife.org/worldwide/science/assessing-ecosystem-services-tessa>

Map the relevant adaptation services and understand how they will change due to climate change

STEP 4: DEVELOPING AN EBA STRATEGY AND ADAPTATION MEASURES

GOAL

In this step, the focus is on building the EbA strategy, defining adaptation priorities and designing EbA measures. These adaptation priorities must refer to the intended outcomes of the adaptation intervention and they should be cognizant of ecosystem services delivery in the area under consideration.

GUIDING QUESTIONS (1)

Along with stakeholders, define the adaptation priorities for your sector/resource considering the analysis of the context, vulnerability profile and ecosystem services from the previous steps:

- Which landscape and ecosystem components are at the base of key livelihoods & sectors and are essential to increase their adaptive capacity in the face of change (e.g. forest, wetland, grazing lands, and assets such as water supply facility, health centre, road, etc.)?
- Which ones are the most vulnerable to current and future climate impacts?
- Which ones could clearly benefit from enhanced ecosystem services?
- List and map ecosystems which would deliver these enhanced services?

Using the climate and socio-economic context and the future scenarios at hand (from Steps 1 & 2) revise the main trends potentially increasing climate vulnerability and propose EbA measures:

- Determine which ecosystems (and services) are to be managed in order to (i) reduce current vulnerability and (ii) increase future adaptive capacity according to trends under different scenarios.
- Based on these, propose a feasible set of EbA measures (Table 2) in line with the adaptation goals defined when formulating your Theory of Change (Table 1).
- If necessary perform a cost-benefit analysis aimed at selecting those EbA measures that are affordable and which best fit the socio-economic context.

BOX 1: Trade-off analysis of adaptation options in The Philippines

Adaptation strategies for the forest/agriculture sector could be prioritized on the basis of their effects on other sectors (in addition to their effectiveness in forestry/agriculture). In general, those that have positive effects on other sectors should receive higher priority, while those that have negative effects could be mitigated if possible...
...For most of the adaptation strategies there are clearly trade-offs in that there are both positive

and negative effects on other sectors. In many cases, the negative effect is the additional cost required to be able to implement adaptation strategies. This hurdle may prove daunting, considering the lack of resources of many Philippine government and nongovernment agencies. In EbA measures such as reforestation, one possible option is to explore increased community participation. In addition to advantages in terms of empowerment and ownership, community participation often allows a lowering of the total cost of the EbA main measures.
Source: AIACC, 2006:11

Table 2. Examples of EbA measures

Measure	Notes	Type of data and resources
Coastal habitat restoration	Must respond to policies aimed at reducing disaster risk and strengthening livelihoods.	Sediment dynamics and biodiversity and its use in coastal habitats.
Livelihood diversification	Aimed at relieving pressure on ecosystems providing adaptation services.	Resilient livelihoods' strategies (community level); cultural preferences.
Promoting agroforestry systems	Choose native species apt for your adaptation goal. Start with pilots.	Planning at the household and farm levels.
Land use planning / zoning	Requires legislation, funding, public policies and strong leadership for implementation.	E.g. maps on land capability and hazards.
Setting up biological corridors	Requires data and strong negotiation skills between stakeholders. Sustainable land use incentives shall be allocated to privately and community owned lands.	Survey of species using different habitats through the year or moving along altitudinal gradients as climate changes.
(PES) Payment for ecosystem services	Requires funding sources, policies and negotiated strategies for equitable PES.	Example: water provision (m3/s); disaster risk mitigation costs (\$).
Coordination between government units relevant for EbA	Responsibilities, institutional roles and budgets must be clear.	Existing public policies on land use regulations.

Source: Adapted from UNEP, 2012

GUIDING QUESTIONS (2)

To define the EbA strategy, you could analyze the trade-off for each priority EbA measures proposed for each sector or livelihood of interest (see Box 1);

- A cross-sectoral trade-off analysis should be done at the watershed scale to ensure that negative effects are anticipated and mitigation measures defined before the implementation of the EbA strategy; this is to avoid maladaptation.
- Priority shall be given to measures with

overall positive effects not only for the targeted beneficiaries but also on different sectors, livelihoods or social groups¹².

Individual EbA strategies could address more than one sector, allowing for greater synergy and cost-efficiency, and these synergies should be the main target of EbA measures.

GUIDING QUESTIONS (3)

To prepare implementation of the identified EbA measures a planning and allocation of roles must be made. EbA measures must strengthen climate resilience on site as well as at broader levels according to previously defined adaptation goals:

- Define clear roles and responsibilities for implementing EbA measures, i.e. institutional and community roles, and allocate corresponding budgets to those involved.

- Define who does what, when and using which resources.
- Set up a team for monitoring and evaluating EbA progress at a broader/watershed level (if possible) - see next step.



OUTCOME

An EbA strategy taking into account possible synergies, cost-efficiency and trade-offs is in place. EbA measures are ready to be tested and monitored on the ground.

RESOURCES AND REFERENCES FOR STEP 4:

1. AIACC, 2006. Trade-off Analysis of Adaptation Strategies for Natural Resources Water Resources and Local Institutions in the Philippines. AIACC Working Paper, n.32. available at www.aiaccproject.org
2. UNEP, 2012. Ecosystem-based Adaptation Guidance: Moving from Principles to Practice. Working document. UNEP Division

of Environment Policy Implementation. University of Sunshine Coast, Australia.

<http://www.unep.org/climatechange/adaptation/EbA/EBADecisionSupportFramework/tabid/102163/Default.aspx>

3. UNDP, 2010. Designing Climate Change Adaptation Initiatives. A UNDP toolkit for Practitioners. Bureau for Development Policy. http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/designing-adaptation-initiatives-toolkit.html

NOTE

¹² AIACC, 2006: methodology for trade-off analysis on pp11.



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STEP 5: MONITORING & EVALUATION FOR LEARNING



GOAL

The goal of this step is setting up a Monitoring & Evaluation system (M&E) to ensure effective adaptation by:

- Supporting the long-term process of learning about “what works” in adaptation and
- Providing a tool for practitioners to manage their work in the context of the uncertainty surrounding climate change impacts¹³.

GUIDING QUESTIONS

- Determine how the M&E framework will contribute to improving learning and informing future interventions and decision-making.
- Explore logic and assumptions in your Theory of Change: i.e. how inputs are to generate activities that will help you achieve your adaptation goals?
- Dealing with uncertainty about future climate change, societal and environmental responses requires establishing **baselines**¹⁴ that will enable measuring progress, flexibility of the EbA intervention and if necessary, adjusting the EbA strategy and measures.

NOTES

¹³ GIZ, 2011:8.

¹⁴ Baseline: a snapshot of conditions established before the start of the intervention from which progress can be assessed. For considerations regarding “moving baselines” see Pringle, P. 2011:29.

¹⁵ A proxy indicator is a substitute for a change that is not directly measurable. See Box 2.

TIPS

- Some tips for choosing appropriate indicators for EbA:
- Embedding the intervention’s goals and activities within its specific climate change and development context: the socio-economic, environmental and climatic context in which activities will be implemented.
 - Characterizing indicators by type of outcome and devising a baseline to measure progress within each.
 - Defining whether the M&E will focus on adaptive capacity development, on the delivery of adaptation actions or both
 - ‘Assets’ and ‘institutional functions’ can be two types of indicators that are particularly useful in describing adaptive capacity;
 - Under adaptation actions, activities and decisions that address particular ‘climate hazards’, or work to reduce ‘vulnerability drivers’ are highlighted;
 - ‘Ecosystem services’ and ‘livelihoods’ can be used as indicators for demonstrating the long-term and systematic needs of sustaining development in a changing climate.
 - Use process indicators to check if the “direction of travel” is correct.
 - Use sound quantitative data for comparing with other types of adaptation actions or to deliver snapshots of adaptation progress, carefully choosing proxy¹⁵ indicators and evaluating the reasons behind the collected data.
 - Besides reviewing indicators of use for specific development sectors which could be applied for Climate Change Adaptation, it could be smart accounting for development projects and development gains relevant for EbA in the local context.

Box 2: Using proxy indicators

Improved resilience of natural systems and coastal communities to the effects of storm surges is not readily apparent for several years if the adaptation strategy relies on the restoration of mangroves, taking many years to reach maturity.

However, a proxy indicator could reflect short and medium term changes that show the likelihood of the mangrove’s success in the long run; for example, the passing of government policies and/or specific community driven land ownership and use agreements to support this strategy.

Source: ABCG, 2012:15

Box 3: Issues to be aware of when planning M&E for an EbA initiative

- Are we measuring against: (i) EbA intervention objectives’, (ii) characteristics of “good adaptation” and good EbA or (iii) a “moving” baseline?
- What is the contribution of EbA interventions to the adaptation process?
- What are the performance, efficiency and effectiveness of the monitored EbA measures and how should these be flexibly adjusted to stakeholders’ needs?

In short, there are two types of effectiveness:

- Whether the adaptation project performed as intended, and
- Whether, in light of current or expected climatic changes that performance resulted in reduced vulnerability of targeted social groups and the ecosystems upon which they depend.

The M&E framework is to focus on activity or outcome monitoring. Be aware of the importance of results-based management, flexibility, and learning through regular feedback loops and engagement with partners.

Source: Adapted from ABCG, 2012:2



OUTCOME

A sound M&E framework is in place to learn what works in the EbA intervention

RESOURCES AND REFERENCES FOR STEP 5:

1. For a commented list on M&E tools and their relevance for EbA, see: ABCG, 2012. A review of Monitoring and Evaluation Approaches for Ecosystem-based Adaptation. AWF, CI, JGI, TNC, WCS, WRI, WWF. http://www.abcg.org/document_details?document_id=98
2. Defra, 2010. Measuring Adaptation to Climate Change – A Proposed Approach. <http://archive.defra.gov.uk/environment/climate/documents/100219-measuring-adapt.pdf>
3. GIZ, 2011; Making Adaptation Count: Concept and Options for Monitoring and Evaluation of Climate Change Adaptation. BMZ, Eschborn. WRI. <http://www.wri.org/publication/making-adaptation-count>
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STEP 6: MAINSTREAMING EBA AND PROMOTING SYNERGIES



GOAL

In this step the goal is to identify what is needed in order to mainstream EbA into local, municipal and national policies relevant for increasing the resilience of people and ecosystems to changing climatic conditions.

Mainstreaming refers to the integration of adaptation objectives, strategies, policies, measures or operations so that they become part of the national and regional development policies, processes and budgets at all levels and stages.

As mainstreaming “aims to enhance the effectiveness, efficiency, and longevity of initiatives directed at reducing climate-related risks, while at the same time contributing to sustainable development and improved quality of life¹⁶”, EbA interventions - which increase overall development resilience - have a clear advantage over traditional adaptation options. In this regard, EbA mainstreaming - when supported by demonstrated good practice at local scales¹⁷ - will facilitate informing policies, promoting learning and enabling the up scaling of EbA

NOTES

¹⁶ ADB, 2005:2

¹⁷ UNEP, 2012:7

¹⁸ Adapted from ADB, 2005:115

GUIDING QUESTIONS

In order to have an enabling environment to mainstream EbA, we should look for entry points and make the case to:

- Increase awareness, knowledge and understanding of climate variability and change-induced threat through capacity building.
- Enhance capacities of stakeholders and institutions across sectors and at different levels to jointly formulate and implement adaptive policies that take climate change into consideration.
- Ensure that EbA interventions complement other development initiatives: taking advantage of synergies and building common approaches.

The integration of EbA into relevant policies, strategies and plans to manage climate risk, must be done:

- Considering broader development frameworks and sectoral strategies.
- Through lobby and advocacy led by high level decision makers, strong institutions and EbA champions.
- Demonstrating positive processes and results of EbA interventions.
- Prioritizing adaptation strategies that deliver tangible and visible benefits in the short to medium term: e.g. vulnerability reduction and livelihoods’ diversification.
- Ensuring a multi-stakeholder process of a continual improvement in adaptation outcomes¹⁸.



OUTCOME

Building blocks of an action plan to mainstream EbA into climate sensitive sectors and policies, plans and strategies.

RESOURCES AND REFERENCES FOR STEP 6:

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2. GIZ 2011. Integrating Climate Change Adaptation into Development Planning. GIZ Climate Protection Programme. BMZ, Eschborn, Germany. <http://www.seachangeop.org/node/875>
3. UNDP-UNEP, 2011. Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners. UNDP-UNEP Poverty-Environment Facility. Available at www.unpei.org

Enhance the effectiveness, efficiency, and longevity of initiatives directed at reducing climate-related risks by mainstreaming them into local, municipal and national policies.

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14. GIZ, 2014. The Vulnerability Sourcebook. Concepts and Guidelines for Standardized Vulnerability Assessments. BMZ, Adelphi, EURAC. <https://www.adelphi.de/en/publication/vulnerability-sourcebook-concept-and-guidelines-standardised-vulnerability-assessments>
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ANNEX 1: TYPE AND SOURCES OF INFORMATION TO BE COLLECTED¹⁹

Some basic secondary information shall be collected and collated under a few key groupings, such as:

- (i) Demographic, social and economic information including livelihoods;
- (ii) Environmental information, including land use patterns, riverine and marine products;
- (iii) Recent data on most frequent disasters and hazards;
- (iv) Information on climate change, including available -downscaled- models;
- (v) Information on institutions and key stakeholders;

Furthermore, information on the policy environment affecting land uses, DRR and livelihoods; the history of donor engagement; and of course, maps of the target area shall be collected and interpreted in light of the particular EbA intervention.

This secondary information -as will be seen in the next pages- will then be ready to be shared, discussed and validated with actors. Once updated, the site context will be clearer.

When ready, all information should then be linked to the key concerns of the EbA initiative at the appropriate scales of analysis and work.

As some of the main sources for this information you shall consider among others:

- The academia and experts working on agriculture, land use planning, environment, DRR, demographic and health studies.
- Governmental institutions such as: The Ministry of Agriculture; The Ministry of the Environment; The Water Resources Authority; The Health Ministry.

- Key policy and strategy documents including²⁰:
- National development plan, poverty reduction strategy paper.
 - National Adaptation Program of Action (NAPA), climate change target program or strategy paper.
 - National DRR platform.
 - Hyogo Framework of Action monitoring reports.
 - National Communications to the UNFCCC: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php
 - Intended Nationally Determined Contributions: <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx>
 - Intergovernmental Panel on Climate Change (IPCC) assessment reports - regional chapters.
 - UNISDR campaigns.
 - UNDP, UNOCHA or UN country office journal articles.

NOTES

¹⁹ For a comprehensive description of the information to be collated, interpreted and downscaled to the local level and possible sources, tools and resources, see Oxfam, 2012 and GIZ, 2014..

²⁰ Modified from: Oxfam-CCAP, 2012:13.

You will often find that there is already a lot of information and published material available from national and international sources that you can use in scoping. This could include²¹:

- National communications and adaptation plans.
- Studies on socio-economic, environmental and development issues.
- IPCC reports and national studies on climate change climate change information portals.

Below are some links to information on climate change and its impacts, which might be useful for your vulnerability assessment:

- ci:grasp: web-based climate information service which supports decision makers in developing and emerging countries in adaptation planning: http://www.pik-potsdam.de/~wrobel/ci_2/
- Climate Change Knowledge Portal (CCKP): the World Bank's central information hub on climate change: <http://sdwebx.worldbank.org/climateportal/index.cfm>
- Climate Information Portal (CIP): The University of Cape Town's climate information platform: <http://cip.csag.uct.ac.za/webclient2/app/>.
- IPCC Data Distribution Centre (DCC): climate, socio-economic and environmental data (past and future scenarios): <http://www.ipcc-data.org/>
- UNDP Climate Change Country Profiles: a database of observed and modelled climate data for 61 developing countries: <http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/>
- Permanent Service for Mean Sea Level (PSML): observed sea level data from the global network of tide gauges: <http://www.psml.org/>
- Socio-economic Data and Applications Center (SEDAC): part of NASA's Earth Observing System Data and Information System (EOSDIS), focusing on human interactions in the environment: <http://sedac.ciesin.columbia.edu/>

NOTE

²¹ Modified from GIZ, 2014.

ANNEX 2: GLOSSARY

Adaptation^{#22}: includes initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected stresses, including *climate change* effects. Various types of adaptation exist, for example, anticipatory and reactive, *private* and *public*, and *autonomous* and *planned*.

Adaptive management^{@23}: is a structured, interactive process of decision-making in the face of uncertainty, with an aim to reducing uncertainty and improving performance over time: system monitoring, evaluating results and adjusting actions on the basis of what has been learned.

Drivers of change^{*24}: Any natural or human-induced factor that directly or indirectly causes a change in an ecosystem (MA, 2005).

Ecosystem assessment^{*}: A social process through which the findings of science concerning the causes of ecosystem change, their consequences for human well-being, and management and policy options are brought to bear on the needs of decision-makers (UK NEA, 2011).

Ecosystem service^{*}: The benefits that people obtain from ecosystems (MA, 2005); the direct and indirect contributions of ecosystems to human well-being (TEEB, 2010).

Human well-being^{*}: A context- and situation dependent state-, comprising basic material for a good life, freedom and choice, health and bodily well-being, good social relations, security, peace of mind, and spiritual experience (MA, 2005).

Indicator^{*}: Observed value representative of a phenomenon to study. In general, indicators quantify information by aggregating different and multiple data. The resulting information is therefore synthesized.

Mainstreaming[#]: refers to the integration of adaptation objectives, strategies, policies, measures or operations such that they become part of the national and regional development policies, processes and budgets at all levels and stages.

Maladaptation[#]: refers to an *adaptation* that does not succeed in reducing vulnerability but increases it instead.

Resilience[@]: The ability of a social or ecological system to cope and adapt to changes in the environment. In practice building resilience can be considered analogous to decreasing vulnerability (IUCN, 2010).

Scenario[#]: is a description of how the future may unfold based on "if-then" propositions, typically consisting of a representation of an initial situation, a description of the key drivers and changes that lead to a particular future state.

Vulnerability[#]: is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including *climate variability* and extremes. Vulnerability is a function of the character, magnitude and rate of climate change and variation to which a system is exposed, its *sensitivity*, and its *adaptive capacity*.

NOTES

²² [#] Source: UNEP, 2009

²³ [@] Source: GIZ, 2011.

²⁴ ^{*} Source: EU, 2013.

