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# Outcome paper of the discussion series

EbA-relevant Tools & Methods

Global Project **Mainstreaming EbA** / September - November 2016
Tine Rossing and Alexandra Köngeter

Background

We need effective and field-proven tools and methods to support adaptive management and decision-making and consider EbA measures within an overall adaptation strategy. In response, this discussion series centered around three key questions: 1) Which EbA-relevant tools exist already and have been used successfully at different stages of the mainstreaming cycle? 2) How to adopt existing tools to an EbA context? 3) How to make these tools available to a broader audience?

These questions were addressed from September-November 2016 within the **online discussion series** facilitated by the global project *Mainstreaming EbA*. The discussion series presented **three webinars** following up on a **virtual discussion on the member space** of the International EbA Community of Practice with the aim to share and discuss experience with regards to development and application of different tools and methods in support of EbA planning and implementation during different stages of the EbA mainstreaming cycle. In addition, members of the International EbA Community of Practice shared their impressions on EbA-relevant global events within the "**Community NEWS**".
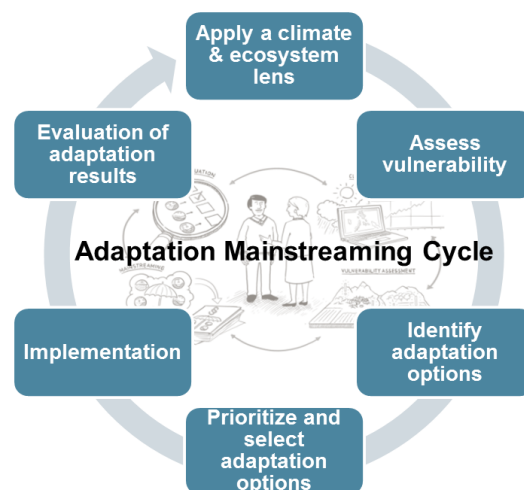
I. **ASSESSING RISK AND VULNERABILITY IN THE CONTEXT OF EBA (I)** - 15 September, 8:30-10:00 (CEST)
   Community News:
   a. IUCN World Conservation Congress;
   Main themes:
   b. Guidance on integration ecosystem considerations for Vulnerability and Impact Assessment (VIA);
   c. Vulnerability Assessments in EbA projects – experiences from high mountains in Central Asia; and
   d. How to build capacity for applying EbA tools?

II. **ASSESSING RISK AND VULNERABILITY IN THE CONTEXT OF EBA (II)** – 13 October, 16:00-17:00 (CEST)
   Community News:
   a. International workshop on EbA experiences by INECC, Mexico
   b. Solutions for EbA – a short introduction to the 'Solutioning' approach for compiling good practices under the Panorama Initiative
   Main themes:
   c. Vulnerability mapping in catchments in Brazil

III. **IDENTIFYING AND PRIORITIZING EBA OPTIONS** - 24 November, (16:00 - 17:40 CEST)
   Community News:
   a. EbA in NDC implementation: Experiences from UNFCCC CoP22
   b. Habitat III: Financial instrument for urban EbA
   Main themes:
   c. Tool to prioritize adaptation options: Integration of EbA
   d. Experiences from applying the prioritization tool in Colombia
   Conclusions

Summary and key points

▶ Webinar 1: **Assessing risk and vulnerability in the context of EbA**

## EbA Community of Practice NEWS

Paul Schumacher, GIZ Tajikistan, shared insights from the **IUCN World Conservation Congress** held in Hawaii from September 1-10. During a **session on Experience, Exchange, and learning about EbA and Eco-DRR that works**, it was highlighted that unlike EbA, Eco-DRR also addresses non-climatic hazards. While Eco-DRR mainly focuses on natural ecosystems, **EbA also concerns managed ecosystems**. A group exercise arrived at three recommendations to help advance Eco-DRR and EbA: 1) More monitoring and evaluation to build stronger evidence to influence policy makers; 2) increased education, capacity building and awareness raising; and 3) building stronger case studies.

More general take-home messages from other sessions included that EbA is a very hot topic – no adaptation solution is complete without integrating nature-based solutions. Surprisingly, nobody talked about the importance of climate information. However, Paul Schumacher did state during a presentation that **integrating and adapting climate science information to local needs is key** for any adaptation project, adding that EbA projects need to start planning for the worst case climate scenario. Lastly, he noted that a **key future priority should be to make the case for EbA to the big banks**, due to large budgets for climate adaptation and significant upscaling potential for EbA. Making the case for EbA should not only be done based on cost-benefit analyses, but also by convincing the engineers within the banks about the benefits of green infrastructure as a viable option to gray infrastructure.

The case of the global Mountain EbA Programme: Guidelines for Vulnerability and Impact Assessment under EbA

Cordula Epple, UNEP-WCMC, presented the **Guidance on Integrating Ecosystem Considerations into Climate Change Vulnerability and Impact Assessment (VIA) to Inform EbA**. She stressed that while there are already a lot of different tools for VIAs, most **available tools do not consider ecosystems and their services** in a systematic manner. As such, this Guidance is supposed to complement existing VIA methodologies and tools, and is mainly focusing at a subnational scale (community, watershed or regional level).
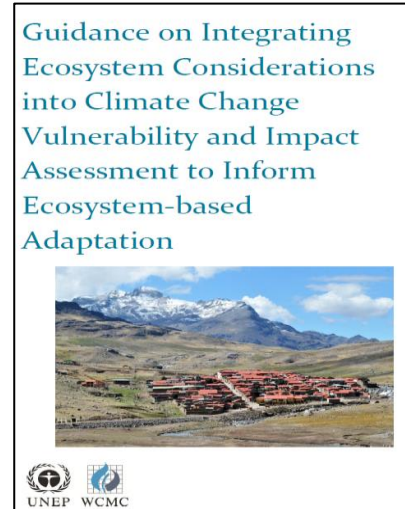
The Guidance is structured as per **six key steps**: 1) Defining the scope of assessment, 2) Understanding the context: livelihoods and ecosystems, 3) Assess current exposure and sensitivity, which concerns ecosystems, 3) Assess current adaptive capacity and vulnerability, 5) Assess future vulnerability and 6) Next steps, which concerns looking into the future, combining scenarios for both climate and development. Cordula Epple highlighted that focusing on livelihood groups and which ecosystem services they depend on and, in turn, which ecosystems that supply these services had provided an effective scope for the assessment. She also stressed that while the Guidance follows similar steps as many existing VIA tools, **step 3 is generally where ecosystems are not sufficiently considered**. This Guidance therefore focuses on how to identify which ecosystem functions that are important for ecosystem services, which climatic parameters are affecting these and how, thereby affecting people's livelihoods and well-being. When assessing ecosystem resilience to climatic impacts, it is **important to be specific:** Resilience to what will be strengthened? Which ecosystem functions? Which climatic factors are taken into consideration?

Key lessons learned from applying the Guidance include: 1) Systematic consideration of the role of ecosystems and their services add value to VAs and adaptation planning. 2) The **benefits go beyond EbA**. All

adaptation activities should be aware of the impact on ecosystem services and of the importance of ecosystem services for human adaptation. 3) The **Guidance should not be used in isolation**, but combined with other types of VA tools. 4) It is important to ensure an appropriate **balance between scientific and traditional knowledge and local perspectives**. 5) A two- or even multi-step approach to VIA may be required to **avoid spending too much time on the assessment vis-à-vis adaptation planning and implementation**. It is recommended to **start with a Rapid Assessment to identify key problems first**, and then use additional in-depth studies to support specific interventions, while making iterative adjustments at each step. 6) **Plan from the outset an ongoing adaptation process** owned by the beneficiaries.

The case of Central Asia: Vulnerability Assessments in EbA projects – experiences from high mountains in Central Asia

Benedikt Ibele, GIZ Tajikistan, presented experiences from applying the UNEP-WCMC Guidance on integration ecosystem considerations in VIA. This Guidance was one of the important sources for the **Framework for Vulnerability Analysis** that was developed and implemented by the project [Ecosystem-based Adaptation in High Mountainous Regions of Central Asia](#). The Framework was synthesized from methods published by GIZ, UNEP, World Bank and GEF, with feedback from WWF US. Thanks to two scientific implementing partners, the [Michael Succow Foundation](#) and the [GFZ German Research Centre for Geoscience](#), the approach is grounded in **looking at ecosystem health and abiotic vulnerability**, **focusing on melting glaciers and changes to the hydrological cycle** due to climate change impacts. The **VIA centered on water resources**, what will happen to it and how it will impact the local livelihoods in the project sites due to climate change. Benedikt Ibele highlighted how the project team had developed 5 steps for how to **ensure strong participation by the local population**. He stressed that training of facilitators for field-based work is really important, given that there is a lack of people, who are both good at field work, while also having a strong understanding of climate change adaptation, and EbA in particular.

The team also worked with WWF US and CCSR (Columbia University and NASA) to develop adapted and localized climate change projections for the project pilot areas. They specifically wanted projections that **included seasonal projections based on livelihoods in the project pilot sites**. These projections were discussed with the local communities to get their views and inputs, using tools like seasonal calendars, based on which participatory scenario planning was carried out. Prioritization of adaptation options is currently taking place.

The generated climate information was used to arrive at an **impact chain, showing the impacts on livelihoods and human well-being**, based on a conceptual model. In high mountainous areas local communities are mainly dependent on the natural systems for their livelihoods, which is also why EbA appears to be such a viable adaptation solution. **Scenario planning** was used to discuss different possible scenarios for future change and vulnerabilities with the involved communities, based on what is important to them. In this specific case, a key **barrier of working with local communities is not only local languages, but even local dialects**. The team therefore developed a **glossary of key climate-related terms to accommodate this language barrier**. Lastly, a key reflection is how scientific do we need to be vs. how practical we should be.

How to build capacity for applying EbA tools

Isabel Renner, freelance trainer for capacity development, presented the updated version of the **training course "Mainstreaming EbA into development planning".** This training is based on an existing GIZ/OECD Climate Change Adaptation training course from 2014. The update was based on an assessment of capacity development needs of practitioners in 12 partner countries carried out by the global project [Mainstreaming EbA](#). Furthermore, new EbA-relevant resources and elements of other training courses by GIZ where integrated. The capacity development needs identified are e.g. clarifying what qualifies as EbA and synergies with overlapping approaches, design of finance strategies, practical tools for implementation, how to effectively communicate to different target groups and how to mainstream EbA into existing policies.

The new training course is based on 4 core modules. Each includes a number of complementary sessions which can be combined flexibly based on participants' specific needs. The modules follow a similar structure: 1) Input by trainer, invited expert or participant, 2) group work exercise, and 3) discussion and reflection. Isabel Renner stressed that this is a basic training and the focus is on process-orientation rather than on technical knowledge.

The training is available in English and Spanish and would ideally take 3-4 days. For further information, contact Alexandra.Koengeter@giz.de

▶ Webinar 2: **Assessing risks and vulnerabilities in the EbA context (II)**

EbA Community of Practice NEWS

1. **Tools & methods for ecosystem-based adaptation – key messages from an international workshop in Mexico by INECC (**Mexico National Institute of Ecology and Climate Change)

An **international workshop on implementation of EbA projects** was held in Mexico City from September 28-30th. The workshop involved 13 speakers from 10 countries, where Day 1 involved presentations, while Day 2 focused on group work. **Mariana Echaniz**, GIZ Mexico, highlighted the following key lessons from the EbA methods discussed:

Concerning vulnerability assessments (VA):
- Scientific and local community knowledge generated in a participatory manner should be combined to assess vulnerability.
- For exposure analysis, climate scenarios should consider vulnerability, temperature trend analysis and extreme events and communities should be involved, for example to produce risk maps.
- Sensitivity analysis should consider current environmental and social assessments, while also focus on gender, traditional knowledge and local institutions.
- Analysis and action should be carried out simultaneously at multiple scales (community, regional and national) to reduce vulnerability and to ensure sustained impacts from EbA measures (Example: Global Mountain EbA Programme in Peru/UNDP).

Concerning EbA measures:
- Following a VA, the process of prioritizing and selecting EbA measures should combine expert and local knowledge (Example: Watershed modeling in Colombia (WEAP by SEI).

Concerning EbA governance:
- EbA measures must be embedded into local institutions and decision-making to ensure long-term continuity (Example: CATIE multi-actor decision-making mechanisms; Colombia TNC System to support decision making).

The workshop agenda and **presentations can be accessed** here: http://climate.blue/expertos-internacionales-comparten-experiencias-sobre-adaptacion-basada-en-ecosistemas/

2. **Solutions for Ecosystem-based Adaptation – a short introduction to the 'Solution-ing' approach for compiling good practices under the Panorama Initiative (GIZ Germany)**

Mathias Bertram, GIZ Germany, provided a brief introduction to the 'Solutioning' approach carried out by the global project Mainstreaming EbA. The objective is to compile and share EbA success stories through the Panorama online portal aimed at a broad audience of policy makers, decision-takers and practitioners. He explained what an **"EbA Solution"** is:

- A **successful approach** to solve a **specific problem caused by climate change.**
- It addresses **current and future climate change impacts** (e.g. floods, droughts, storms, sea level rise, melting of glaciers) on human wellbeing by a sustainable management of ecosystems and the services they provide with a **proven impact.**
- It consists of a **combination of building blocks.**

These „building blocks":
- **Are key elements** of a solution, such as instruments, tools, approaches, partnerships or processes;

- determine the solution's success (**success factors**); and
- **may be adapted and/or recombined with others** to address specific challenges in different socio-cultural, ecological, political or economic contexts, sectors, or geographies.

This 'Solutioning" task is part of the **Panorama Initiative** initiated by GIZ and IUCN under the **Blue Solutions Programme**, based on the key question: **What if we could learn from each others' success? Key premise:** A solution provider has knowledge that can be shared with a broader community through success stories published on the online Panorama platform. At present, this platform has 1) marine and coastal and 2) protected areas solutions. The Panorama website was launched at the IUCN World Conservation Congress in September and can be accessed at http://panorama.solutions/en/. The creation of the **EbA solutions portal** to provide EbA-related approaches, methods and tools to solution seekers (e.g. policy makers, practitioners) was initiated in August and will be launched under the Panorama Programme during the CBD COP 13 in Cancun, Mexico on December 6 2016. Additional practical examples will be continuously collated and shared. To share EbA solutions for inclusion on platform, please contact mathias.bertram@giz.de

Climate Change Impact Assessment for the Atlantic Forest in Brazil (Ministry of Environment MMA Brazil / GIZ Brazil)

Jennifer Viezzer, Brazilian Ministry of Environment, and **Martin Becher**, GIZ Brazil, shared how they had carried out a climate change impact assessment for the Atlantic Forest in Brazil. The project Biodiversity and Climate Change in the Atlantic Forest aims to ensure that biodiversity conservation and forest restoration of protected areas mosaics are contributing to climate change adaptation in the Atlantic Forest. The project promotes EbA in three conservation area mosaics of Brazil's Atlantic Forest: 1) Extreme south of Bahia, 2) Mata Atlantica Central Fluminense and 3) Lagamar.

The assessment was carried out in response to a demand by local partners for information on climate change and its impacts, so that they could better **consider climate change in territorial planning and public policies**. The team carried out the climate impact assessment, not the entire vulnerability analysis, because the scope was the entire Atlantic Forest area. They **focused on the biophysical impacts**, given that **socio-economic** data are local-specific. An analysis of these latter data will be next step to elaborate a full vulnerability analysis.

First, numerical data from IMPE (institute that gather and model climate data) was converted into maps, downscaled and analyzed, based on an average of data from two scenario models to make the information as easy to understand as possible for local stakeholders. The data concerns future averages from 1961-2005 and for different timeframes until 2100 and concern climate extremes, including heat waves, droughts, hot nights and intensive rainfalls.

Methodology: First the team generated **1024 maps of climate exposure** based on the following parameters: 2 scenarios, 4 trimesters (to capture seasonal variability), 4 regions, 4 projections, and 8 climate variables, including 4 variables for extreme events (temperature, temperature variation, precipitation, precipitation variation, CDD, R10mm, TN90p, WSDI). Next step was to prepare **28 maps of biophysical attributes** for the 4 regions based on 7 variables (soil type, vegetation cover, vegetation type, watershed and hydrography, land use and land cover, altimetry, distribution of dengue occurrence). Third, these two data sets were crossed to generate **896 maps of potential impacts** for 2 scenarios, 4 trimesters, 4 regions, 4 projections, and 7 impacts (floods, erosion, landslides, dengue vector, soil moisture, agro-zoning, vegetation). The methodology was explained in greater detail by using the case of floods as a potential future impact. The maps revealed that while the North and Northeastern part of Brazil will suffer less from floods in the future, the South and Southeast will be hit harder. The data concerning water erosion and landslides showed similar trends and results. For future dengue distribution the maps highlighted that an increase mainly in the South and Southeast can be expected. This is important as currently there are not that many dengue occurrences, so prevention will need to be taken. Concerning soil moisture, Southeast areas already suffering from drought and low water availability will be hit harder. The generated maps also highlighted which vegetation types would lose vs. gain

climatic aptitude in terms of percentage. They also revealed that ecotones will gain significantly, given that they are transitioning from one type of ecosystems to another.

Based on the findings, **strengths and future challenges were identified**. Regarding strengths, 1) it is the **first time climate impacts have been spatialized** for Brazil's Atlantic Forest and where specific areas can be named for specific impacts; 2) the study meets the **demand for localized climate change impact data for local territorial planning** of local partners and maps are quite easy to read; 3) it provides a robust methodology and 4) it provides **first step for a complete vulnerability assessment**.

The following **challenges were identified**: 1) The quality and scale of entry data are rough; 2) the study was based on an average between two models, but now national partners would like to see specific results for each model; 3) it is not easy to communicate and make the data of the maps available, given the significant size of the map files and the study is very long and very technical. The team is therefore working on different communication products for different types of audiences to better convey the information and results. 4) The final challenge will be to proceed with the next steps to complete an entire participatory vulnerability assessment.

In conclusion, a **major shift in adaptation studies has been the evolution from impact-based studies to the analysis of contextual vulnerability**, which will be the next step of the team's work. To proceed, the team **needs their local partners to take ownership** of this process and develop concrete EbA measures. While the project does not finance concrete EbA measures on the ground, the team is using local perception information gathered to introduce EbA to plans and public policies. Final point: We cannot adapt to everything, but should focus on progress and not perfection.

▶ Webinar 3: **Identifying and prioritizing EbA options**

EbA Community of Practice NEWS

1. EbA in NDC implementation: Mexico's experience from UNFCCC CoP22

Dr. Juan Carlos Arredondo Brun, SERMANAT, Mexico, shared insights from a side event on sectoral Nationally Determined Contributions (NDC) implementation held during the UNFCCC CoP22 in Marrakesh. The key focus was on how countries will be implementing their NDCs. He highlighted how conservation of biodiversity and ecosystem services is an integral part of Mexico's broader combined adaptation and mitigation response to climate change. Mexico was **therefore among the first countries to include climate adaptation, emphasizing EbA, in their NDC submission**. Moreover, deforestation is also included as a focus for adaptation, highlighting synergies between adaptation and mitigation.

This NDC submission was considered a breakthrough in terms of what we expect from parties to the UNFCCC. The presentation generated a lot of attention from the side event audience. Dr. Juan Carlos Arredondo Brun therefore explained that a large part of Mexico's population is living in rural areas and heavily dependent on environmental resources for their livelihoods. This explains the emphasis on the adaptation component in the NDC and EbA in particular. Protecting forests, broader biodiversity and its ecosystem services is a way to reduce vulnerability and increase resilience, not only of people and their livelihoods, but also of strategic infrastructure and the natural environment itself.

Mexico's NDC covers the time period 2020-2030. In terms of next steps for implementation of EbA within this plan, Mexico will focus on different background studies to gain better understanding of, for example, vulnerabilities to climate change. These studies will form the basis for future EbA interventions during the planned 10-year period. However, Mexico will not only focus on the technical aspects of EbA, but more importantly also on identifying **financing and funding sources** for these future interventions.

2. HABITAT III: Financial instruments for urban EbA

Felipe Gómez, GIZ Colombia, presented work on innovative financial instruments for EbA carried out under the auspices of the Sectoral Network on Environmental Management and Rural Development in Latin America and the Caribbean – GADeR-ALC and the GIZ-implemented project, *Strategies for Ecosystem based Adaptation in Colombia and Ecuador*. The methodology developed for designing innovative financial instruments was adopted by Colombia's National Financial Committee. Local workshops were held, where the participants worked through the methodology and designed seven different financial instruments. More workshops have been requested to share the methodologies and results, and design more innovative financial instruments for EbA.

The methodology has five components. The **Normative Component** cuts across and is included the remaining four components.

1. The **Technical Component** focuses on the What, Where and How? This concerns the name, expected results, current state of risks and a description of the environment. Key questions concern: Which ecosystems do we want to recover or restore? How will the resilience be improved? What is the normative state that can support this technical component?
2. The **Institutional Component** concerns the Who? i.e. who should be involved? Who can take charge of the financial instruments being developed? How can transparency be ensured? What are the expected results? How can efficiency of investments be ensured?
3. The **Financial Component** is the With what? – i.e. where will the financial resources come from? How will we finance the work, e.g. from crowd sourcing? What needs to happen for us to get there? How can we scale up the income generated from the financial instrument? What are the expected results?
4. Finally, the **Commercial Component** focuses on the Why, or how to 'sell' the financial instrument. Who are the people and institutions that may be interested in this instrument? What are the principles and values that the measure aims to convey? This information is then used to develop a slogan to help 'sell' the measure to the identified target groups.

The last part of the workshop focused on **identifying barriers, opportunities and guidelines** to provide more direction for viable financial instruments. The issue of stakeholders was mainly addressed under the institutional and commercial components. The most innovative financial instrument developed to date is a Fiduciary Fund for combating heat waves in Mexico City.

A booklet with the methodology and results was presented during the Habitat III. This publication **– Innovative Financial Solutions for Building Resilience in Cities** - can be accessed at the member space of the EbA Community of Practice. (For subscription, please contact Alexandra.Koengeter@giz.de).

This booklet is available in Spanish. In addition, two videos about the workshop and generated results are available (**Video 1**, **Video 2**)

Tool to prioritize adaptation options: Integration of EbA

Ainara Aranguren, consultant, presented the integration of EbA into an existing **Methodology for Prioritizing Climate Change Adaptation Measures,** initially developed by the Mexican-German Climate Change Alliance, together with SERMANAT, INECC and CONANP. This assignment is carried out for the Global Mainstreaming EbA Project. The objective is to strengthen the methodology by incorporating the EbA approach, emphasizing the sometimes poorly known and unseen benefits of this type of adaptation measures, when compared to non-EbA measures.

The original methodology was created for three reasons: 1) To help prioritize adaptation measures; 2) to allocate resources efficiently and transparently; and 3) to strengthen institutional and social capacities to address climate change. Main attributes of the methodology: 1) It is flexible and can be adapted to different contexts, and 2) it encourages participation, continuous reflection and capacity development of participating actors.

Unlike the original methodology, which covers both the initial identification and prioritization of adaptation measures, the EbA methodology will only focus on the process of how to **prioritize adaptation measures.** The reason is that the initial identification of adaptation measures should be part of the preceding VIA study.

The prioritization process is based on 1) **Multi-criteria analysis** and 2) **cost-benefit analysis**. This process should be inserted into and be part of a broader systematic 7-step climate adaptation planning approach:

- **STEP 1 - Process design** to define the objectives of the process, available resources and stakeholders.
- **STEP 2 - Selection criteria** are defined to evaluate each proposed adaptation measure.
- **STEP 3 - Identification of [possible] adaptation measures** is where all information for each measure is systematized.
- **STEP 4 - Review and adjustments** of measures: Stakeholders are included and the selection criteria are reviewed.
- **STEP 5 - Prioritization** of potential adaptation measures is carried out, using the multi-criteria analysis defined in Step 2.
- **STEP 6 - Economic valuation** of the possible measures, which includes a cost-benefit analysis.
- **STEP 7 - Monitoring and feedback** helps to document and systematize all information and lessons to promote transparency and learning.

Ainara Aranguren then outlined the methodology, scope, benefits and limits of the study, stressing that Mexico is used as an example. She pointed out that the **study will include 3 concrete examples** where EbA has been prioritized using this methodology.

A key part of the conceptual framework is to consider climate adaptation as part of a broader transformation towards sustainability, recognizing that climate change is a problem of development and for development. Ideally, adaptation strategies should be integrated into broader human development and it is desirable to promote *No Regrets*-measures that would derive benefits even without climate change.

Going through the 7-step adaptation planning process, **recommendations for revisions** to be made after applying an EbA lens where highlighted. Concerning **Step 1** (process design), it is recommended to incorporate specialists with experience in different adaptation approaches, along with the principles and priorities that will guide the process.

Concerning **Step 2** (selection of criteria) the **new proposed** criteria are:
- Positive/negative **environmental** externalities
- Positive/negative **social** externalities
- Synergy with other conventions (CBD and CCD)
- Gender equality
- No regrets
- Vision of socio-ecological systems

The cost-benefit and cost-effectiveness criteria should be removed, as that would be carried out under Step 6 instead. Another recommendation is to identify what the general priorities or principles of the national climate change policy that could be considered to define prioritization criteria.

For **Step 3** (identification of adaptation measures) it is recommended to make the importance of the descriptive sheet more visible and improve it with the following elements: 1) Adaptation approach (e.g. EbA or CbA), 2) improved co-benefits section, 3) externalities, 4) possible maladaptation, and 5) sources of financing.

For **Step 4** (review and adjustments), it is proposed to add a question whether any of the considered adaptation measures could be replaced with an EbA measure. An example will be inserted that demonstrates how a grey infrastructure measure could be replaced with a more cost-effective EbA measure.

For **Step 5** (prioritization) a detailed information sheet should be applied as part of the multi-criteria analysis. A table outlines the ecosystems provided and their importance for human well-being, e.g. forests => wood => construction materials and economic welfare. This step will also include a guide to qualify EbA measures for the proposed criteria.

Step 6 (economic valuation) concerns development of a cost-benefit or cost-effectiveness analysis. The study is developing inputs that support the valuation of the co-benefits generated by EbA measures. This mainly concerns resources and tools that facilitate the valuation of ecosystem services, including:
1. Description of the total economic value of ecosystems.
2. Presentation and definition of different valuation methods.
3. Description of the relationship between the last two with different ecosystem services.
4. Table with examples of common social, environmental and economic costs and benefits of EbA measures reported in the peer-reviewed and grey literature.
5. List of websites, studies, official documents, databases and other resources for valuation of ecosystem services.

For **Step 7** (monitoring and feedback) it is proposed to add the questions: 1) Could I have had more diverse adaptation approaches (EbA or CbA)?; and 2) what kind of information did I lack to prioritize the measures appropriately?

Experiences from applying the prioritization tool in Colombia

Felipe Gómez, GIZ Colombia, presented the results of the prioritization of EbA measures in Colombia carried out by the GIZ-implemented Program – *Strategies for EbA in Colombia and Ecuador*. The work was done for the coastal city of Cartagena, which already has a Climate Change Plan that includes both adaptation and mitigation measures. This plan also identifies seven EbA measures, e.g. mangrove restoration, restoration of beaches, coral restoration and tree planting in the city. A simple methodology for how to prioritize EbA measures was developed based on existing MARISCO and GIZ-Mexico methodologies. The team expanded the scope by elaborating additional possible EbA measures according to the activities being developed in the region. The team ended up with a total of 12 EbA measures that were evaluated and prioritized.

Two prioritization workshops were held in Cartagena and Monteria, where the methodology was applied to the two local climate change plans. As a result, 12 evaluation criteria were developed jointly with different Colombian institutions. The team also developed a quick risk analysis.

The prioritization methodology entails four steps:
- **STEP 1: Identify and prioritize key ecosystems for EbA** (with a special emphasis on ecosystems that provide services and protect against identified key climate hazards (flooding, sea level rise, coastal erosion and drought).
- **STEP 2: Identify and prioritize key climate threats:** 1) Recent past (1990-2010), 2) the present (2010-20) and 3) the near future (2020-40).
- **STEP 3: Identify exposed assets, including population**, in response to the threats. Maps were prepared for each climate threat and local experts identifies exposed assets and population.
- **STEP 4: Evaluate identified measures against criteria** (using the multi-criteria analysis based on the MARISCO and Mexico methodology).

The criteria for the analysis were grouped under four headings:
Environmental:
       1) Does the measure improve ecosystem state?
       2) Does the measure improve sustainable use and conservation?
       3) Does the measure improve ecosystem service provision?

Social:
       4) Does the gives attention to the most vulnerable?
       5) Does the measure reduces disaster risk?
       6) Does the measure involve social participation?
       7) Does the measure have ample beneficiaries?

Economic:
       8) Is the measure cost efficient?
       9) Can the measure be financially sustainable?

Political and Institutional:
>   10) Is the measure feasible?
>   11) Is the measure scalable?
>   12) Are there tools for monitoring & evaluating the measure?

Based on the analysis, the team prioritized two EbA measures for Cartagena: 1) Mangrove restoration and 2) recovery of the riparian forests of streams and canals that drain into a large coastal lake in Cartagena. These two measures will be implemented in 2017, along with monitoring of the impact of implementing these two measures.

It was highlighted that a way to ensure a cost-effective process in light of scarce resources is to encourage partnerships and collaboration with all involved stakeholders and institutions, thereby pooling available technical, institutional and human resources. The team does not have a detailed costing of the implementation of the identified EbA measures yet.

Conclusions

Alexandra Köngeter, GIZ Germany, provided a brief recap of the entire Discussion Series on EbA-relevant Tools and Methods, which has taken place from September-November 2016, combining a series of webinars and linked discussions within the EbA Community of Practice. An **Outcome Paper** and a **compilation of complementary resources** that were not covered by the webinars and discussions are currently being finalized in collaboration with Tine Rossing, EbA Consultant, and will be published on the www.AdaptationCommunity.net.

Mathias Bertram, GIZ Germany, presented the EbA mainstreaming toolbox which is currently compiled by two BMUB-IKI funded global projects [Ecosystem-based Adaptation (EbA): Strengthening the evidence and informing policy](#), implemented by IIED, IUCN and UNEP-WCMC, and [Mainstreaming Ecosystem-based Adaptation (EbA): Strengthening EbA in planning and decision making processes](#), implemented by GIZ. A draft database of 158 EbA-relevant tools and methodologies has been developed, including a) Process guidance tools, b) data and information provision tools; and c) knowledge-sharing tools – all further categorized according to six EbA mainstreaming cycle stages. The **quantitative** database will be assessed **qualitatively through a questionnaire** to analyze which tools are applied in practice.

Alexandra Köngeter concluded the webinar by introducing the next Discussion Series that will focus on **Evidence for EbA.**

All webinar recordings are now available [here](#) on [www.AdaptationCommunity.net](#).

For further information please contact [alexandra.koengeter@giz.de](#)

- Additional resources to the discussion series "EbA-relevant tools and methods"

I. Assessing risk and vulnerability in the context of EbA

Title:	**The Vulnerability Sourcebook – Concept and guidelines for standardised vulnerability assessments (2014)**
Author(s):	Kerstin Fritzsche, Stefan Schneiderbauer, Philip Bubeck, Stefan Kienberger, Mareike Buthl, Marc Zebisch and Walter Kahlenborn. With contributions from Sibylle Kabisch, Wera Wojtkiewicz, Christian Richter and Daniel Becker.
Organization(s) producing the document:	Published by GIZ in cooperation with Adelphi and EURAC Research on behalf of Germany's Federal Ministry for Economic Cooperation an Development
Web link:	https://gc21.giz.de/ibt/var/app/wp342deP/1443/wp-content/uploads/filebase/va/vulnerability-guides-manuals-reports/Vulnerability_Sourcebook_-_Guidelines_for_Assessments_-_GIZ_2014.pdf
Available languages:	English, French, Spanish
Brief synopsis:	The scope for using vulnerability assessments is extremely broad. They are **site and context-specific**, and range from developing adaptation measures in rural communities to preparing National Adaptation Plans, from short-term climate variability to long-term climate change, and they cover a multitude of sectors. This Vulnerability Sourcebook and provides a **step-by-step guide for designing and implementing vulnerability assessments** suitable for each of these areas.
	Building on the approach developed by Germany's 'Vulnerability Network' for assessing domestic vulnerability across different sectors at the various administrative levels in Germany, the Vulnerability Sourcebook offers a practical and scientifically sound methodological approach to vulnerability assessments and their application for monitoring and evaluation of adaptation. It is **illustrated with examples and lessons learned** from pilot applications in Bolivia, Pakistan, Burundi and Mozambique. It thus offers a rich compendium of practical and scientific knowledge on vulnerability assessments.
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Title:	**Vulnerability and Impact Assessment of the Climate Change in the Nor Yauyos Cochas Landscape Reserve and its Buffer Zone – Technical Summary (2014)**
Author(s):	Pablo Dourojeanni, Silvia Giada and Maia Leclerc
Organization(s) producing the document:	The Mountain Ecosystems-based Adaptation program (EbA) – a collaborative initiative of UNEP, UNDP and IUCN, funded by Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).
Web link:	English version: http://adaptation-undp.org/sites/default/files/downloads/via-english.pdf Spanish version: http://besnet.world/sites/default/files//mediafile/UNDP%20Peru%20%282014%29%20Peru%20Vulnerability%20and%20Impact%20Assessment%20%28VIA%29%20-%20Technical%20Summary%20SP%20vs.pdf
Available	English; Spanish

languages:	
Brief synopsis:	This document seeks to summarize the report on Climate Change Vulnerability and Impact Assessment of the Nor Yauyos Cochas Landscape Reserve and its Buffer Zones (VIA NYCLR) developed to support the **identification of Ecosystem-based Adaptation measures** for the Nor Yauyos Cochas Landscape Reserve. Some **theoretical and methodological aspects** are presented here, supplemented by the main findings and recommendations, with the aim of being useful for future climate change adaptation experiences.
Contact:	Mr. Pablo Dourojeanni - pablo.dourojeanni@undp.org

Title:	**Vulnerability Assessments for Ecosystem- based Adaptation: Lessons from the Nor Yauyos Cochas Landscape Reserve in Peru (2016)**
	Book chapter in Salzmann, N., Huggel, C., Nussbaumer, S. U. and Ziervogel, G. (Eds) "Climate Change Adaptation Strategies – An Upstream-downstream Perspective". Springer 2016.
Author(s):	Pablo Dourojeanni, P., Edith Fernandez-Baca, Silvia Giada, James Leslie, Karen Podvin and Florencia Zapata.
Organization(s) producing the document:	The Mountain Ecosystems-based Adaptation program (EbA) – a collaborative initiative of UNEP, UNDP and IUCN, funded by Germany's Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB). The Mountain Institute was also a partner in Peru.
Web link:	Entire book: http://www.springer.com/gp/book/9783319407715
Available languages:	English
Brief synopsis:	This book chapter documents and analyzes the **collective learning from having implemented multiple approaches to Vulnerability & Impact Assessment (VIA)** in the Peru project area under the now closed BMUB-IKI-funded Global Mountain EbA Programme.
	The chapter was co-authored by Peru's project team, including colleagues from UNDP, UNEP, IUCN and the Mountain Institute.
	The chapter can be found in the Springer book "Climate Change Adaptation Strategies – An Upstream-downstream Perspective", which was formally launched at the World Mountain Forum in October 2016.
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Title:	**Vulnerability and Impacts Assessment for Adaptation Planning in Panchase Mountain Ecological Region, Kathmandu, Nepal (2015)**
Author(s):	Dixit, A., Karki, M., Shukla, A.
Organization(s) producing the document:	Government of Nepal (GoN), United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), International Union for Conservation of Nature (IUCN), German Federal Ministry for the Environment (BMUB)
Web link:	http://adaptation-undp.org/sites/default/files/downloads/dixit_et_al_2015_nepal_via_report_panchase_final.pdf
Available languages:	English
Brief synopsis:	This report is a presentation of the tools and methods of a vulnerability and impacts assessment (VIA) of both climatic and non-climatic changes on ecosystem services and community livelihoods in the Panchase Mountain Ecological Region (PMER) that constituted the

Nepal project site within the Global Mountain EbA Programme.

The assessment was conducted to develop the information and knowledge needed for human-centered adaptation strategies in order to **develop a sustainable ecosystem management plan for the PMER and its surrounding areas**. These types of strategies would reduce climate risks and enhance the resilience of local communities and ecosystems. The assessment of the impact of climate change on ecosystem services brings together top-down and bottom-up approaches to help prepare adaptation plans to ensure maintenance of the quality of ecosystem services.

The VIA approach is based on the "**embedded system-agent-climate exposure" model**. It assesses vulnerability by measuring sensitivity, exposure and adaptive capacity at the ward and sub-watershed level of the PMER. The approach **integrates vulnerability measurement and adaptation-planning tools with a step-wise participatory mapping of resources, climatic stresses and capacities.** The approach, at both landscape and community levels, used 32 socio-economic, ecological, biophysical and institutional indicators to assess vulnerability of the PMER wards and sub-watersheds.

| Contact: | Mr. Mozaharul Alam - Mozaharul.Alam@unep.org |

Title:	**A Climate Change Vulnerability Assessment for the Namakwa District, South Africa. The 2015 Revision.**
Author(s):	Amanda Bourne, Petra de Abreu, Dr Camila Donatti, Sarshen Scorgie, and Dr Stephen Holness,
Organization(s) producing the document:	Conservation South Africa – Member of the Conservation International Network
Web link:	http://www.conservation.org/publications/Documents/CI-CASCADE-Namakwa-Vulnerability-Assessment.pdf
Available languages:	English
Brief synopsis:	This report presents a **local level vulnerability assessment** for the Namakwa District Municipality (NDM) in the Northern Cape, South Africa. It aims to complement the existing NDM bioregional plan by providing a tool for the rapid assessment of district scale social and ecological vulnerability as well as the identification of priority areas for planning and implementing Ecosystem-based adaptation (EbA).

This report, and update to the 2012 report of the same name using new information and an adjusted methodology, is a milestone consolidation of information on the vulnerability of the ecosystems, socio-economic condition, and institutional structures of the Namakwa District. |
| **Contact:** | Ms. Amanda Bourne - abourne@conservation.org |

Title:	**Weaving Ecosystem Services into Impact Assessment. A Step-by-Step Method. Version 1.0 (2013)**
Author(s):	Florence Landsberg, Jo Treweek, M. Mercedes Stickler, Norbert Henninger, and Orlando Venn
Organization(s) producing the document:	The World Resources Institute
Web link:	Main report - http://www.wri.org/sites/default/files/weaving_ecosystem_services_into_impact_assessment.pdf

Technical Appendix – |

	http://www.wri.org/sites/default/files/weaving_ecosystem_services_into_impact_assessment_technical_appendix.pdf
Available languages:	English
Brief synopsis:	This report introduces the Ecosystem Services Review for Impact Assessment (ESR for IA), a six step method to address project impacts and dependencies on ecosystem services as part of the environmental and social impact assessment process. The steps build on assessments routinely conducted by social and environmental practitioners to **better reflect the interdependence between project, ecosystems, ecosystem services, and people**. Practitioners seeking more detailed guidance on implementing the ESR for IA can consult the associated Technical Appendix, which will walk them through each step and sub-step using an illustrative case study.
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Title:	**USAID Mekong ARCC Climate Change Impact and Adaptation Study for the Lower Mekong Basin – Main Report (2012)**
Author(s):	Jeremy Carew-Reid (Team Leader), Tarek Ketelsen (Modeling Theme Leader), Jorma Koponen, Mai Ky Vinh, Simon Tilleard, Toan To Quang, Olivier Joffre (Agriculture Theme Leader), Dang Kieu Nhan, Bun Chantrea, Rick Gregory (Fisheries Theme Leader), Meng Monyrak, Narong Veeravaitaya, Truong Hoanh Minh, Peter-John Meynell (Natural Systems Theme Leader), Sansanee Choowaew, Nguyen Huu Thien, Thomas Weaver (Livestock Theme Leader), John Sawdon (Socio-economics Theme Leader), Try Thuon, Sengmanichanh Somchanmavong and Paul Wyrwoll
Organization(s) producing the document:	International Centre for Environmental Management (ICEM) – commissioned by the USAID-funded project Mekong Adaptation and Resilience to Climate Change.
Web link:	http://mekongarcc.net/sites/default/files/mekong_arcc_climate_study_main_report-press_for_web.pdf
Available languages:	English
Brief synopsis:	The aim of the Mekong Climate Study was to undertake a climate change vulnerability and adaptation study on the water resources, food security, livelihoods, and biodiversity of the Lower Mekong Basin (LMB). The Mekong Climate Study lays the foundation for the whole USAID Mekong ARCC project by providing the scientific evidence base for **identifying highly vulnerable and valuable agricultural and natural systems assets** in the LMB. It also defines broad adaptation options and priorities, and **guides the selection of focal areas** for enhancing existing approaches and demonstrating and testing new adaptation strategies. The study focuses on five themes: i) agriculture, ii) capture fisheries and aquaculture, iii) livestock, iv) natural systems, and v) socio-economics.
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II. Identifying and prioritizing EbA options

Title:	**Decision-making for climate-resilient livelihoods and risk reduction: A Participatory Scenario Planning Approach (2014)**
Author(s):	Maurine Ambani, Fiona Percy.
Organization(s) producing the document:	CARE
Web link:	English version - http://www.care.org/sites/default/files/documents/CC-2011-ALP_PSP_Brief.pdf French version - http://careclimatechange.org/wp-content/uploads/2015/05/PSP_ALP_FR.pdf
Available languages:	English and French
Brief synopsis:	**Participatory Scenario Planning (PSP)** is a method used by CARE International under its Adaptation Learning Programme (ALP), implemented in Africa, for the collective sharing and interpretation of climate forecasts. ALP supports communities and local governments to use seasonal climate forecasts and information on climatic uncertainty for decision-making, as part of the community-based adaptation (CBA) approach. The PSP method creates space for meteorologists, community members, local government departments and NGOs to **share scientific and traditional local knowledge**. It allows these stakeholders to find ways to combine and interpret these two sources of information into locally relevant and useful forms. Participants of the PSP method consider the probabilities of changes in the climate, assess their likely hazards, risks, opportunities and impacts, and develop scenarios based on such an assessment. They discuss the potential implications of these scenarios on livelihoods, which lead to agreement on plans that respond adequately to the identified levels of risk and uncertainty.
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Title:	**Participatory Scenario Development Approaches for Identifying Pro-Poor Adaptation Options: Capacity Development Manual (2010)**
Author(s):	The Participatory Scenario Development (PSD) track of the World Bank EACC-Social study was led by Robin Mearns and Anne Kuriakose(World Bank). The technical partner was the ESSA-IISD Consortium led by Livia Bizikova and Simon Mead. The larger team from ESSA Technologies Ltd. included Samantha Boardley, Philip Bailey, Carol Murray and Lorne Greig. From the International Institute of Sustainable Development (IISD) the team also included Dale Rothman.
Organization(s) producing the document:	Prepared by ESSA Technologies Ltd and International Institute of Sustainable Development (IISD) for the World Bank
Web link:	http://documents.worldbank.org/curated/en/323051468326176845/pdf/589130NWP0PSD210Box353823B01public1.pdf
Available languages:	English
Brief synopsis:	This is a 'how to' manual that focuses on providing the necessary tools and instructions to Participatory scenario development (PSD). PSD is a process that involves the participation of stakeholders to explore the future in a creative and policy-relevant way. PSD is used to identify the effects of alternative responses to emerging challenges, to determine how different groups of stakeholders view the range of possible policy and management options available to them, and identify appropriate public policies and investment support necessary to facilitate effective

	future actions.
	In using a PSD approach to planning for climate change adaptation, the primary function of the scenarios is to **provide a framework and context within which different groups of stakeholders can better understand potential climate change impacts** and consider and discuss a range of possible adaptation options, as well as the forms of public policy or investment support that are needed to facilitate effective adaptation.
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