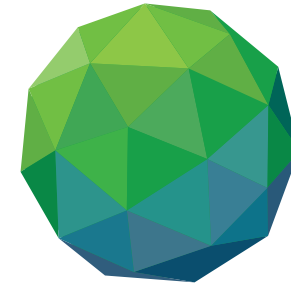


MEET ITAP LESSONS LEARNED

Independent Technical Advisory Panel

Songdo, Republic of Korea

15 March 2022



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Ecosystem Based Adaptation

Caroline Petersen, iTAP

16 March 2022



ipcc

INTERGOVERNMENTAL PANEL ON climate change

Climate Change 2022

Impacts, Adaptation and Vulnerability

Summary for Policymakers

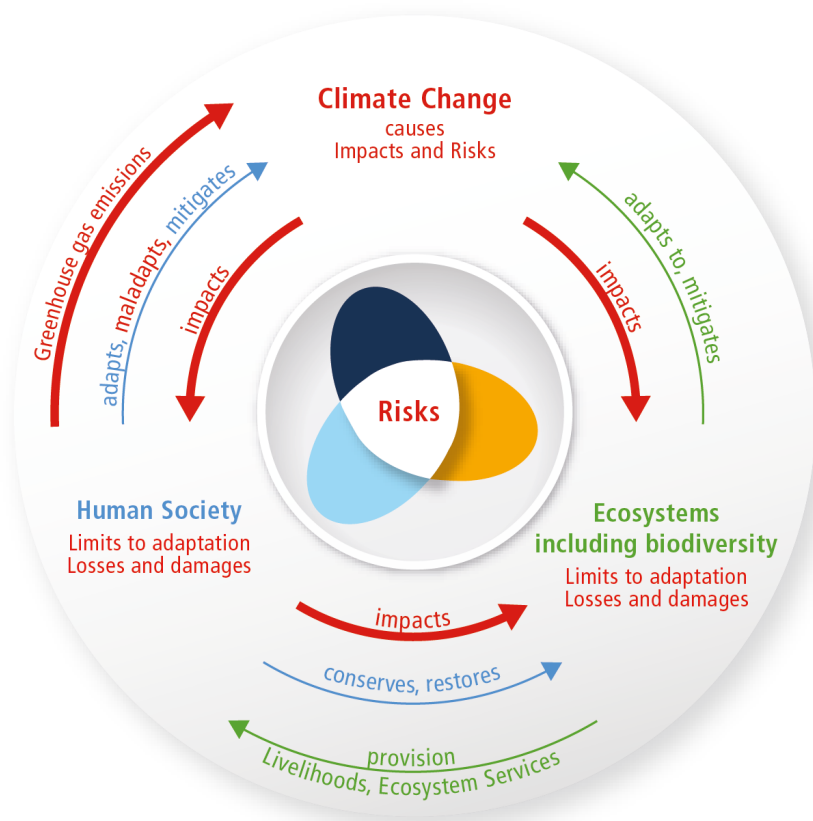


Working Group II input
into the 6th IPCC Report

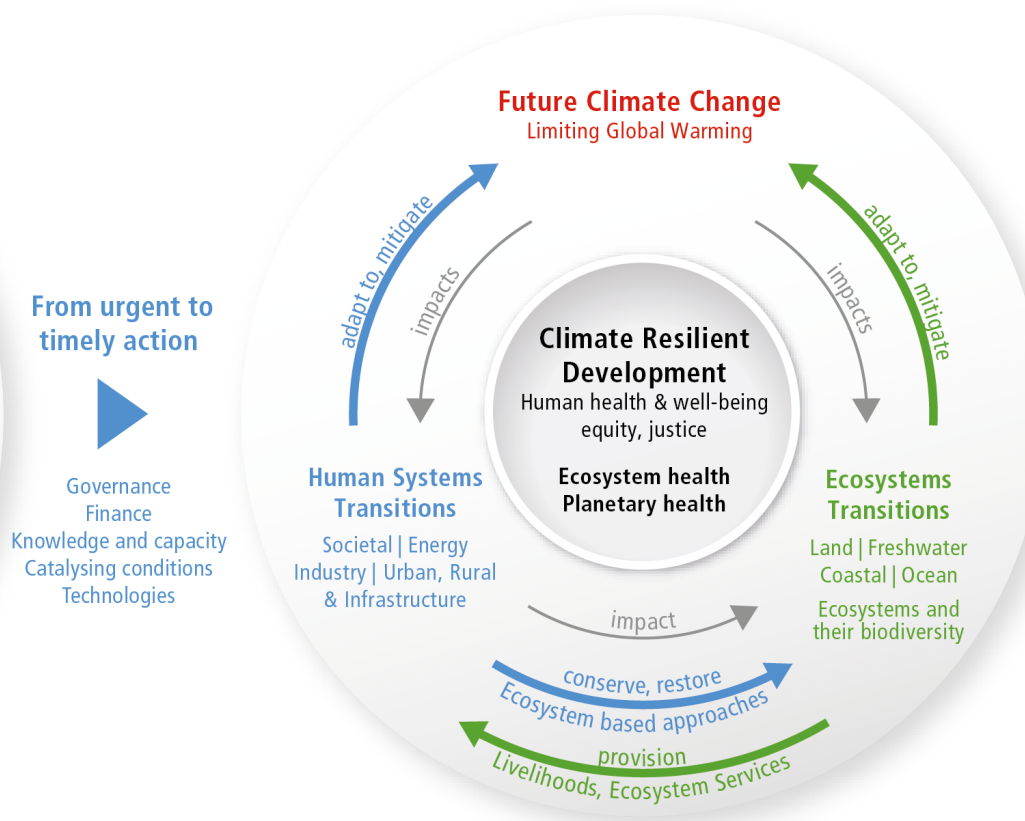
From climate risk to climate resilient development: climate, ecosystems (including biodiversity) and human society as coupled systems



(a) Main interactions and trends



(b) Options to reduce climate risks and establish resilience

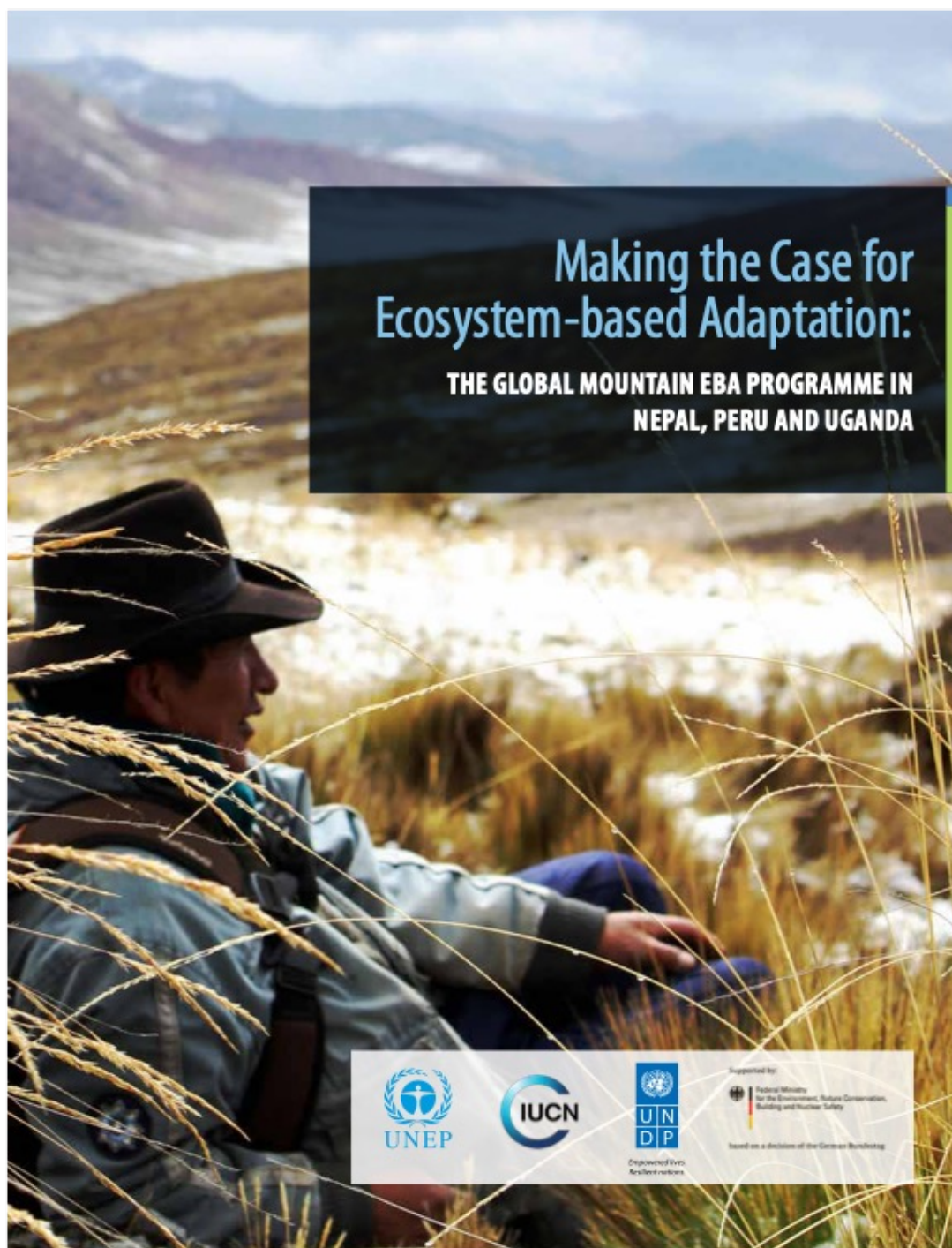


The risk propeller shows that risk emerges from the overlap of:



New IPCC report highlights impact on and contribution of ecosystems...

EBA has finally made its case!



Supported by
Federal Ministry
for the Environment, Nature Conservation,
Building and Nuclear Safety

Based on a decision of the German Bundestag

Empowered lives.
Resilient nations.

Through your pioneering work, we now have a global evidence base..



A screenshot of a web browser displaying the IIED website. The browser's address bar shows "iied.org". The website header includes the IIED logo (International Institute for Environment and Development) with a "50 Years" anniversary badge, a search bar, and navigation links for "Our work", "About", "News and comment", and "Publications". The main content area is titled "Collection" and "Biodiversity | Climate change", with a sub-header "Ecosystem-based adaptation". Below this is a descriptive paragraph about EbA: "Strengthening the evidence and informing policy. Ecosystem-based adaptation (EbA) involves people using biodiversity and ecosystem services to adapt to the adverse effects of climate change and promote sustainable development. IIED, the International Union for the Conservation of nature (IUCN) and the UN Environment World Conservation Monitoring Centre (UNEP-WCMC) are implementing a project called 'Ecosystem-based approaches to climate change adaptation: strengthening the evidence and informing policy' (EbA Evidence and Policy). Working with local partners in 12 countries, the project aims to gather practical evidence and develop policy guidance on how EbA can best be implemented." Below the text are six project cards, each with a thumbnail image and a "Project" label: 1. A world map with location markers, titled "Ecosystem-based approaches to climate change adaptation". 2. People in a cornfield, titled "EbA Evidence and Policy: China". 3. A river valley in a mountainous region, titled "EbA Evidence and Policy: Peru". 4. People in a dry, rocky landscape, with no title. 5. People in a lush green field, with no title. 6. A man holding a newspaper, with no title.

The screenshot shows a ScienceDirect article page. The article title is "Ecosystem-based adaptation to climate change: concept, scalability and a role for conservation science" by Fabio Rubio Scarano. It is published in "Perspectives in Ecology and Conservation", Volume 15, Issue 2, April-June 2017, Pages 65-73. The page includes a table of contents on the left, a main text area with a "View PDF" button, and a "Recommended articles" section on the right. The ScienceDirect logo and navigation links are at the top.



The image displays the "Global EbA Fund" logo, which consists of a circular emblem with a green plant growing from a white hand holding a blue globe. To the right of the emblem, the text "Global EbA Fund" is written in a bold, green font. Below the logo, the logos of supporting organizations are shown: IUCN, UN environment programme, and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. A small "i" icon is also present at the bottom right.

The image shows the cover of a technical guideline document. The title is "Guidelines for Integrating Ecosystem-based Adaptation into National Adaptation Plans: Supplement to the UNFCCC NAP Technical Guidelines". The cover features a photograph of a young green tree sapling in a white pot, set against a background of a blue river and a blurred natural setting. Logos for the UN environment programme (50th anniversary 1972-2022), NAP-GSP, gef, UNDP, and FEBA (Friends of EbA) are displayed at the bottom.

Peer-reviewed science, mainstreaming into policy & scaling up finance



GCF Board members as champions of EBA for multiple benefits...

Ecosystem-based Adaptation (EbA) is the use of **biodiversity and ecosystem services** as part of an overall adaptation strategy to help **people** to adapt to the adverse effects of **climate change**

CBD, 2009

People

Climate Change

Nature

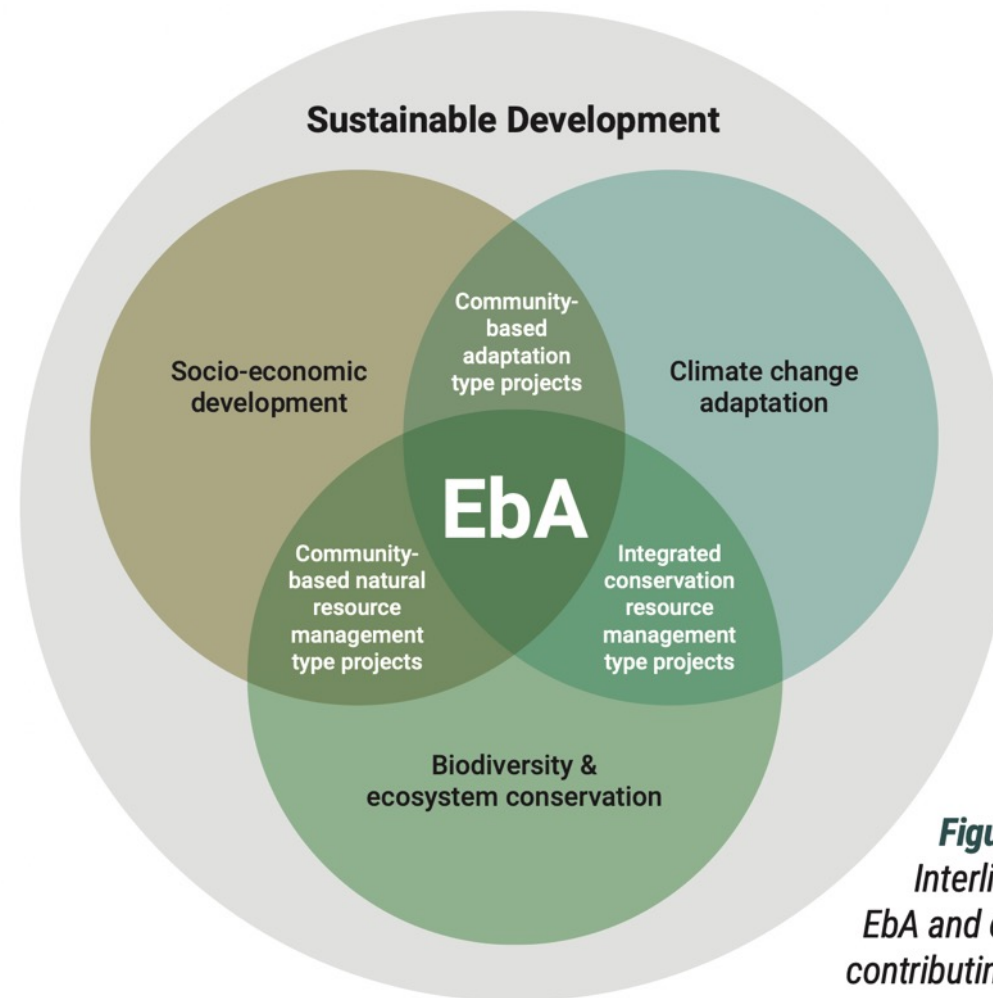
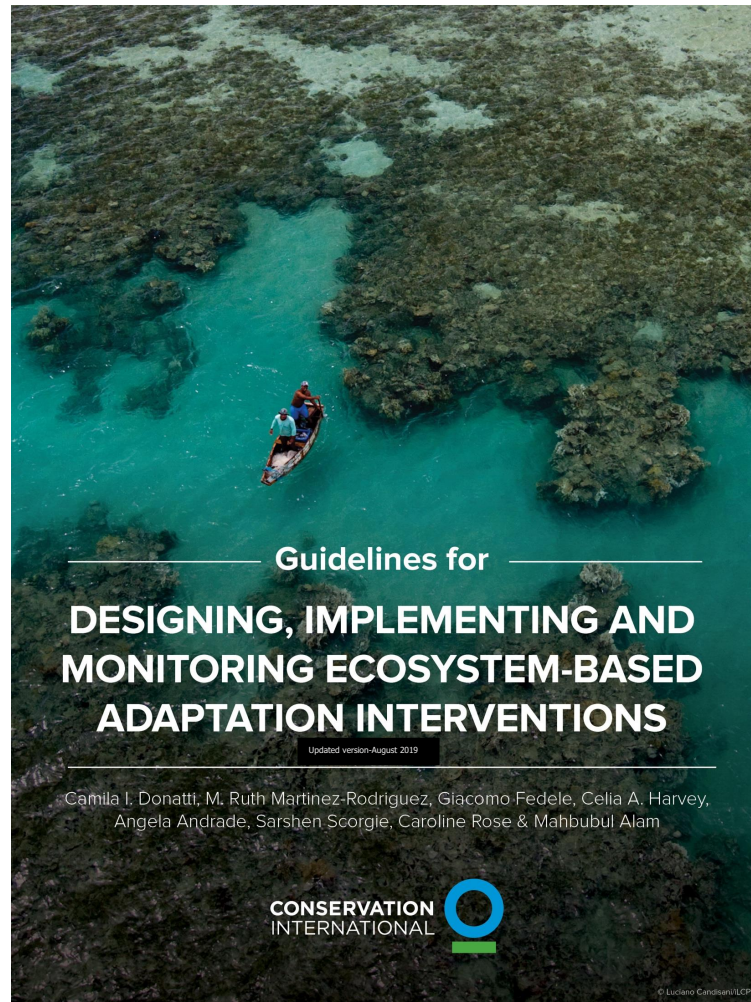


Figure 2.
*Interlinkages between
EbA and other approaches
contributing to sustainable
development (adapted).⁶
- UNEP*



Conservation International (CI) criteria that an internal project must meet to be considered EbA:

- (1) address one or more specific climate change threats or impacts;
- (2) include conservation, restoration and/or improved management of ecosystems and/or biodiversity, **or the implementation of agricultural practices that are based on those;** and
- (3) aim to improve livelihoods and/or increase resilience of vulnerable populations to climate change.



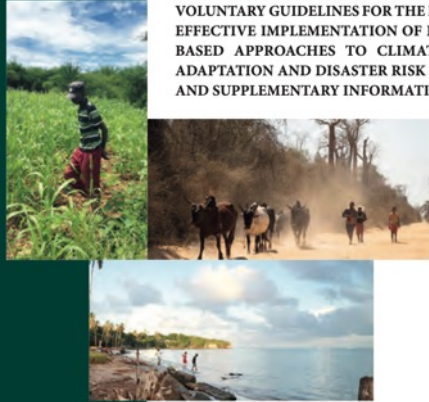
93



Governance for ecosystem-based adaptation

Alejandro Iza
Editor

VOLUNTARY GUIDELINES FOR THE DESIGN AND
EFFECTIVE IMPLEMENTATION OF ECOSYSTEM-
BASED APPROACHES TO CLIMATE CHANGE
ADAPTATION AND DISASTER RISK REDUCTION
AND SUPPLEMENTARY INFORMATION



IUCN Environmental Policy and Law Paper No. 88

Prepared for
United Nations, Secretariat
of the Convention on
Biological Diversity
World Bank Institute of the Earth Resilience



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Key concepts in climate change

ECOSYSTEM BASED ADAPTATION

Introduction

The terms 'ecosystem based adaptation' and 'ecosystem-based approaches to adaptation' (EbA) are receiving increased attention from donors and policy makers. Ecosystem-based adaptation is the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change. EbA is not adaptation for ecosystems, although it may have a conservation benefit.

EbA is a people-focused approach

Ecosystem based adaptation differs from business as usual conservation in that biodiversity conservation is recognised as a possible benefit of EbA, rather than the primary purpose. If the target of climate change adaptation is ecosystems or biodiversity the activity is not EbA unless it explicitly puts the needs of people first.

As an approach to adaptation, EbA may be more cost-effective and accessible by rural communities than measures based on



Making EbA an effective part of balanced adaptation strategies: Introducing the UNEP EbA briefing notes

BRIEFING
1
NOTE

Adaptation to climate change is about helping people and economies thrive in the face of a changing climate. As adaptation solutions can often be found in nature, this has given rise to the concept of ecosystem-based adaptation (EbA). EbA has grown in profile and importance since it was officially defined by the Convention on Biological Diversity (CBD) in 2009. The concept has been embraced by intergovernmental and non-governmental organisations across the globe, and EbA projects have proliferated: a 2015 mapping exercise of EbA projects implemented by just three institutions identified over 150 initiatives.¹ EbA also figures highly on the agendas of national and international policy makers² and donors.³

Building on this momentum to increase the use and positive impacts of EbA requires a consistent understanding of what EbA is, its potential benefits and limitations, and how it can fit into the wider context of climate change adaptation and mitigation, biodiversity conservation, human development and sectoral plans.

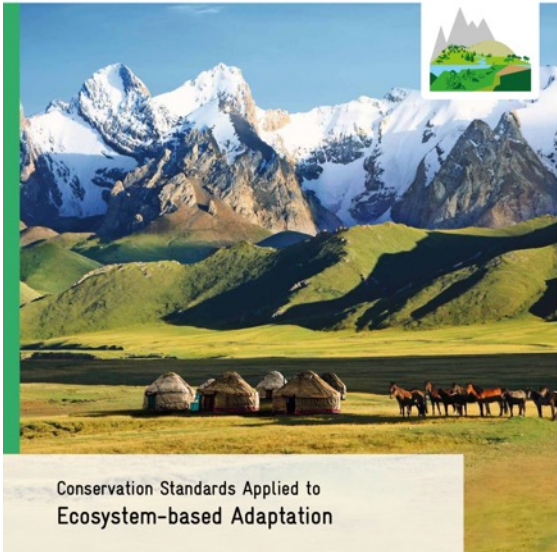
This briefing note serves as an introduction to the series, with a focus on creating conceptual clarity on EbA and its relation to other related approaches, as well as how EbA is key to achieving a much needed paradigm shift. The briefing note series aims to help its readers (especially the United Nations Environment Programme staff, project teams and consultants) to make best use of EbA as part of a balanced approach to addressing climate change adaptation. The briefing notes aim to foster a common understanding of key concepts, issues and considerations to help design, plan and implement successful EbA initiatives. They highlight issues that need to be addressed and potential trade-offs and tensions that need to be resolved to enable EbA to form part of – and contribute to – the wider landscape of climate change adaptation in the context of sustainable development.

Besides academic and grey literature on EbA criteria, standards, principles, best practice and effectiveness, the briefing notes are informed by a review of UNEP's Climate Change Adaptation Unit (CCAU) portfolio of Global Environment Facility (GEF) and Adaptation Fund EbA projects. This review assessed 46 EbA projects systematically using an analytical framework designed to gather information on their alignment with best practice for EbA design, planning, implementation and effectiveness criteria and to identify common practice and examples from the CCAU EbA portfolio.

The series comprises seven briefing notes, starting with this Introduction (1) and covering: (2) navigating the adaptation challenge; (3) EbA measures in different ecosystem contexts; (4) selecting complementary adaptation measures; (5) developing the economic case for EbA; (6) integrating EbA into national planning; and (7) identifying UNEP's role in supporting EbA work. All of the notes emphasise policy relevance and considerations for monitoring and evaluation (M&E) – both crucial for ensuring effectiveness, upscaling and long-term sustainability.



Many useful resources from the EBA community..



Conservation Standards Applied to Ecosystem-based Adaptation

FEBA

Making Ecosystem-based Adaptation Effective

A Framework for Defining Qualification Criteria and Quality Standards

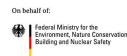


KEY MESSAGES

- Ecosystem-based Adaptation (EbA) is a nature-based solution that is gaining significant importance in the context of climate change (e.g. UNFCCC Paris Agreement, NDC, NAP) and biodiversity conservation policies (e.g. CBD Strategic Plan 2011-2020, Aichi targets).
- EbA links biodiversity and ecosystem conservation approaches with sustainable socio-economic development as part of an overall strategy for helping people adapt to shocks and risks associated with climate change.
- In the context of increasing political commitment and funding it is essential to sharpen the understanding among policy makers and practitioners on what qualifies as EbA, to avoid the incorrect re-packaging of "business-as-usual" conservation or development approaches.
- This paper provides a practical assessment framework for designing, implementing and monitoring EbA measures by proposing a set of 3 elements, 5 qualification criteria and 20 quality standards and example indicators.
- The Friends of EbA network (FEBA) encourages decision makers and practitioners to use this assessment framework to apply a common set of qualification criteria and standards in the context of implementing the UNFCCC Paris Agreement and NDC commitments as well as the national adaptation planning processes.



of the Federal Republic of Germany



of the Federal Republic of Germany

Principles and Guidelines for Integrating Ecosystem-based Approaches to Adaptation in Project and Policy Design:¹

Angela Andrade¹, Rocío Córdoba², Radhika Dave³, Pascal Giro⁴, Bernal Herrera-F.⁵, Robert Munroe⁶, Judy Ogletorpe⁶, Pia Paaby⁷, Emilia Pramova⁸, James Watson⁹, Walter Vargas¹⁰ and Irene Suarez¹¹

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

Core Principles for Ecosystem Based Approaches to Adaptation (EbA)

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

Core Guidelines for Ecosystem Based Approaches to Adaptation (EbA)

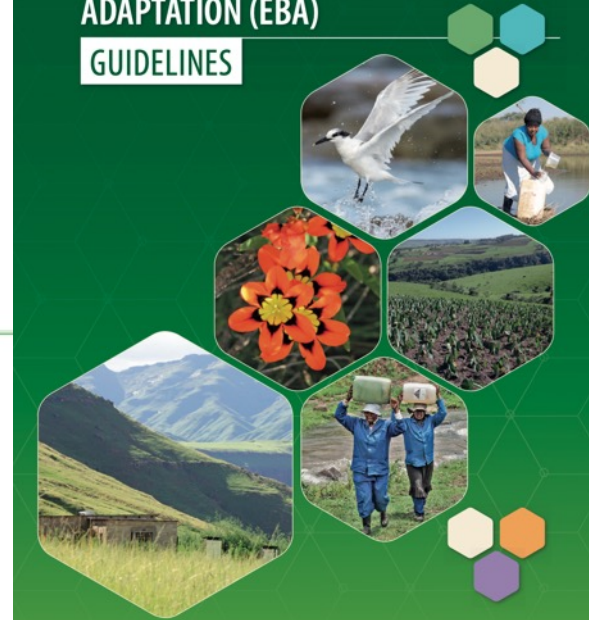
- Prepare project scope and structure.
- Gather data and expertise relevant to the scope of the project.
- Conduct integrated vulnerability assessments and impact projections with flexible criteria that address the linkages between human and environmental systems.
- Locate projects within national and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

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

- ¹ Citation: Andrade, A., Córdoba, R., Dave, R., Giro, P., Herrera-F., B., Munroe, R., Ogletorpe, J., Paaby, P., Pramova, E., Watson, E., Vargas, W., Suarez, I. 2012. Principles and Guidelines for Integrating Ecosystem-based Approaches to Adaptation in Project and Policy Design. IUCN-CEM, CATIE, Tarnsile, Costa Rica. 4p.
- ² Commission on Ecosystem Management (CEM) of the International Union for the Conservation of Nature (IUCN) and Conservación Internacional Colombia. larad@conservation.org
- ³ International Union for the Conservation of Nature (IUCN), Mesoamerica and Caribbean Initiative. rocio.cordoba@iucn.org
- ⁴ Conservation International (CI). rdave@conservation.org
- ⁵ CARE. pgirot@ciatic.ac.cr
- ⁶ Tropical Agricultural Research and Higher Education Center (CATIE), bernalh@ciatic.ac.cr
- ⁷ BirdLife International. robert.munroe@birdlife.org
- ⁸ World Wildlife Fund - United States (WWF-US), judy.ogletorpe@wwfus.org
- ⁹ Tropical Agricultural Research and Higher Education Center (CATIE), paaby@hotmail.com
- ¹⁰ Center for International Forestry Research (CIFOR), ELRAM@CIFOR.org
- ¹¹ Wildlife Conservation Society (WCS), justice@wcs.org
- ¹² IADB. WVVERGARA@contractual.iadb.org
- ¹³ The Nature Conservancy (TNC), isuzarez@tnc.org or irene.suarez@yaho.com

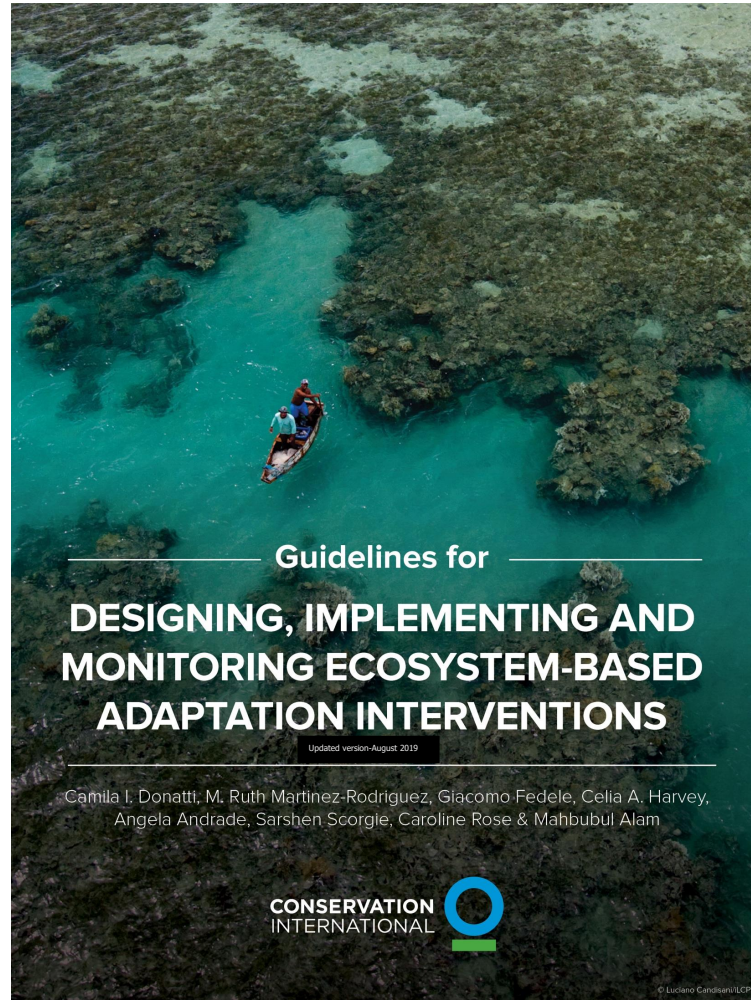


ECOSYSTEM-BASED ADAPTATION (EBA) GUIDELINES



Zooming in on specific aspects of EBA and providing great tools





Conservation International (CI) criteria that an internal project must meet to be considered EbA:

- (1) address one or more specific climate change threats or impacts;
- (2) include conservation, restoration and/or improved management of ecosystems and/or biodiversity, **or the implementation of agricultural practices that are based on those;** and
- (3) aim to improve livelihoods and/or increase resilience of vulnerable populations to climate change.

Ecosystems occur along a continuum from natural to transformed...

Self-regulating ecosystems



Seminatural ecosystems



Anthropogenic ecosystems



Ecosystem self-management

Human management



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THE RESTORATIVE CONTINUUM

Improving biodiversity, ecological integrity,
and ecosystem services



**REDUCING
SOCIETAL
IMPACTS**

**IMPROVING
ECOSYSTEM
MANAGEMENT**

**REPAIRING
ECOSYSTEM
FUNCTION**

**INITIATING
NATIVE
RECOVERY**

**PARTIALLY
RECOVERING
NATIVE
ECOSYSTEMS**

**FULLY
RECOVERING
NATIVE
ECOSYSTEMS**

REDUCED IMPACTS

REMEDICATION

REHABILITATION

ECOLOGICAL RESTORATION





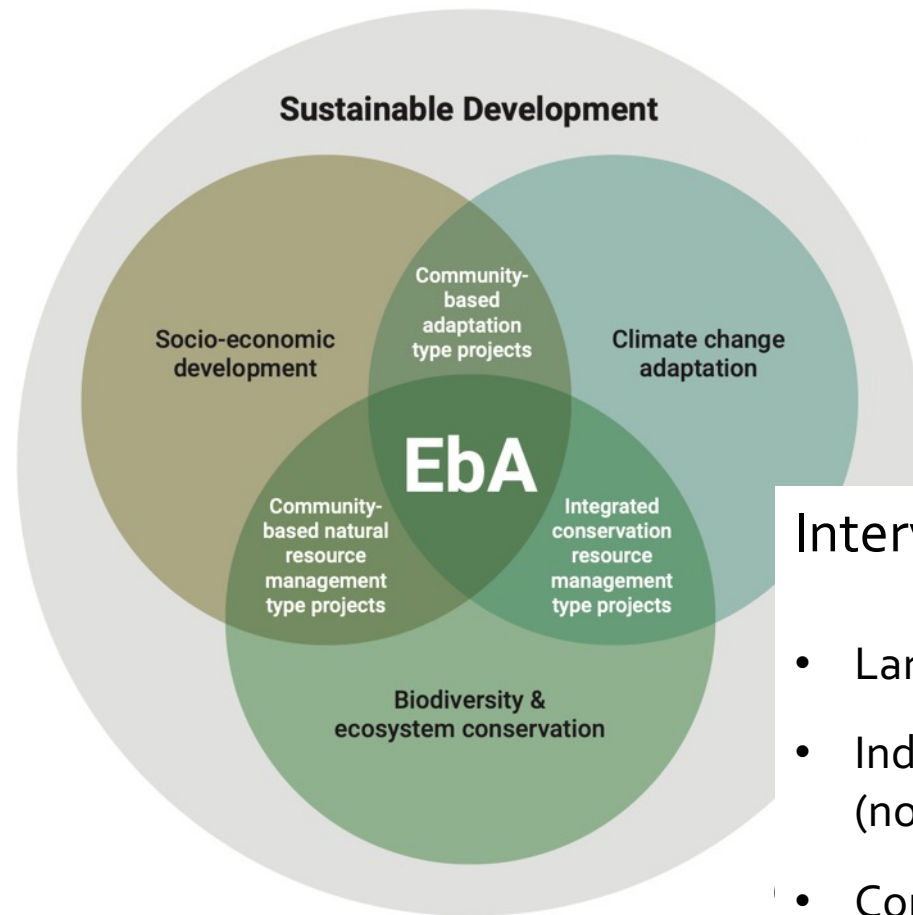
Many EBA projects work in managed but diverse agroecological landscapes

The screenshot shows the UNEP website with the following elements:

- Header:** UN environment programme logo, 50th anniversary (1972-2022), navigation menu (Who we are, Where we work, What we do, Publications & Data), and a colorful circular icon.
- Breadcrumbs:** Home / Explore Topics / Climate Action / What we do / Climate adaptation / Ecosystem-based Adaptation
- Main Image:** A scenic view of ancient stone pagodas in a lush green landscape with mountains in the background. The title 'Urban Ecosystem-based Adaptation in Asia Pacific' is overlaid in large white text. A small caption at the bottom right of the image reads: 'Building climate resilience of urban systems through Ecosystem-based Adaptation...'.
- Social Media:** A vertical green bar on the left contains icons for Facebook, Twitter, LinkedIn, and Email.
- Project Title:** Building climate resilience of urban systems through Ecosystem-based Adaptation (EbA) in the Asia-Pacific region.
- Key Figures:**
 - **Budget:** USD 6 million (Co-finance: USD 88 million)
 - **Executing Entities:** Thimphu Thromde (Bhutan), NCSD (Cambodia),
- Related Content:**
 - In Climate Action*
 - Why does climate action matter?
 - What we do
 - Climate Action Note
 - ▶ **Climate adaptation**
 - Climate Technology Centre and Network
 - Climate and clean air coalition



Some work in highly transformed settings but still apply an ecosystem approach...



Interventions that probably would not be EBA...

- Large monocrop forest plantations (not biodiversity)
- Individual interventions in family farms with no cumulative impact (not ecosystems)
- Conserving forests as carbon sinks without specific resilience benefits to geographically identified "downstream" stakeholders (not benefiting vulnerable communities)

Or, could projects conserving large intact natural forests be considered as promoting the resilience of whole societies, some of them thousands of kilometres away?



How do we calculate numbers of direct and indirect beneficiaries from EBA interventions?

Where EBA fits into the GCF results architecture..



The screenshot shows a web browser window displaying the GCF website. The address bar shows "greencimate.fund". The navigation menu includes "ABOUT GCF", "PROJECTS & PROGRAMMES", "NEWS & EVENTS", "PUBLICATIONS & DOCUMENTS", and "GCF BOARD". The main content area features a document preview on the left, a title "GCF/B.29/12: Integrated Results Management Framework" in green, and a "SHARE" section with social media icons for Facebook, Twitter, and LinkedIn. The main text describes the Integrated Results Management Framework (IRMF) and its purpose.

GCF/B.29/12: Integrated Results Management Framework

SHARE

f t in

This document presents GCF's integrated results management framework (IRMF), which is intended to merge the initial results management framework (decision B.07/04) and performance measurement frameworks (decision B.08/07) into one framework, the IRMF. The IRMF updates GCF's results architecture and related measurement and reporting approaches for the first replenishment period of the GCF.

The IRMF also seeks to further strengthen the ability of GCF to measure and report the impact of its investments by updating GCF's results architecture to operate in improved alignment with the GCF Investment Framework, and enabling more consistent measurement and reporting of results from the project/programme level. This proposed results

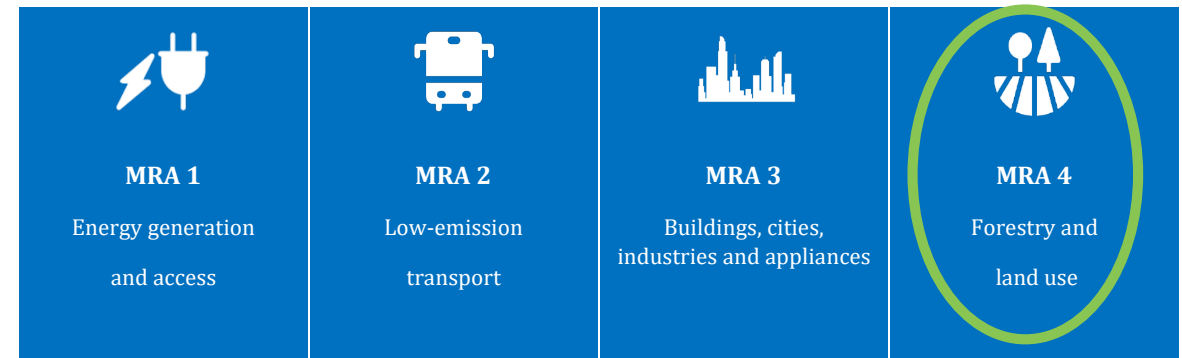
DOWNLOAD
ENGLISH | PDF | 1.07 MB

GCF Results Areas in new IRMF retain four areas of resilience..

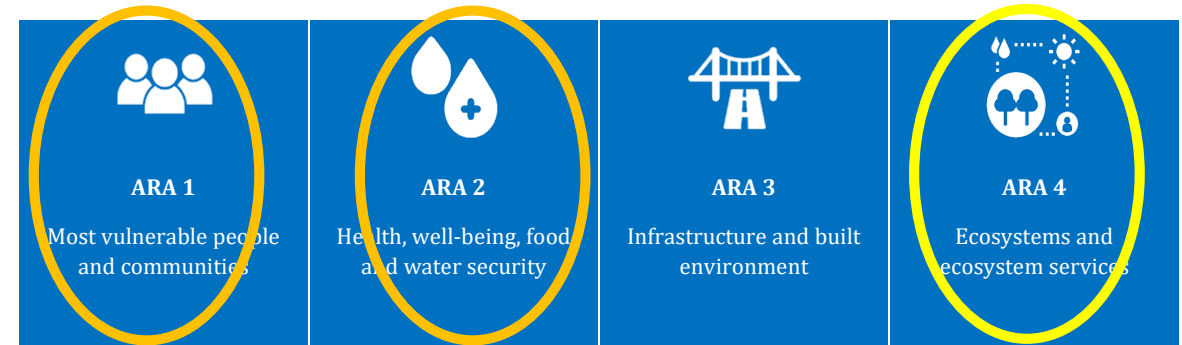
Adaptation – increased resilience of:

- (i) Most vulnerable people and communities;
- (ii) Health and well-being, and food and water security;
- (iii) Infrastructure and built environment; and
- (iv) Ecosystems and ecosystem services.

Mitigation results areas (MRA)



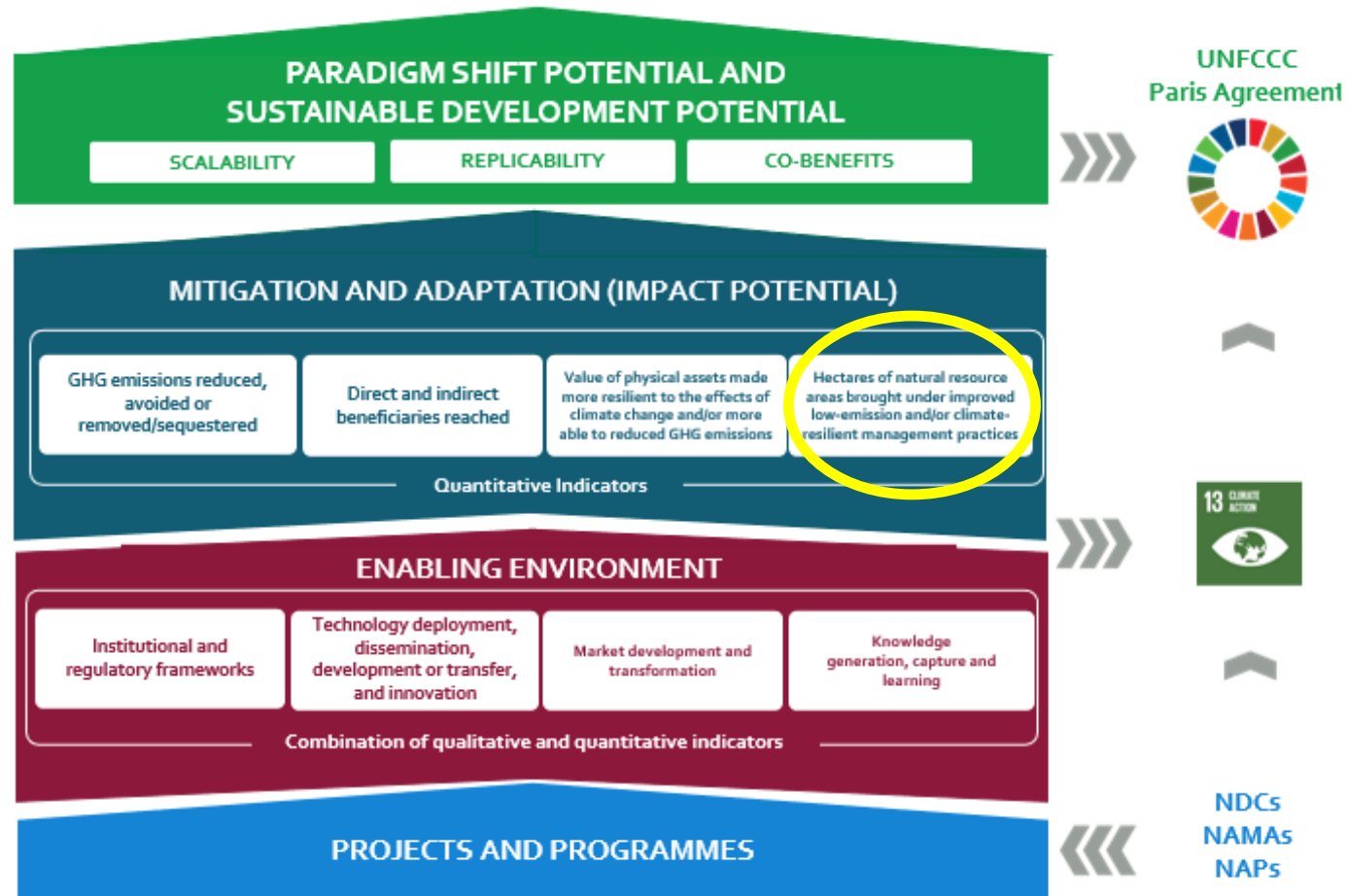
Adaptation results areas (ARA)



New results framework has 8 Core Indicators including indicators for infrastructure and ecosystems that crosses a



Figure 2: integrated results management framework results architecture



Core Indicator 4:

“Hectares of natural resource areas brought under improved low emissions and or climate-resilient management practices”

Under Core Indicator 4 there are supplementary indicators...



Core 4: Hectares of natural resource areas brought under improved low-emission and/or climate-resilient management practices	MRA 4: Forestry and land use ARA 1: Most vulnerable people and communities ARA 2: Health, well-being, food and water security
4.1 Hectares of terrestrial forest, terrestrial non-forest, freshwater and coastal-marine areas brought under restoration and/or improved ecosystems (unit: hectares)	MRA 4: Forestry and land use ARA 4: Ecosystems and ecosystem services
4.2 Number of livestock brought under sustainable management practices (unit: number of livestock)	ARA 1: Most vulnerable people and communities ARA 2: Health, well-being, water and food security ARA 4: Ecosystems and ecosystem services
4.3 Tonnes of fish stock brought under sustainable management practices (unit: tonnes)	ARA 1: Most vulnerable people and communities ARA 2: Health, well-being, water and food security ARA 4: Ecosystems and ecosystem services

These can now be brought into project results frameworks..

<p><u>ARA4 Ecosystems and ecosystem services</u></p>	<p><u>Core 4: Hectares of natural resources brought under improved low-emission and/or climate-resilient management practice</u></p>	<p>Progress / completion reports</p> <p>Extension officers monitoring reports</p>	<p>0 hectares</p> <p>No ecosystems in targeted areas are currently protected or strengthened to respond to climate variability and change</p>	<p>5,800 hectares</p>	<p>11,600 hectares</p>	<p>No perverse incentives (policies, prices, monoculture industries that affect natural capital) are introduced in the project area</p> <p>The project's area is not seriously disrupted by a major extreme climate event, affecting restored areas, before resilience measures have been fully adopted</p>
<p><u>ARA4 Ecosystems and ecosystem services</u></p>	<p><u>Supplementary 4.1: Hectares of terrestrial forest, terrestrial non-forest, freshwater and coastal marine areas brought under resoration and/or improved ecosystems</u></p>	<p>Progress / completion reports</p> <p>Extension officers monitoring reports</p>	<p>0 hectares</p> <p>No ecosystems in targeted areas are currently protected or strengthened to respond to</p>	<p>5,800 hectares</p>	<p>11,600 hectares</p>	<p>No perverse incentives (policies, prices, monoculture industries that affect natural capital) are introduced in the project area</p> <p>The project's area is not seriously disrupted by a</p>

BUT... crucial to define carefully what is involved in bringing a hectare of natural habitat under "improved climate-resilient management", how this will be measured, monitored and reported on

Cross-cutting projects typically include ecosystem resilience...

FP173 **CROSS-CUTTING**

MULTIPLE COUNTRIES

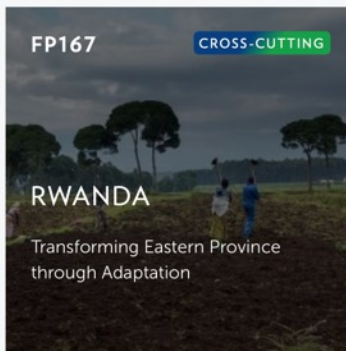
The Amazon Bioeconomy Fund: Unlocking private capital by valuing bioeconomy products and service...



FP167 **CROSS-CUTTING**

RWANDA

Transforming Eastern Province through Adaptation



SAP023 **CROSS-CUTTING**

MEXICO

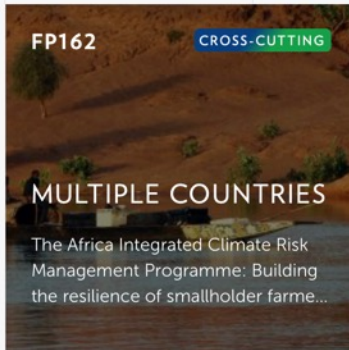
River Restoration for Climate Change Adaptation (RIOS)



FP162 **CROSS-CUTTING**

MULTIPLE COUNTRIES

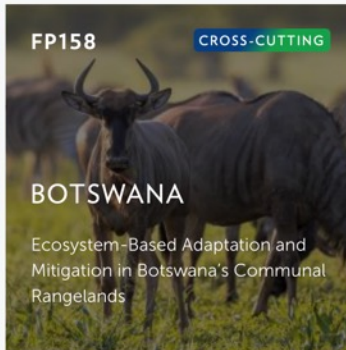
The Africa Integrated Climate Risk Management Programme: Building the resilience of smallholder farmer...



FP158 **CROSS-CUTTING**

BOTSWANA

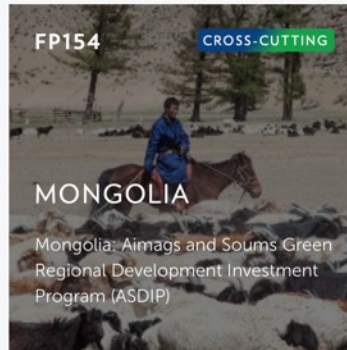
Ecosystem-Based Adaptation and Mitigation in Botswana's Communal Rangelands



FP154 **CROSS-CUTTING**

MONGOLIA

Mongolia: Aimags and Soums Green Regional Development Investment Program (ASDIP)



SAP019 **CROSS-CUTTING**

SUDAN

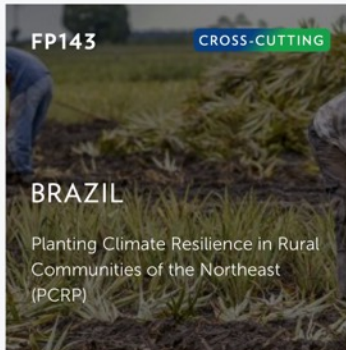
Gums for Adaptation and Mitigation in Sudan (GAMS): Enhancing adaptive capacity of local commu...



FP143 **CROSS-CUTTING**

BRAZIL

Planting Climate Resilience in Rural Communities of the Northeast (PCRP)



SAP014 **CROSS-CUTTING**

ARMENIA

Forest resilience of Armenia, enhancing adaptation and rural green growth via mitigation



And growing number of Adaptation projects with a strong focus on ecosystems, either in an EBA approach, or a hybrid approach...



<p>FP170</p> <p>ADAPTATION</p> <p>THAILAND</p> <p>Enhancing climate resilience in Thailand through effective water management and sustainable agric...</p>	<p>FP169</p> <p>ADAPTATION</p> <p>MICRONESIA (FEDERATED STATES OF)</p> <p>Climate change adaptation solutions for Local Authorities in the Federated States of Micronesia</p>	<p>FP165</p> <p>ADAPTATION</p> <p>MALDIVES</p> <p>Building Climate Resilient Safer Islands in the Maldives</p>
<p>FP157</p> <p>ADAPTATION</p> <p>CUBA</p> <p>Coastal Resilience to Climate Change in Cuba through Ecosystem Based Adaptation - "MI COSTA"</p>	<p>FP145</p> <p>ADAPTATION</p> <p>GUATEMALA</p> <p>RELIVE - RESilient LIVELihoods of vulnerable smallholder farmers in the Mayan landscapes and the Dry...</p>	<p>FP141</p> <p>ADAPTATION</p> <p>MONGOLIA</p> <p>Improving Adaptive Capacity and Risk Management of Rural communities in Mongolia</p>



What potential is there for large-scale GCF programmes using an EBA or a grey-green approach?



GCF is starting to see more large-scale adaptation programmes, including in PSF, some with EBA focus...



FP181 **ADAPTATION**

MULTIPLE COUNTRIES

CRAFT - Catalytic Capital for First Private Investment Fund for Adaptation Technologies in Develo...

A close-up photograph of a water tap with a single drop of water falling from it, set against a blurred background of colorful flowers.

FP180 **ADAPTATION**

MULTIPLE COUNTRIES

Global Fund for Coral Reefs Investment Window

A photograph of a sea turtle swimming in clear blue water over a coral reef.

FP174 **ADAPTATION**

MULTIPLE COUNTRIES

Ecosystem-based Adaptation to increase climate resilience in the Central American Dry Corridor and...

A photograph of a person wearing a hat and a light-colored shirt, standing in a lush green field with trees in the background.

Many challenges, especially:
How we show impacts linked to interventions, if sub-projects or company investments and markets are not known in advance?

Vast areas of South Asia can benefit from harnessing floodwaters to adapt to drought....



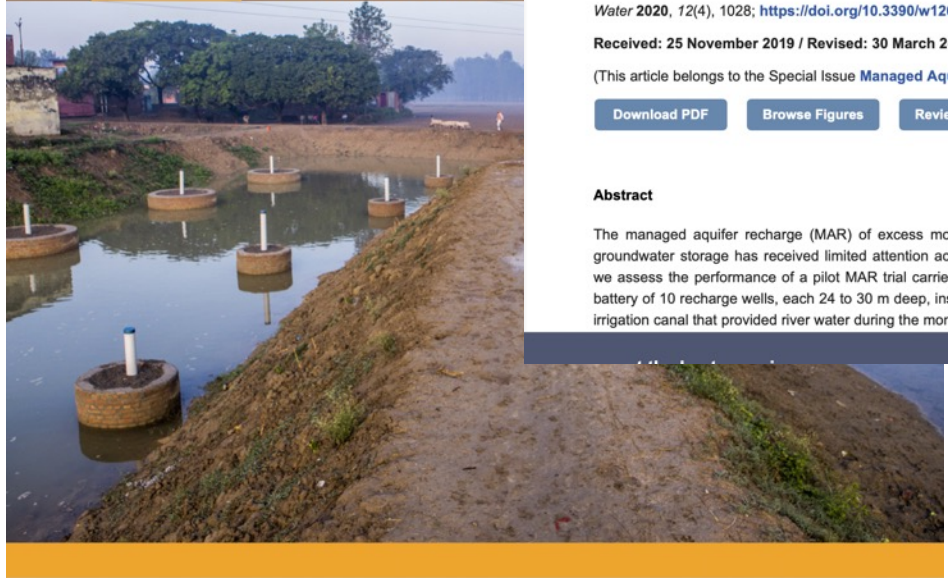
GRIPP CASE PROFILE SERIES

04

Utilizing Floodwaters for Recharging Dependent Sustaining Irrigation: Lessons from Multi-site River Basin, India

Paul Pavelic, Alok Sikka, Mohammad Lal Muthuwatta, Nishadi Eriyagama, Vinay Kumar Mishra, Sunil Kumar Jha, V. Ratna Reddy, Sanjit Kumar Rout, Brindha Karthikeyan, Pennan Chinnappa

ISSN 2520-2405



Open Access Feature Paper Article

Managed Aquifer Recharge of Monsoon Runoff Us Performance Assessment of a Pilot Trial in the Rar

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Abstract

The managed aquifer recharge (MAR) of excess monsoonal runoff to mitigate groundwater storage has received limited attention across the Indo-Gangetic Plain. We assess the performance of a pilot MAR trial carried out in the Ramganga basin battery of 10 recharge wells, each 24 to 30 m deep, installed in a formerly unused irrigation canal that provided river water during the monsoon season. Over three ye

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Research Report

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Controlling Floods and Droughts through Underground Storage: From Concept to Pilot Implementation in the Ganges River Basin ●●●

Paul Pavelic, Brindha Karthikeyan, Giriraj Amarnath, Nishadi Eriyagama, Lal Muthuwatta, Vladimir Smakhtin, Prasun K. Gangopadhyay, Ravinder P. S. Malik, Atmaram Mishra, Bharat R. Sharma, Munir A. Hanjra, Ratna V. Reddy, Vinay Kumar Mishra, Chhedi Lal Verma and Laxmi Kant



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Research Report

Underground Transfer of Floods for Irrigation (UTFI): Exploring Potential at the Global Scale

Mohammad Faiz Alam and Paul Pavelic

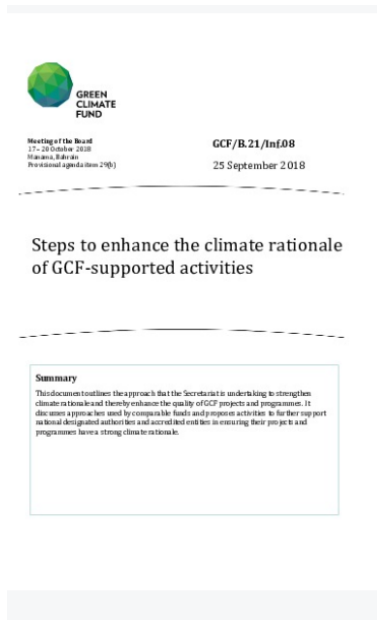


- Groundwater issues addressed**
- ✓ Groundwater over-abstraction
 - ✓ Groundwater quality/human health
 - Salinity issues/intrusion
 - Land subsidence
 - Ecosystem degradation
 - ✓ Food security/livelihoods

- Type of interventions**
- Legal initiative/regulation
 - Policy
 - ✓ Technology application
 - Local initiative

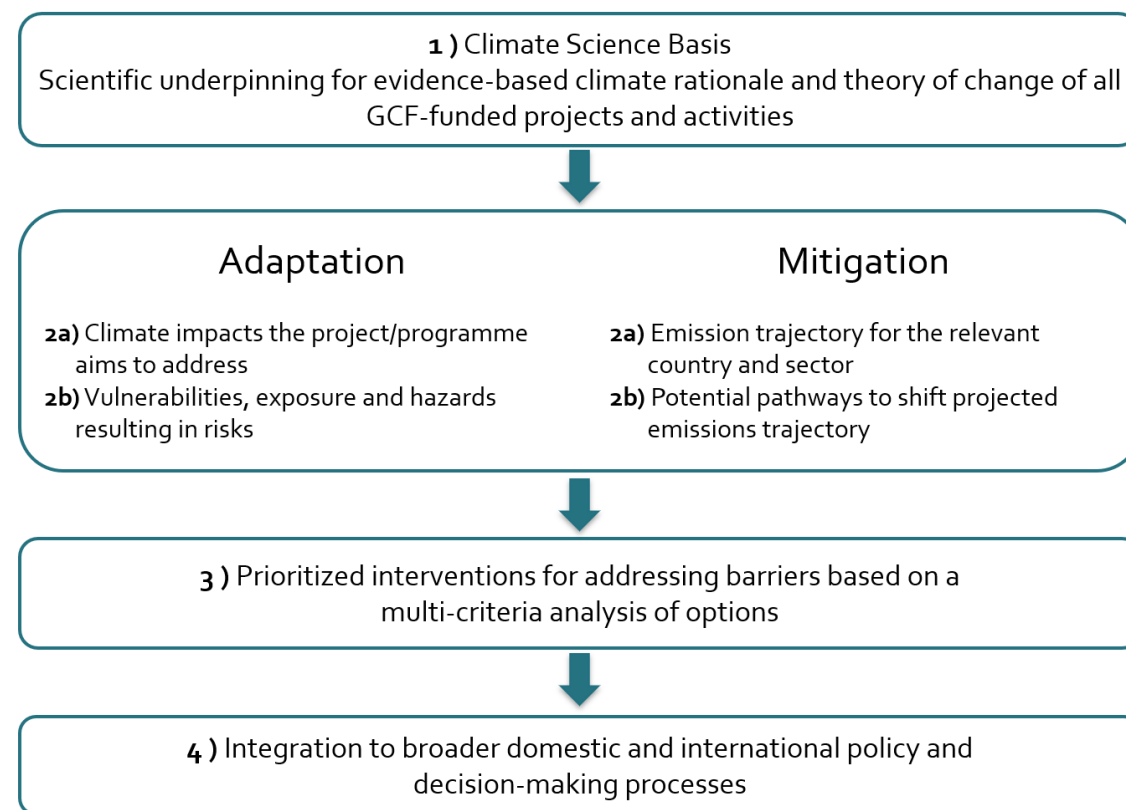
iTAP applies the GCF Investment Criteria in reviewing EBA projects



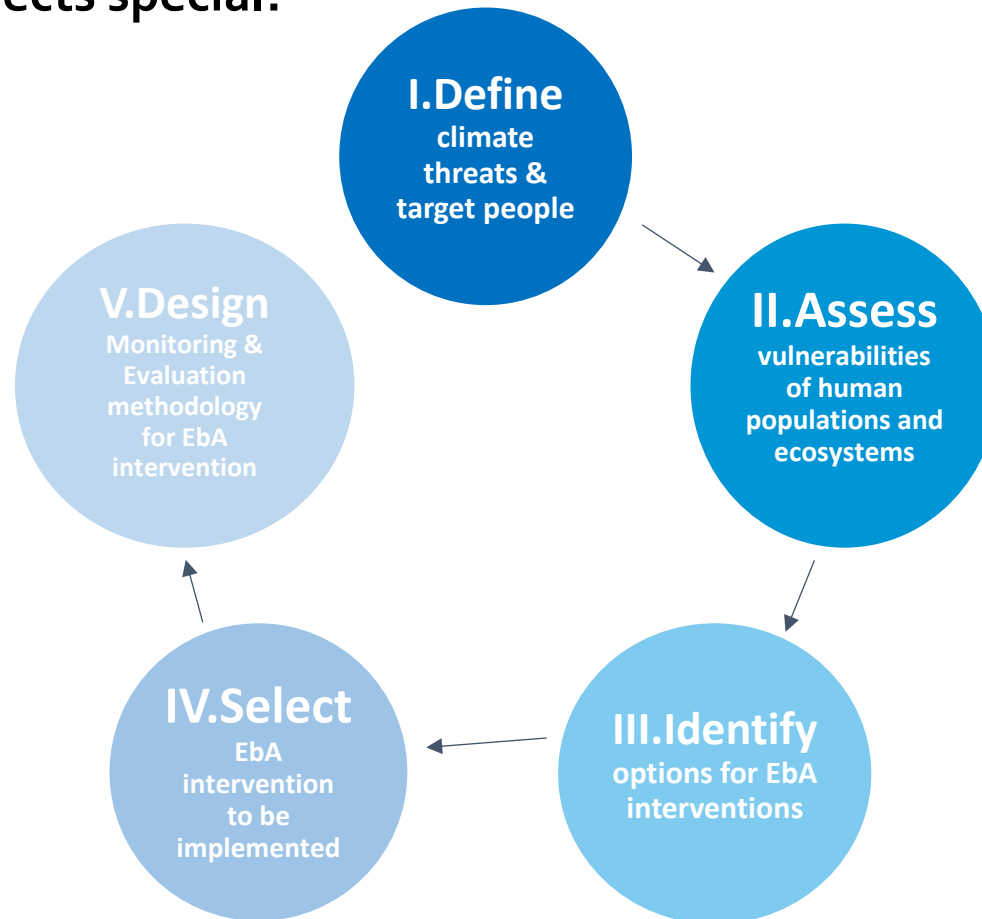


GCF/B.21/Inf.08: Steps to enhance the climate rationale of GCF-supported activities

Figure 1: Elements that constitute sufficient climate rationale



What makes EBA projects special?



Good practices in EBA

Good practice 1:

Showing clearly how use of future projection models is validated by trends in observed meteorological data

- FP16g SPC FS of Micronesia



B

- Although the frequency of droughts is projected to decrease in FSM, drier conditions and droughts are linked to ENSO events, with an increased intensity of events occurring under El Niño conditions. The driest year on record for Micronesia was 1998 and was a direct consequence of an El Niño phenomenon the same year. Figure 2 below illustrates the variability of precipitation patterns and the intensity of drought periods in Pohnpei and Yap¹³.

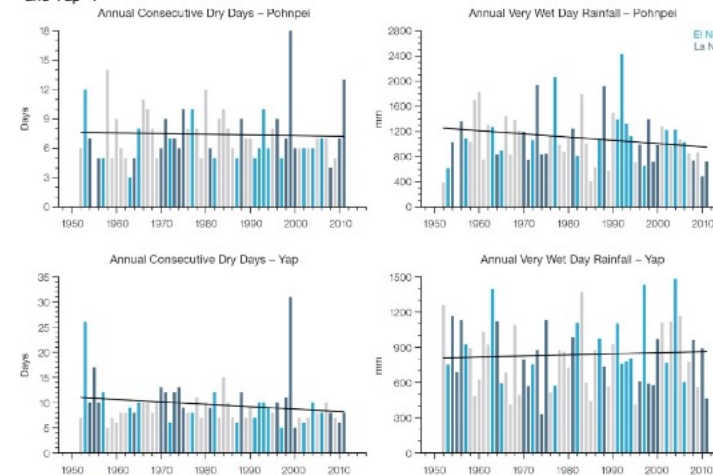


Figure 1. Observed Time Series of Annual Consecutive Dry Days and Annual Very Wet Day Rainfall in Pohnpei and Yap

9. **Sea level rise:** Between 1993 and 2010, FSM has experienced a disproportionate amount of sea level rise, ranging from 8 to 12 mm per year, compared to other areas in the Western Pacific (see Figure 2 below)¹⁴. Since 2000, FSM has been occasionally experiencing a periodic rise of sea level in the low-lying coastal areas of both high and low islands. Additionally, **ENSO variations** amplify¹⁵ the mean sea level across FSM which exacerbates the impacts of tidal surges, rainfall, and extreme events like typhoons. Climate variability due to seasonal changes and large-scale climate features such as ENSO can lead to overall changes in trade wind patterns and temperature, which in turn may affect sea level at timescales of months to years. For instance, ENSO can cause sea-level changes up to 30 cm in the western tropical Pacific, depending on time of year and location. Naturally occurring sea-level changes due to tides, weather and climate variability can be quite large at any one time compared to sea-level rise through climate change alone. **A small amount of overall, long-term sea-level rise due to climate change will compound the effects of natural variability and cause an increase in extreme sea levels to happen more often¹⁶.**

10. Overall, the effect that climate change will have on ENSO incidence and severity remains uncertain, but it is clear that ENSO events result in a direct increase of large-scale sea level anomalies (SLAs) in the Western Tropical

Good practice 2:

Showing in detail the links between impacts and interventions

- FP167 IUCN Rwanda

Output 1.3 Scale-up climate resilient silvopastoral packages to restore degraded rangelands

The table below summarises Output 1.3, which will implement and scale-up climate resilient silvopastoral packages to restore rangelands.

Key aspects	Description
Overview	The objective of the proposed intervention is to strengthen the resilience of pasture lands prone to drought by promoting and upscaling silvopastoral systems and sustainable pasture management. This will result in improved livestock production, which support livelihoods and enhance their resilience during prolonged drought periods.
Adaptation benefits	<ol style="list-style-type: none"> 1. Improve soil properties due to greater uptake of nutrients from deeper soil layers, enhanced availability of nutrients and soil organic carbon from leaf-litter and increased nitrogen input by N₂-fixing trees.¹ 2. Enhance the resilience of the soil to degradation, nutrient loss, and climate change, while enhancing water holding and infiltration capacity of the soil and reduce evapotranspiration which contributes to the regulation of the hydrological cycle by reducing runoff intensity.^{2,3} 3. Overall, these results improve the animal welfare⁴, livelihood of livestock communities and Rwanda economic growth

¹ Nair VD, Haile SG, Michel GA, Nair R, 2007. Environmental quality improvement of agricultural lands through silvopasture in southeastern United States. *Scientia Agricola* 64:513-519.

² Ibrahim M, Guerra L, Casasola F, Neely N, 2010. Importance of silvopastoral systems for mitigation of climate change and harnessing of environmental benefits. In: Abberton M, Conant R, Batello C (Eds) *Grassland carbon sequestration: management, policy and economics. Proceedings of the workshop on the role of grassland carbon sequestration in the mitigation of climate change. Integrated Crop Management, Vol. 11.* FAO, Rome, Italy. <http://www.fao.org/docrep/013/i1880e/i1880e09.pdf>.

³ Jose S., 2009. Agroforestry for ecosystem services and environmental benefits: an overview. *Agroforest Syst* 76 (1):1-10.

⁴ Broom DM, FM Galindo, Murgueta E., 2013. Sustainable, efficient livestock production with high biodiversity and good welfare for animals. *Proceedings of the Royal Society Biological Sciences* 280:2013-2025

Good practice 3:

Demonstrating application of lessons, science and traditional knowledge

- FP157 UNDP Cuba

Activity	Sub-activities
Activity 1.1. Assess and restore coastal wetland functions by reestablishing hydrological processes	1.1.1 Validate local conditions in intervention sites and verify ecosystem capacities for coastal resilience to CC impacts through in situ and spatial temporal analyses 1.1.2 Restore the ecological flow of freshwater towards targeted mangrove ecosystems through cleaning of existing water channels and building small scale low impact infrastructure to facilitate the laminar flow of water to coastal wetlands during rainy seasons 1.1.3 Invasive species management in target sites to reduce pressures on the coastal wetland and enhance ecosystem coping capacity and resilience
Activity 1.2 Mangrove and swamp forest rehabilitation through natural and assisted regeneration for enhanced coastal protection	1.2.1 Acquire forestry and evaluation equipment for restoration in target sites 1.2.2 Implementation of natural regeneration management measures in target sites 1.2.3 Red mangrove and native species planting in target sites for forest rehabilitation along the shoreline boundary of coastal wetlands 1.2.4 Implementing fire control management and illegal logging and extraction surveillance measures as well as the purchasing of insurance for mangrove forests within restoration sites to ensure their long term sustainability and protection

1. Planting methods that have demonstrated the survival rate of the mangrove at above 85% in areas where coastline erosion has been significant is a key lesson learned from this project that will be put in place in the targeted vulnerable areas.

2. Lessons include the incorporation of rehabilitations measures that initiate through the transformations in the conditions of the substratum through water management and correct water circulation to favor microbian activity in the organic decomposition process followed by enrichment actions through red mangrove propagules. In highly deforested areas "island" restoration methods were used based on Central and South American experiences. This method allows the focalization of preparation work in site and planting in small spaces within the deforested areas with the objective of optimizing the substratum process and the interspecific development amongst the propagule, this method allows a simulation of the natural regeneration process within the degraded area.

3. In terms of ensuring the resilience of the restoration methods, particular attention was made to the restoration intervention sites. For example, in mangrove plantings near the sea bordered (with submerged roots), the project innovated through the estanquillo process that allowed the mangrove planting to withstand increased wave activity until achieving the stability required to manage this pressure (4 years estimated). The implementation of this method resulted in a high survival rate of the mangrove at above 90% (see picture below).



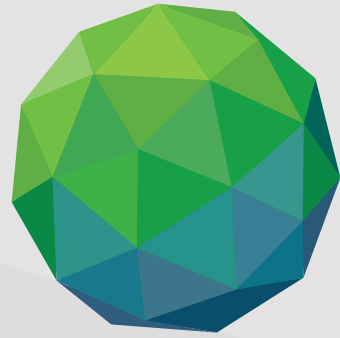
In terms of managing drought like conditions within an area, registries kept by the Forest Enterprise demonstrate the success of restoring the hydrology. In 2015, the first experiences of niches and plantations were applied in one of the target areas that had been facing an extreme drought event with consequences on mortality and lack of establishment of the red mangrove propagules. Hence the project worked to open channels and ditches to refresh the planting areas with sea water (of lower salinity than the marsh) and lower the salinity levels while refreshing the plantings and the establishment of new propagules. This technique was further enhanced with the speckling of forest nursery species that favored the achievement and survival of areas planted in 2015 that were affected by the drought conditions. This work was later complemented by the manual clearing of targeted ditches 2 years later to increase the freshwater flow.



Many other issues to explore

- Challenges of scale and beneficiaries
- Issue of attribution
- Issue of maladaptation
- Most promising innovative financing mechanisms for EBA
- How we scale up across vast areas in the next decade?

Q & A



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