Nature and Ecosystem Based Adaptation

Benefits of the ecosystem-based adaptation

Dr. Nguyen Tai Tue

Lecture contents

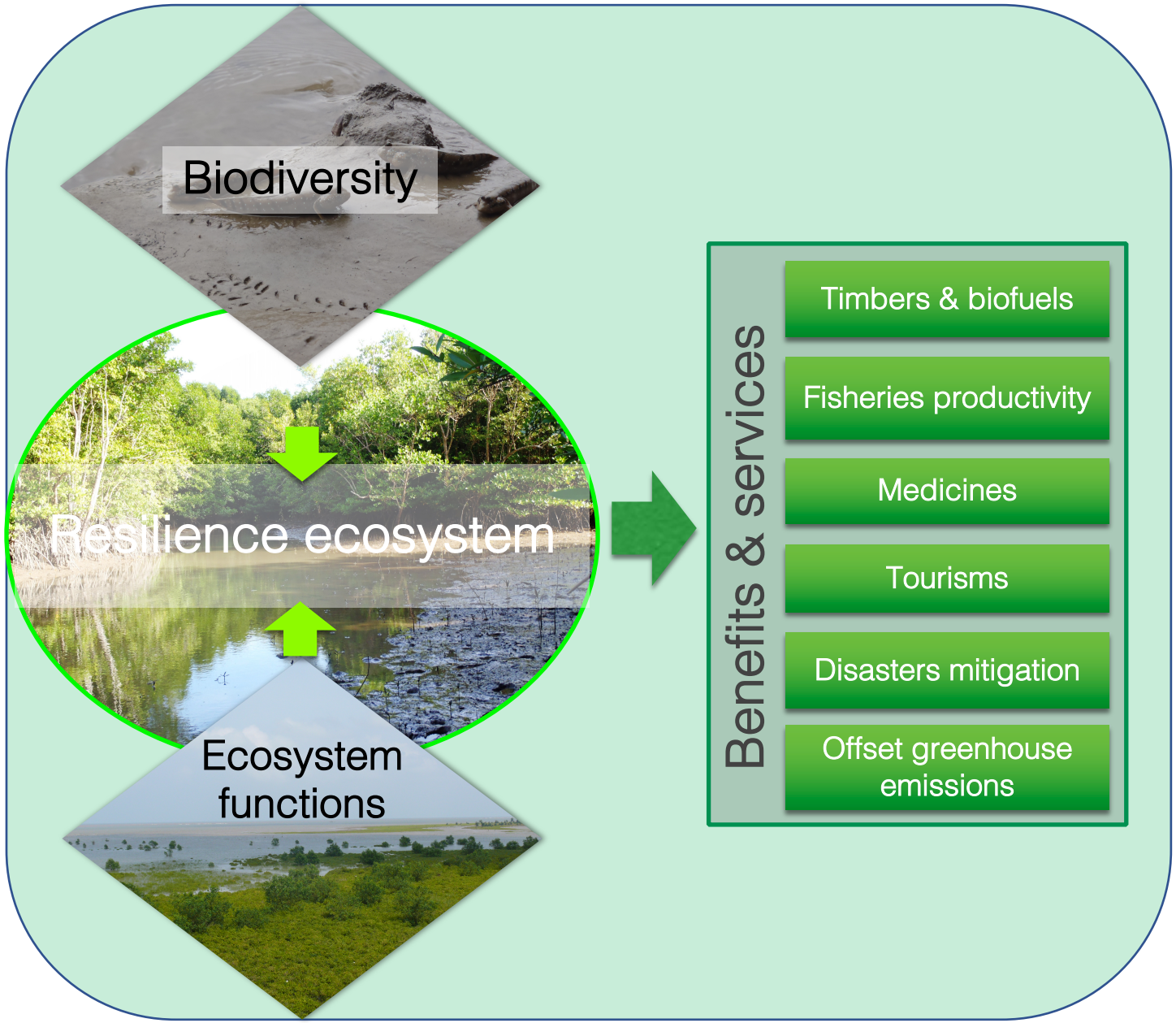
- Module 1: What is ecosystem-based adaptation?
- Module 2: EbA framework
- Module 3: Discussing the opportunities and challenges of EbA
- Module 4: Read the paper and discuss on the example of EbA

Module 1: What is ecosystem-based adaptation?

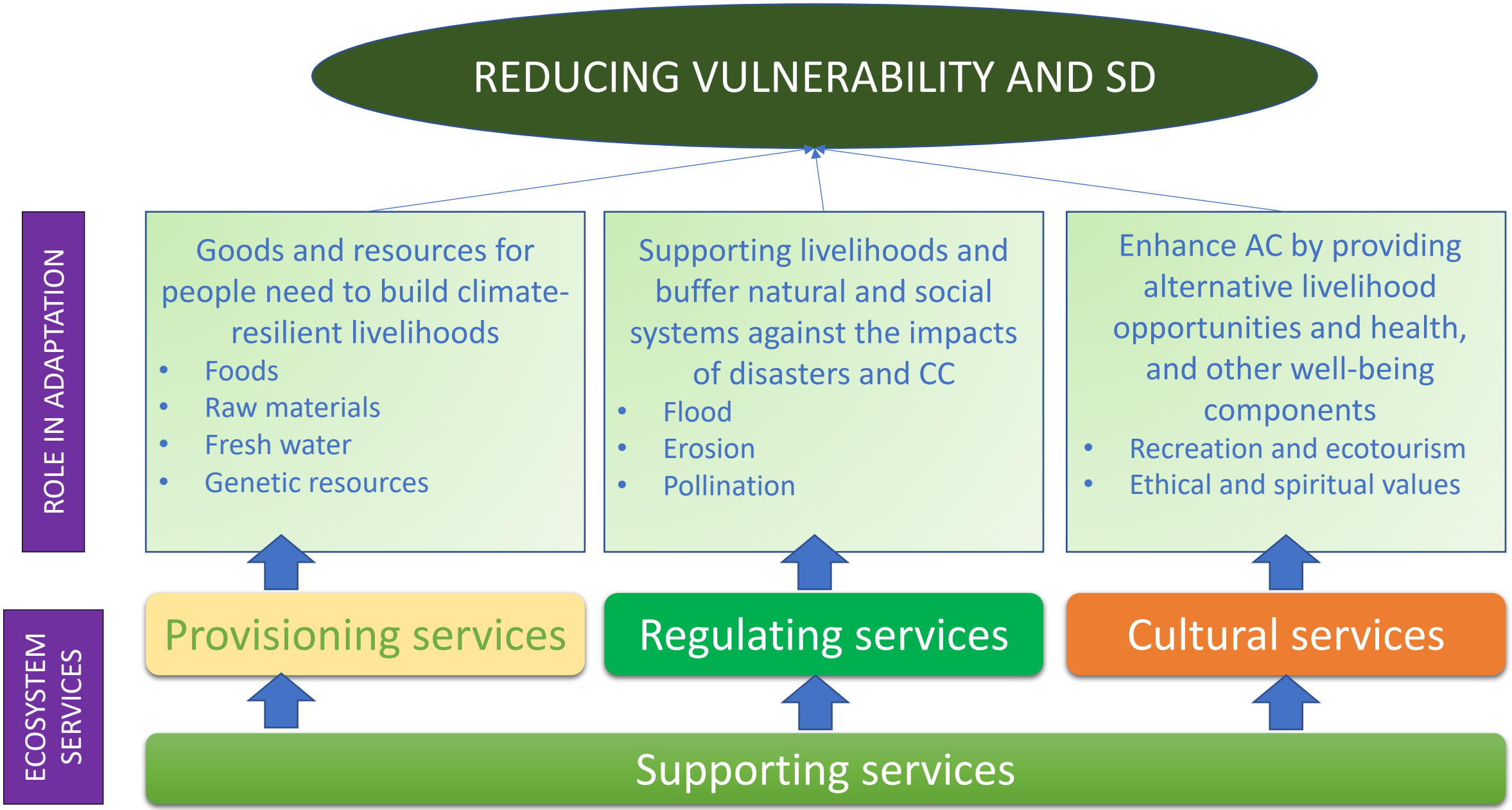
Ecosystem-based adaptation

- Societal adaptation to climate change requires measures that simultaneously reduce poverty, protect or restore biodiversity and ecosystem services, and remove atmospheric greenhouse gases
- “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)
- Ecosystem-based Adaptation (EbA) integrates the use of biodiversity and ecosystem services into an overall strategy to help people adapt to the adverse impacts of climate change (IUCN)
- “Local and landscape scale strategies that enable both people and nature to adapt in the face of climate change” (IUCN 2009)
- “Adaptation policies and measures that take into account the role of ecosystem services in reducing the vulnerability of society to climate change” (Vignola et al. 2009)

Ecosystem-based framework



Ecosystem-based framework



EbA is a process that involves

- Restoration: Strengthening and assisting the recovery of ecosystems that have been degraded, damaged or destroyed.
- Conservation: Strategies to conserve the function, structure and species composition of ecosystems, recognising that all components are inter- connected.
- Sustainable management: Managing resources in ways that promote the long-term sustainability of ecosystems and the ongoing delivery of essential ecosystem services to society.

EbA is a process that involves

Restoration

Strengthening and assisting the recovery of ecosystems that have been degraded, damaged or destroyed.

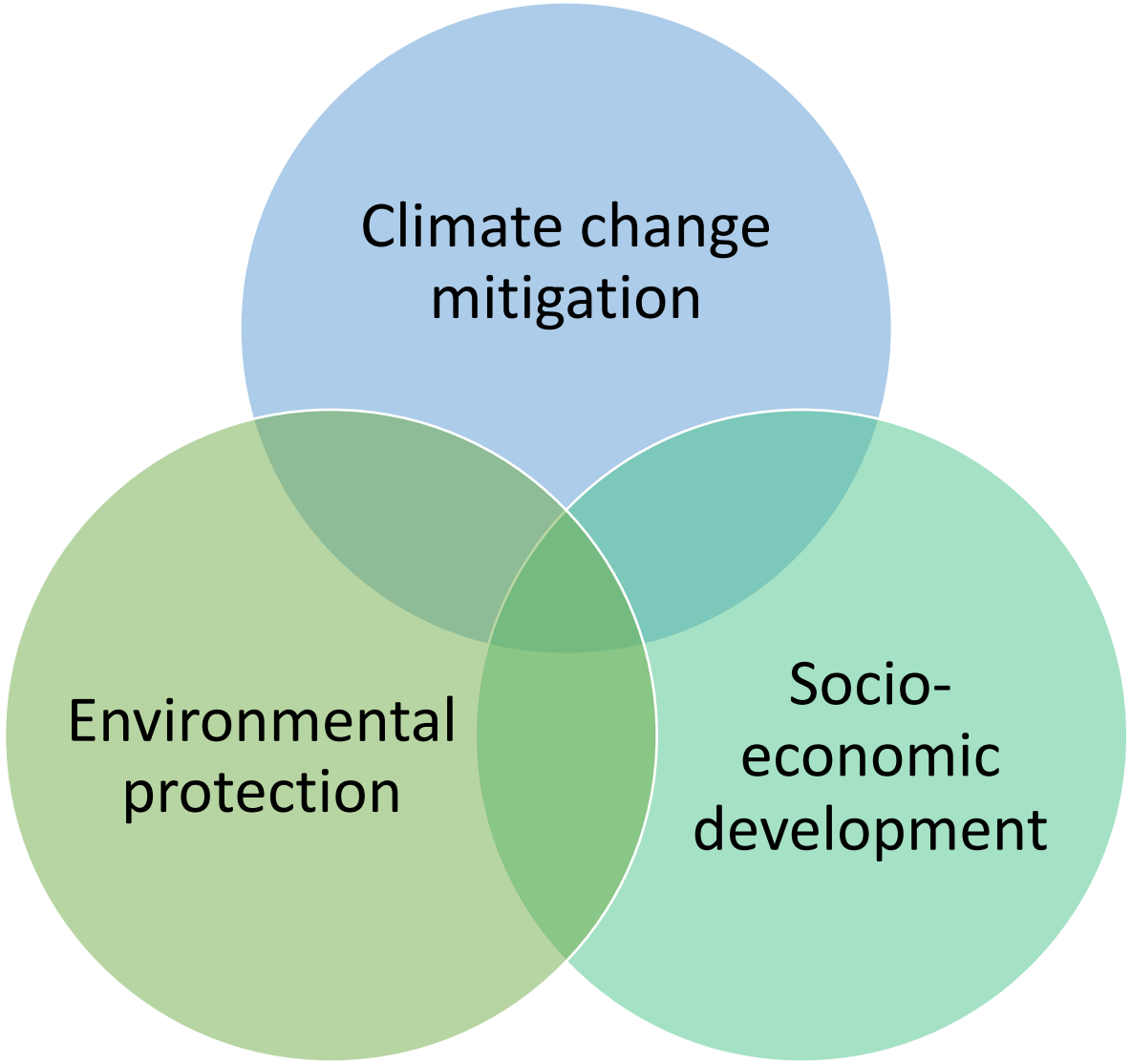
Conservation:

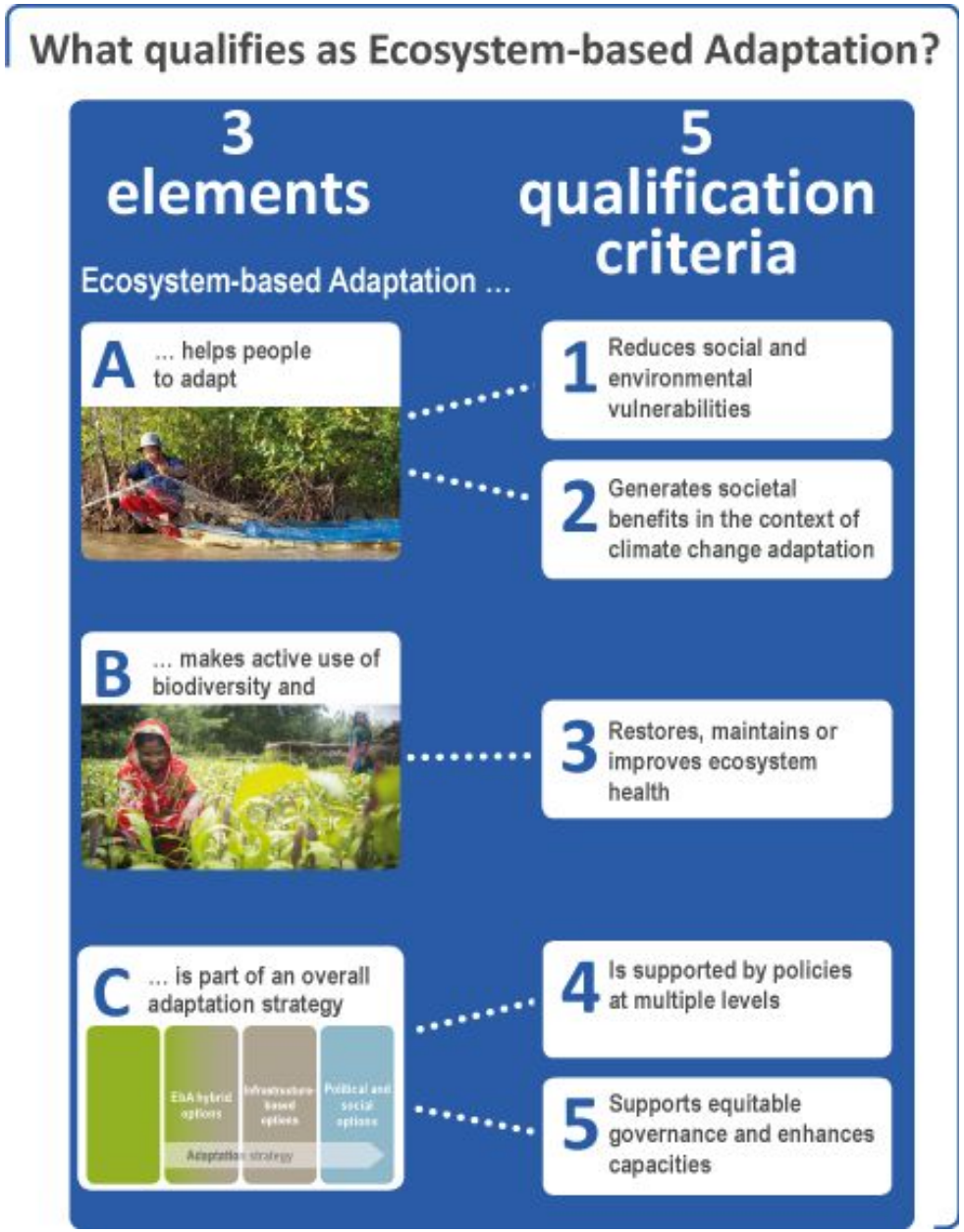
Strategies to conserve the function, structure and species composition of ecosystems, recognizing that all components are interconnected.

Sustainable management

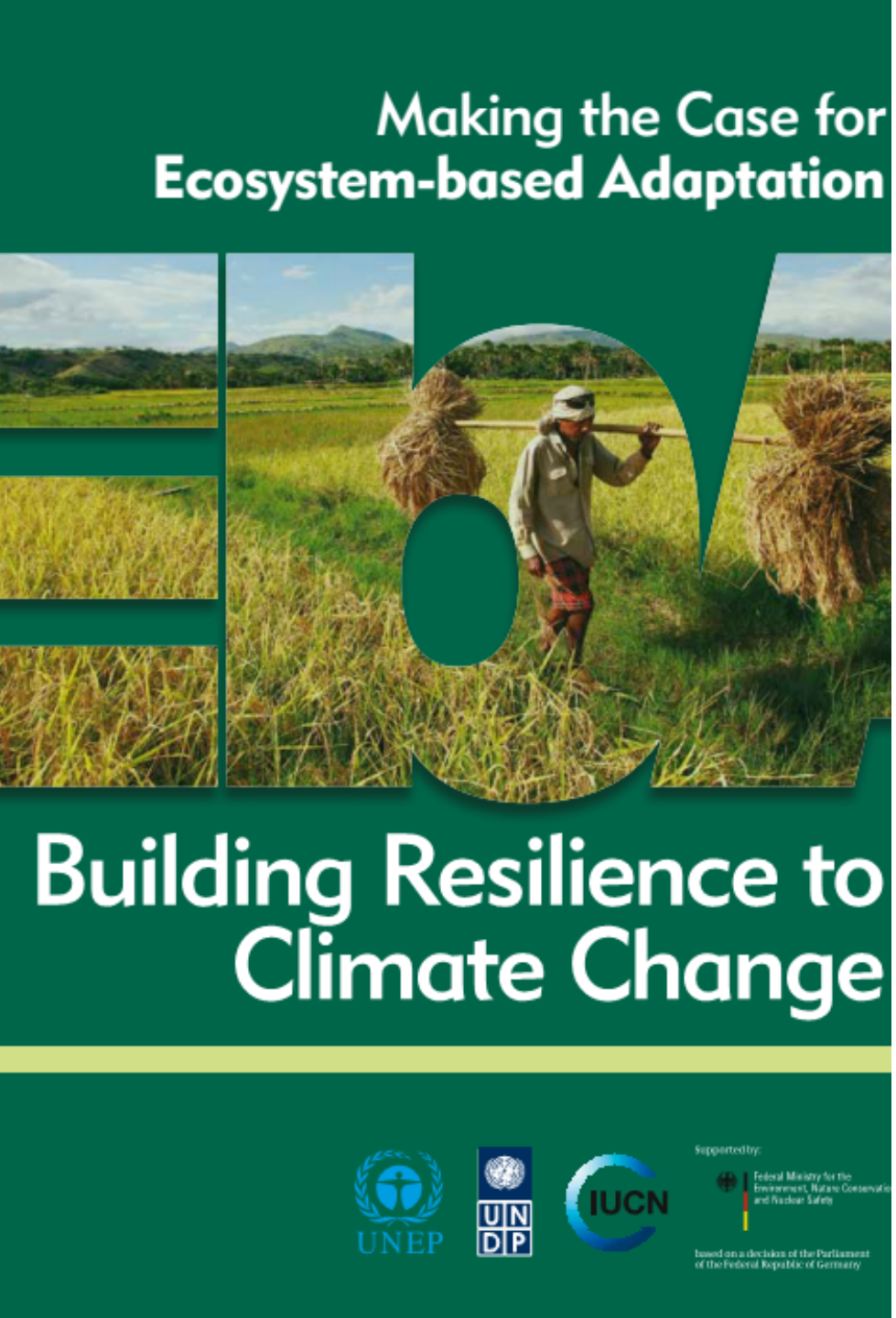
Managing resources in ways that promote the long-term sustainability of ecosystems and the ongoing delivery of essential ecosystem services to society.

EbA co-benefits





https://www.adaptationcommunity.net



EbA benefits

- Provides numerous **opportunities** for natural solutions to manage the impacts of climate change
- Provides social, economic, environmental **co-benefits**
- Requires **comparatively small investment** relative to long term benefits
- Key **challenges** restrain implementation (lack of information, lack of financial resources institutional resistance)
- Incorporates best science and local knowledge and fosters **knowledge generation and diffusion**
- Is **participatory,** transparent, and culturally appropriate while embracing gender and equity appropriately

EbA benefit examples

- Enhance food security
- Help people adapt to the adverse effects of CC
- Reduce climatic risks and hazards
- Enhance knowledge and capacity
- Improve the quality of life and mental and physical health of people
- Prolong the sustainability and lifetime of built infrastructure
- Promote enabling governance
- Engaging people and communities

EbA benefit examples

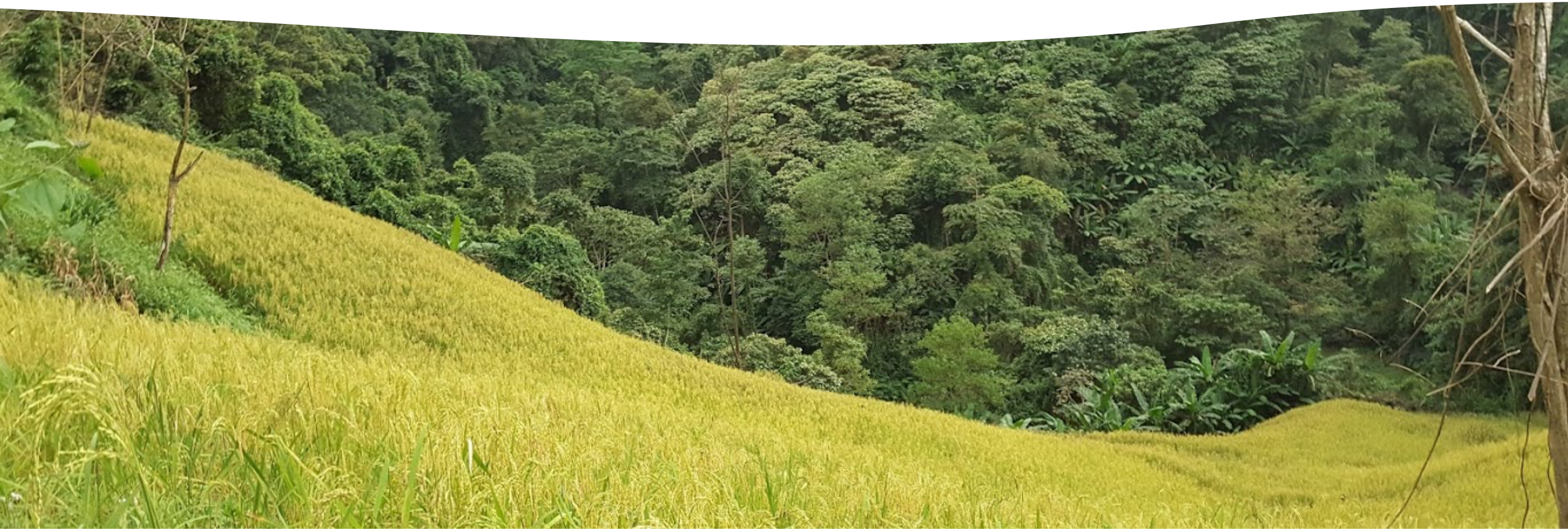
- Enhance food security

EbA contributes to increase agricultural productivity

- Increase water resources, restoring and managing watersheds to maintain water supplies for agriculture
- Diversifying crops and utilizing intercropping to improve resistance to pest outbreaks that may increase with climate variability
- Improve soil fertility
- Support pollinators
- Provide many alternative livelihoods

EbA benefit examples

- Help people adapt to the adverse effects of CC
- Enhance food security



EbA benefit examples

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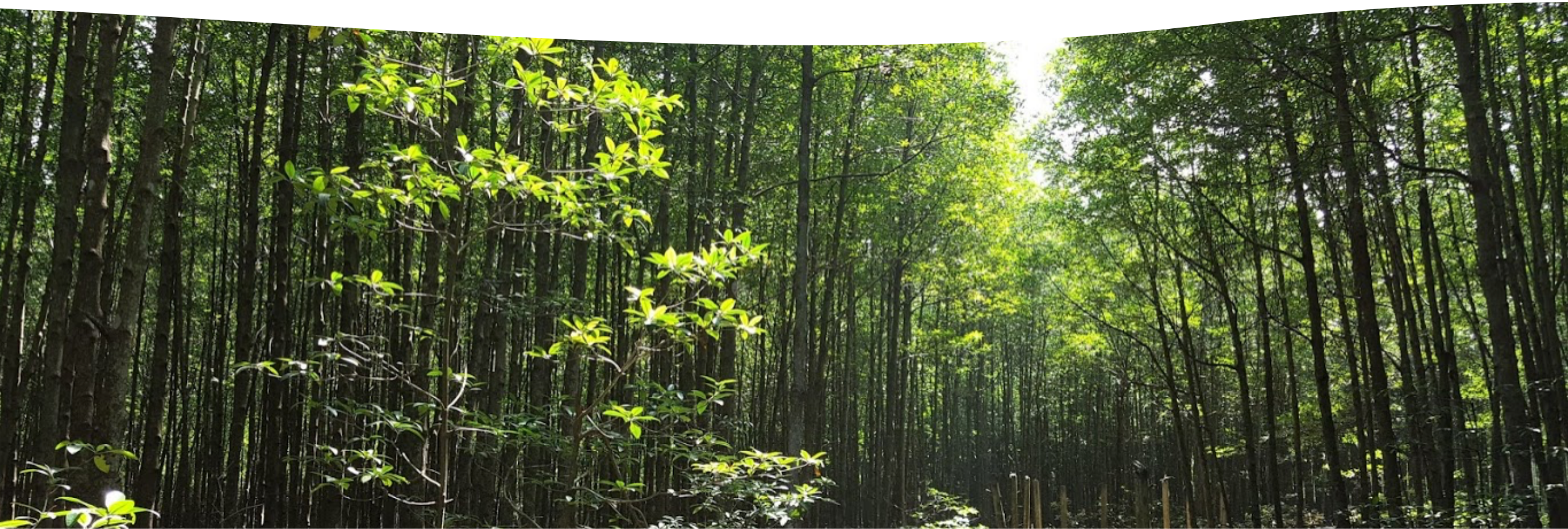
- Enhance knowledge and capacity



Quiz: What SDGs that EbA can support?

You have 5 minutes to think about the synergies between EbA and SDGs

Synergies between EbA and SDGs

Synergies between EbA and SDGs

Conservation of mangrove ecosystems, providing many goods and services that increase household income and resilience to climate change.

Synergies between EbA and SDGs

2 ZERO HUNGER

The use of wild relatives of crops or livestock breeds can improve the ability of existing crops to cope with higher temperatures and reduced water availability under climate change, thereby maintaining or increasing productivity and contributing to food security.

Synergies between EbA and SDGs

The use of wild relatives of crops or livestock breeds can improve the ability of existing crops to cope with higher temperatures and reduced water availability under climate change, thereby maintaining or increasing productivity and contributing to food security.

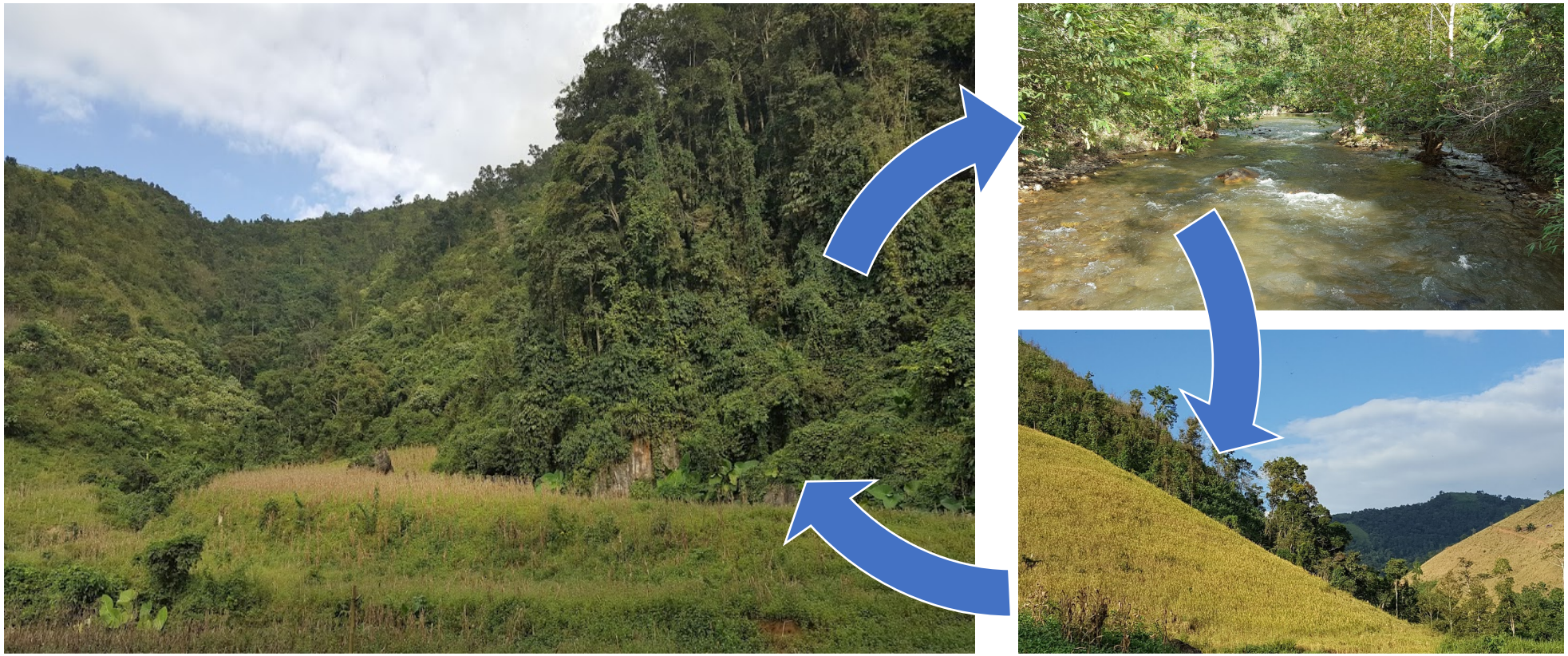
A lunch meal of the Hmong minority family in Huoi Poc ward, Nam Can commune, Ky Son district, Nghe An

Synergies between EbA and SDGs

The sustainable management or restoration of green spaces and wetlands can enhance their resilient capacity to climate change-driven increases in hot waves, extreme rainfall, helping to mitigate flood risk

Synergies between EbA and SDGs

The conservation or restoration of forests, coastal ecosystems, etc., can reduce disaster risk for local communities where climate change is projected to increase the frequency or intensity of cyclones.



Synergies between EbA and SDGs

The conservation or restoration of forests, coastal ecosystems, etc., can reduce disaster risk for local communities where climate change is projected to increase the frequency or intensity of cyclones.

Demonstration site before interventions (left) after interventions (right) in Nepal

(© Sanjaya Devkota)

Synergies between EbA and SDGs

EbA interventions, by sustainably managing, conserving, restoring and-where necessary-transforming ecosystems, can contribute greatly to the conservation and sustainable use of marine and freshwater biodiversity.

Mangrove protection helps organic shrimp farming

Certified organic shrimp being processed for export to the EU and North America. Minh Phu Seafood Company. Ca Mau province, Vietnam. Photo: SNV

Synergies between EbA and SDGs

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Synergies between EbA and SDGs

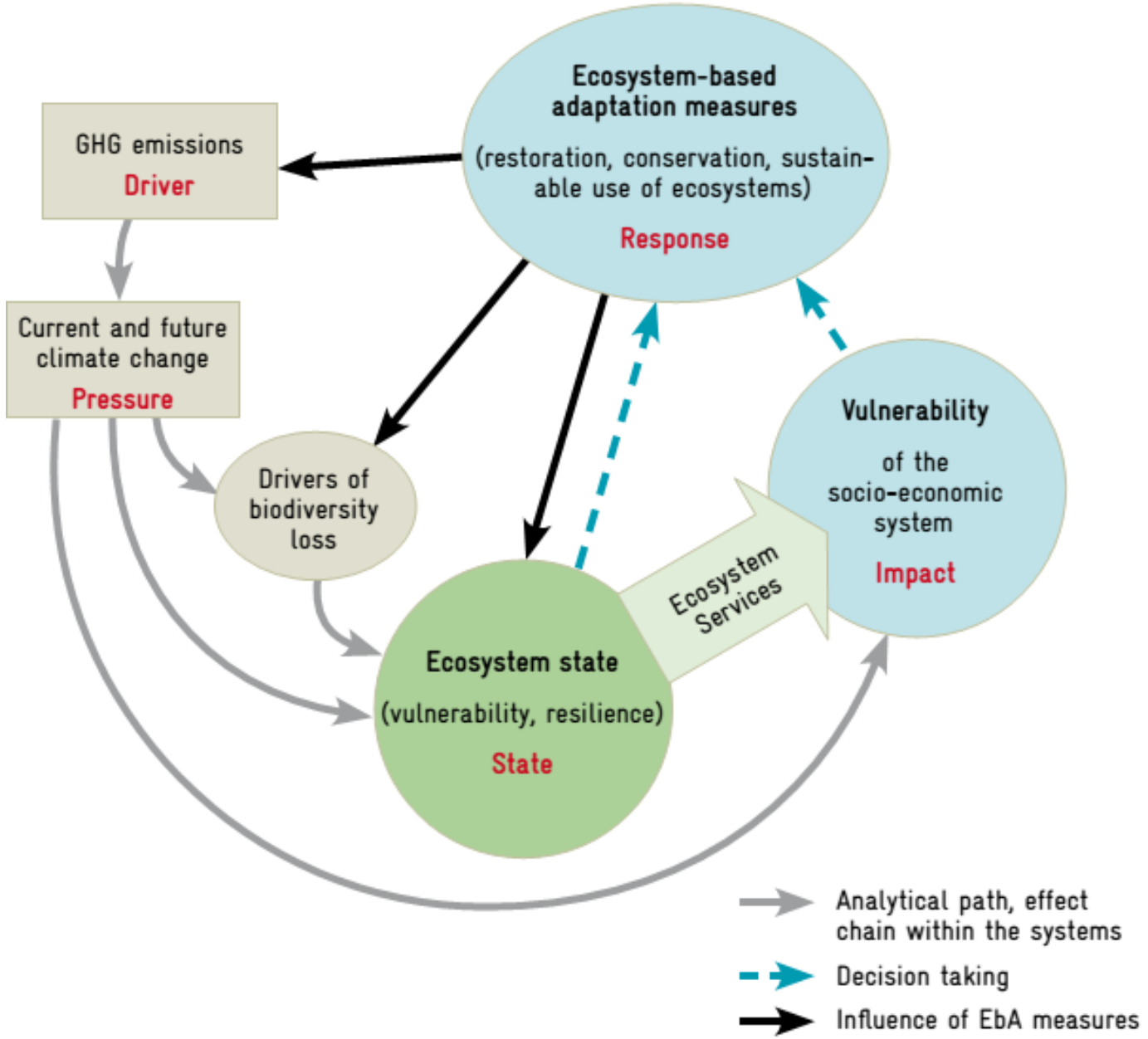
EbA interventions, by sustainably managing, conserving, restoring and-where necessary-transforming ecosystems, can contribute greatly to the conservation and sustainable use of terrestrial biodiversity.

Na Ư commune, Dien Bien Province

Module 2: EbA framework

EbA framework

Analytical framework for EbA measures



Framework to build a EbA project

PHASE 1

- Gathering and compiling the information for the analysis about the study area

PHASE 2

- Analyzing the information

PHASE 3

- Integrating EbA into policies and planning

https://www.iisd.org/project/ALivE

Framework to build a EbA project

- Phase 1: Gathering and compiling the information for the analysis about the study area
  - it involves engaging key stakeholders in dialogue and participatory analysis that will be used to inform the planning process
  - scientific information is combined with local knowledge to identify locally relevant solutions to the challenges presented by climate change.

Defining the study area

- The number and diversity of communities and ecosystems captured within the area
- Differences in livelihood strategies and activities
- Practicalities in terms of connecting with key informants and bringing stakeholders together for focus group discussions.
- The amount of information already available about the target area and the scale of information available.

Methodologies for information gathering

- Combination of secondary research
- Key informant interviews and participatory research; organizations

https://www.iisd.org/project/ALivE

Framework to build a EbA project

PHASE 1. Gathering and compiling the information for the analysis about the study area

- Define the study area
  - The number and diversity of communities and ecosystems captured within the area.
  - Differences in livelihood strategies and activities.
  - Practicalities in terms of connecting with key informants and bringing stakeholders together for focus group discussions.
  - The amount of information already available about the target area and the scale of information available.
- Gathering and compiling the information for the analysis about the study area
  - Secondary data
    - All the existed data and reports related to ecosystems, ES, CC impacts, etc.
  - Primary data
    - Key informant interviews: Community leaders, local government, researchers, etc.
    - Participatory: engage stakeholders in dialogue on their experiences; group discussions with particular groups within communities on the challenges they face and proposed solutions

Framework to build a EbA project

PHASE 2. Analysing the information

STEP 1: Understand the context

- Describe
  - Study area, project goals and objectives
  - Describe the livelihood context in the study area
  - Major ecosystems in the study area
- Assess livelihood dependence on ecosystem services
- Identify
  - ecosystems needed for livelihood activities
  - how ecosystems reduce impacts from natural hazards

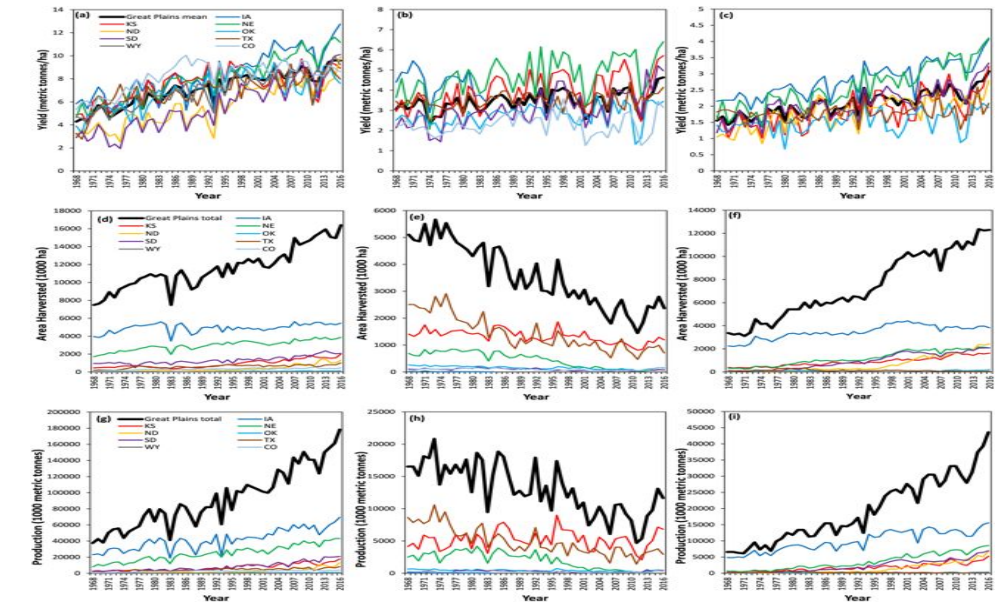
http://www.ipcc-wg2.org/AR5/

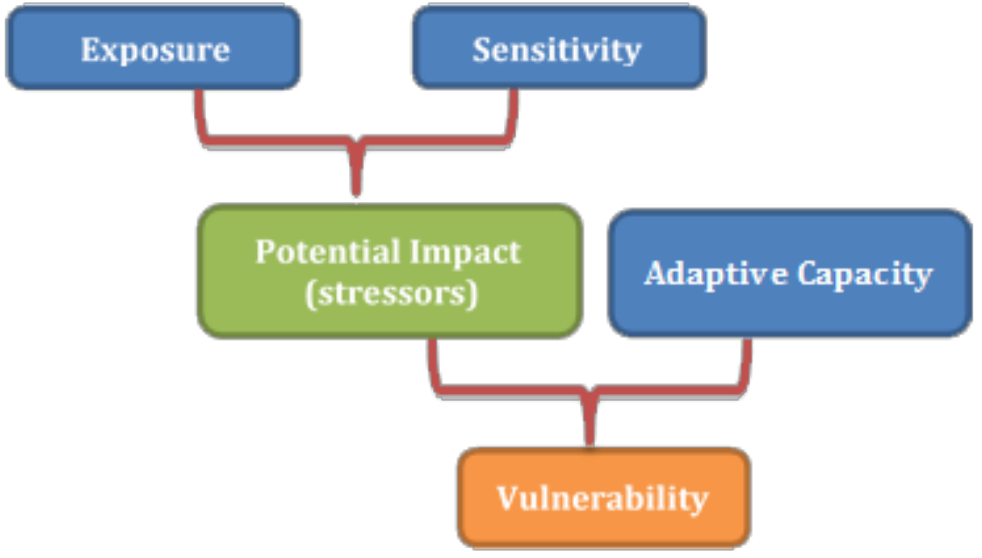
Framework to build a EbA project

PHASE 2. Analysing the information

STEP 2: Analyse risks to ecosystems and livelihoods

- Document observed and projected climate change in the study area
- Assess impacts of climate change on ecosystems important for livelihoods
- Analyse impacts of climate change on ecosystems important for livelihoods
- Assess impacts of non-climatic stressors on ecosystems
- Analyse impacts of climatic and non-climatic stressors on livelihoods
- Identify social groups that are particularly vulnerable





Framework to build a EbA project

PHASE 2. Analysing the information

STEP 3: Identify and prioritise EbA options

- To identify
  - adaptation outcomes for vulnerable livelihood strategies
  - EbA options for vulnerable livelihood strategies
- Prioritie effective EbA options for vulnerable livelihood strategies
- List of effective EbA options
- Change or add new EbA options
- Identify evaluation criteria to assess the feasibility of EbA options
- Evaluate feasibility of EbA options based on chosen criteria
- List of feasible EbA options
- Identify key actions that need to take place for implementation of priority EbA options

Climate Change Impacts Addressed	EbA Intervention
Impacts of extreme rainfall or drought on downstream water users	Wetlands protection and rehabilitation to increase water storage potential, 'soaking up' floods or releasing water gradually during droughts
Increased coastal erosion as a result of sea level rise and changes in wave dynamics	Coral reef protection
Increased frequency or intensity of tropical storm surge and flooding	Mangrove protection and restoration to reduce wave energy
Reduced crop production due to changes in the wet or dry season or extreme weather events	Implementation of sustainable farm management (e.g., agroforestry systems, soil and water conservation practices, use of cover crops) that can buffer various climate change impacts on crop production

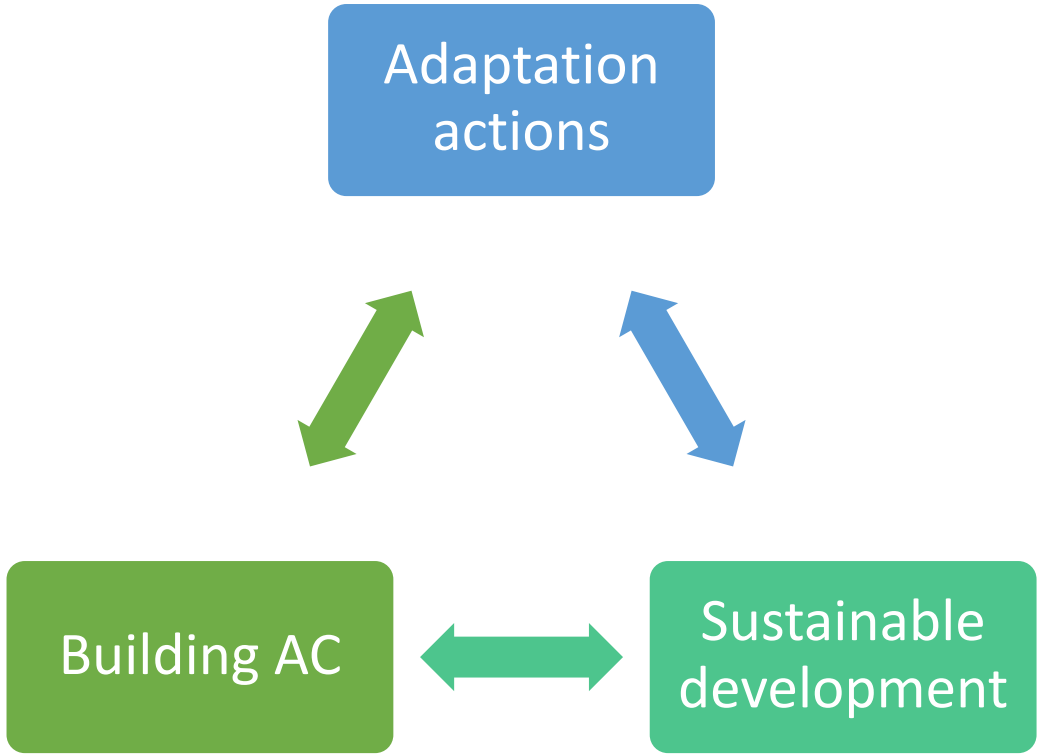
CONSERVATION INTERNATIONAL

Framework to build a EbA project

PHASE 2. Analysing the information

STEP 4: Design project activities to facilitate implementation of EbA options

- To identify
  - Inputs for prioritized EbA options
  - Roles and responsibilities for priority EbA options
  - opportunities and barriers that influence the implementation of priority EbA options and key actions
  - project activities to support implementation of priority EbA options and key actions, taking into consideration required inputs, actors, responsibilities, opportunities and barriers



Framework to build a EbA project

PHASE 2. Analysing the information

STEP 5: Identify key elements to monitor and evaluate EbA options

- Identify long-term indicators to measure adaptation outcomes
- Identify short-term indicators to measure EbA options
- Describe the baseline situation for each adaptation outcome
- Data collection and methods – Monitoring
- Data collection and methods – Evaluation

EbA indicators development processes

- **Specific** to the objective
  - Is it clear exactly what is being measured?
  - Does the indicator capture the essence of the desired result?
  - Does it capture differences across areas and categories of people?
  - Is the indicator specific enough to measure progress towards the result?
- **Measurable** either quantitatively or qualitatively
  - Are changes objectively verifiable?
  - Will the indicator show desirable change?
  - Is it a reliable and clear measure of results?
  - Is it sensitive to changes in policies and programs?
  - Do stakeholders agree on exactly what to measure?
- **Attainable** (in terms of realistic, practical and simple)
  - What changes are anticipated as a result of the assistance?
  - Are the result(s) realistic? For this, a credible link between outputs, contributions of partnerships and outcome is indispensable
  - Is information available at a reasonable cost and effort?
  - Will it be easy to collect and analyse?
- **Relevant** to the information needs of decisionmakers
  - Does the indicator capture the essence of the desired result?
  - Is it relevant to the intended outputs and outcome?
  - Is the indicator plausibly associated with the scope of activity?
- **Time-bound** so that users know when to expect the objective or target to be achieved
  - Is it a consistent measure over time?

Framework to build a EbA project

PHASE 3. Integrating EbA into policies and planning

Why integrate EbA into policies and plans?

- Raising awareness
- Achieving scale
- Institutionalisation
- Finance
- Improving environmental sustainability
- Longer-term monitoring

Framework to build a EbA project

PHASE 3. Integrating EbA into policies and planning

Identifying entry points

- Identifying the branch or level of government that has the power to make the desired policy change.
- Understanding where and how political debates occur.
- Recognizing the role of informal politics.
- Analyzing existing opportunities or capacity limitations that may influence if and how change occurs.
- Identifying external forces that may have an influence on the change process.

Framework to build a EbA project

PHASE 3. Integrating EbA into policies and planning

Developing a strategy for policy influence

- Clearly define targets
- Identify the desired changes
- Identify allies
- Develop key messages
- Develop the evidence
- Use a mix of engagement strategies

Module 3: Discussing the opportunities and challenges of EbA

Module 3: Discussing the opportunities and challenges of EbA

- **The question 1:**
  - Is EbA just theoretical? Is it applied?
  - What are the opportunities?
  - What are the challenges?

- **The question 2:**
  - Do you know concrete examples of EbA interventions? What make them interesting? What have been the challenges in implementing them?

Opportunities

- Multiple benefits across landscapes
  - Biodiversity conservation and enhancement
  - Contribution to mitigation
    - Conserving ecosystems for adaptation also conserves carbon
    - EBA projects may also tap carbon financing
- No-regret and flexible measures
- Cost-effectiveness
  - maintaining nature's capacity to buffer the impacts of climate change on people is often less costly than having to replace lost ecosystem functions through the use of heavy infrastructure or technology.
- Multiple benefits across sectors
- Directly contribute to SDGs at local, regional and global scale

Challenges

- **How to deal with complexity and diversity?**
  - Feedback loops, diversity of stakeholders, sectors, scales, contexts
- **How to adapt ecosystem management to climate change or changes in social vulnerability?**
  - Adaptive management
- **How to characterize ecosystem?**
  - E.g. what mangrove width, height, or species for protection?
- **How to balance trade-offs?**
  - Short- vs. long-term needs (e.g. aquaculture vs. mangroves in coasts)
  - Trade-offs between different ecosystem services
- **How to finance?**
  - Transfers from beneficiaries of services to ecosystem managers
  - Carbon funding
  - PES

Module 4: Read the paper and discuss on the example of EbA