



# ECOSYSTEM-BASED ADAPTATION

## ESSENTIAL FOR ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS

### Why is adapting to climate change key for achieving the Sustainable Development Goals?

- Climate change, if ignored, will undermine global efforts to achieve food, water and energy security, poverty alleviation and biodiversity conservation, and is therefore a major challenge for sustainable development and for the achievement of the Sustainable Development Goals (SDGs).
- For example: Climate change-driven shifts in seasonal rainfall and temperature patterns, together with increases in the severity or frequency of extreme events, could increase the number of undernourished people by 170 million and the number of people living with water scarcity by 1.2 billion. It could threaten up to 30% of known plant and animal species with global extinction within 100 years.
- Adaptation to climate change is a process aimed at alleviating adverse impacts and exploiting any benefits of climate change on people, livelihoods and ecosystems.
- Studies suggest that existing adaptation funding will need to increase by 10 to 15 times by mid-century if we are to avoid the worst impacts of climate change.
- Without greater focus on—and investment in—adaptation, we will not achieve the SDGs.



## Why is ecosystem-based adaptation an important approach for climate change adaptation?

- Nature-based solutions can play a key role in climate change adaptation. Ecosystem-based adaptation (EbA) is defined here as “the sustainable management, protection, restoration or transformation, of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to climate change.”
- Examples of EbA include the restoration of coastal ecosystems to protect people against increases in cyclone intensity or frequency, and the use of shade trees in coffee plantations to maintain production even as temperatures rise (Table 1).
- EbA can be applied in diverse landscapes and seascapes, including natural areas, human-modified landscapes such as agricultural areas, and urban regions.
- EbA approaches may be more cost-effective than engineering and technological options, often providing multiple co-benefits, such as climate mitigation, habitat creation, and biodiversity conservation.
- In many contexts, however, EbA approaches can be part of a broader adaptation strategy that may include a combination of EbA and engineering approaches—so called ‘grey-green’ infrastructure, such as protecting coastlines through a combination of mangrove restoration and sea-walls—as well as complementary adaptation measures focused on governance, education and capacity building.
- The focus of EbA on understanding ecosystem function and dynamics helps decision makers recognize where building resilience is the best adaptation response (e.g., enhancing people’s ability to “bounce back” after a major drought or storm event) or where transformation may be required (e.g., shifting how a landscape or seascape is governed to accommodate new sets of goods and services as ecosystems transform in structure and function under climate change).

**Table 1. Examples of EbA interventions implemented to address specific climate change impacts and key beneficiaries of those interventions.**

Climate Change Impacts Addressed	EbA Intervention	Beneficiaries
<i>Impacts of extreme rainfall or drought on downstream water users</i>	Wetlands protection and rehabilitation to increase water storage potential, ‘soaking up’ floods or releasing water gradually during droughts	Water users (communities and businesses) Communal farmers
<i>Increased coastal erosion as a result of sea level rise and changes in wave dynamics</i>	Coral reef protection	Coastal communities Tourism sector Fishing communities
<i>Increased frequency or intensity of tropical storm surge and flooding</i>	Mangrove protection and restoration to reduce wave energy	Coastal communities Fishing communities Tourism sector
<i>Reduced crop production due to changes in the wet or dry season or extreme weather events</i>	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	Smallholder farmers Large-scale farmers Rural communities

## Why is EbA critical for achieving the Sustainable Development Goals in a changing climate?

- Many of the SDGs are directly linked to the health and biological diversity of ecosystems and the services they provide.
- Many of the most disadvantaged and marginalized sectors of society that are the targets of sustainable development goals are highly dependent on ecosystems to support their livelihoods.
- EbA can provide sustainable, climate resilient, nature-based solutions that span many of the global challenges the SDGs seek to address, optimizing synergies and reducing trade-offs. For example:
  - » **SDG 2 – ‘End 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.
  - » **SDG 11 – ‘Resilient cities’**: The sustainable management or restoration of watershed forests and wetlands can enhance their ‘green water storage’ capacity in areas projected to experience climate change-driven increases in extreme rainfall, thereby helping to mitigate flood risk in downstream cities and urban areas.
  - » **SDG 13 – ‘Combat climate change and its impacts’**: The conservation or restoration of coral reefs and coastal forests, such as mangroves, can reduce disaster risk for coastal communities where climate change is projected to increase the frequency or intensity of cyclones.
  - » **SDGs 14 and 15 – ‘Life below water’ and ‘Life on land’**: EbA interventions, by sustainably managing, conserving, restoring and—where necessary—transforming ecosystems, can contribute greatly to the conservation and sustainable use of marine and terrestrial biodiversity.

## What can be done to promote EbA in support of the SDGs?

- Enhance understanding of the role of ecosystems in supporting the achievement of many of the SDGs.
- Support learning and exchange on ecosystem-based management practices among the Disaster Risk Reduction, Rural Development, REDD+, Climate-Smart Agriculture, EbA and other complementary communities of practice to promote synergies and avoid trade-offs among potentially competing objectives, ensuring that actions are climate-smart, and hence contribute to the overall achievement of the SDGs.
- Ensure EbA is incorporated into national development planning as countries seek to operationalize the SDGs.
- Increase global funding for adaptation, including for EbA, in at least ten-fold to close the gap between current spending and what is needed to ensure sustainable development under climate change.

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Building on successful research, demonstration projects, and engagement in international policy, CI is driving a set of key steps toward eliminating greenhouse gas emissions from the loss of carbon-rich ecosystems and securing the ecosystems that strengthen humanity's adaptive capacity to the impacts of climate change.

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