



# Mainstreaming Ecosystem-based Adaptation in Viet Nam

*Policy Note*

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# Overview

**Climate change in Viet Nam is an impediment to sustainable development.** It threatens economic progress and puts pressure on the livelihood of the country's population. The livelihoods of the majority of the population in Viet Nam and its key socio-economic sectors are highly reliant on natural resources and the services that ecosystems provide. The ecosystems are already deteriorating due to external pressures, which will be exacerbated by climate change. With current and increasing climate change threats, the government of Viet Nam is facing the difficult task of making decisions that help build resilience to climate change impacts in subsistence-based communities while still encouraging sustained economic growth.

**Ecosystem-based adaptation (EbA) provides nature-based solutions that reduce vulnerability of people while simultaneously generating a range of social, economic, and environmental co-benefits.** Though the dialogue on EbA has gained increased attention internationally and locally, the concept of EbA remains in its early development stages. There are few resources available to ensure effective development and implementation of EbA responses. In responding to Viet Nam's need for a detailed guidance to assess and implement EbA, the World Bank, the World Wide Fund for Nature (WWF), and the Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE) under the Ministry of Natural Resources and Environment (MoNRE) jointly developed a framework for EbA and field-tested it in the coastal districts of the Ben Tre province in Viet Nam under the guidance of key line ministries, which formed a stakeholder working group in Viet Nam.

The purpose of this policy brief is to present the key messages related to the application of EbA in Viet Nam, as well as provide guidance for mainstreaming and scaling up of EbA in the policies and planning processes in Viet Nam.

**Climate change threatens to slow down the economic development in Viet Nam and poses a challenge to the government.**

**Ecosystem based Adaptation offers solutions to climate change impacts that can also yield additional socio-economic benefits.**



# Why Ecosystem based Adaptation in Viet Nam?



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“Ecosystems provide a variety of services to people and economies that range from provisioning services such as water and food; regulating services like climate, disease and water regulation; cultural heritage services, sense of place and recreation; and the underpinning supporting services such as soil formation, primary production, and habitat provisioning (*Millennium Ecosystem Assessment 2005*).”

As one of the world's most vulnerable countries to climate change, Viet Nam is already experiencing climate impacts, which will be exacerbated during this century, with large parts of its population and valuable ecosystems at risk.

Viet Nam's long coastline, geographic location, and diverse topography make it one of the most hazard-prone countries in the Asia-Pacific region, particularly vulnerable to tropical cyclones, storms, and flooding<sup>1</sup>. The annual average temperature of Viet Nam has increased by about 0.5°C in the last 50 years; and sea level has increased about 20cm in the same time<sup>2</sup>. Given the high concentration of the country's population and economic assets (including irrigated agriculture) in coastal lowlands and deltas, if sea levels increase by one meter, about 39 percent of the Mekong Delta, more than 10 percent of the Red River Delta, around 2.5 percent of the Central Coast, and more than 20 percent of Ho Chi Minh City would be inundated, directly impacting thousands of people and incurring huge economic losses<sup>3</sup>.

The populations that rely on subsistence-based livelihoods and the services that ecosystems provide will inevitably be at highest risk.

Sectors like agriculture, fisheries and tourism sustain the economy and livelihoods of the majority in Viet Nam. The Mekong Delta is home to about 18 million people and is accountable for more than 50 percent of total rice production and almost 60 percent of the total fishery output in the country. Overall, Viet Nam's marine ecosystem contributes to more than 5.3 million tons of marine fisheries a year, and provide for about 47 percent of protein needs in people's diets<sup>4</sup>. The Climate Change Research Institute at Can Tho University has predicted that, besides suffering from drought brought on by seasonal decrease in rainfall; many provinces in the Mekong Delta will be regularly flooded by 2030.

Viet Nam is one of the most hazard prone countries in Asia and is highly vulnerable climate change impacts, especially sea level rise.

Highly productive sectors in Viet Nam, like fisheries and rice production, are dependent on climate-sensitive natural resources and are projected to be severely impacted by climate change.

EbA uses biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change<sup>5</sup>. EbA adds a social-ecological system (SES)<sup>6</sup> dimension to the adaptation process, indicating that the distinction between human and ecological systems is arbitrary, and the two should be viewed as integral and interlinked to each other<sup>7</sup>. If ecosystem services are relevant for a given community or sector - for example fisheries or farming - the adaptation strategies need to address the vulnerabilities of both natural and human systems at the same time and consider the links between them<sup>8</sup>.

EbA uses nature-based solutions to provide adaptation benefits to the communities while protecting the natural resource base.

<sup>1</sup>World Bank 2011.

<sup>2</sup>MONRE Viet Nam Climate change and SLR scenarios 2012.

<sup>3</sup>MONRE Viet Nam Climate change and SLR scenarios 2012.

<sup>4</sup>MONRE draft national biodiversity conservation plan 2013.

<sup>5</sup>CBD 2013.

<sup>6</sup>SES: A human- environment system that has both bio-physical factors (natural resources, ecosystems and ecosystem services) and social factors (human, societies, economies) that interact regularly in a resilient and a sustained way. <sup>7</sup>Berkes and Folkes 2003. <sup>8</sup>Locatelli 2008.

# Operational Framework:

## A step-wise solution to developing and implementing Ecosystem-based Adaptation in Viet Nam



**An EbA Framework provides easy step-wise technical guidance on the consideration and development of EbA responses to strengthen the resilience of communities and ecosystems alike.** The framework is presented in three steps:

- Step 1: Vulnerability assessment of Social Ecological Systems.
- Step 2: Identification and Prioritization of EbA Measures.
- Step 3: Implementation, Monitoring and Evaluation of EbA Measures

In addition, the framework also provides policy guidance for mainstreaming EbA into the planning process and policies in Viet Nam.

The operational guidance is targeted at policymakers and practitioners with the intention to make EbA options relevant to planning processes in Viet Nam, so that EbA concepts can be easily adopted in new and revised plans and strategies.

**Step-wise guidance can help planners and practitioners consider, assess, and implement EbA solutions.**

**The piloting of rapid vulnerability assessment and identification of adaptation options for the coastal districts in Ben Tre yielded a set of key lessons learned for further implementation of EbA.** Key lessons learned from the field-testing that can help uptake of EbA in other parts of the Viet Nam include:

- There is a strong level of interest from other provinces to implement EbA based on the framework piloted in the Ben Tre province. Institutionalizing the framework and creating an enabling environment will be necessary to scale up usage of the framework. Doing so will require awareness raising, capacity building, and knowledge transfer.
- Since EbA is a relatively new concept for the communities, all the communications on EbA and guidance on implementation must be simple, and “visual” where possible.
- It is not possible to prescribe the time and resources needed for implementation of EbA since it is largely determined by the context.

**Vulnerabilities of communities and ecosystems are interlinked and need to be assessed together.**

**To get an accurate picture of the vulnerability of the SES, the vulnerability assessment must take into account the vulnerability of both ecosystems and the communities considering different scenarios of current and future climate change risks.** The vulnerability of the ecosystems and the communities are closely interlinked; increased vulnerability of either one

**Step 1:  
Vulnerability  
assessment of  
Social-Ecological  
System.**

may increase the vulnerability of the other. For example, mangrove forests highly contribute to livelihood and income, by providing food nesting and nursery grounds for many animals including commercially important fish and shrimp, and providing provisional services such as food, medicine, construction materials, and so forth.

**Non-climate change related risks are as important as climate change related risks in assessing vulnerability.**

**To ensure that the adaptation solutions address all risks, the vulnerability assessment must take into account both climate- and non-climate-related risks and pressures that increase the vulnerability of communities and ecosystems.** Unsustainable practices including unsustainable land-use along with some development related activities that play a major role in increasing the vulnerability of societies and ecosystems together with climate change impacts. For example, shrimp farming and the development of hard structures have shown to cause further deterioration of ecosystems.

**Scenario analysis helps to assess future vulnerability under different management actions to guide adaptation.**

**Carrying out a scenario analysis as part of the vulnerability assessment helps to determine future vulnerability, management actions needed to cope with future vulnerability, and if EbA should be considered.** The scenario analysis is a preliminary analysis that identifies some examples of management actions related to hard adaptation (like dikes, which is often the preferred solution that is implemented in Viet Nam), or EbA actions. Comparing these under different scenarios helps assess if EbA should be considered in the first place. For example, in the case of Ben Tre, it was determined through a scenario analysis using different models that EbA measures may

be a more effective management solution than using hard adaptation measures to decrease coastal vulnerability and reduce wave heights, or could at least work equally well.

**Cost effectiveness analysis helps decision makers compare different adaptation options and make an informed decision on most cost-effective measures.**

**Comparative cost effectiveness analysis (CEA) provides a way to measure and compare cost effectiveness of EbA responses with other adaptation responses and helps decision makers to make a cost effective-decision.** An assessment of the identified EbA responses against alternative responses will help tell whether the EbA responses are indeed more cost effective than other adaptation options. Together with cost effectiveness, other social and environmental criteria should be considered to prioritize and select adaptation measures.

**Step 2:  
Identification  
and Prioritization  
of EbA Measures.**

**EbA measures are most often cost effective options, both as stand-alone solutions and in combination with other adaptation options.**

**EbA responses, either as stand-alone responses, or in combination with alternative responses, are often more cost-effective.** In Ben Tre, a CEA revealed showed that combining the EbA solution (coastal forest ecosystem) with the sea dike not only reduced the cost per unit of benefit but also increased the security of the dike system (Box 1).

### Box 1. Example of Cost-Effectiveness Analysis, Ben Tre, Viet Nam

The cost effectiveness analysis was carried out under two scenarios of sea level rise<sup>9</sup>:

- (1) Low risk scenario of 12 cm sea level rise: Comparing the EbA measure with the hard adaptation measure.
- (2) High-risk scenario of 33 cm sea level rise: A combination of EbA and hard adaptation was compared with hard adaptation by itself.

The discount rate applied was 10 percent and the measure of effectiveness was the number of people protected from sea level rise.

Results: Under the low-risk scenario, the financial cost per person in the expected flooded area being protected with sea dike systems in Ben Tre province from climate change risk was on average about 138.8 million VND/person versus 1.7 million VND/person with EbA responses, with but the total economic cost saving of EbA responses of is more than 100% when other environmental benefits are considered. Under the high-risk analysis the financial cost per person for protecting a person from the negative impact of climate change risk by using the combined hard and EbA options is a little higher than the hard adaptation option alone, about 128.6 million VND/person versus 126.6 million VND/person but the total economic cost saving is about 25% higher when other environmental benefits are considered. have significant cost savings compared with the hard adaptation option alone; about 55 percent, 17 percent, and 5 percent for Ba Tri, Binh Dai and Thanh Phu district, respectively.

### Step 3: Implementation of EbA Measures and Recommended Principles for Monitoring and Evaluation.

#### **EbA does not have to be implemented in isolation.**

EbA measures can be considered and implemented together with hard, soft, and community-based adaptation responses. For example, EbA should always be complemented with institutional and policy-based measures that are sometimes also called “soft” measures. In very high-risk scenarios, adaptation responses including both soft and hard adaptation responses

**EbA solutions, as a part of an overall strategy, can also complement other adaptation options.**

such as coastal dikes, irrigation channels, relocation of high-risk communities, and the like will have to be considered carefully and if necessary integrated with the EbA measures.

#### **EbA planning and implementation requires involvement from different sectors and different agencies.**

EbA will often have spatial implications that will involve making important decisions on land-use (for example, where to conserve or reforest mangroves that might conflict with where to build roads) and implementing them to ensure ecosystem services are protected. For instance in Viet Nam, agencies involved in different sectors at provincial level like natural resource management, water resources, land-use (under the mandate of the Department of Natural Resources and Environment (DONRE)), agriculture, and rural infrastructure (under mandate of the Department of Agriculture and Rural Development (DARD)), and provincial development plans especially the socio-economic development plan (under the Department of Planning and Investment (DPI)) should work together for EbA. It would be crucial for these different agencies to work with each other with adequate support and help from their respective ministries at the national level.

**Implementation of EbA should be multisectoral and inclusive of all relevant line ministries.**

**To ensure that EbA or any other adaptation measures do not cause maladaptation<sup>10</sup> and that the success of EbA measures is documented, monitoring is necessary.** Monitoring and evaluating of adaptation initiatives plays a key role in ensuring that successes are replicated and unintended negative impacts avoided. It will also be important to monitor the healthy ecosystems in terms of what worked and what did not work to cope with climate change impacts.

**Monitoring and evaluation helps improve implementation and management of the EbA response over time and informs future development of similar responses.**

<sup>9</sup> Ben Tre DONRE, 2010. Climate change scenarios for Ben Tre province, NTP-RCC standing office of Ben Tre province

<sup>10</sup> Maladaptation is an action taken to avoid or reduce vulnerability to climate change, but which in turn may increase the vulnerability of other systems, sectors or social groups. For example sluice dams created to reduce salinity in water can change natural hydrological regime, and affect the population dependent on estuaries in Ben Tre.

**Lessons learned from disaster risk reduction and management experiences can add value and should be incorporated in the design and implementation of EbA measures.** Viet Nam has a long history of disaster risk reduction (DRR) and disaster risk management (DRM) including community-based DRM. Where possible EbA measures could benefit by taking into account lessons learned from DRR and DRM, and adopting these as part of EbA solutions.

**Lessons learned from disaster risk reduction and management experiences can inform design and implementation of EbA.**

For example:

- Risk management information systems are highly effective in DRM, assisting communities in improving productivity and increasing resilience to disasters.
- Successful DRM/DRR initiatives often make use of locally available technologies including mobile phones and radios for early warning systems. As part of the broader Climate Change Adaption (CCA) response, EbA could also use the locally available technologies to create awareness on climate-change-related information and sustainable management of ecosystems.
- National networks of local governments established to share tools, knowledge, and approaches are champions of DRR/DRM. These networks should be made aware of future vulnerabilities and role of ecosystems in DRR/DRM. This should be enhanced as part of the CCA-DRRM coordination Forum.



# Recommendations and Guidance

## for Mainstreaming EbA in climate change and Sustainable Development Planning



**Viet Nam has a good base of climate policies and programs that provide good entry points for introducing EbA.** These include, for example, the National Target Program for Climate Change, the National Climate Change Strategy and Action Plan, the Provincial Climate Change Action Plan, and the Green Growth Strategy. In addition since EbA is very much a crosscutting concept that plays a role in several sectors, it should also be considered in relevant sectoral planning such as forestry, agriculture, energy, water, infrastructure, and so forth. The Social and Economic Development Plan (SEDP) is a particularly good entry point for mainstreaming EbA in cross-sectoral and development planning. All ministries, agencies and departments must be included in the dialogue and coordination of mainstreaming EbA to ensure that key ecosystem priorities are not compromised in different trade-offs.

**Integration of EbA in existing plans and policies is most essential to ensure EbA is considered and implemented at both national and subnational levels**

**Mainstream EbA at different levels.** EbA will need to trickle down the province, sector and district sub-national level.

**Mainstreaming needs to happen at all levels**

In order to ensure that community resilience, especially of the poor, is increased through sustainable management of resources, EbA must be mainstreamed at the lowest level of planning possible.

**Institutionalize the framework and the methodology used for EbA.** Oftentimes, different agencies tend to use different data and methodology for EbA. Since many international and regional organizations including UN agencies and multilateral banks are interested in supporting the implementation of EbA in Viet Nam, it helps the country to have a standard set of data and methodology that can be used by different agencies to prepare their own plans, strategies and projects. The EbA framework developed by ISPONRE, WWF and the World Bank can serve as a methodology for subnational level assessments for EbA.

**Institutionalization of frameworks and methodologies will support mainstreaming EbA in different planning processes**

**Invest in targeted research and capacity building.** There is some capacity at the national level in Viet Nam on climate change and to some extent on EbA. However, at the sub-national level there is a significant need for targeted capacity building in the area of awareness of climate change, adaptation issues, and EbA. Some examples of training priorities include: (a) capacity building for provincial

**Investment in capacity building is necessary to create an enabling environment for implementing EbA**

Entry points for Mainstreaming EbA and agencies responsible at provincial level

Relevant Sectors	Relevant Policies	Responsible Agencies	Examples of EBA measures
Natural resources and environment management	Provincial Climate Change Action Plan	Department of Natural Resources and Environment (DONRE)	<ul style="list-style-type: none"> <li>• Wise use of wetlands,</li> <li>• Community-based natural resources management</li> <li>• Environmental protection</li> </ul>
Biodiversity Conservation	Provincial Biodiversity Conservation Plan	DONRE	<ul style="list-style-type: none"> <li>• Establish new protected areas</li> <li>• Create green corridors</li> <li>• Strengthen law enforcement</li> </ul>
Land Use	Provincial Land-use Plan	DONRE	<ul style="list-style-type: none"> <li>• Reallocate settlements and public works to safer/less vulnerable areas</li> </ul>
Planning and Investment	Provincial Socioeconomic Development Plan	Department of Planning and Investment (DPI)	<ul style="list-style-type: none"> <li>• Green growth strategy</li> <li>• Low carbon economy</li> </ul>
Agriculture	Climate Change Action Plan for Agriculture Sector	Department of Agriculture and Rural Development (DARD)	<ul style="list-style-type: none"> <li>• Climate-smart farming practices</li> </ul>
	Aquaculture and Fishery Development Plan	DARD	<ul style="list-style-type: none"> <li>• Rehabilitate aquatic resources</li> <li>• Community-based fisheries management</li> <li>• Promote sustainable and responsible aquaculture and capture fisheries</li> </ul>
	Forestry Development Plan	DARD	<ul style="list-style-type: none"> <li>• Restore coastal mangroves</li> <li>• Improve forest protection</li> </ul>
	Irrigation Development Plan	DARD	<ul style="list-style-type: none"> <li>• Water saving, collecting and storing system</li> </ul>

officials (decision makers and technical staff of DARD and DONRE as well DPI) on ecosystem services/ecosystem service use and for climate change adaptation; (b) training on longer term planning including spatial planning and scenario development; (c) training on economic tools for quantifying ecosystem services etc.

**Integrate EbA in DRR and DRM plans and initiatives. CCA should be more closely related to DRR and DRM**, and the concepts should be considered in unison as they complement each other. Viet Nam already has experience in dealing with DRR and DRM given its longstanding history with natural disasters. The rural poor have particularly been vulnerable to disasters, as they are more likely to reside in hazardous locations and in sub-standard housing, and lack financial, material, technical resources, and social networks necessary to cope. Viet Nam is one of the leading countries on community-based DRM, where capacity building approaches are already integrated with structural risk reduction investments both at community and provincial levels. This needs to be strengthened with EbA, given the high vulnerability of rural poor communities to the impacts of climate change<sup>11</sup>.

**EbA and disaster risk reduction and management strengthen each other to build present and future resilience to climate change.**

<sup>11</sup>Global Development Learning Network Asia Pacific, 2013, Distance Learning Seminar Series 2013, "Community-based Disaster Risk Management (CBDRM): Lessons Learned and Way Forward"

