

EcoAdapt in the Pacific POLICY BRIEF



ECOSYSTEM BASED ADAPTATION: AN APPROACH NOT AN OPTION

Ecosystem Based Adaptation (EbA) harnesses biodiversity and the services provided by ecosystems to support communities adapting to a changing climate. EbA has been widely applied throughout the world as one of many adaptation options but considering it as an isolated project or option to be implemented limits its application. Indeed, the inherent systems thinking that underpins EbA, represents a much broader way of exploring adaptation which is relevant to a broad suite of intervention entry points ranging from the protection of assets to ecosystem management and community well-being. This policy brief explores our philosophy of applying EbA as a comprehensive approach to climate change adaptation, rather than as a single option for consideration.

1 WHAT IS ECOSYSTEM BASED ADAPTATION?

Ecosystem based adaptation (EbA) has been widely applied throughout the world as a strategy to adapt to climate change threats. According to the Convention on Biological Diversity that recognised EbA in 2009, EbA is 'the use of biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse effects of climate change.

EbA focuses on the ecosystem services that support human populations and seeks to address climate risks through ecosystem-sensitive interventions that maintain or enhance ecosystem service flows. As a result, understanding of the links between ecosystem services and communities is critical to supporting the uptake and implementation of EbA.

Historically, EbA has been put forward as an adaptation option, which may be chosen as an alternative to engineering solutions or other adaptation options. However, considering EbA as an option limits its application. In our research, the EcoAdapt team has sought to reposition EbA as not just an adaptation option, but as an overarching approach to adaptation. This broader definition enables the consideration of EbA in more contexts and, importantly, highlights the need to consider ecosystem services and adopt socio-ecological systems thinking (see Box 1) in all adaptation decision making contexts.

Adopting the 'EbA as an approach' mantra can enable EbA to be applied across a wide range of adaptation 'entry points' (see Box 2) and not constrained to least impacted settings. In simple terms, this means that EbA can be implemented at the governance, asset protection, community development and ecosystem conservation entry points, ensuring that ecosystem

services and maintenance of ecosystem condition are considered in all adaptation decision making contexts.

In addition, unlike engineering adaptation options that seek to protect key assets or infrastructure against a single climate threat, such as sea level rise, the adoption of an EbA approach can enable management of multiple climatic and non-climatic threats concurrently and at multiple scales.

Box 1: Socio-ecological systems and EbA

The application of EbA as an approach requires understanding of human (society, culture and economy) and environmental elements and interactions in the location being assessed. This socio-ecological system' (SES) thinking supports understanding of the complexity of problems and impacts that might arise from climate change and implementing adaptation activities. SES thinking enables the pros and cons of interventions to be evaluated, not just for people, but for all component parts of the system and not just for whether it addresses the specific concern of interest, but also to identify possible flow-on effects throughout the system.

For the Pacific EcoAdapt research program, this has required collaboration between researchers from across multiple discipline areas including modelling, ecology, ecosystem services, climate change, coastal processes, economics and policy discipline areas. A critical part of the research approach was to support dialogue and participation of in-country stakeholders in the research, including development of models and decision tools. This participatory approach ground-truthed the scientific evidence being gathered with knowledge and insights from in-country partners at the local community, Tanna Island and Provincial Government levels, to ensure that the systems were appropriately and authentically represented.

Box 2: Adaptation entry points and EbA

Decision makers often bring their different perspectives to adaptation planning based on their purpose and objectives and particular climate risks they are seeking to address. These purposes lead to multiple different 'entry points' which frame the scope, activities and therefore outcomes of the adaptation intervention. Four common entry points for adaptation are:

1. Risks to governance
2. Risks to assets
3. Risks to community and sustainable development
4. Risks to ecosystems and species

Adaptation decision making at these different entry points may require different interventions. For example, reducing risks to assets, such as a road or a school, may require hard engineering solutions, but by taking an EbA approach, all four are viewed through a systems thinking lens that considers the potential impacts of possible solutions across the other three areas and considers how ecosystem services and therefore community wellbeing are maintained or enhanced.

While earlier work exploring barriers and limitations to the success of EbA highlight a range of conditions that can reduce the efficacy of EbA, the new broader conception of EbA, which seeks to embed EbA thinking into all adaptation decision making, simply requires the appreciation that ecosystems and human communities are intimately connected and supporting (and enhancing) ecosystem service flows and provisions will lead to positive outcomes both for ecosystems and the communities that rely upon them.

1.1 How EbA goes beyond Nature-Based Solutions (NbS)

EbA and 'nature-based solutions' (NbS) have both received a lot of recent attention, with NbS gaining support, particularly throughout the developed world, as a strategy to embrace green assets and manage a host of environmental management problems. There are, however, a range of key differences between EbA and NbS, namely:

- The socio-ecological system, which underpins the EbA approach, is much broader than approaches to NbS, which tends to focus on very local environmental problems
- EbA is purposely focused on climate change adaptation and mitigation, whereas many NbS projects attempt to manage current problems with no mention of (or consideration of) climate risks
- NbS interventions often utilise ecosystem services, but don't explore the connections between ecosystem stocks, services and their flows to human communities

These differences are important in the context of the repositioning of EbA as an approach, because when EbA is considered as an option, it can often be confused for NbS, which isn't as holistic in its design or intent. The holistic approach to adaptation captured by EbA inherently considers the

consequences of adaptation interventions within the broader context and in so doing, it reduces the risk of maladaptation.

2 AN APPROACH WITH MANY OPTIONS

2.1 Applying systems thinking to explore multiple EbA interventions

The context is critical in adaptation decision making. To unpack the role of social, economic, cultural and environmental contexts in supporting community wellbeing, the EcoAdapt team has explored climate change impacts and a series of proposed EbA actions at a range of different scales across Vanuatu (see Box 3). This work has brought together a wide range of discipline experts to explore climate and EbA intervention impacts on community wellbeing at the local (Port Resolution), island (Tanna Island), capital city (Port Vila) and National (Vanuatu) scales, enabling explicit evaluation of changes in social and economic contexts and their impacts on adaptation outcomes to be revealed.

Box 3: EbA Approach in Action: Assessing Adaptation impacts on Community Wellbeing

One of the great strengths of an EbA approach is the degree to which more than one action can be planned to address one or more climate risks. Through the creation of a complex socio-ecological systems model, interventions at different levels, which target different parts of the system, can be assessed either individually, or as part of a combined array of interventions.

The Pacific EcoAdapt research program explored the benefits of multi-dimensional interventions on community wellbeing. For example, the benefits of interventions which improve subsistence gardening productivity, including the implementation of nurseries and community radio services, have been shown to reduce pressure on forest and coral reef environments as critical sources of food. Coupled with actions to establish a series of community-based conservation areas (marine and forest) to formalize and support reef and tropical forest conservation efforts, these interventions maintain ecosystem condition, facilitate ecosystem service flows and support sustainable development for communities.

Combining EbA interventions has great potential to yield wide benefits to ecosystems and communities. Indeed, EbA interventions offer multiple benefits and have the potential to integrate adaptation priorities by:

- Exploring suites of adaptation interventions (a system of adaptations)
- Addressing root causes of risk factors (vulnerability, exposure)
- Responding to compounding and cascading climate risks
- Responding to changing risk factors shift over time
- Including non-climatic risks including from development impacts
- Establishing interventions in the context of other sustainable development goals
- Providing evaluation of new and alternative adaptation options

The benefits of applying an EbA approach have been demonstrated through the modelling conducted for the Pacific EcoAdapt research program which highlights how considering the SES and local context can ensure that ecosystem based adaptation can generate positive outcomes and, unlike hard engineering options, it does not limit the scope for future adaptation decision making.

EbA enables transformation, by putting into action an adaptation strategy that is flexible and favours the maintenance of significant ecosystem services that support both human and ecosystem health. In contrast, many other adaptation approaches, especially those which favour hard engineering solutions to protect assets, restrict the capacity for further adaptation and significantly alter ecosystem condition and the flow of ecosystem services, often with irreversible consequences. Implementing an EbA approach enables communities to adopt strategies that do not prohibit growth, while maintaining connections between people, land and sea.

The research under Pacific EcoAdapt highlighted that Vanuatu is at the crossroads – significant investment in infrastructure and development will have long-term consequences. The development decisions taken now will place the country along pathways which will structure and re-shape the capacity of the people and the ecosystems to adapt and respond to climate change threats well into the future. Lessons from the program show it will be critical that Pacific Island nations adopt an EbA approach to climate change adaptation, to avoid locking in limiting options that create disconnection and loss of resilience, and aim for all adaptation to maintain or enhance ecological systems to support continued growth of healthy, productive communities.

MORE INFORMATION

The information in this brief contains summary information from a research paper (in press) in the academic journal of Regional Environmental Change.

ⁱ For more information on SES, read https://en.wikipedia.org/wiki/Socio-ecological_system.