

To increase EbA, governments in their national development processes need to place greater emphasis on prioritising biodiversity and sustainability of resources, as well as improving the overall health of ecosystems. This requires strong leadership, new thinking and adequate financial and technical resources.

## Multiple benefits of EbA

The international community can support the adoption of EbA in the Pacific by committing additional financial and technical assistance toward EbA strategies to overcome climate change challenges. EbA makes good sense not only from the narrow perspective of risk reduction but also from the broader perspective of improving economic well-being. Healthy ecosystems provide many other products and services that people value. The future level of this commitment will no doubt be a subject of post-Kyoto agreements forged by the global community.



Yela conservation forest area, Kosrae, FSM

### More information:

For more information on climate change and Pacific Island responses, some useful resources can be found across various Web links, including the following:

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)GmbH  
<http://www.gtz.de/en/weltweit/asien-pazifik/27718.htm>

Intergovernmental Panel on Climate Change, Fourth Assessment, Working Group 2 Report –<http://www.ipcc.ch>

International Union for Conservation of Nature  
[www.iucn.org/oceania](http://www.iucn.org/oceania)

Locally Managed Marine Area Network  
<http://www.lmmanetwork.org/>

Pacific Adaptation to Climate Change Project  
[http://www.sprep.org/climate\\_change/PACC/index.asp](http://www.sprep.org/climate_change/PACC/index.asp)

Pacific Islands Applied Geoscience Commission  
<http://www.sopac.org>

Pacific Disaster Net  
<http://www.PacificDisaster.Net>

Secretariat of the Pacific Community  
[http://www.spc.int/lrd/Climate\\_Change.htm](http://www.spc.int/lrd/Climate_Change.htm)

Secretariat of the Pacific Regional Environment Programme  
[www.sprep.org](http://www.sprep.org)

Small Island Developing States Network  
<http://www.sidsnet.org/>

United Nations Framework Convention on Climate Change  
[www.unfccc.int](http://www.unfccc.int)



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## Ecosystem-based Adaptation – using nature to help address climate change

Politicians, scientists and experts are currently debating appropriate ways to adapt to and reduce the impacts of climate change. Responses to climate change have been largely considered from the perspective of building different types of physical infrastructure.

This information brief introduces the concept of investing in natural infrastructure – that is, Ecosystem-based Adaptation to climate change – that Pacific Island communities can use to live healthy, culturally rich and secure lives, and governments can support through effective national development planning.

### What is Ecosystem-based Adaptation?

Ecosystem-based Adaptation (EbA) is all about using nature to help communities build resilience and become less vulnerable to the effects of climate change. EbA is about identifying and implementing strategies for the management, conservation, and restoration of ecosystems to ensure that they continue to provide products and services to enable people to cope with the impacts of, and even benefit from, climate change.

**Ecosystems** are communities of organisms and the physical environments in which they exist.

**Adaptation** to climate change is defined as actions that people undertake to cope with or benefit from the effects of climate change.



Coastal Mangrove Ecosystem, Western Division, Fiji (IUCN)

### Examples of EbA include:

- upland and watershed management to ensure that water storage and flood regulation services are optimised through controlled development and maintenance of river basins and their vegetation;
- protection or rehabilitation of mangroves and other coastal vegetation that lines our shores to help maintain a defence against storm surges that would otherwise damage coastal homes, roads and services – while protecting fish resources for livelihoods; and
- improvements in agricultural management to maintain and enhance the health of terrestrial and aquatic ecosystems.

## Multiple benefits of EbA

Nature, through ecosystems and ecosystems services, provides the first line of defence against natural disasters. In addition to these direct benefits EbA strategies also provide significant ongoing social, economic and environmental benefits. For example, conservation and restoration of mangroves allows us to benefit not only from the protection they provide against storm surges, but also from increased support for fisheries-based livelihoods. Mangroves serve as important nursery grounds and habitats for many species of food fishes. They also filter sediment and help protect coral reefs from excessive sedimentation.

This approach can also save countries millions of dollars by removing or reducing the need for alternative adaptation approaches, which often include expensive infrastructure projects such as sea walls and groynes. These can sometimes do more long-term damage to the environment than the immediate impacts of a storm, by, for example, eroding shoreline stability by deflecting wave energy elsewhere.



Lake Tenganan, E. Rennell, Solomon Islands (SPC)





Kiribati causeway - nature reclaiming the foreshore (SOPAC)

## Managing water from 'ridge to reef'

River basins (watersheds) and groundwater supplies are natural infrastructure for coping with climate change. They provide water storage and flood regulation vital for reducing the vulnerabilities of communities and economies to climate change.

EbA activities that build and maintain natural infrastructure in river basins strengthen water, food and energy security in the face of climate change.

In the Pacific, many projects are currently being implemented that emphasise ecosystem-based management, including integrated water resource management (IWRM), and 'ridge to reef' management.

Examples of water management can be found throughout the region. Communities are becoming more aware that farming and forestry practices can sometimes pollute their rivers and streams, which then transport the pollutants to the reef, killing coral and reducing fish stocks.



Watershed protection, human settlement and coral reef systems are closely linked in Pacific islands (Upolu, Samoa; (Stuart Chape)

EbA activities are also often more suitable than physical infrastructure, particularly as they are more accessible to the rural poor and require less technical and financial capacity. Construction of physical infrastructure to adapt to climate change often requires engineering knowledge and skills as well as finances that many communities do not have. EbA strategies are more cost-effective because they require little financial outlay and minimal maintenance compared with physical infrastructure-based adaptation strategies. EbA strategies can also easily build on traditional management practices.

EbA strategies can be applied at all scales, from the community to the national level. They can be quickly implemented, particularly where ecosystems are intact. Where ecosystems are degraded, EbA strategies that help restore their health also make good sense as they can help reduce poverty and support sustainable livelihoods.

Well functioning ecosystems are more resilient than degraded ecosystems. When ecosystems are healthy, local communities are better able to quickly recover from extreme weather events. This is particularly critical in the Pacific, where many communities are located in remote areas and disaster relief assistance may take weeks to reach affected communities.

## EbA – some recent actions

In light of their increasing vulnerability, Pacific Islanders have, with the help of development partners, adopted many ecosystem-based management approaches, which also serve to protect them from the effects of climate change. Some examples are given below.

By using different management instruments, Pacific Islanders are working toward changing from damaging to environmentally friendly practices, including restoring traditional management practices. This is also expected to help strengthen the resilience of natural ecosystems, protect biodiversity, and improve water quality in villages.

## Reducing the risk of natural disasters

The importance of mangroves to climate change adaptation has been recognised in the Pacific and is being translated into on-the-ground action by community groups and environmental organisations.

On Ranongga Island in Solomon Islands, communities have been planting mangroves to protect their coastline, as the old mangroves have died after the land was uplifted in a recent earthquake. Similar replanting of mangroves can also be seen along the Coral Coast of Viti Levu in Fiji Islands.



Taro plantation, Taveuni, Fiji (SPC)

In Samoa, a taro breeding programme aims to provide drought resistant planting material to enhance food security in rural areas. Salt tolerant varieties of sweet potato are being distributed to countries for evaluation. These should assist communities affected by storm surges and salt water intrusion.

Other ecosystem-based strategies to adapt to climate change include soil conservation through better agricultural land management, and rehabilitation of native vegetation in countries such as Fiji Islands, Vanuatu and Tonga.

Much more needs to be done to ensure that all communities are resilient in the face of climate change.

## What can governments do to encourage EbA?

It is important that all government sectors prioritise and reduce climate change related risks by adopting EbA policies and strategies.

EbA approaches are not new. They are an integral part of sustainable resource management and conservation strategies and often build on traditional management. Many countries have recently implemented projects to improve sustainability of resources through locally managed areas. However, this is not enough to ensure a country's resilience in the face of climate change. Such projects need to be broadened and expanded, effectively implementing key principles of sustainable development and good governance, as well as the various regional frameworks and plans of action that Pacific Islands Forum leaders have signed.



Woman fishing, Tanna coastline, Vanuatu (Matt Capper)

## Sustainable farming practices

The EbA approach has many synergies with sustainable approaches to agriculture, including supporting agricultural resilience, agro-forestry systems, landscape management that protects watersheds, protection and management of water resources and the incorporation of local ecological knowledge into farming systems.

Traditionally, many indigenous communities preserved diversity of crop genetic material in their family farms. In the last few decades, as a form of agro-biodiversity conservation, crop genetic material has been collected and stored in national and regional plant germplasm collections, including the Centre for Pacific Crops and Trees (CePaCT) at the Secretariat of the Pacific Community.