



# Pacific Ecosystem-based Adaptation to Climate Change (PEBACC)

## WELCOME

to this first edition of the PEBACC newsletter!

This quarterly newsletter is an initiative to share information on Ecosystem-based Adaptation (EbA), a pragmatic and sustainable option for securing resilience in social and ecological systems impacted by climate change.

In this first edition, we provide an overview of the EbA approach and some highlights of EbA activities in the region.

We hope you find it informative and relevant to your work and encourage you to use it as a platform to showcase your EbA activities.

Herman Timmermans  
Project Manager  
PEBACC Project



MANGROVES, WAGINA, SOLOMON ISLANDS. PHOTO: F.PATISON/SPREP

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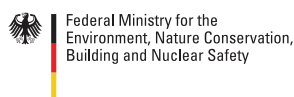
The Pacific Ecosystem-based Adaptation to Climate Change Project is a five year initiative implemented by the Secretariat of the Pacific Regional Environment Programme (SPREP) in partnership with the governments of Fiji, Solomon Islands and Vanuatu.

The project is part of the International Climate Initiative (IKI). The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) supports this initiative on the basis of a decision adopted by the German Bundestag.

The Project focusses on strengthening and protecting the role of natural ecosystem services to enhance resilience to climate change.



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## Wagina communities rely heavily on natural ecosystems



SEA WEED FARM, WAGINA, SOLOMON ISLAND. PHOTO: E.PATISON/SPREP

A recent community mapping on Wagina Island, South of Choiseul, Solomon Islands found that the people of the island are heavily dependent on natural ecosystems especially the coastal and marine environments for their livelihood.

The mapping exercise referred to as Ecosystem and Socio-economic Resilience, Analysis and Mapping (ESRAM) was commissioned by the Secretariat of the Pacific Regional Environment Programme (SPREP) through its Pacific Ecosystem-based Adaptation Project (PEBACC).

SPREP's PEBACC Country Manager for Solomon Islands, Mr. Fred Patison explained that "the aim of the study is to gain a deeper understanding of the role of the natural ecosystems on the island and for Wagina, the marine ecosystem is an essential part of life for the people."

"Wagina islanders are sea people who depend largely on marine resources and for them, maintaining a healthy marine ecosystem is a matter of life."

"They are among the biggest seaweed producers in Solomon Islands with households in Wagina earning in the region of SBD 26 258 (USD3 315) per year according to a study by Kronen (2013) on Social and economic dimensions of carrageenan seaweed farming in Solomon Islands. The mangroves and coastal forests provide much needed wood for building materials as well as biofuel and the island is also home to canoe building trees."

Today, the Island faces enormous challenges from the impacts of climate change that are further exacerbated by an increasing population, fluctuating seaweed prices and a proposed bauxite mining.

### the people of the island are heavily dependent on natural ecosystems especially the coastal and marine environments for their livelihood

According to Mr. Patison, "it is critical that the functioning ecosystems are protected to maintain and build national and community resilience to climate change."

Chief Tapukeba Mereki of Wagina is grateful that the ecosystem mapping exercise enabled the community to understand and realise where the main ecosystems and natural resources are and how they can manage them sustainably.

The mapping team to Wagina was led Dr Beth Toki, a marine ecologist representing BMTWBM and the University of Queensland accompanied by local freshwater and biodiversity expert Mr. David Boseto, Dr Tammy Tabe, a local Climate Change Anthropologist and Mr. Fred Tabepuda of LLCTC (Lauru Land Conference of Tribal Community) and SPREP.

The ESRAM study in Solomon Islands is carried out in Honiara and Wagina Island and is expected to be completed in early 2017. The findings of the study will guide the implementation of the PEBACC Project in Solomon Islands.

## Study reveals Port Vila ecosystems under considerable pressure



PORT VILA, VANUATU. © S.CHAPE

A preliminary report of the greater Port Vila area in Vanuatu has revealed that pressures caused by urbanisation present considerable challenges for maintaining the integrity of a number of the ecosystem services upon which the people and economy of Port Vila depend.

The assessment referred to as the Ecosystem and Socio-economic Resilience Analysis and Mapping (ESRAM) process was commissioned by the Secretariat of the Pacific Regional Environment Programme (SPREP) and undertaken by RMIT University and two local civil society organisations in Vanuatu: the Vatu Mauri Consortium and the Vanuatu Education Policy Advocacy Coalition network.

"One critical resilience challenge for Port Vila city is to ensure the sustainability and quality of the city's water catchment, which lies to the east of the Bauerfield Airport land strip and extends eastward into the abutting mountain region (as well as southward to the edge of the municipal boundary). Although this area is zoned to allow only non-intensive agricultural uses, enforcement has lapsed in recent years with housing developments occurring within Zone 1 of the catchment" The report stated.

With increased human activity along the coast, there is increased pressure on beaches, lagoons, mangroves and coral reefs.

In the words of a Blacksands community member, "The fishing sites in the coastal waters at Blacksands are no longer as healthy and abundant as they once were. The size and the number of fish (particularly *Mangru*, as well as shellfish) has decreased and there has been a 10-year trend in the disappearance of green snail and trochus."

Referring to fresh water, "pollution is particularly high in the Tagabe and Prima rivers with plastic, factory and human waste from upstream settlements, factories, riverside toilets, and washing."

"Water levels are lower than previously and

weeds are clogging up the channels, further slowing the water flow" The report stated.

Relating to forests, there is recognition that overharvesting of trees and forest materials is damaging and results in problems such as flooding around riparian zones and erosion along the coast.

"The amount and quality of firewood and materials like *natungura* and *pandanus* has reduced significantly. Many households now have to buy their firewood, which is an expense that can be difficult to afford" The report mentioned.

Adding to the pressures of rapid urbanisation and unplanned development, the report also highlighted that "climate change will act to exacerbate the resilience challenges facing the city into the future."

Obvious impacts of climate change are sea level rise and coastal erosion due to storm surge, coastal and riverine flooding, heat stress and drought.

To counteract these impacts, the report recommended "the implementation of Ecosystem-based Adaptation (EbA) as a viable option for Port Vila's continued resilience into the future."

Reforestation coastal areas and rivers, encouraging protected areas, planting fast growing firewood trees in gardens to increase personal firewood supply, forest management trainings and initiatives and clean-up programs are some EbA activities outlined in the report to restore the ecosystems that support the population of Port Vila and the surrounding settlements. Communities that participated in the study included: Blacksands, Erakor Bridge, Erakor Village, Etas, Fres Wind, Ifira, Mele, Pango, Seaside and Tagabe Bridge. The final report will be released in December 2016. The ESRAM findings and recommendations will guide the activities of the Pacific Ecosystem Based Adaptation to Climate Change Project (PEBACC) Project. In Vanuatu the PEBACC Project sites are Port Vila and Tanna Island.

## 3D map for Taveuni Island



P3DM MAPPING, TAVEUNI. PHOTOS: M'LIS FLYNN



The people of Taveuni can now view their island on a tangible 3 dimensional model map, thanks to support provided by the Secretariat of the Regional Environment Programme (SPREP) through the Pacific Ecosystem based Adaptation to Climate Change Project (PEBACC) in partnership with the leaders and communities of Taveuni.

Speaking at the launch of the model at Somosomo village on 28 October, Fiji's Conservator of Forests from the Ministry of Forestry, Mr. Elik Senivasa, said the model is a living and resourceful document for Taveuni Island.

"I believe this model was made by the children, youths and the elders and this just goes to show the amount of knowledge that will be passed to the younger generations so that they are able to understand the developments that take place on the island and the need for sustainability of the environment."

"By just looking at the model, we can see a lot of changes to the land settings especially through infrastructural development." Mr. Senivasa said.

Mr. Senivasa added that while development is encouraged, the people need to work together to ensure that planning is participatory and that the resources are managed wisely for future generations.

Fiji's Project Officer of the PEBACC Project,

Ms. Filomena Serenia explained that the key objective of the mapping exercise is to develop an effective decision making tool relating to not just the management of natural resources but additionally, climate change adaptation and development activities on Taveuni.

"It was great to see community people, leaders and government representatives actively engaged in the mapping exercise. P3DM is a powerful tool to increase community ownership and empowerment in natural resource planning." Ms. Serenia said.

Traditional conservationist and Coordinator of Bouma National Heritage Park on Taveuni, Mr. Sipiriano Qeteqete is pleased that Taveuni can access such a tool and says the model will be influential for community action.

"Having a 3D model of the island will be a great resource for community awareness and discussions. To date, we have just been talking but nothing to show the communities. So to be able to show the entire island and the state of the natural resources to the communities will make a big difference towards action."

The development of the model is part of a bigger climate change adaptation consultation and planning process currently underway in Taveuni supported by PEBACC.

# Rescuing mangroves in Ra province, Fiji



COMMUNITY MEMBERS REPLANTING MANGROVES IN RA PROVINCE  
PHOTO: APISAI BOGIVA

Many Pacific nations host important areas of mangroves, which provide valuable ecosystem services that contribute to climate change adaptation, such as flood, storm and erosion control; prevention of salt water intrusion; and breeding, spawning and nursery habitat for commercial fish species. The cherry on the cake is that mangrove ecosystems also play an important role in carbon sequestration.

For instance, while projections indicate up to three times more extreme rainfall events by 2090 in the Pacific as well as more severe tropical cyclones – depending on our future greenhouse gas emissions, healthy mangrove ecosystems can help protect coastal assets and save lives by reducing storm surges. They can also play an important role in terms of food security through supporting fisheries and preventing salt water intrusion in agricultural fields and gardens.

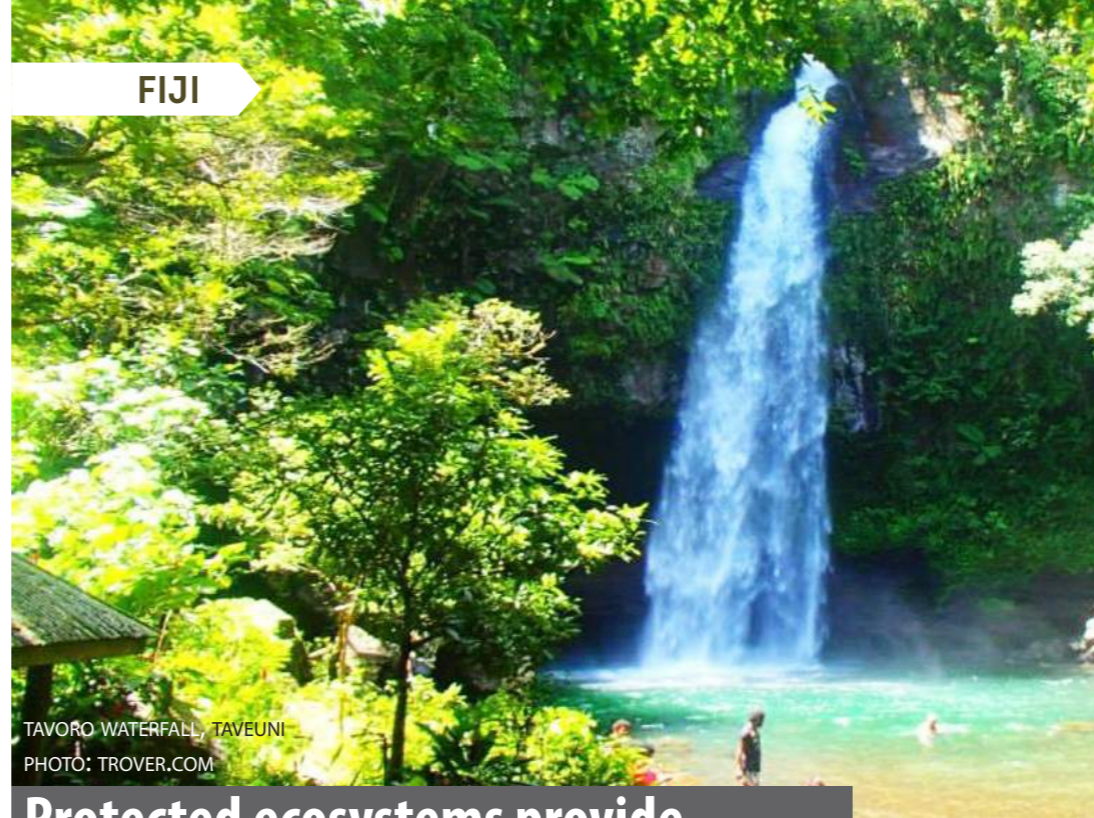
However, mangroves are under increasing threat from anthropogenic pressure and sea level rise. In Fiji, according to the Tropical Cyclone Winston Post Disaster Needs Assessments, 2016, the major pressures on mangroves are illegal logging and fuelwood collection, which led to around a 25 percent loss of total mangrove area from 2003 to 2013.

Protecting mangroves from anthropogenic threats and restoring these ecosystems, while insuring they can sustainably deliver adaptation services to populations, is a robust ecosystem-based adaptation strategy, and a major one to consider for Pacific nations. This is an objective of the RESCCUE project in Fiji.

RESCCUE – Restoration of Ecosystem Services and Adaptation to Climate Change

– is a regional project coordinated by the Pacific Community (SPC) which fosters adaptation to climate change through integrated coastal management and innovative financial mechanisms. The project’s main objective is to strengthen the resilience of Pacific populations and ecosystems to climate change.

In Fiji, the project is implemented under the supervision of both SPC and the Fijian Government by the Institute of Applied Sciences (University of the South Pacific) with Landcare Research, Wildlife Conservation Society, Conservation International, and the Fiji Environmental Law Association. RESCCUE operates in two pilot sites: Ra and Kadavu provinces. In Ra province, the project is focusing on mangrove protection and rehabilitation in five areas along the coast. The activities include: mapping of the coastline and the development of a profile of the coastal area; determining with communities areas to be revegetated (e.g. identification of high and low energy areas); establishing temporary community-based nurseries; replanting and monitoring; and conducting consultation with communities to establish a mangrove *tabu* area with an associated management plan. The selection of restoration sites and mangrove species is conducted in a way that ensures strong adaptation services: for example, the *Rhizophora* genus is used to better control erosion and minimize impacts from storm surges. The recently conducted operations also accounted for the devastating impacts of Tropical Cyclone Winston on Ra province, including the adjacent fringing and barrier reefs, during which mangroves were affected – some species being more resilient than others – but not destroyed.



TAVORO WATERFALL, TAVEUNI  
PHOTO: TROVER.COM

## Protected ecosystems provide economic benefits – Bouma, Taveuni

A resolution by the people of Bouma in Taveuni 20 years ago to put an end to logging activities and conserve their environment is reaping its harvest. Today, the restored and protected ecosystems in the area serve as excellent tourist attractions on the garden island of Fiji.

Traditional Conservationist and Coordinator of Bouma National Heritage Park, Mr. Sipiriano Qeteqete says “Bouma offers the most tourist attractions on Taveuni Island today because of its conservations efforts over the years.”

“Tourists are attracted to the excellent waterfalls, diving opportunities, abundant bird life, bush and coastal walks. This has provided employment for our people and the money is coming into our communities and is being used for the education of our children.” Mr. Qeteqete explained.

Mr. Qeteqete recalls that “prior to conserving our resources, our key income was from logging and fishing. Our land is not as fertile as the other parts of Taveuni where *dalo* (taro) is farmed for export. Our opportunities were very limited.”

“But when we resorted to conserving our natural resources, we established four projects that are today the major natural attractions: a marine park, Bouma National Heritage Park, the Tavoro Waterfall and Lavena coastal walk.”

“Cyclone Winston earlier this year was a real threat to our conservation efforts but not all was destroyed. The coastal walk suffered the most damages but we are rebuilding it” Mr. Qeteqete added.

Apart from the economic benefits gained from the tourism activities, nature is restored and food security is secured for the Bouma communities where there is decent supply of sea food and other vital resources such as fresh and clean water.

Mr. Sipiriano who is a conservationist of more than twenty years on the island says he sees the difference in the resources when he visits other parts of the island.

“They are experiencing water shortages and their *dalo* yields are poor. Often the district leaders would invite me to speak to the communities but they don’t seem to take conservation seriously.

“I am pleased that the PEBACC project is doing work on the island and with the development of the P3DM map of Taveuni, the people will now see for themselves the situation on the ground and have greater appreciation for nature and what is left on the island.”

“It hurts me to see people destroy the environment especially cutting down trees and I will continue to be a voice for the protection of nature. I am thankful to various partners: New Zealand Aid, National Trust of Fiji, Native Land Trust Board, Fiji Department of Forestry, Helen Sykes Resort Support and Nature Fiji for their support to our projects” Mr. Sipiriano added.

Mr. Sipiriano who is currently employed by National Trust of Fiji to do his conservation work, sees no greater responsibility than this for his home island, people and future generations.



PHOTO: AARDVARKTRAVEL.COM

LAVENA COASTAL WALK, BOUMA, TAVEUNI

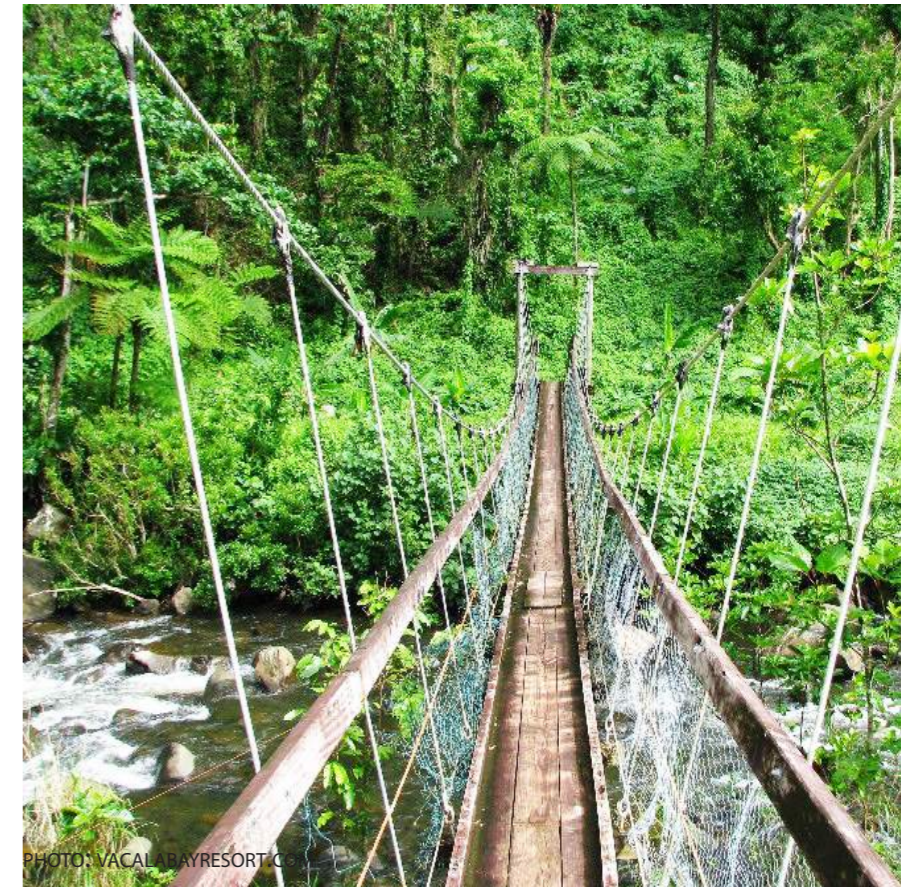


PHOTO: VACALABAYRESORT.COM

PART OF LAVENA COASTAL WALK, BOUMA, TAVEUNI

# In a changing climate, we need nature to save us from ourselves

© Shaun Martin

By Shaun Martin (Senior Director, Climate Change Adaptation and Resilience, World Wildlife Fund)

If you lived in Honolulu and suddenly relocated to Minneapolis, it's fair to say you would need to make a few lifestyle adjustments. You would have to buy warmer clothes, learn how to drive in icy conditions, and perhaps even trade in your surfboard for cross-country skis. In short, you would have to adapt to an unfamiliar climate.

These days, you don't need to move somewhere far away to experience a different climate: a new climate is moving to you. In today's warming world, adapting to climate change is a necessity facing every family, community, industry and nation. Climate change is already affecting where and how we grow our food, how much water we have to drink, and which places are safest to build our homes. We must rethink all of the implications climate change has on our daily lives and if we're equipped to manage situations we haven't experienced before. For example, how will we fight longer and more intense forest fire seasons, manage outbreaks of new diseases and repair homes and property continually damaged by increasingly frequent extreme weather events?

Adapting to climate change is perhaps the greatest test that humankind has ever faced. And, we must use every tool at our disposal to address this global challenge.

One tool that's getting lots of attention here at the IUCN World Conservation Congress is called "ecosystem-based adaptation," or the use of nature to help people adapt to the adverse consequences of climate change. The concept is simple. Anyone who has sought refuge from the heat under a shady tree understands that living things around us can make us more comfortable and safer under unpleasant or threatening circumstances. Similarly, it stands to reason then as we prepare for more frequent and intense heat waves, cities might consider increasing green spaces with lots of trees to protect people from exposure to dangerously high temperatures. This simple idea is what ecosystem-based adaptation might look like.

Wherever we look, nature can play an important role in preparing us for a changing climate.

If your community is subject to more frequent flooding, wetlands can provide a natural buffer to absorb excess water that would otherwise damage homes and infrastructure. Coastal communities benefit from mangroves that provide protection from storm surges associated with hurricanes and typhoons. And wild plants that are well-suited to hot and dry climates may become more valuable as we seek new sources of food and medicine.

And yet, despite the value these natural systems provide for our health, welfare and public safety, too often we destroy

them for short-term gain. We clear forests for agricultural plantations, cut down mangroves for coastal development, dam rivers and drain wetlands. When we degrade these natural systems, not only do we erode nature's ability to sustain itself, these actions increase our own vulnerability to the effects of climate change. In fact, the greatest irony is that the very plantations, coastal development and dams we are creating are themselves at greater risk of failure due to climate change, particularly when nature is no longer available to protect them.

The moral of this tale is simple: protecting nature helps us protect ourselves from the changing climate. Ecosystem-based adaptation is a promising yet largely untapped innovation that can help people prepare for an uncertain future. We can no longer afford to willfully destroy the natural world at a time when we need it more than ever. Nature is our best hope for the future.

This commentary first appeared on the Huffington Post at [http://www.huffingtonpost.com/shaun-martin/in-a-changing-climate-we-\\_b\\_11800250.html](http://www.huffingtonpost.com/shaun-martin/in-a-changing-climate-we-_b_11800250.html)



THE THREAT OF CLIMATE CHANGE LOOMS LARGE OVER DEVELOPING COUNTRIES IN PARTICULAR. NATURE CAN HELP REDUCE THE VULNERABILITY OF ITS PEOPLE. PHOTO: SHAUN MARTIN.

HOMES LIKE THESE IN BELIZE COULD BENEFIT FROM THE PROTECTION OF MANGROVE ECOSYSTEMS, WHICH HELP REDUCE DAMAGE FROM STORM SURGE AND STRONG WAVES. PHOTO: SHAUN MARTIN.



VIETNAM IS AT RISK FOR INCREASED FLOODING WITH MORE INTENSE RAINFALL EVENTS. PHOTO: SHAUN MARTIN.

## ESRAM

### What is an ESRAM?

An ESRAM is a process for ecosystem and socio-economic resilience analysis and mapping (ESRAM). Key elements include linking technical skills with local knowledge using participatory approaches; using the landscape as the level of analysis; focusing on inter-connectivity between systems, generating future scenarios based on current and anticipated trends.

### What is the objective of an ESRAM?

To provide a robust framework for planning ecosystem-based adaptation interventions.

### What are the current ESRAM studies in the Pacific?

ESRAMs are being conducted in Fiji, Solomon Islands and Vanuatu.

### When will the ESRAM be released?

The ESRAM study reports for the three countries will be available in early 2017.

### Who will have access to the ESRAM reports?

The ESRAM main and synthesis reports will be widely distributed and will be available for download on the SPREP website.




COMMUNITY DISCUSSIONS, ESRAM STUDY IN VANUATU. PHOTO: D.LOUBSER/SPREP



# ECOSYSTEM-BASED ADAPTATION

## PROMOTING NATURAL SOLUTIONS TO CLIMATE CHANGE



### WHAT IS ECOSYSTEM-BASED ADAPTATION (EbA)?

“Ecosystem-based Adaptation is 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... it aims to maintain and increase the resilience and reduce the vulnerability of ecosystems and people in the face of adverse effects of climate change.” CBD 2009

#### What are the benefits of EbA?

Having a healthy environment around us secures our supply of freshwater and other natural resources. These are called ‘ecosystem services’ and are the added benefits that do not come when ‘hard’ engineered adaptation solutions, such as when seawalls are built.

#### But what is adaptation?

Adaptation is making changes in order to reduce the vulnerability of a community, society or system to the negative effects of climate change.

#### When is EbA the best adaptation option?

There are many different approaches to adaptation. The best option will reduce the vulnerability of a group of people in the most cost effective way over the long term. This could be through conventional adaptation, EbA or a combination of both.

The ability to compare EbA with conventional solutions will need to be built through effective monitoring of and evaluation of current EbA projects and by building the capacity of local decision-makers to select the best adaptation options available.

#### In the Pacific, how can EbA help us adapt?

By protecting intact ecosystems, managing natural resources and restoring degraded ecosystems.

For example, steep slopes in our region are often stabilised by deep rooted vegetation. As rainfall is expected to be more intense in the future, this natural buffer protects communities from flooding and landslides and also ensures that reefs are healthy by reducing the impact of sediment flows from erosion.

Keeping forests intact, or replanting them, also provides a source of building materials, crops and firewood.

Water catchments are also protected and in the sea, healthy reefs can then support greater fish populations.

#### Where can I get more information?

For further information about EbA and the PEBACC Project, visit [www.sprep.org/pebacc](http://www.sprep.org/pebacc).

#### About SPREP

SPREP is the primary intergovernmental environmental organisation working in the Pacific. Visit [www.sprep.org](http://www.sprep.org) for more information about the work of SPREP in the region.