

**Pacific-German Regional Programme on
Coping with Climate Change in the Pacific Island Region**



**Climate Change Adaptation Successes
at Pele Island, Vanuatu**



Quick Facts:

Project Duration: 01/2009 -12/2015

Implementation Partner: Secretariat of the Pacific Community (SPC) & Secretariat of the Pacific Regional Environment Programme (SPREP)

Project Countries: Vanuatu + 11 other PICs

Funded by: German Federal Ministry for Economic Cooperation and Development (BMZ)

Introduction

Pacific Island Countries (PICs) are hit hard by climate change due to the high vulnerability and insufficient adaptation abilities. The predicted sea-level rise, changes in precipitation patterns and rising temperatures will have negative effects on these countries. Coastal erosion, salt water intrusion, changes to cyclone, and changing ecosystems place a heavy burden on the sustainable development of the PICs.

The 'Coping with climate change in the Pacific Island Region (CCPIR)' programme aims to strengthen the capacities of Pacific member countries and regional organisations to cope with the impacts of climate change. The programme is funded by the government of the Federal Republic of Germany through the Federal Ministry

for Economic Cooperation and Development (BMZ) and implemented through GIZ working in partnership with SPC and SPREP. At the regional level, the project aligns with the Pacific Island Framework for Action on Climate Change 2006-2015 (PIFACC).

The programme commenced its activities in 2009 working with Fiji, Tonga and Vanuatu. As of 2011 it has been expanded to another nine Pacific Island Countries and the duration has been extended until 2015.

Objective

The overall objective of the programme is that 'the capacities of regional organisations in the Pacific Islands region and its member states to adapt to climate change and mitigate its causes are strengthened'.

Main Components

To achieve the objective, the following six components have been collaboratively developed, under which national programme activities are aligned.

Component 1: Strengthening regional advisory and management capacity

Component 2: Mainstreaming climate considerations and adaptations strategies

Component 3: Implementing adaptation and mitigation measures

Component 4: Sustainable tourism and climate change

Component 5: Sustainable energy management

Component 6: Climate change and education

The Vanuatu CCCPIR programme has actively been engaged in components 2, 3 and 6 since 2009, and expanded its focus to cover Components 4 & 5 in 2012.

The Pele Island Project Site

Pele Island in Vanuatu is one of those places that you imagine when you think of the South Pacific; 4km² of white sandy beaches, rolling volcanic hills, coconut palms, and colorful coral reefs. Sound idyllic? Think again. Unfortunately, Pele Island is now host to another, more menacing stereotype: climate change. Home to around 400 people, Pele's environment is being battered by an onslaught of climate-related shocks from increased cyclonic activity (~3 already experienced each year) to variable rainfall patterns to coastal erosion and salt intrusion in freshwater wells. Depending heavily on the husbandry of livestock, small-scale farming of manioc, taro and banana and the harvest of marine resources like fish and giant clams, the people of Pele are particularly vulnerable to climatic impacts on their natural resources. Even with Vanuatu contributing to less than 0.001% of global carbon emissions, its island populations, like the people of Pele, are still faced with the daunting task of adapting to the changes. Adaptation is not easy, and for most island individuals who earn an average income of \$60USD per week, it can seem impossibly overwhelming.

But with the help of the BMZ-funded Coping with Climate Change in the Pacific Islands Region, the Secretariat of the Pacific Community (SPC) and the Government of Vanuatu, GIZ is now assisting the small communities on Pele Island to cope with the adverse effects of climate change.

Livestock Husbandry Improvement

The people of Pele have voiced concerns regarding a key source of food and cultural livelihood: local pigs. Pigs are a traditional part of the Melanesian diet, and the people of Pele keep nearly 200 pigs at any one time. Today's pigs however are experiencing considerable stress related to the weather. A prolonged drought in 2010 led to high mortality and disease among the island's animals. In addition pig feed (manioc and banana leaves) have been drying up, leading to a decline in growth rates.

The SPC-GIZ has responded with the construction of a pig rearing facility designed to encourage new breeds of pigs that may be more tolerant to extremes in weather and climate related stresses. The key to project lies in the traditional knowledge that wild boars are more climatically tolerant than the varieties reared in most Melanesian villages. By crossing wild pigs with those bred for passivity and domestication, the goal is to develop new varieties that are both productive and climate tolerant. GIZ and the Vanuatu Department of Livestock ran a technical training with over 30 island residents on animal husbandry and climate change adaptation options. Today over 30 cross-bred adapted pigs have been shared with local farmers to improve their resilience against the negative impacts of climate change.

In addition to the breeding program, the facility is also a hub of innovation on pig husbandry, including new techniques for feeding animals using new and high nutrient diets. Tilapia fish, commonly raised to supplement human fish consumption are also being reared to supply much needed protein to available pig feeds. In addition, vegetables and root crops are being grown specially to feed the pigs. A technique called silage has been piloted on Pele, wherein excess crops are treated for long term storage and preservation for use during periods of low feed availability.

For More Information: <http://www.nab.vu/sites/all/files/projects/livestock.pdf>

Coastal and Catchment Erosion

A second major concern of the residents of Pele Island is the ever increasing problem of erosion, both on the slopes of the mountain and also along the coastlines. An increase in the frequency of severe storms hitting the island has caused the upper slopes of the hillside to erode into food gardens and also large chunks of beachfront to fall away into the sea. The effects of this increasing erosion are severe for both food security and land tenure on the small island.

The SPC-GIZ project has responded with the design and implementation of a community forest nursery intended to produce soil-stabilizing tree species to minimize the erosion problems. After a two-day technical training facilitated by GTZ and the Vanuatu Department of Forests, a Pele Island Forestry Association was formed and has already begun rearing and replanting thousands of Sandalwood, Bluewater, Tamarind, Whitewood, Citrus, Vetiver Grass and Mahogany seedlings, climate resilient resistant trees that is also highly valued in the lucrative perfume industry. The forestry association has 45 members from all four island villages, including 12 youth and 15 women, who collaborate to maintain the forestry nursery and collect endemic nuts and seeds for germination and replanting in eroding areas.

For More Information: http://www.nab.vu/sites/all/files/projects/forest_nursery.pdf

Invasive Species Control

The SPC-GIZ project has also come up with a creative solution to improve soil fertility which is being impacted by climate changes based on locally available marine pest species: the Crown of Thorns starfish. Pele Island's coral reefs are under siege from another threat: the coral eating Crown of Thorns (COT) Starfish. These starfish undergo population explosions when sea waters warm quickly and when large amounts of land-based sediments are eroded onto the reef. A single COT can consume up to a square meter of live coral reef in a week. Being covered in poisonous spines, not many predators on the reef can eat the COT starfish and so outbreaks often end when the coral reefs of an affected area have been completely decimated.

Solving both the COT starfish problem and the poor soil issue, the SPC-GIZ project developed a process for collecting the starfish, treating them to remove salt, and turning them into rich fertile soil via composting. The entire composting process takes less than 8 weeks, and has provided the Pele Island climate nursery with an abundant supply of rich planting soil. The coral reefs are much better off now too, with over 20,000 dangerous starfish removed for the project during a series of COT underwater 'clean up' competitions involving more than 150 islanders organized by SPC-GIZ and the Pele Island Forestry Association.

Water Protection and Soil Fertility

To protect underground water supplies and also enable agricultural production on Pele's poor and sandy soils a novel design for a composting toilet. The toilet is now fully operational to harvest the 'waste' produced by the children of Pele's Tangovauwia Primary school, to turn it into highly fertile compost. Trials are currently underway to compare the productivity of garden crops fertilized with toilet compost, starfish products and even manure from local pigs and chickens. Already results are indicating that vegetables are significantly more productive when supplemented with locally produced and organic fertilizers.

For More Information: <http://www.nab.vu/sites/all/files/projects/compost.pdf>

Food Preservation & Disaster Risk Reduction

Vanuatu is known for its bountiful harvests of fruits and nuts (like mango, coconut, papaya and tamarind), but climate change is threatening these very important sources of food and income. Climate change and variability are already affecting the timing and success of flowering and fruiting of many of these crops. For example, the 2011 mango crop was affected by the heavy rains caused by two consecutive La Nina events. Climate extremes can also cause trees to fruit early, late or not at all. The high vulnerability of our fruits and nuts to climate change have made them the focus of the SPC-GIZ Climate Change Program.

In Vanuatu, very little value adding of products is undertaken. For example, when tomatoes are in season, the markets are flooded, prices drop and much produce is wasted. Only a few months later, no tomatoes can be found. Developing ways to store and preserve these excess fruits and nuts for use during cyclone periods when little food is available is a critical climate adaptation strategy. Some islands of Vanuatu have very well developed traditional food storage techniques, like the preservation of breadfruit in the Torres Islands, while others do not.

The SPC-GIZ program, in collaboration with Charles Long Wah of the Vanuatu Kava Store, have developed a Vanuatu-appropriate and efficient solar drying system, and organized training workshops on the basic elements of fruit drying, food security and value adding. With the help of the project's detailed step-by-step instruction and drying manual, village women have learned and are now producing quality dried products for food security and even extra income generation.

For More Information: <http://www.nab.vu/sites/all/files/projects/solarfruit.pdf>

Honey Bee Husbandry for Income & Food Security

The European honey bee, *Apis mellifera*, is distributed throughout the world, including throughout the Pacific Islands. The honey bee is important to the people of Vanuatu as a source of food security and income (through honey sales). It is also the most economically valuable pollinator of agricultural crops worldwide. Bees are crucial in maintaining agricultural biodiversity by pollinating numerous plant species whose fertilisation requires an obligatory pollinator.

While bees have adapted remarkably well to many climatic biotopes, changing climatic conditions will have an impact on the survival and productivity of Vanuatu's local honey bee strains. The SPC-GIZ Coping with Climate Change in the Pacific Island Region project is seeking to find innovative ways to enable small-scale honey bee enterprises to adapt to climate change. The adaptive strategies being trialled on Pele include:

- Modification of hive design to suit changing temperature and rainfall
- Selection of disease free strains
- Improved husbandry techniques
- Proactive use of agro-meteorology information for planning
- Trials on increasing agricultural productivity with bee pollination

For More Information: <http://www.nab.vu/sites/all/files/projects/bees.pdf>

Fish Aggregating Devices (FADs) for Food Security

Vanuatu was once known for its bountiful reef seafood. However harvests are low throughout the country. A major problem facing the fisherman on Pele is a decline in catches of coral reef fish. Reefs are dying due to combined effects of bleaching, severe storm damage and predatory crown of thorns starfish. Overharvest for sale into the commercial markets is also taking its toll on local fisheries.

While coral fisheries are declining, many deepwater fish stocks remain in good condition. Fishing in deeper waters is costly as fishermen must pay for fuel to find pelagic fish, travel in dangerous seas and spend time away from their families and gardens. As such, deep water fish are often too highly priced for local consumption. In effect, there is a serious mismatch between fish demand and supply in local communities that is being exacerbated by climate change.

To overcome the hardships faced by local fisherman. The Vanuatu Fisheries Department and the SPC-GIZ Climate Change Program have installed a Fish Aggregating Devices (FAD). The FAD attracts deep water pelagic fish (like tuna, mahi-mahi and marlin) close to local villages. The FAD enables adaptation to climate change by providing a nearby source of food security, allows enhanced revenue generation and releases fishing pressure from climate vulnerable coral reefs.

For More Information: http://www.nab.vu/sites/all/files/projects/fish_aggregating_device_fad.pdf

Conclusion

While Pele Island in Vanuatu is still predicted to be severely impacted by changing global climate, the SPC-GIZ adaptation programme is working hard to ensure that the island communities can cope now and into the future.

<http://www.nab.vu/projects/coping-climate-change-pacific-island-region-spc-giz>

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