



European Union



Pacific  
Community  
Communauté  
du Pacifique

# Global Climate Change Alliance: Pacific Small Island States Individual Country Evaluation Report - Tonga

PREPARED FOR  
Pacific Community  
23 May 2016

## REPORT PREPARED BY

PACIFIC RESEARCH AND EVALUATION ASSOCIATES

Martin Pritchard [martin@prea.com.au](mailto:martin@prea.com.au)  
Damien Sweeney [damien@prea.com.au](mailto:damien@prea.com.au)  
[www.prea.com.au](http://www.prea.com.au)



**PREA**  
PACIFIC RESEARCH & EVALUATION ASSOCIATES

## 1. INTRODUCTION

This is one of nine individual country evaluation summary reports produced as part of the Global Climate Change Alliance: Pacific Small Island States post-project evaluation<sup>1</sup>.

The Global Climate Change Alliance: Pacific Small Island States (GCCA: PSIS) Project is a European Union (EU) funded initiative to assist nine smaller Pacific Island states (Cook Islands, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Niue, Palau, Tonga and Tuvalu ) to adapt to climate change. The project was implemented by the Pacific Community (SPC), with an implementation period from July 2011 through to November 2016<sup>2</sup>.

The overall objective of the project was to support the governments of nine small island states of the Pacific in their efforts to tackle the adverse effects of climate change.

The GCCA: PSIS project consisted of on-ground climate change adaptation activities in specific sectors – coastal protection, marine resources, health, agriculture, and freshwater; supported by mainstreaming of climate change into national and sectoral policies, plans, budgets and procedures. The project also provided technical assistance, capacity building and supported regional collaboration.

The four components and key result areas (KRA) of the project were:

1. Climate change mainstreamed into national and/or sector response strategies.
2. Well-articulated sectoral adaptation strategies that address budget support criteria.
3. National climate change adaptation projects implemented.
4. Streamlined technical assistance that supports national adaptation responses delivered by regional organisations in a collaborative manner.

The individual country evaluation report presented below is guided by responses to the key evaluation criteria provided in the original terms of reference:

- Relevance & EU Coherence
- Effectiveness
- Impact
- Efficiency
- Sustainability
- Cross-Cutting themes of gender and the environment
- Visibility

The report also provide a summary of best practices and any specific recommendations for future action or improvement.

---

<sup>1</sup> The evaluation report is presented as a full report containing all sections, as well as separate executive summary, individual country evaluation summaries and case studies.

<sup>2</sup> The project was granted a one-year extension.

## 2. TONGA EVALUATION REPORT

### Sector for Climate Change Adaptation Project

Coastal protection

### Project

#### Trialling Coastal Protection Measures in eastern Tongatapu

Three coastal villages in the eastern side of Tongatapu were selected for piloting both soft and hard coastal protection measures. Measures piloted include groynes (concrete sedi-tunnels with varying degrees of permeability and groyne spacing) and detached breakwaters each combined with sand recharge. This is the first time these coastal protection measures have been implemented in Tonga and it is the first time permeable sedi-tunnels have been used in the GCCA: PSIS. Both measures were complemented with the planting of coastal plants and mangroves. The approach selected is categorised as 'managed coastline advance' which accepts that measures implemented will only delay (not prevent) coastal erosion and loss of land.

Monitoring activities at the pilot sites are ongoing to determine the degree of effectiveness of the coastal protection measures. Initial monitoring results indicate the measures have had a positive impact in the short term.

### Implementing Entity

The Implementing Entity was the Ministry of Lands, Environment, Climate Change, and Natural Resources (MLECCNR) in partnership with the Ministry of Infrastructure. The JNAP Technical Working Group (TWG) provided project oversight.

The secondment of an experienced senior engineer from the Ministry of Infrastructure to the Project Management Unit (PMU) based within the Climate Change Division of MLECCNR bridged a capability gap in the PMU to oversee the infrastructure based components of the project. This implementation arrangement was effective and can be recommended in the future to provide the coastal engineering knowledge and skills to the PMU.

### Relevance & EU Coherence

The Tonga project is highly relevant to national priorities as documented in the Tonga's Joint National Action Plan (JNAP) for Climate Change Adaptation and Disaster Risk Management (2010) (Goals 3 - vulnerability assessment and Goal 4 - increased climate change resilience). The project demonstrates coherence with other EU programmes that aim to increase resilience of PSIS to climate change vulnerability. The project also aligns with SPC's Climate Engagement Strategy.

The project is highly relevant to the communities at the pilot sites. Much of the socio-economic activities and critical infrastructure (including the coastal road) exist in low lying coastal areas which are highly vulnerable to negative impacts of climate variability. Communities in eastern Tongatapu have been exposed to flooding and land loss due to coastal erosion which is exacerbated by storm surges. Existing hard infrastructure coastal protection at the pilot sites was in disrepair and ineffective.

Some other relevant climate change projects were being implemented or planned in Tonga during the planning and implementation stages of the GCCA project. These projects include:

- Pacific Adaptation to Climate Change (PACC) – Focused on mainstreaming climate change in national and sector policies and implementing measures to increase water security and pilot coastal protection measures.
- University of the South Pacific-European Union Global Climate Change Alliance project (USP-EU GCCA) – Focus area is food security (Tongatapu) and water security (Vava’u and Ha’apai).
- Strategic Programme for Climate Resilience (SPCR) 2014 – 2019 – One of the many focus areas includes coastal protection.
- Coping with Climate Change in the Pacific Island Region – Programme (CCCPiR) 2009- 2015 (GIZ)

There was no duplication of work between the projects.

### Effectiveness

#### Most effective in implementing two coastal protections measures in eastern Tongatapu that were informed through best practice feasibility studies, research and design phases

Overall the project was found to be highly effective with the project purpose being achieved and all components of key results areas delivered and the four targets exceeded. The project’s achievements against the revised logframe (April 2015) are presented below.

Expected result	Indicator	Indicator achieved
<b>Overall Objective:</b> Increase resilience to climate change impacts in Tonga	Minimum 2 new modes of delivery available for climate change adaptation and coastal management by 06/2015	Achieved: Groynes and detached breakwaters complemented with sand recharge and coastal planting
	Climate change adaptation / disaster risk reduction measures incorporated into a diagnostic study that informs an integrated coastal management plan by 06/2015	Achieved: Diagnostic study completed (August 2014) and ready to inform ICM plan.
<b>Purpose:</b> Trial coastal protection measures in eastern Tongatapu	Lessons learnt from these coastal protection interventions shared with other Pacific island nations and stakeholders in Tonga by 12/2015	Achieved: National Lessons Learnt Workshop held in Tonga (October 2015). Lessons shared with future projects GIZ ACSE and ADB SPCR. Lessons shared at regional Lessons Learnt Workshop in Yap (August 2015). Two videos produced to share lessons. Palau delegation visit occurred (February 2015) to learn about Tonga’s coastal protection measures.

Expected result	Indicator	Indicator achieved
	At least 50 stakeholders from national government, local government and communities provide input (written or verbal) to the diagnostic study to inform an integrated coastal management plan by 03/2015	Exceeded: Over 58 stakeholders from Government and the community informed the diagnostic study via three workshops held May – July 2014. 18% of the 43 community members contributing were women.
<b>Key Result Area 1:</b> Education and awareness on coastal management in the context of climate change enhanced in Tonga	Communications schedule of education and awareness activities prepared by 06/2014	Achieved: A very basic communications activity schedule completed. <sup>3</sup>
	At least four education and awareness activities conducted by 09/2015	Exceeded: Six activities conducted. Two primary school beach monitoring field trips, one University of South Pacific class excursion, launch event, speech competition, community meetings and television interview.
<b>Key Results Area 2:</b> Coastal adaptation measure involving hard and soft protection elements identified, designed and constructed for a vulnerable coastal community in eastern Tongatapu	Coastal protection measures selected, designed and costed by 09/2013	Achieved: As evidenced by Feasibility Study and Costing report; Historical Erosion report; Final design; Environmental Impact Assessment completed by August 2013.
	One coastal protection measure completed and in place by 06/2015	Exceeded: Two coastal protection measures (20 groyne sedi-tunnels and 10 detached breakwaters supported by sand recharge and coastal replanting) implemented in Talafo'ou, Makaunga and near Manuka Village in Eastern Tongatapu. 1401 meters of coastline protected.

<sup>3</sup> Activity schedule listed only 6 activities with no dates, responsibilities, purpose or key messages. National Coordinator had a communications background and several more communications activities were carried out that were not documented in the plan.

Expected result	Indicator	Indicator achieved
<b>Key Result Area 3:</b> Effectiveness of the coastal protection measures monitored, in collaboration with other related projects	Staff in MLECC & NR regularly engaged in beach monitoring by 12/2014	Achieved: Quarterly monitoring (beach profiles) started in March 2014 by the Geology Division.
	At least two schools involved in coastal monitoring by 09/2015	Partial: Manuka/Navutoka GPS and Makaunga/Talafo'ou GPS engaged in costal monitoring field trip. These were one-off field trips. No ongoing coastal monitoring is occurring at schools.
<b>Key Result Area 4:</b> Capacity of key stakeholders in Tonga enhanced to plan for coastal change in the context of climate variability and change	Diagnostic study for a coastal management plan prepared by 03/2015	Achieved: Diagnostic study completed (August 2014) and available to inform ICM plan.

The logframe was modified during the course of implementation to reflect revisions to the project design. Notable changes include scaling back the original development of the Integrated coastal management plan to only focus on the diagnostic study (completed August 2014) to inform the plan that will be developed post-project. This decision was made due to the lengthy time required to complete all the consultations that would be integral to the preparation of an integrated coastal management plan. Original "Activity 3.3 Hold training workshops in the monitoring and maintenance ..." was replaced by an activity to construct three playground areas (parks) for communities located at the coastal area sites where protective measures took place. This change was made due to the fact that specific skills and specialist equipment was needed to collect the required monitoring data and carry out the maintenance. Communities expressed an interest in parks for their children to play in. Three parks were created.

Whilst it will take several years to determine the true effectiveness of the coastal protection measures, initial monitoring data and observations can provide an indication of likely success. Beach profiling data captured between March 2014 and January 2016 indicates that the groynes have been effective in retaining the sand that was recharged to the area and additionally accumulating new sand to extend the depth of the beach further seaward. A summary statement in August 2015 noted that the 'this indicates that this design is working in terms of coastal protection'. Positive results were also seen for the detached breakwaters, however, the incorrect representation of the data in some charts does not allow for the accurate interpretation of the data. Observations at the site show small rock sedimentation deposits occurring behind the breakwater and close to the foreshore. It is anticipated that this process of sediment accumulation will continue with time.

Mangroves and coastal plants were planted on the foreshore area at the breakwater site, however, most had died. Plant die off is likely due to the mangroves being planted directly after the site works were completed instead of holding off for 12 months as outlined in the design. This oversight was acknowledged by the project team.

In February 2015, MLECCNR hosted a visit by six representatives from the Palau National Government and the Koror State Government (one of the states of Palau) to share experiences about Tonga's coastal protection project and the procedures used in its implementation. This exchange was extremely successful for both Palauan and Tongan stakeholders.

### **Additional Activities beyond the focus of the Coastal Protection Sector**

Access to climate change finance via new modalities was progressed through revision of the existing Tonga Climate Change Trust Fund Bill and a supporting manual to guide the administration of the Fund. Policy work was undertaken by local and international consultants with input from the JNAP TWG and a Parliamentary Standing Committee. The ADB was also influential in providing input into the Trust Fund structure. However, their input created some confusion within the Ministry of Finance regarding the Trust Fund structure. There were some differences of opinion as to whether the Trust Fund should be housed within the Ministry of Finance or Parliament. The Bill is currently awaiting endorsement by Cabinet. This is the first Climate Change Trust Fund to be established in the Pacific region. It may provide a model for other countries to take as a starting point for replication, pending an assessment of its effectiveness in the short to medium term.

A key mainstreaming measure completed by the project included the revision of the outdated Tonga Climate Change Policy 2006. The new Climate Change Policy 2015 – 2020 was completed in September 2015 and endorsed by Cabinet in February 2016. It provides clear objectives and links to the Tonga Climate Change Trust Fund.

Additionally, a review of climate change mainstreaming into national plans and policies in Tonga was conducted in 2013. A subsequent assessment report of budget support readiness indicated that the likelihood that Tonga would qualify for direct budget support for climate change is high given previous positive assessment<sup>4</sup> and noted strong Public Financial Management (PFM).

Training in 'Proposal preparation using the Logical Framework Approach (LFA)' was delivered to 58 people (29 women, 29 men) over two training sessions in February 2014 and June 2015. The post-training evaluation indicated that the training was successful in building capacity and motivation of Tongan government staff and community based groups to use the LFA to design projects and inform the preparation of proposals. Follow-up impact surveys revealed that seven proposals had been developed since the training and all were informed by components of the LFA. The survey also revealed that participants were using the LFA to inform both proposal writing and general work duties. Weaknesses identified during the first workshop (budgeting and project monitoring) were addressed in the second workshop. Overall, the training was highly valued and participants reported having a high degree of confidence to undertake most steps of the LFA.

### **Impact**

#### **Resilience of coastal communities to the impacts of storm surges and sea level rise increased**

The coastal protection measures will require long term monitoring to determine what sustained impact they have on communities. To date, three strong storm events have demonstrated that the protected areas did not suffer from debris and waves overtopping the coastal road, compared to unprotected areas close by where debris was deposited onto the road by strong waves. As a result of

---

<sup>4</sup> Assessment of National Systems (ANS) undertaken by AusAID

the intervention, community members (based on the small numbers interviewed) feel more protected from storms and sea level rise.

### **Playgrounds provide increased recreation for the broader community and economic development opportunities for women**

Playgrounds are being used by children from pilot communities and neighbouring villages. Children are now playing on the beaches that were previously void of sand and in a marsh-like state. Parents no longer need to drive their children to Nuku'alofa to play at beach parks. Local village women occasionally set up stalls to sell peanuts and snacks which provide a new economic development opportunity for women (a positive unintended consequence). The replenished beaches may in the future attract more locals and tourists. On the flip side, toilets are required at the playgrounds to accommodate sanitation needs of visitors. Additionally, safety measures are required to increase the safety of children crossing the road to get to the playground. There has already been one reported incident of a child being hit by a car crossing the road. This is an unintended negative consequence of the playgrounds being established. Warning cones have been positioned to act as a temporary crossing whilst MLECCNR wait for proper signage and road painting to occur.

### **Fish species and numbers have reportedly increased**

Whilst not yet proven by a marine survey, some local residents have reported that since the site works, more fish are in the area and species of fish that had disappeared in recent years have returned. Such evidence is anecdotal and the impact may be short-term as a result of disturbances to other habitat or the increased nutrients released into the area by the coastal works. This is another positive unintended consequence from the project.

## **Efficiency**

### **Time**

All planned project activities (based on revised logframe) were completed within the allotted project timeframe. However, several activities (notably the coastal protection measures) were delayed and not completed as per the timeline in the PDD. The main delay experienced was due to the halting of construction works when police ordered the construction contractor to stop taking sand from the designated extraction points. Despite consultation with Town Officers who were involved in the PDD design process, some local community members were not happy about the sand being taken from the proposed sites (which were changed twice during the project). Rumours about the project spread for political reasons appear to have inflamed community sentiment<sup>5</sup>. Sand extraction (this time from the lagoon) and beach recharge continued after further community consultation.

### **Cost**

Tonga had acquitted 100% of its €565,850 allocation by March 2016. €65,850 was allocated for national coordination and the remainder for the climate change adaptation project.

A review of project finances early in 2015 indicated that the project contingency had not been required to complete planned works (allocated). These funds were utilised to construct eleven extra groyne representing an efficient use of all project funds.

---

<sup>5</sup> It was rumoured that the project was benefiting financially by taking sand from beach areas without compensation being paid when the project had budgeted to pay for sand. This rumour was untrue.



Estimated costs of different coastal engineering approaches were developed by CTL Consult and this information was considered in the final selection of coastal measures implemented and the scope (number of sites) that could be targeted.

### **Staffing**

The core Project Management Unit (PMU) consisted of a national coordinator and senior infrastructure engineer (on secondment from the Ministry of Infrastructure) in the first year. This secondment was a key to filling a capability gap in the infrastructure component of the project. A finance officer was recruited in Year 2 to help the coordinator focus on implementation. The bulk of project implementation was contracted out to a local construction company and the services of an international coastal engineering company were procured for the feasibility and design study, as well as limited monitoring and oversight during implementation. The PMU took the lead in the implementation of education and awareness activities.

Evidenced by PMU feedback and the fact that the project was completed within the timeframe, the evaluation finds that human resources allocated were sufficient (both in terms of capacity and capability) to deliver the project.

Overall the evaluation finds the project was delivered with a high degree of efficiency in terms of time, financial investment and staffing.

### **Sustainability**

The detailed design for the coastal protection measures outlined that it may be necessary to recharge the pilot sites with more sand in between two to five years – this is standard practice with sand recharge. The lifespan of the groynes is estimated to be approximately 5-10 years after which maintenance or replacement may be needed.

There is no core budget allocation being set aside for sand recharge or repair of the groynes. Infrastructure maintenance is reliant on either external financial support either through new projects or an allocation from the Tonga Climate Change Trust Fund (if it is endorsed and funded). This maintenance and future project replication work is one of the main intended uses for the Fund resources.

There are currently no plans in place to continue either the community or schools education programme; however it is possible the consultation process for the ADB SPCR project may fill part of this role in the short to medium term. The SPCR project has the same target area (Eastern Tongatapu) as this project and it is anticipated the project will replicate and complete works scoped in the original design documentation that informed the GCCA project.

Project monitoring of pilot sites is reliant on the Geology Division situated within the Ministry of Lands, Survey & Natural Resources. The Division is committed to conducting quarterly monitoring as part of its mandate (core funding). It is highly likely the SPCR project will make a point of ensuring this monitoring occurs up until 2019. Whilst the Geology Division conducted project monitoring without receiving any direct GCCA funds, the Division did receive some equipment (total station for surveying) funded by the GCCA project to conduct detailed beach profiling. The Division recommended that future projects allocate some funding to monitoring activities to cover both new equipment and the overtime claims for staff wages. Beach monitoring can only be conducted at low tide and thus staff often need to work outside of standard business hours.

Overall, the benefits of the project are highly likely to continue in the short to medium term (1 to 5 years). Longer term sustainability is dependent on endorsement of the Tonga Climate Change Trust Fund Bill and funding from external donors will be required for the ongoing benefits of the project.

## Cross-Cutting

### Gender

Women were represented (38%) in capacity building activities and community consultations, including the project design workshop. Women also raised the issue of children's safety during the construction period and this was addressed through frequent radio announcements about the works' schedule and the blocking off of sedi-tunnels entrances where children may get trapped. Whilst these are positive indicators of inclusiveness, women, youth and the elderly (vulnerable groups) only had one token mention in the concept note and PDD. Whilst it is acknowledged that the project beneficiaries are the entire target coastal villages who are all vulnerable to the impacts of sea level rise, a greater focus on the specific needs of vulnerable groups in the project design process could help identify opportunities for them to benefit to a greater extent.

### Environment

The PDD risk management matrix did not identify any specific environmental risks outside of the impacts of natural disasters. An Environmental Impact Assessment (EIA) was conducted prior to this project to consider environmental risks and management responses.

With the exception of community concerns around the mining of sand (for sand re-charge), there were no reported negative environmental impacts from the project.

Unintended positive environment benefits that have occurred include the (anecdotally reported) increase in fish varieties and fish numbers at the pilot coastal sites.

The CTL Consult Feasibility Studies report noted that one cause of coastal erosion was sand mining conducted ten or more years ago. The project EIA (2012) community survey involving 244 households (74% of the target population) found that 9.8% of interviewees still mined sand from the local beaches for funerals and small domestic activities. Future projects could seek to raise awareness about the impacts of local sand mining. The scale of sand mining could be quantified to estimate the extent that this mining is contributing to coastal erosion.

## Visibility

The project developed only a very basic community engagement plan that by itself would have been insufficient to ensure adequate external communications and visibility. Fortunately the national coordinator had a communications background and thus many other communications activities occurred (media releases, banners, TV and radio segments) that were not in the basic engagement plan. It is recommended that all future projects develop a detailed communications plan at the project design stage which can be refined as implementation progresses. This ensures that adequate staff resources, time and funds can be allocated to implement the plan. All activities in the basic engagement plan were implemented.

The evaluation found evidence of communications tools and knowledge management products that created awareness about the project, visibility of the implementation agency (SPC) and donor (EU). Visibility was created by the insertion of text acknowledgements and logos into all official reports and publications.

Examples of communications and visibility products include media releases, newspaper articles, fact sheets, newsletters (Climate Change Matters), billboards and banners. Videos were also produced ('Buying time with better coastal management in Tonga' and 'Looking above and beyond climate change in Tonga: A success story of the GCCA project'). Video has been found to be one of the most useful forms of communicating project results and activities.

There have been a variety of communication and visibility activities including a climate change speech and poster competition for school children, field trips to the project site for primary school and USP students, a 30-minute interview on TV discussing climate change and the GCCA project, presence at Environment Week (2014) and a launch event (2015). Presentations were also given at regional and international events (e.g. 2015 Pacific Climate Change Roundtable).

A regional workshop (September 2015) involving all SPC GGCA: PSIS project teams and other development partners provided a forum to share national and regional lessons. A national lessons learnt workshop (October 2015) was held to enable the project team and local partners to identify and document lessons learnt.

Overall, there was sufficient visibility about the project, SPC and funding from the EU.

## Best Practices and Recommendations

### Best Practices

1. The model to review historical coastal changes, undertake feasibility, design and costing studies, to inform the selection of the most appropriate coastal protection measure is essential.
2. PMU composition had the right mix of skills and expertise, including project management, finance, technical (coastal) and communication skills.

### Recommendations

1. Engage communities early and consistently during implementation to ensure their buy-in.
2. Significant effort needs to be invested in community consultation about alternative coastal protection measures.