Palau-Tonga Exchange Workshop Report
Visit of Palau representatives to Tonga
Sharing Experiences on Coastal Management
9-13 February 2015

Overview:

The first Palau-Tonga exchange to share lessons learnt about coastal protection measures took place from 9-13 February. The exchange involved a seven-member delegation of legislators and government officials from the Republic of Palau, including densely populated Koror State, visiting Tonga to learn about methods to enhance the resilience to climate change of coastal communities in eastern Tongatapu. The focus of the exchange was on each country sharing their experiences and challenges relating to the conceptualization, planning, implementation and evaluation of coastal protection measures within the context of integrated coastal management and climate variability and change.

This South-South cooperation was initiated by the Government of Palau who co-funded the exchange visit with the European Union funded and Secretariat of the Pacific Community (SPC) implemented Global Climate Change Alliance: Pacific Small Island States (GCCA:PSIS)project.

During the exchange, the delegation visited several of the project sites in Tonga, where two different types of coastal protection measures are being constructed. The Palauan delegation also met with the Chief Executive Officer and key staff from Tonga's Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication to discuss their respective processes for designing, implementing, monitoring and evaluating coastal protection projects.

On the last day of the workshop, Palau presented their lessons learnt from the exchange and developed an action plan that includes incorporating lessons into the Koror State Master Plan upon their return. Please see the workshop agenda, list of participants, and evaluations in the annex of this report.

Background:

Coastal communities in small island states, such as Tonga and Palau, are increasingly becoming more vulnerable to threats from extreme weather events, coastal flooding, and coastal erosion due to accelerated sea level rise linked to climate change. In Palau, coastal communities are experiencing the effects of such threats, particularly in Koror State where a large percentage the population of Palau is located. To date, six communities in the state have experienced flooding during king tides. In other states, taro patches are being flooded by saltwater and thus the communities' food source is affected. These events impact the livelihoods, land, and infrastructure of the communities. Without proper assistance to protect or relocate them, they may experience loss of homes, property, and crops which they depend on.

Therefore, this exchange provided Palau with an opportunity to learn about different methods to enhance the resiliency of its coastal communities. This was accomplished by looking at:

- Examples of soft engineering options (i.e. mangrove planting, beach replenishment, etc.)
- Examples of hard armouring options (i.e. offshore breakwaters and semi-permeable groins)
- Examples of a combination of both hard and soft engineering options

Putting such remedies in place can help the Government better mitigate or adapt to the changing coastal conditions and give more time for coastal communities to either relocate to higher ground or improve the design of their homes (e.g. elevated homes) to minimize the impacts of the rising sea.

Workshop Objectives:

To advance coastal planning, management and protection options in the context of climate change in Koror State and the Republic of Palau by:

- meeting with staff in the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication (MEIDECCC) to discuss and exchange information about Palau and Tonga's different approaches to coastal management;
- visiting on-the-ground examples of coastal management strategies; and
- meeting with stakeholders including local communities to share experiences and lessons learnt.

Day 1: Introduction and presentation of coastal issues and current management practices from Tonga and Palau

Formal introductions and a welcome speech by CEO, Mr. Paula Ma'u, opened the workshop.

Presentations and discussion then followed:

- The SPC GCCA: PSIS project Climate Change Adviser presented on the background of the project to date in Tonga including an overview of the process undergone to design, implement, and evaluate the coastal protection project.
- The Director of the Tongan Department of Climate Change presented on the Joint National Action Plan on Climate Change Adaptation and Disaster Risk Management (JNAP), 2010-2015 as it ties into coastal protection. Also the process of undergoing a feasibility study,

design, costing, and an environment impact assessment for the coastal protection was discussed. The three projects supporting coastal protection measures on Tongatapu include the EU funded GCCA:PSIS project (ongoing), the ADB Strategic Program for Climate Resilience (planned), and the GIZ Adaptation to Climate Change and Sustainable Energy Programme (ACSE) (planned).

A discussion ensued on the structure of the government in Tonga and the location of climate change within the government. Also, the benefits of having documents such as the Tonga JNAP and a coastal feasibility study in attracting donor funding were discussed. The Tonga Climate Change Fund was brought up as a way to provide funding between project cycles.

- The Palauan climate change coordinator presented on the Palauan context, particularly on current coastal issues, approaches to coastal management, actions taken and planned. National verses state government structures and their role in responding to climate change in Palau was discussed. The draft Palau Policy for Climate and Disaster Resilient Low Carbon Development was also explained.
- The director of eCoast explained the coastal engineering process behind the coastal protection measures. He provided an overview on the design, implementation and monitoring of hard and soft engineering measures along two coastal stretches. Measures consisted of the construction of permeable groynes and breakwaters coupled with beach replenishment, coastal planting, and improved coastal drainage. Questions on the designs were raised and it was agreed that these would be clarified in the site visits on Day 2 and 3.

<u>Day 2</u>: First site visit: GCCA: PSIS coastal protection project in Eastern Tongatapu

During day two, the delegation team had the opportunity to visit the GCCA: PSIS project sites, where two types of coastal protection measures are being constructed as part of the 'Trialling coastal protection measures in eastern Tongatapu' project. Dr Mead and Mr Pesa Tu'iano explained the construction and engineering behind each of the measures and many questions were asked.

One measure being implemented is a mixture of non-permeable, semi-permeable, and permeable groynes. Despite the recent placement of the groynes, the Palau team remarked on the initial accumulation of sand deposits. The other protection measure that was viewed and explained was coastal breakwaters. There were no visible signs of sand replenishment in areas where the breakwaters were completed as they are under constructed. Continued monitoring and evaluation will take place to measure the effectiveness.

Discussion on a semi-permeable groyne.

<u>Day 3</u>: Second site visit: Coastal management issues and soft protection measures

The second site visit was to western Tongatapu to the sight of the proposed ACSE coastal protection project. The first stop demonstrated a beach where sand mining occurs regularly, and the effect of the mining was noticeable in that rocks were exposed.

Two other sites viewed were areas where mangroves trees were harvested, and as a result, the areas were visibly bare. Signs of mangrove tree replanting was visible, but appeared be affected by pigs foraging. Dr Mead explained the plans for revitalizing the coast in this area using combined hard and soft measures, which he had also presented on day 1.

After the site visits, many key coastal issues in Tonga were remarked on, including how coastal protection measures are rarely permanent in the context of climate change induced sea level rise, the related issue of how to address relocation at a government level, and even the question of how to prevent pigs from grazing on beaches. Pig grazing has been identified to be one of the key issues in Tonga in preventing beach ecosystems from being revitalized, due to the continuous overturning of muddy sediment.

Pigs grazing in an area where mangroves have been planted.

<u>Day 4</u>: Lessons learnt, panel discussion, and Action Plan for coastal protection in Palau

Xavier presented on the Palau team's lessons learnt from the exchange. These lessons included:

1. Tonga's government structure is aligned in such a way where climate change initiatives can be streamlined more efficiently compared to Palau.
2. Palau's government should be able to streamline climate change initiatives more effectively once its restructuring is completed.
3. Coastal protection and relocation of affected communities need to be planned ahead and implemented as early as possible.
4. The Palauan EIA process poses a challenge whenever a project of this scale and alteration of an affected area is recommended. A robust baseline study and extensive community engagement would need to be undertaken in order to garner buy-in for such project(s) and to ensure that environmental impacts are minimized.
5. The team saw the importance of conserving mangrove areas during the site visits.
6. Developing a flood drainage system along the coastline may be an option for Palau.

The differences in EIA processes between the countries were discussed following this presentation.

Next, a panel discussion took place on the following:

- Monitoring of coastal protection site: how to carry out beach profiles- the results of the beach profiles to date were presented
- Land use planning issues- the laws and policies surrounding land use in Tonga were presented
- Integrated Coastal Management Plan for Tongatapu- the diagnostic study for informing the coastal management plan as well as the Tonga Climate Change Policy were discussed
- Tonga's approach to coastal engineering- the construction process and issues such as locations for sand extraction were presented
- Summary of lessons learnt on coastal protection in Tonga- it was highlighted that proper community engagement and planning from the beginning is extremely important. Also, promoting climate change and country priorities through policies, donor roundtables, and a programmatic approach can be very useful tools for countries.

The above was followed by a group work to prepare an action plan for Palau on coastal protection measures and relocation of affected communities. The exchange finished off with report-back and discussion of action plan. The action plan included the following activities:

1. Report on the lessons learnt from the Tonga site visit and their relevance to coastal management in Koror State and Palau to be provided to OERC.
2. Present lessons learnt to state legislature, the National Emergency Committee (NEC) and community members to build an understanding about appropriate measures.
3. Recommend inclusion of coastal management planning into the Koror State Master Plan and the Palau Policy for Climate and Disaster Resilient Low Carbon Development from the lessons learnt from the exchange by June, 2015.
4. Continue dialogue with Tonga on the progress of their coastal management project and the performance of the groynes and breakwaters every 4 months for the next 2 years.
5. Share updates of the Palauan coastal management project/initiative(s) with Tonga.
6. Submit a concept note for a follow-up visit to view the progress and performance of Tonga's coastal protection project scheduled for next year.

The CEO Mr. Paula Ma'u officially closed the exchange at the end of Day 4.

Annex 1: Workshop Agenda

Day 1: **Monday, 9th February 2015**

CHAIR: Manu Manufetoa

Time	Topic	Presenter
10:00-10:30 am	CEO Meeting with the team from Palau	Mr. Paula Ma'u, CEO Venue: MIC Conference Room
10:30-11:00 am	Morning tea	Venue: NEMO Conference Room
11:00 am	Workshop starts	
11:00-11:15 am	Welcome	Ms. Luisa Tuiafitu Malolo, Director of Climate Change
11:15-11:30 am	Opening address	Mr. Paula Ma'u, CEO
11:30-11:40 am	Group Photo	Mr. Taulava Pulini, Photographer
11:40-11:50 am	Introductions	All
11:50-12:00 pm	SPC-Global Climate Change Alliance: Pacific Small Island States (GCCA: PSIS) project • General background • Climate change predictions for Tonga and Palau	Ms. Juliana Ungaro, SPC, Fiji
12:00-12:30 pm	GCCA: PSIS project in eastern Tongatapu – JNAP process, selection of project, feasibility study, final design, environmental impact assessment and community involvement	Ms. Luisa Malolo
12:30-1:00 pm	Palau coastal issues, approaches to coastal management, actions taken and	Mr. Xavier Matsutaro/ any other

	planned	Palau team members
1:00-2:00 pm	Lunch	
2:00- 2:45 pm	Group work by topic: **Group 1**: Developing a intercostal management plan against a background of climate change **Group 2**: Coastal engineering and dynamics against a background of climate change **Group 3**: Planning and land ownership against a background of climate change	All
2:45- 3:15 pm	Palau representatives from each group briefly report back • Max 5 minutes each • Discussion on each topic following presentations: - What can work for Palau? - Challenges that may arise?	Palau team
3:15-3:45 pm	Afternoon tea	
3:45-4:30 pm	Tonga coastal issues, approaches to coastal management (hard and soft engineering), actions taken and planned	Dr. Shaw Mead, eCoast, New Zealand
4:30 pm	*End of Day 1*	

Day 2: **Tuesday, 10th February, 2015**

Time	Activity
9:00 am	Depart for field visit to eastern Tongatapu – site of GCCA: PSIS project
10:00 am	Arrive at site – view sites where groynes and breakwaters are constructed and discussion
12:30 pm	*Lunch*
1:30 pm	Informal meetings with community members on their perspective and lessons learnt
2:30 pm	Visiting the Ha'amonga Trilithon
3:00 pm	*Depart for hotel*

Day 3: **Wednesday, 11th February, 2015**

Time	Activity
9:00 am	Depart for field visit to western Tongatapu – other sites where there are coastal erosion and management issues
10:00 am	Arrive at site – view site and discussion
11:00 am	Informal meetings with PACC project community members
12:30 pm	*Lunch*
1:30 pm	Tourist stop – Blow Holes
3:00 pm	*Depart for hotel*

Day 4: **Thursday, 12th February 2015**

CHAIR: **Luisa Malolo**

Time	Activity	Presenter
9:00-10:00 am	Presentation: Lessons learnt from the	Palau team

	exchange and plans for coastal protection in Palau	
10:00-10:30 am	Morning tea	
10:30-12:30 pm	Panel discussion with : 1) **Mr Taniela Kula, Department of Geology** Monitoring of coastal protection site at eastern Tongatapu –how to carry out beach profiles 2) **Ms Rosamond Bing, Lands Department** Land use planning issues 3) **Ms Luisa Malolo, Director, Climate Change** Integrated Coastal Management Plan for Tongatapu 4) **Mr Pesa Tu'iano, Ministry of Infrastructure** Tonga approach to coastal engineering 5) **Mr Manu Manuofetoa, Project Coordinator** Summary of lessons learnt on coastal protection in Tonga	Panel moderator – DrGillian Cambers, SPC, Fiji
12:30-1:30 pm	*Lunch*	
1:30-2:15 pm	Group work: Prepare action plan for Palau	All
2:15- 3:00 pm	Report back and discussion of action plan	Palau team
3:00 pm	Closing	Mr Paula Ma'u, CEO
5:30 pm	*Depart for Workshop Closing Dinner and Video Launch*	
6:30 pm	*Cocktail*	
7:00 pm	Launch of the Tongan video *Buying time with better coastal management,* from the videos series *Climate Change Adaptation – the Pacific Way*	
7:30 pm	*Closing Dinner*	

Annex 2: Workshop Attendance List

NAME	POSITION/ ORANIZATION	COUNTRY
1. Lynna Thomas	Integrated Water Resource Management, Environmental Quality and Protection Board	Palau
2. Xavier Matsutaro	Associate Climate Change and GCCA: PSIS Coordinator, the Office of Environmental Response and Coordination	Palau
3. Brian Melairei	Director and Engineer, Public Works and Capital Improvement Program	Palau
4. John Wong	Chairman, Koror State Land Use Master Plan	Palau
5. Maggy Antonio	Director, Koror State Building and Zoning Office	Palau
6. Felix Francisco	Legislator and Chairman on Resource and Development	Palau
7. MengkurRechlulk	Legislator/Floor Leader and Legislator for Dngerong Hamlet, which has the most affected coastal sites	Palau
8. Paula Ma'u	CEO, Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communication (MEIDECCC)	Tonga
9. Lu'isa T Malolo	Director, Department of Climate Change	Tonga
10. Sione Fulivai	Senior Climate Finance Analyst, Climate Change	Tonga
11. Manu Manuofetoa	Tonga GCCA: PSIS national coordinator	Tonga
12. Pesalili Tuiano	Civil Engineer, GCCA:PSIS construction oversight	Tonga
13. 'Apai Moala	Beach Profile Officer, Department of Geology	Tonga
14. Taniela Kula	Department of Geology	Tonga

15. ‘Aneti Havili	GCCA: PSIS Project Finance Officer, Climate Change	Tonga
16. Losana Latu	Vulnerability and Impact Assessment Officer, Climate Change	Tonga
17. Rosamond Bing	Legal Adviser, Ministry of Lands and Natural Resources	Tonga
18. Renie Vaiomounga	Geology Officer, Ministry of Lands, Survey and Natural Resources	Tonga
19. Eileen Fonua	Mac BIO coordinator, Department of Climate Change	Tonga
20. Uikelotu Vunga	ODS Project Coordinator, Department of Climate Change	Tonga
21. Lilu Moala	TNC Project Coordinator, Department of Climate Change	Tonga
22. Mele Lasike	Administrative Assistance, TNC Project, Department of Climate Change	Tonga
23. Malini Teulilo	Environment and Climate Change Information	Tonga
24. Haunani Ngata	Environment and Climate Change Information Officer	Tonga
25. Tu’amelie Fusimalohi	Complain Officer, EIA, Department of Environment	Tonga
26. Gillian Cambers	GCCA: PSIS Project Manager, SPC	Fiji
27. Juliana Ungaro	GCCA: PSIS Climate Change Adviser, SPC	Fiji
28. Graham Sem	GIZ consultant- ACSE project	Fiji
29. Shaw Mead	Managing Director, Coastal Engineer- eCoast consulting	New Zealand

Annex 3: Exchange evaluations by the Palauan representatives

Respondent	Question 1: What is the key information that you learned from this exchange which is relevant to the Palau context?	Question 2: What discussions / actions do you intend to take upon your return to Palau?	Question 3: What could have been done better in facilitating this exchange?	Question 4: Is any further support needed upon your return?
1	- The importance of ensuring that your policy helps you align your priorities to help with solving coastal management problems (climate change). - There are new ways to solve problems but they need to be adapted to suit Palau.	- Discussions with my office about how to help the state deal with dwelling in low-lying areas. - Looking at future permit applications and have discussions with state on how to deal with development in low-lying areas.	The exchange was good. I would have appreciated more information about environmental impacts of actions taken and how they were mitigated.	Information from our SPC/Tongan counterparts about how each structure performed and any other information that would help us implement the project back home.
2	- Effective institutional arrangement is needed to mainstream climate change - Groynes (permeable and semi-permeable) may be a viable option for Melekeok &Ngiwal state.	Summarise lessons learnt and provide them to Koror State Government, national government and line agencies.	- More exchange of existing plans and actions from both countries before the forum. - Exchange information of coastal issues with specific examples before the forum.	Yes, I see this as a first step in learning from each other. It would be beneficial to have assistance (funding and technical) to secure monitoring and evaluation and data sharing of how the project is performing. It would also be beneficial for the Palau team to visit Tonga in a year's time to see how the project has progressed and to see if there have been improvements on the replenishment of the coastal

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				areas.
3	Key information learned is how the whole government structure is streamlined to cover loopholes from top officials to the grassroots and using the same strategy to align donors. Magnificent.	To streamline relevant agencies in the state and create a link between legislature and the workforce.	More time on policy development and data collection.	Yes, continuity of dialogue between participants of both countries and between Governments. Open a network to share data and information and facilitate more examples.
4	- Tonga's institutional arrangements toward climate change. - Tonga's coastal management approach	Tonga's approach to protecting their shores. However, would be very interested in the data to be gathered to see the actual results of the project.	None	Yes! Continue and maintain communication with Tonga and SPC so that we can obtain and do a self-analysis of the M&E results.
5	Differences between both countries' structure of government…Permanent office for Climate Change	Steps of the program…especially meeting with the community.	I was hoping that there was a complete project(s) in Tonga that I can see fits the problem in coastal areas in Palau especially Koror State.	Needs monitoring analysis based on the aspects of the projects done using groynes, (trial project) in order for us to adapt and use for the future of climate change adaptation in Palau.
6	The issue on sea level rise and coastal erosion and how Tonga is exploring	As per Koror State issues on climate change and sea level rise,	So far the facilitating part is good. Everything just went smoothly as	Yes, as requested before for the monitoring data to be

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	measures into preserving its coastal areas.	we are thinking to develop a resettling policy for the people and development of coastal areas.	expected.	shared with us, so that we can easily choose the type of plan (groynes) to be utilised.
7	- All related agencies are under one office. - Plan in place to meet donors' requirements. - Good coordination of communities. - Key staff continues holding the same job.	- Create one office to deal with climate change issues. - Better process for data collection. - Need a national policy to deal with climate change issues.	- The visit was well coordinated. - Information sharing was very informative.	- Information sharing. - Update on the results of the pilot project.