

THE COASTAL COMMUNITY ADAPTATION PROJECT

C-CAP NEWSLETTER

Helping Pacific Island Communities Adapt to a Changing Climate

SEPTEMBER 2013

C-CAP PARTNERS WITH LOCAL ENGINEERING FIRM FOR CLIMATE RESILIENT INFRASTRUCTURE DESIGN AND CONSTRUCTION OVERSIGHT

Engineering Partner NRW Macallan (Fiji) Ltd: a multidisciplinary consulting engineering firm with experience in six Pacific Island Countries

Through the implementation of C-CAP, USAID will build and/or rehabilitate 90 small infrastructure projects in nine Pacific Island countries—Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. The C-CAP team has formalized a partnership with NRVV Macallan (Fiji) Ltd. (Macallan) to lead all C-CAP infrastructure design activities, provide oversight and quality control for construction, and to develop operations and maintenance training and resources for communities (see diagram below).

C-CAP's project implementation strategy combines participatory planning with local and international best practices to produce sustainable climate adaptation solutions that directly meet community-identified needs.



Climate Risk Mapping Infrastructure Prioritization Infrastructure Construction Maintenance Tools & Training

ABOVE: Stages in the planning and implementation of C-CAP climate change adaptation infrastructure activities.

Following community-led climate change risk and infrastructure mapping and prioritization of infrastructure solutions for climate adaptation, C-CAP partner Macallan brings regional and international best practices for climate resilient infrastructure design and construction.

Macallan's role is three-fold: Infrastructure Design Construction Oversight Operations and Maintenance Infrastructure Design Through engineering design, Macallan will give form to communities' visions for new/rehabilitated infrastructure that increases resilience to the impacts of climate change. Macallan will ensure that all designs meet local building code requirements, all local and U.S. laws and regulations. The firm will also incorporate structural measures to ensure the built/rehabilitated infrastructure will be resilient to the projected impacts of climate change.

Construction Oversight The C-CAP

partner will lead construction oversight in partnership with C-CAP's Social Mobilizers in each community. With guidance and detailed reporting tools provided by Macallan, Social Mobilizers will implement daily monitoring of construction to ensure that construction firms stay true to the infrastructure design.

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C-CAP PARTNERS WITH LOCAL ENGINEERING FIRM continued...

Operations and Maintenance

To ensure the sustainability of infrastructure investments, Macallan will create operations manuals and maintenance tools; will provide access to spare parts; and will offer operations and maintenance training to community members. These measures will ensure that all communities have the knowledge, skills and resources to maintain and rehabilitate these important infrastructure investments as needed. C-CAP combines participatory processes for identifying and prioritizing community adaptation needs with Macallan's track record of producing high quality designs informed by climate projections and best practice design measures.

"This strategy," explains C-CAP Chief of Party Stephen M. Smith "will help to ensure that all USAID/C-CAP infrastructure implemented in the Pacific Island region can *structurally* withstand the impacts of climate change and *functionally* increase community resilience to climate change. All C-CAP products must mirror the United States Government's commitment to the Pacific—a long-term, durable partnership with Pacific Island governments and communities to support adapting to the impacts of global climate change."

C-CAP INFRASTRUCTURE ACTIVITIES MEXT STIEPS

The C-CAP team is currently working with Macallan on infrastructure designs that will benefit communities in Fiji, PNG, Samoa, Tonga and Vanuatu for projects like rainwater catchment systems, cyclone-proofing important health and social infrastructure like community health centers, and installing structures to reduce coastal erosion. Construction will begin in the first half of 2014. Collaborating with the NRW Macallan construction engineers and staff, C-CAP Country Mobilizers (see following article on the role of Country Mobilizers) will ensure all elements of the Environmental Monitoring and Management Plan are carried out by the construction contractor.

C-CAP'S COUNTRY MOBILIZERS ON BOARD

The C-CAP team is excited to have the project's first five Country Mobilizers on board. The Country Mobilizers received project training in September, ensuring they now have the skills and knowledge to undertake their duties, both in the field and the office. Each Country Mobilizer will take on liaison with communities and local-level government representatives, the facilitation and documentation of community workshops, the completion of site surveys, and monitoring of project activities. C-CAP is engaging a total of 12 Country Mobilizers—one for each participating country. Country Mobilizers will soon be recruited for Kiribati, Nauru, Solomon Islands, and Tuvalu.



ABOVE: C-CAP's Country Mobilizers (from left):Tonga CM 'Unaloto Puloka, Samoa CM Cecilia Amosa, PNG CM Isimel Tuembe, Vanuatu CM Thomas Putunleta, Fiji CM Semi Masilomani. *IMAGES BY C-CAP*

ADAPTATION IN MOTION CHECKING IN WITH C-CAP COMMUNITIES: FIJI, PAPUA NEW GUINEA AND SAMOA

In Vunisinu/Nalase, Fiji...

Vunisinu-Nalase is a small village of 250 people that sits on the Rewa Delta, approximately 20 miles east of Suva. Like neighboring Rewa Delta villages, low elevation compounded by sea level rise leaves the village prone to inundation during storms that produce strong storm surges and intense precipitation. Their precarious position along the Rewa Delta is compounded in the 'wet season' from October to March, and during increasingly unpredictable periods of heavy rain, particularly when storms coincide with spring tides. This often results in widespread, frequent bouts of flooding that leave little recovery time for drainage. The problem of flooding is exacerbated by an outdated drainage system that was not designed for current or projected levels of precipitation and sea level rise.



During C-CAP-facilitated discussions, the community considered current and projected climate change impacts for Vunisinu/Nalase, identified their chief vulnerabilities using the Infrastructure Prioritization Index (IPI)¹, and came up with an integrated solution to mitigate their vulnerability to flooding. The solution involves the installation of new flood gates, improved drainage, and river bank protection.



ABOVE: STANDING WATER IN Vunisinu/Nalase, Fiji.

In this periodic series, the C-CAP team checks in on partner communities that are navigating the fluid process of climate change adaptation.

This window into C-CAP communities charts project implementation from heightened awareness of climate change projections, to self-assessments of local vulnerability, to targeting limited adaptation resources to rehabilitate and/or construct new infrastructure that can *structurally* withstand the impacts of climate change and *functionally* increase community resilience to climate change.

C-CAP Partner NRW Macallan (Fiji) Ltd (Macallan) is developing specifications for the flood mitigation interventions, which will be designed to withstand precipitation levels and sea level rise projected during the infrastructure's lifespan. Designs could include modifications to the drainage canal that separates Vunisinu and Nalase villages to reduce flooding during high tides; the installation of a flood gate to reduce the inflow of water at high tide: and/or nature-based interventions such as the use of natural vegetative barriers and earthen bunds to improve river bank protection. Projects are estimated to be completed in early 2014.

¹C-CAP's decision support tool that assists communities to identify which existing or potential community infrastructure assets are of most importance for enhancing their capacity to adjust to the predicted impacts of climate change.

ADAPTATION IN MOTION continued...

In Pari, Papua New Guinea (PNG)...

A twenty minute drive from Port Moresby, Pari village's population of more than 2,000 is expanding rapidly as a popular destination for internal migrants seeking out economic opportunities in the capital city. Through a risk identification and asset mapping exercise, the community expressed serious concerns regarding the pressure that the increasing population is putting on the natural resource base-primarily the potable water supply, local forest, and marine ecosystem. The pressure on dwindling water resources is exacerbated by climate change impactssuch as shifting seasonality, increased incidence of drought, and decreased precipitation—further adding to the social tensions felt in the community.

Community members expressed frustration with periodic and acute water shortages caused by overpopulation, reported incidence of drought (which are projected to increase in number and intensity in the coming decades), and the capacity of current water infrastructure to meet the community's need for increased water supply.

Currently, municipal services provides piped water through approximately 20 community stand pipes in central village locations; water flow, however, is often insufficient and interrupted, failing to meet local demand.

Through C-CAP support, the village is preparing for the installation of an eight-tank 72,000 liter rainwater catchment system designed to increase the community's potable water storage capacity. This intervention will enhance the community's capacity to adapt to changing rainfall patterns predicted in PNG, as it positions them to maximize water collection and storage during periods of rain that will better enable them to meet increasing local demand during periods of drought.

The gutter systems and catchment tanks-which are to be connected to a women's center, primary school, and two purpose-built rainwater catchment structures-will be anchored and able to withstand cyclone-force winds.



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ABOVE: Rainwater tank above Pari in a state of disrepair.

In addition to capturing rainwater through a gutter system, the three new rainwater catchment systems will be connected to the main municipal water system, positioning the community to collect and store municipal water as needed. Construction is slated to commence in December.

ADAPTATION IN MOTION continued...

In Manase, Samoa...

Manase is a coastal village on the northeast coast of Savai'i, Samoa's westernmost island, which has a population of 147 people. Its locally-owned beach fale (traditional thatched roof bungalows) accommodations, and pristine white sandy beach make Manase a popular destination for ecotourists, cultural tourists and backpackers. Reflective of the economic importance of the Manase coastline, participants identified sea level rise, more extreme tidal movements and storm surges, and coastal erosion as the most significant global climate change impacts that face the community. Through the IPI, the community prioritized protection of the village coastline and beach, but expressly rejected the idea of constructing a seawall, which the community fears will detract from the natural beauty of their beach.





ABOVE: Strong winds buffet the coast at Manase, Samoa.

Design engineer partners from Macallan are developing construction specifications for a mixture of nature-based and hard engineering measures that will provide coastal protection and allow longer-term beach regeneration, while also maintaining the natural beauty of the site. C-CAP estimates that the installation of a sustainable bioengineering coastal protection system, anchored by a mix of underwater groins and tidal breakers, will be completed in early 2014.

The USAID/C-CAP Newsletter is a regular source of information on the implementation of C-CAP.

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