Coastal City Adaptation Project (CCAP) Agreement No. AID-656-C-14-00001

FY2014 1st Year of the Project

4th Quarter Report: July 2014 – September 2014

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CONTENTS

ACRONYMS

CCA	climate change adaptation
CCAP	Coastal City Adaptation Project
CLTS	community led total sanitation
COR	Contracting Officer's Representative
CSO	civil society organization
DRR	disaster risk reduction
EWD	early warning system
GOM	Government of Mozambique
HNI	Human Network International
INAM	National Weather Agency (*Instituto Nacional de Meteorologia*)
INGC	National Disaster Management Institute (*Instituto Nacional de Gestão de Calamidades*)
MNO	mobile network operator
M&E	monitoring and evaluation
NGO	nongovernmental organization
SMS	short message service
UniLúrio	Lúrio University (*Universidade Lúrio*)

Cover Photo: House and latrine at the edge of mangrove stands in Icídua, Quelimane.

1. Project Duration 5 years

2. Starting Date Contract signature - November 25, 2013
Start of operations - January 16, 2014

3. Life of Project Funding US$14,904,209

4. Geographic Focus

The Coastal City Adaptation Project (CCAP) focuses its intervention on the most vulnerable coastal cities that are not currently receiving significant support from other donors. We are working in two cities: Pemba and Quelimane. Initially, the objective was to identify a third city, but in consultation with the project's COR, we are postponing this decision until activities in these two cities are sufficiently advanced to allow us to determine which interventions hold the most potential for success. An option under consideration is to identify a few key, very successful interventions, and scale them in additional cities along the Mozambican coast.

5. Program/Project Objectives

Proactive investments in adaptation can cost-effectively avert a significant portion of the projected costs of climate change while yielding substantial co-benefits. To facilitate this process in vulnerable Mozambican coastal communities, CCAP is working with municipal governments to increase understanding of urban adaptation issues and increase the application of management options for urban adaptation. CCAP is also engaging with academia, civil society organizations and the communities themselves to increase climate awareness and the technical expertise of future urban planners and municipal authorities, to improve the resilience of the target coastal cities and to facilitate the adoption of adaptive measures at the local level.

Objective 1: Improve the provision of climate-resilient urban services by municipalities

Pemba and Quelimane have unique challenges that require a flexible and tailored approach to assessing, preparing for, prioritizing, and implementing climate-resilient improvements to urban services. Pemba is in the early stages of vast economic expansion as international extractive industries prepare for intensified offshore operations. Quelimane has less immediate promise of foreign investment and will require significant community buy-in and engagement to improve its provision and sustainability of resilient urban services.

The activities under Objective 1 focus on upgrading the capacity and technical skills of municipal authorities to plan, manage, and lead the execution of climate change adaptation (CCA) and disaster risk reduction (DRR) strategies. We also will introduce participatory mechanisms for identifying and prioritizing adaptation options that combine technically credible and sound scientific analysis with engagement of vulnerable groups and communities in diagnosing problems and designing specific interventions. This will ensure that municipalities' CCA and DRR plans are technically reliable, responsive to local realities, and maximize the use of local resources for sustainability.

Objective 2: Increase adoption of climate resilience measures by communities, civic and community organizations, including civil society, NGOs, and faith-based organizations

Because climate change is a long-term issue with consequences that may not yet be fully visible or widely comprehended by coastal communities who are intimately familiar with challenges like

inland flooding and storm surges, prompting them to take action will require significant investment in behavior change communications. This challenge is heightened among vulnerable populations whose more immediate needs, such as health, shelter, and food security, often trump activities that require longer planning horizons. Overcoming this obstacle requires both top-down (science and research-based expertise) and bottom-up (grassroots understanding of vulnerabilities, gender dynamics, and coping mechanisms) solutions that focus on “no-regret” measures and mainstream climate change into broader development programs.

The activities under Objective 2 aim to increase community resilience to climate change. It will involve assisting Mozambican institutions to establish enduring partnerships with centers of global climate change expertise; building networks and information platforms for climate change resilience knowledge and resource sharing; developing practical and cost-effective adaptation and disaster risk reduction options in cooperation with local communities; and delivering training that equips youth, both male- and female-led households (nearly one-third of Mozambique’s households are female-led), and civil society with the skills to become champions for resiliency.

Figure 1. Solid waste in flood zone in Paquitequete, Pemba.

At the community level, we will focus on four types of intervention: (a) improved house construction so they provide more effective shelter to the most vulnerable communities; (b) improved sanitation by reducing open air defecation by constructing latrines where appropriate; (c) cost-effective potable water solutions, primarily focusing on rainwater harvesting; and (d) mangrove restoration in close collaboration with local and national government agencies.

Objective 3: Increase the capacity to potentially implement economic risk-management tools, such as insurance plans and contingency funds, for at-risk urban infrastructure and livelihoods

Disaster risk financing and insurance are components of the Hyogo Framework for Action, a 10-year plan to make the world safer from natural hazards, to which Mozambique is a signatory. Although they are valuable tools for disaster risk management, they can only be economically viable in supporting risk reduction in an environment where the population is simultaneously working to reduce risk through the adaptation options identified under Objectives 1 and 2. Mozambique has taken concrete steps to improve disaster response and recovery in recent years, including the completion of a Systematic Inventory and Evaluation of Risk Assessments initiative, which identified a large amount of data on disaster risk spread several Government of Mozambique (GOM) institutions, and the creation of a disaster database collecting 30 years of data on human and economic disaster losses in Mozambique under support from the Global Risk Identification Program. Yet much work remains to be done to harness this valuable data for decision-making on fiscal transfers and insurance product development. This is particularly clear when examining the penetration of insurance in the local market — only 5.1 percent of Mozambicans use any form of insurance, and even fewer use insurance to cover catastrophe risks.

The activities under Objective 3 will be postponed to allow the other activities under Objectives 1 and 2 to get off the ground. When they start, they will focus on engaging the private sector in many fronts, including that of seeking to increase awareness of and building capacity to implement risk management mechanisms. To this end we will provide targeted short-term expertise from leading risk and reinsurance specialists to engage the private sector and insurance industry in a dialogue to assess barriers to product development, and to empower national and municipal officials to make budgeting decisions that support improved disaster planning, response, and recovery.

6. Summary of the Reporting Period

Major Project Impact during the Reporting Period

Participative validation of priority field interventions represented one of the major achievements of the project during this reporting period. Also, the involvement and commitment of INGC in the management and expansion of the SMS-based early warning system (EWS) helped to strengthen relations between the project and the key governmental stakeholders. Both achievements, are described in detail below.

Project Launch Events in Quelimane and Pemba

After building relationships with local governments and community members, conducting youth, gender, and institutional assessments in the municipalities, and refining the project's work plan through participatory meetings, CCAP formally launched project activities with public events in Pemba and Quelimane. Each of the launch events had three major components:

1. Neighborhood visits: CCAP Chief of Party Carlos E. Quintela and a USAID delegation led by Mission Director Alexander Dickie joined the municipal mayors in visiting neighborhoods that are particularly vulnerable to climate change-related events. In Pemba, Acting Mayor Marques Naba led a tour through Paquitequete, a densely populated neighborhood subject to tidal flooding, and in Chibuabuara, which is located on a steep slope and vulnerable to landslides, such as those that occurred in March of

this year. In Quelimane, Mayor Manuel de Araújo noted that the neighborhood of Incídua, which is located in a floodplain, had become particularly vulnerable to flooding after protective mangrove stands had been harvested for firewood and construction materials. Acting Mayor Naba also led a tour through Manhaua, which has recently constructed a drainage system with the assistance from the Millennium Challenge Account, but the system has been overrun with trash and vegetation, making the systems much less effective. These visits not only highlighted the significant difference in vulnerability profiles of the two municipalities, but also informed the project team of potential tailored interventions for each neighborhood.

2. Formalizing commitments: The launch events served not only as a starting point for activities in the municipalities, but also displayed stakeholders' mutual commitment to the project's goals. Remarks from USAID Mozambique Mission Director Alexander Dickie stressed the importance of the project as a whole; comments from the municipalities' mayors, Governor of Cabo Delgado Abdul Razak, and INGC's regional directors Hélder Sueia and Belém Monteiro, reflected a commitment by government officials and agencies to support adaption measures. CCAP Chief of Party Carlos E. Quintela affirmed the role of the project, including outlining potential actions to be taken in each municipality.

3. Early Warning System (EWS): Among the activities and interventions discussed, implementing a mobile phone-based EWS provided a concrete example of how CCAP assists Pemba and Quelimane in adapting to climate change. The system, designed by CCAP subcontractor Human Network International (HNI), not only provides SMS warnings regarding climatic events but also allows for post-event reporting. INGC's Quelimane technical department leader Paulo Tomás and INGC's Pemba Information Officer Jose Tavares led demonstrations of the EWS's reporting capabilities at the launch events. These demonstrations both showed the utility of the system and reaffirmed INGC's commitment to collaborating on CCAP.

National and local media coverage of the CCAP launch events further informed citizens in the municipalities and around the country of the CCAP's goals and activities. On the national level, *Jornal Notícias*, Televisão de Moçambique, STV and Rádio Moçambique, reported on the launch events. At a local level, *Jornal Diário da Zambézia*, Rádio Zambeze, Rádio Paz, Rádio Quelimane FM provided media coverage in Quelimane while *Jornal Horizonte*, Rádio Wimbe, Rádio Sem Fronteiras provided covered the events in Pemba.

Maximizing Capacity of Early Warning System and its Users

Following successful demonstrations of the EWS at the project launches, CCAP worked to expand the reach of the EWS, both in terms of increasing knowledge around the community and overall functionality of the system. Over three sessions, INGC and municipal technical staff, community leaders, teachers, school administrators and religious leaders, participated in trainings and testing of the EWS. In Pemba, Mayor Tagir Carimo and U.S. Ambassador Douglas Griffiths participated in the demonstration of the system, which served to enhance the buy-in of the various institutions and participants who helped conduct tests and received training.

Beyond expanding the capacity of users, CCAP has also begun the expansion of the types of services. With the warning system and emergency response data collection tools established, CCAP has started developing other functions to the system, such as medium-term post-disaster collection. Medium-term post-disaster collection allows for municipalities to understand the

needs of a community once emergency needs are addressed. CCAP is exploring the possibility of establishing a dial-in public information system, which will allow citizens to get information on CCA interventions and DDR practices at no cost to the user.

Figure 2. First EWS training session for community leaders in Pemba.

Just as the types of services will expand, the number of people reached by the EWS will also expand in the months to come. While we expect to continue refining the system and improving the skills of users at the municipal level, CCAP has already started to plan the geographic expansion of the EWS.

Determining tailored, prioritized interventions

Following a participatory process with municipal officials and community representatives to identify initial target neighborhoods for CCAP's initial interventions, the CCAP team sought the input of community members on the types of interventions desired. This participatory collection of information both ensures that the correct type of intervention is implemented while also creating buy-in from the community members to assist with the activities. From August 25th to September 25th, community members and local government counterparts in these participatory meetings in Paquitequete in Pemba and Incídua in Quelimane developed a number of potential interventions, such as the following:

- Improved sanitation: community members acknowledged open air defecation as a significant issue. CCAP intends to conduct urban adaptations of community-led total sanitation (CLTS) training, which will help demonstrate how open air defection leads to an increase in illness during floods. Connecting these two issues will ultimately lead to the construction and proper use of latrines. More information on CLTS is provided in *Communications and Behavior Change* below.
- Potable water: in addition to reducing the amount of feces-infected water through improved sanitation, community members identified the need for storing potable water as critical for adapting to the effects of climate change. CCAP will look at introducing local, low-cost, scalable methods for retaining potable water, such as rain water catchments.
- Flood-resistant housing: houses located in floodplains and along the coast often incur significant damage, as seen in the Pemba floods in March. Participants recognized the

need to improve housing construction to minimize potential damage during a severe climatic event.

- Green infrastructure. As Quelimane Acting Mayor Marques Naba iterated in his neighborhood tour of Incídua, the decimation of mangrove stands has put neighborhoods at increased risk of flooding. Community members echoed this in calling for "green infrastructure," such as the restoration of mangroves. Following this call, CCAP conducted assessments of the potential for mangrove restoration. More information on green infrastructure is provided below in *Rapid Assessment for Potential Mangrove Restoration with Universidade Lúrio (UniLúrio).*

Figure 3. Drinking water vendor making deliveries near Icídua, Quelimane.

Mapping local NGOs engaged in CCA and DDR activities

To implement the interventions selected during the participatory meetings, CCAP will partner with local NGOs as a way to not just utilize local knowledge, but also increase the capacity of local organizations. Building on the initial findings from the draft municipal assessment conducted earlier this year, CCAP carried out a comprehensive survey of local organizations in Pemba to identify local NGOs and gauge their capacity to implement CCAP activities. The survey in Pemba found that some organizations have successfully implemented CCA-related projects in rural areas, but few have experience in urban environments and the majority of organizations lack formalized policies and procedures for most functions. A similar survey will take place in Quelimane early in the next reporting period. These findings will inform CCAP's capacity building interventions and assist in the selection of partners to implement activities.

Rapid Assessment for Potential Mangrove Restoration by UniLúrio Consultants

Among potential partners, UniLúrio in Pemba emerged as a potential partner for implementing green infrastructure activities. CCAP engaged with representatives from UniLúrio to evaluate their proposal of mangrove restoration as an approach to mitigate the effects of climate change. Discussions between UniLúrio staff, CCAP COR Colin Quinn and CCAP Chief of Party Carlos E. Quintela initially found that while mangrove restoration would be feasible in Quelimane, dune stabilization would likely be a more fruitful action in Pemba. UniLúrio biologists Sérgio Garrido and Culsumo Carimo conducted a rapid assessment of the status of mangroves in priority areas in Quelimane; results will be presented in the next reporting period.

Communications and Behavior Change

Following the neighborhood selection and intervention prioritization that took place following the launch events, counterparts from the municipalities identified environmental education and behavior change as areas of intervention. Initial messaging around CCA and DRR occurred to coincide with the project launch events. Each launch event had a theatre presentation illustrating the most common climate issues affecting both cities and how local populations could cope with them in an adaptation perspective. Radio spots, which used both Portuguese and local language, informed residents about actions that can be taken by local populations to adapt to climate change in their particular environment. Building off these initial activities and taking into account the institutional assessment and local NGO mapping, CCAP will be working with local organizations, religious leaders, community leaders, and artists to carry out additional behavior change messaging.

Figure 4. Homes near cleared mangrove stand in Icídua, Quelimane.

Community-led total sanitation (CLTS) methodology is at the forefront of CCAP's planned behavior change activities. Community members and municipal government leaders alike have recognized *fecalizaçao* – open defecation – as a problem that requires intervention. CCAP's technical team has initiated conversation with other USAID projects in Southern Africa to discuss methods of reducing open defecation, specifically around the construction and proper use of latrines. The CLTS methodology relies heavily on behavior change communications. We anticipate that local organizations will provide assistance with messaging around CLTS.

7. Project Performance Indicators

Below is a summary of the progress made toward the targets defined in the M&E Plan. To measure the project performance CCAP developed 26 indicators that respond to all activities planned during the LOP. For the FY2014 Q4 CCAP has performed on six indicators accordingly with activities developed in those Quarter in both municipalities as indicated in the table below.

Indicators	FY14 Q3	FY14 Q4	TOTAL	Target LOP	% LOP	Indicator Activities Q4
5. Number of CCA or DRR tools developed, tested and/or adopted (Outcome)	4	2	6	10	60%	CCAP developed and tested the EWS platform as a tools for both municipalities and create municipality accounts for data managers to test that corresponding to two tools tested in Q4, one for Quelimane and other for Pemba.
7. Number of person hours of training completed in climate change as a result of USG assistance (Output, F Indicator 4.8.2-29)	700	255	955	3,000	32%	One EWS training for data senders was done in Quelimane and two trainings in Pemba during the Q4 for a large group (including CLGRC, school teachers, religious leaders and communities' leaders) covering 168 cumulative hours in Quelimane corresponding to 62 people trained during 3 hours each person and 87 (both trainings) cumulative hours in Pemba corresponding to 45 hours, 15 people and 3 hours each in the first training and 42 hours, 14 people and 3 hours each person in the second training. (This count only municipal personnel or provincial staff working in line ministries in the target cities).
8. Number of person hours of technical assistance on CCA or DRR delivered (Output)	44	14	58	1,000	6%	Data managers (people who will send the EW SMS for all data senders and manage the data received from the field regarding to the situation caused by extreme event) technical assistance (TA) was done for INGC and Municipality technical staff tree times in the Q4, one in Quelimane covering 7 cumulative hours corresponding to 2 people 2 hour each and one person 3 hours and 7 hours in Pemba covering two TA, first with 2 people counting 2 hours each and in the second with one person during 3 hours.
15. Number of person hours of training completed in climate change as a result of USG assistance (Output, F Indicator 4.8.2-29)	181	57	238	6,000	4%	One EWS training for data senders was done in Quelimane and two trainings in Pemba during the Q4 for a large group (including CLGRC, school teachers, religious leaders and communities' leaders) covering 18 cumulative hours in Quelimane corresponding to 6 people trained during 3 hours each person and 39 (both trainings) cumulative hours in Pemba corresponding to 15 hours, 5 people and 3 hours each in the first training and 24 hours, 8 people and 3 hours each person in the second training. (Does not include municipal personnel or provincial staff working in line ministries in the target cities).
18. Number of person-contact hours of information disseminated about climate change vulnerabilities and adaptive options (Output)	0	278,110	278,110	3,000,000	9%	During the CCAP launch event the project prepared different messages related to CCA and DRR issues and those were disseminated trough radios spots, debates and print banners in both municipalities, those radio spots and debates was done in Portuguese and others local languages each (in Quelimane: Chuabo and Lomue and in Pemba: Maconde, Emacua and Mwani)
23. Proportion of individuals engaged in CCAP activities who are youth (Output)	14.8%	16.3%	15.4%	20%	76.9%	16% of people participated in EWS training and data managers technical assistance was youth (people from 16 to 29 years old)

8. Major Implementation Issues

Operational Challenges

The project obtained the definitive operating license from the Ministry of Industry and Commerce in late July. Immediately following the issuance of the license, a local law firm began the process of assisting CCAP to obtain declarations of good standing from the tax authorities and the social security institute, which are required as part of the work permitting application process. The tax authorities are in the process of upgrading their computer systems, which led to lengthy delays. The project submitted a request in early July to the social security institute, and received a response in early September only to discover that it was for a different USAID project implemented by Chemonics. CCAP expects to obtain the required quitclaims in the next reporting period.

Procurement Update

CCAP received USAID approval of the Grants Under Contract Manual in September. CCAP intends to award its first grant to INGC to provide its local committees in Incídua and Paquitequete respectively with emergency kits, pending USAID approval of a waiver to issue grants to host government institutions. At the end of the reporting period the project initiated the procurement process to obtain the emergency kits in anticipation of receiving the waiver.

Staffing Update

In July, USAID formally approved a revision to the CCAP staffing structure that named Casimiro António as Deputy Chief of Party for Programs and Brant Paulson as Deputy Chief of Party for Operations. CCAP technical staff conducted interviews for the Senior Technical Advisor position and has already made an offer subject to relevant USAID approvals at the end of the reporting period.

9. Collaboration with other Donors and Projects

Close cooperation with projects and donors operating in the coastal cities is fundamental to better address adaptation needs. To this end CCAP has identified strategic entities to partner with to foster the adaptation agenda. CCAP is exploring the possibilities of designing adapted and resilient infrastructures (e.g. housing) with UN-Habitat that can better withstand extreme weather events such as flooding and cyclones. In the same line, CCAP and Mozambique Red Cross are exploring the potential for collaboration to assist areas with sanitation deficits to prevent water and or vector borne disease in case of an emergency. With other partners such as UNDP and ACRA, CCAP is exploring the potential to enlarge the adaptation footprint by supporting the development of local adaptation plans. The partnership is extended to the work with the academia to include the restoration of specific green infrastructure in those cities.

10. Key Activities Planned for Next Quarter

- **Initiate work on adapted infrastructure design and constructions:**
    - Develop adaptive designs, resilient and incremental improvements to residential housing that takes into account the target communities specificities and vulnerabilities to extreme events;
    - Examine options for elevated silos for solid waste management;

- Promote community-based solutions for cleaning and maintaining drainages and natural water channels.

- **Access to clean water:**
  - Review potential rain water catchment and storage systems that could improve access to potable water beyond the rain reasons.

- **Green infrastructure restoration:**
  - Determine options for preserving and/or restoring mangroves that provide ecosystem services to Quelimane to enhance resilience;

- **Sanitation:**
  - Initiate efforts to use CLTS methodology in target local community to reduce open defecation in order to improve the community environmental sanitation;

- **Support the development of municipal climate resilient development (CRD)**
  - Complete vulnerability maps to support municipal government decision making in terms of future municipal development intervention;
  - Development targeted capacity building trainings with support from academia for key municipal stakeholders;

- **Awareness and behavior change:**
  - Develop radio products such as contests, dramas, debates and spots to deliver messages on the above listed topics and to promote changes in behavior;
  - Train local activists in behavior change techniques and engage them in practical campaigning;
  - Work with drama groups to develop, train and engage with local communities using the participatory theatre approach.

Figure 5. Cleared mangrove stands near Icídua, Quelimane.

11. Evaluation/Assessment Update

Evaluations, Assessments, Studies and Audits	
Completed: List evaluations, assessments, studies and/or audits held last year	Major Findings/Recommendations
Gender and Youth Stakeholder Analysis	The poorest people, mostly women and children, face greater difficulty in enhancing their resilience to climate change-related events. Despite efforts to inform the public about the causes of extreme climate events and how to minimize exposure, there are still several explanations based on traditional beliefs that are widely circulated, contributing to general misinformation. Many residents lack of awareness of their own responsibilities in undertaking adaptive initiatives, but rather passive wait for action by the municipalities. The City Councils in both Pemba and Quelimane have a fairly balanced number of men and women, but women hold far fewer key positions and have less influence on decision-making. The mainstreaming of gender perspective in the all CCAP interventions will enhance their quality and relevance for residents and municipal officials alike.
Planned: List evaluations, assessments, studies and/or audits planned for next year	
Institutional Assessment of the Municipalities of Pemba and Quelimane – CCAP will submit in the next reporting period	
Annual Project Review –scheduled for second quarter of fiscal year 2015.	

12. Administrative Update

CCAP completed the recruiting process for the Senior Technical Specialist and made a formal offer at the end of the reporting period, which is conditional upon all applicable USAID approvals.

13. Success Stories and Photos

We do not have any success stories to submit at this time due to the nature of our initial activities. CCAP is building a photo archive of the project with geo-tagging, so they can provide a verifiable record of location, in addition to the date and time the pictures were taken. A Short-term Technical Advisor in the next reporting period will assist CCAP to generate some baseline narratives to capture the starting point for interventions, against which we will be able to create more powerful narratives as interventions come online and bring benefits to target municipalities.

14. Financial Information

Line Item	Total Life of the Project Budget	Actual Expenditures through this Quarter		
		Prior (through June 30, 2014)	July 1, 2014 to September 30, 2014 (Q4)	Total
Salaries	3,172,747.00	275,027.26	157,436.11	432,463.37
Fringe	1,195,763.00	114,686.52	61,124.07	175,810.60
Overhead	2,463,048.00	229,260.93	123,674.90	352,935.82
Travel & Transportation	368,513.00	51,897.95	30,795.40	82,693.35
Allowances	734,239.00	141,500.92	61,962.02	203,462.94
Other Direct Costs	1,136,172.00	188,153.13	86,920.01	275,073.14
Equipment, Vehicles, & Freight	146,082.00	103,108.81	1,432.24	104,541.05
Training	467,616.00	4,953.12	170.44	5,123.56
Subcontractors	1,464,492.00	260,526.24	186,457.30	446,983.54
Grants	2,100,000.00	-	-	-
General and Administrative	671,708.00	69,414.07	43,592.48	113,006.55
Fees	983,829.00	107,889.42	56,517.50	164,406.92
NICRA Adjustments	-	-	30,588.30	30,588.30
Grand Total	**14,904,209.00**	**1,546,418.36**	**840,670.77**	**2,387,089.13**

15. Year-to-Date Summary of Activities

The following section presents a brief summary of project activities and accomplishments during FY 2014.

CCAP's objectives and geographic focus

The Coastal City Adaptation Project (CCAP) works primarily with municipal governments to increase their understanding of urban adaptation issues and promote the application of management options for urban adaptation. CCAP also works with other local government agencies, universities, civil society organizations, and as a principal target group, the communities themselves. With this broad set of stakeholders, CCAP seeks to increase climate awareness and the technical expertise of future urban planners and municipal authorities, to increase the resilience of the target coastal cities, and to facilitate the adoption of adaptive measures at the local level. These interventions aim to accomplish three objectives: (1) to improve the provision of climate-resilient urban services by municipalities; (2) to increase the adoption of climate resilience measures by communities, civic and community organizations, including civil society, NGOs, and faith-based organizations; and (3) to increase the capacity to potentially implement economic risk-management tools for at-risk urban infrastructure and livelihoods.

From a geographic perspective, CCAP focuses its intervention on the most vulnerable coastal cities that are not currently receiving significant support from other donors. In the first phase, the priority cities are Pemba and Quelimane. In subsequent phases the project will work in additional cities implementing activities that have proven to be successful and that are readily scalable. In some cases, the impact of the intervention may go beyond the city limits, when it is

cost effective to do so, when other agencies that will cover the additional cost of expanding the coverage, and/or because the mandate of the partner organization involved in its implementation, requires it. This is particularly the case of the Early Warning System (EWS), as discussed below.

Starting operations

A week following contract award CCAP deployed a short-term start-up team that focused on office set-up and hiring staff. Chief of Party Carlos E. Quintela mobilized to post in mid-January and shortly thereafter led a work planning workshop with participation from USAID, Eduardo Mondlane University (EMU), municipal planning firm Vedor Lda, and subcontractor Human Network International (HNI), in addition to the CCAP staff and members of the Project Management Unit (PMU) for CCAP that traveled to Maputo to assist with project start-up. By March 2014, the Maputo-based office was set up, equipped and staffed, with municipal advisors arriving at their posts in Pemba and Quelimane in June.

Integral to the technical start-up activities was the preparation of and institutional assessment, as well as a gender and youth assessment. These two tasks were subcontracted with two local firms, Vedor Lda and Blid *Consultoria e Serviços*, respectively. These assessments provided a clear picture of the challenges facing the Municipalities of Pemba and Quelimane and their communities. They also provided a framework for the development of the implementation approach that CCAP has used during its first year of operations.

Building partnerships

The process of preparing these assessments allowed the project to engage with many local actors through a series of working sessions over a period of six months with the technical teams of the municipalities, the leaders of the communities (secretaries of the neighborhoods, religious leaders, and teachers) and key government agencies, such as INGC. These working sessions varied in size, with in some there were 100 participants, in others it involved technically intensive sessions with a few key local experts. This process helped defined CCAP's approach for its first phase of designing interventions. Specifically, these sessions advanced four key project priorities: (1) share and validate the draft work plan prepared during project start-up; (2) establish and launch of the EWS; (3) select the focal neighborhoods in which to initiate field activities; and (4) select the priority interventions in those focal neighborhoods.

Figure 6. Meeting of municipal staff and community leaders to validate CCAP's work plan in Pemba.

One of the main benchmarks of this outreach and partner engagement process was the formal launching of the project in July in both Quelimane and Pemba. It served to formalize the commitment of USAID through CCAP to work with local partners to increase the resilience of these coastal cities, and confirm as well, the commitment of the communities, the municipalities and INGC to join this partnership. USAID Mission Director Alex Dickie reinforced this message

by visiting with Mayor Manuel Araujo Quelimane's Icídua neighborhood, and with Acting Mayor Marques Naba Pemba's Paquitequete neighborhoods. The mayors confirmed the conclusions of the extensive consultation process that identified these neighborhoods as priorities for their respective municipalities.

Strengthening the municipalities and local government agencies

Of all the things that are needed to help municipalities and local government agencies address the challenges of climate change adaptation in coastal cities, CCAP began by focusing on two practical tools that would provide immediate benefits: an enhanced early warning system, and a vulnerability map for each municipality.

Early Warning System

The early warning system (EWS) that CCAP is developing with INGC and the municipalities is an enhanced tool because, while most early warning systems are one-way information delivery platforms, CCAP's EWS also has the capability to receive information from the field in real time. It is a two-way, mobile network solution that performs four critical emergency response and preparedness functions: (1) it provides status updates of the proximity of storms and instructions to the population; (2) it collects critical information during the most severe period of the storm; (3) it engages the community in post-disaster response activities by extending their involvement in data collection; and (4) it provides free and easy access to information about adaptation and resilience measures, disaster preparedness, and eventually on a wide variety of topics ranging from health to agriculture throughout the year. These functions are described in more detail below.

- ***Warnings and preparedness instructions***. Its most elemental component is the early warning per se. When it is fully implemented it will complement existing early warning systems that use radio and television. The EWS obtain information from the National Weather Agency (Instituto Nacional de Meteorologia – INAM) and INGC and will disseminated it by SMS to the network of participants in the EWS. It will send follow up messages updating the community leaders about the status of the approaching storm and instructions for preparedness actions. The platform for the operation of this component of the EWS is already in place. CCAP is currently working on the procedures and protocols to engage with INAM and the INGC to make it operational.

- ***Rapid response***. The lack of information during the most intense period of a storm, usually the first 72 hours after the landfall of a cyclone, often makes it extremely difficult to make decisions that could reduce the loss of life, health and property. Typically, information is gathered by dispatching the staff of emergency response agencies and institutions, but in reality the challenges of gaining access to most affected areas cause decisions to be made without much reliable data. CCAP's EWS relies on a network of participants that provide critical information about the immediate situation. Currently, CCAP has trained over 150 participants in both cities and we are working to expand their number. During this phase, participants will provide INGC with data by submitting answers to 12 critical questions, such as the number of people missing, injured and dead; status of access roads and health facilities; and the most pressing service, equipment and supply needs. With this information INGC can more effectively distribute resources and coordinate the actions of the many agencies involved in emergency response. This part of the EWS is operational and CCAP is currently working on expanding the system and training INGC to take full control of the platform.

- ***Post-disaster response***. Following the storm, the EWS will continue to operate providing INGC with the relevant information for the post-disaster phase. There is a standard INGC questionnaire with close to 30 questions for this phase of the cycle that participants can respond to via EWS platform. As in the rapid response phase described above, the EWS participants not only provide valuable and timely information, but ensure the effective engagement of the communities through their recognized—formal and informal—leadership structure. The training conducted to date with the EWS participants has not focused on this phase, but the protocols and interface are very familiar to all. These adjustments are planned for the coming months.

- ***Information dissemination, the 3-2-1 Platform***. To complement the functions above, we in the initial phase of developing an on-demand Information service (the 3-2-1 platform) that will be accessible on simple mobile phones to anyone in Mozambique. This system will not be restricted to the cities where we work. Using their own simple mobile phones, callers will be able to call in and listen to public service information in the local language anytime, anywhere, free of charge. In a series of "listen and choose" steps, callers use their telephone keypad to select a pre-recorded message. Our partner HNI, who is implementing the EWS is in advance negotiations with local mobile network operator (MNO) Movitel for the implementation of this system. We expect that the system will be operational early next year.

To perform these functions, the EWS relies on four elements. First, the rapidly expanding number of cell phone users and increasing coverage by the MNOs. Second, a very simple user interface that is already very familiar to all cell phone users, the Short Message Service, or SMS. Any basic, inexpensive cell phone will work, as long as it can send and receive SMS, which is a common feature of most cell phones. Third, a simple to operate, yet robust data management platform that functions in the background, which is fully operational now and will be managed entirely by INGC by the middle of next year. Fourth and most important, is the network of participants that provide the data collection and serve as the backbone of the system. These participants are community leaders—neighborhood secretaries, members of INGC's local disaster response committees, religious leaders, school teachers, local health workers—who CCAP has been training since March on the operation of the system. Although the data entry protocols are very simple, training is fundamental so that data collection during the storm can be done effectively, and so that their role and responsibilities toward the community they serve, can be routinely reinforced.

To make the system more accessible to the growing number of EWS participants, we have subcontracted with an SMS aggregator that receives the SMSs from users registered to any of the mobile networks, toll free, and delivers them to the data platform. This is essential because it increases the breadth of the system by receiving messages from all MNOs in Mozambique, and allows for the greater number of network participants, regardless of cell phone service provider, all at no cost to the participant.

As innovative as the technical approach for the EWS is, its real strength rests on its reliance on community engagement. This makes the system more robust because the community leaders that drive the EWS assume, in very tangible ways, responsibility for the people they lead and whose trust has been placed in them. CCAP started working within the formal organization of the neighborhoods with the neighborhood secretaries and local disaster management committees. Now, we are also engaging religious leaders and local teachers and principals in this process, providing them with the training needed to support the EWS. This diverse

leadership structure is an important aspect of the community and they are in the best position to provide the interface between the community they represent and the emergency response teams when natural disasters occur.

At INGC's request, we are currently reviewing the expansion of the coverage of the EWS to the district and the province levels. For INGC this is important because their mandate exceeds the municipal jurisdictions. For CCAP it would be important that the EWS is adopted nationally so that it can benefit all the coastal cities in Mozambique. In the coming weeks we will be analyzing the cost implications and cost-sharing arrangements with INGC and other donors.

Vulnerability mapping

The process of developing the vulnerability map is in its early stages. We have held two consultation sessions in Pemba and Quelimane to identify the relevant variables. We are currently in the data collection phase and expect to have a draft map by the end of the year.

Increasing the resiliencies of vulnerable communities

The interactions with the communities had multiple objectives. Two of them were paramount for the definition of follow up activities. First, select the focal neighborhoods and second, identify the priority interventions. We needed to agree with all the stakeholders where we would start working and what we would do to help them become more resilient.

Through an involved process of consultation with the communities and the municipality, two neighborhoods in each city were selected based on their perceived vulnerability. In both cities the mayors themselves confirmed the findings of the consultation process. In Quelimane, Icídua and Manhaua were selected, but work this year will start in the former. In Pemba, Paquitequete and Cariacó were selected, and likewise, work this year will start in the former.

Figure 7. Neighborhood of Icídua (lower right from central Quelimane) is located in an open flood plain that was previously protected by mangrove stands, which were cleared to create salt flats.

The same consultation process served to identify the priority interventions. Although solutions that will be appropriate for Icídua will differ from those of Paquitequete because their location, topography, population density, among other variables, the problems identified were the same.

- ***Sanitation***. Open defecation continues to be a major concern in both neighborhoods. Provision of latrines alone will not be sufficient. We will address this problem by adapting the Community Lead Total Sanitation (CLTS) methodology to urban settings and proceed from there to design and build in close collaboration with the municipality and the community, latrines that are appropriately adapted to the local conditions and preferences of the communities.

- ***Solid waste***. Collection and removal of garbage has been identified as a major concern of the municipality. We will design with the municipalities and the neighborhoods a solid waste management approach that involves interventions that range from changes in local behavior to the construction of waste collection centers, and procedures for its removal to the municipal landfill.

- ***Potable water***. Access to potable water is limited, particularly in Icídua because it more distant from the center of the city. Water is obtained from community wells, some of them not close enough to homes, and from water vendors who deliver them in 25 litter jugs on bicycles. We are reviewing options for rainwater harvesting systems that are cost effective to construct and easy to maintain.

Figure 8. Neighborhood of Paquitequete, Pemba, is located at the tip of the peninsula in a densely populated area subject to tidal flooding.

- ***Resilient housing***. We are finalizing a partnership with UN Habitat to design low-cost yet resilient housing and train local contractors to build them, and working with local financial institutions to finance them. We will approach this process in an integrated manner, including into the design considerations the sanitation and potable water needs of the families in the target neighborhoods.

- ***Green infrastructure***. Much of the increase vulnerability of both cities in general, and the target neighborhoods in particular, has to do with the destruction of the natural habitats that created a buffer from tides, floods and storm surges. We are establishing a partnership with UniLúrio to first, conduct rapid assessments in Icídua and Paquitequete of the green infrastructure needs. From the preliminary review that we conducted with UniLúrio scientists, we have concluded that mangrove restoration is the priority for Quelimane, and that dune stabilization is the priority for Pemba. This finding was confirmed for Quelimane by a field assessment conducted by consultants affiliated with UniLúrio. The next step is to share this assessment with the relevant government and community organizations and to lay out a plan for implementing the recommendations of the assessment and the consultations. A similar field assessment for Pemba will take place in the coming months.