Addressing high evaporation rates of current water storage systems and facilities

The Pacific Adaptation to Climate Change (PACC) project is supporting the integration of climate change risks into policy frameworks and the implementation of community-based adaptation measures in 14 countries throughout the Pacific. These actions are intended to increase resilience in three key development sectors: water resource management, coastal zone management, and food production and food security.

In the Republic of the Marshall Islands (RMI), the PACC project focuses on water resources management on the Majuro Atoll, where the nation's capital is located.

Issues

RMI is made up of 29 low lying atolls and five low elevation islands, together comprising 70 square miles of land. The Majuro atoll has a land area of 3.56 square miles and a tropical oceanic climate. With this type of climate and small land mass, climate change intensely affects local livelihoods, infrastructure, and sea level.

Factors identified as contributing to RMI's vulnerability to climate change include high population densities on the islands, poverty, low elevation, wide geographic dispersal, a fragile ecosystem with limited freshwater resources, and a weakly developed economy vulnerable to global influences.

As 100% of RMI's population and infrastructure resides on the coastline, the people are vulnerable to high winds, waves, typhoons and coastal erosion. The most threatening impacts of climate change on RMI include longer and more frequent droughts that impacts on water availability.

Water management has been identified as a major issue that—in the face of growing population, reduced space and decreasing available resources—urgently needs to be addressed in the Marshall Islands. Residents drink approximately 1 million gallons of water daily and the 23 mega gallons of water stored in existing reservoirs provides less than a month's supply in times of drought. This is a very vulnerable situation; more El Niño-like events in a future climate change scenario would bring about serious socio-economic and health repercussions for the island of Majuro.

Actions

PACC RMI is working to address the issue of high evaporation rates of current water storage facilities and demonstrating a whole-island approach to climate change adaptation. PACC RMI is demonstrating the benefits of preparing for future climate change risks in the water sector and is also working on ways to improve water usage in other sectors, particularly agriculture, during droughts. PACC RMI will take action through several approaches to improve water resource management:

Policy mainstreaming:

To improve water quality and conservation policy, the PACC RMI project is working very closely with the Integrated Water Resources Management (IWRM) project to develop a national water policy. Furthermore, the PACC project in collaboration with key national and regional partners have developed a climate change policy and Joint National Action Plan to better coordinate climate change issues at the national and community level.

Community-based adaptation:

In addition to policy mainstreaming efforts, there are a number of capacity building measures and concrete installations intended to enhance climate-resilience in RMI. These efforts are in place to achieve the second PACC outcome: to design and demonstrate innovative decision systems, approaches, technologies and practical measures to improve climate-resilience. For example:

Minimising evaporation rates of water storage facilities: The climate of the atolls restricts the quality and quantity of freshwater supply in RMI. While sources of water vary around the country, 70% of RMI's residents depend on rainwater as their primary source for drinking water. Addressing the problems of leakages to key storage facilities is needed to maintain adequate supply in times of drought. Efforts are under way to provide a membrane cover to stop leakage.
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and increase storage capacity on holding tanks. There are a total of 7 holding tanks with a combined capacity of 36.4 million gallons. Each holding tank has a capacity of 5 million gallons, except for holding tank #7 (with 8 million gallons) and holding tank #3 (with 3.4 million gallons of treated water). Most of these tanks are currently leaking due to torn membranes. PACC RMI will replace the cover for holding tank #3 and will install membranes for tanks #1, 2 & 4.

Development of alternative water sources: Creating alternative supplies to reduce usage from the primary Laura water source will support drought resilience and food security in the RMI. The PACC project will support the provision of water tanks to the Laura agricultural community to help reduce their dependency to underground water. This is important to ensure that Laura Water Lens is not overused which can lead to salinity increase.

Knowledge and information on water conservation and climate change: Demonstrating the correct usage of water for agriculture during a drought will also help residents adapt to the effects of climate change. PACC RMI is providing a better understanding of both water conservation and the various vulnerabilities and risks that climate change can cause for Majuro. Supporting the exchange of information to detect early warning signs, disaster risk reduction, and disaster response, provides RMI residents with knowledge to better adapt to climate-related threats. In addition, with the construction of a new water source by the Majuro Water and Sanitation Corporation, PACC RMI outcomes will help inform future government initiatives.

Impacts

The main goal and expected outcome of this project is to enhance the capacity of the RMI to adapt to climate change and variability in the water sector. By increasing water storage and improving existing water systems, PACC RMI efforts will conserve the limited water available and enable communities on this fragile atoll nation to withstand future droughts. By promoting alternative water sources for drought resilience, PACC RMI work is also expected to increase baseline water levels and improve food security by amplifying the production of staple crops.

Increased availability and quality of water, will improve public health, agricultural production, and industry, thereby preserving communities and livelihoods. On a broader level, PACC RMI work will have a meaningful impact for its residents by strengthening the institutional framework within the country, and improving the capacity of government and community leaders to integrate climate change risks into sustainable development programmes. The results and lessons will be shared regionally and globally, and bring together new knowledge generated through the project as the basis for a strategic and regional approach to climate change adaptation.

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Membrane covers work to stop leakage and increase storage capacity on holding tanks.
Photo: PACC RMI