

TONGA

PACC Country Brief

Pacific Adaptation to Climate Change



Improving the current Hihifo water infrastructure to address current and future water problems that would be worsened by climate change

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.

Based on Tonga's needs, the PACC Tonga project is focused on improving water availability and quality in the Hihifo district, Tongatapu. PACC Tonga is using climate change models, technical expertise and traditional knowledge to identify, evaluate, design and demonstrate appropriate adaptation actions that will enhance the current Hihifo water infrastructure and improve the livelihoods of the people by providing them with clean potable water.

Issues

The Kingdom of Tonga is comprised of 172 islands, with a total land area of 718km and 419km of coastline. The climate is characterized by heavy rainfall, humidity and high temperatures which are steady through the year, with the exception of severe tropical cyclones during the summer months. These bring sea-level increases, coupled with localised flooding and drought. These climate effects are a microcosm of global climate change, and pose a threat to Tonga's residents and infrastructure.



Water reserve systems in Tonga
Photo: PACC Tonga

Environmental changes in Tonga's coastal zones include land loss, shoreline retreat, reduced beach vegetation (including mangroves) which would otherwise act as buffers against the impacts of climate change. Much of the infrastructure and socio-economic activities in Tonga are located near or on the coast which makes them highly

vulnerable to effects of sea-level rise. This has a significant impact on the country's GDP and development in general. Water infrastructure in particular is essential to the well-being of the residents, and needs to be addressed.

The municipal water supply system of Hihifo District was launched in the 1960s and is currently providing water to more than 700 households. However, frequent water shortages are a problem - especially for villages in the far north: Haatafu, Ahau and Kanokupolu. Often, water pressure is so low that water only runs in the morning and occasionally evenings. Current water management infrastructure and design are deficient for rainfall storage, distribution and sustainable use. This has serious implications for people in the Hihifo District, as it affects the availability of water for consumption, agricultural production and industry, as well as village livelihoods.

Actions

In response to the issue of limited water, PACC Tonga is developing climate-resilient water management practices at the community level. PACC Tonga is also improving the collection and storage of rain and groundwater resources (including individual household and community storage capacities), reducing leakage of reticulated systems and water storage facilities and promoting water conservation (e.g awareness raising).

Address fundamental considerations in relation to water resources management

- The Policy was formulated to address the following fundamental considerations:
- views from stakeholders (government agencies, NGOs, private sectors and local communities) on how Tonga's freshwater water resources and water supply can be properly and sustainably managed,
- emphasis on the importance of mainstreaming climate change and disaster risk considerations into planning, policies, legislations, projects designing and execution of programs in

Country Summary

Country:

The Kingdom of Tonga

Thematic Sector:

Water Resource Management

Project Funding Source:

GEF-Special Climate Change Fund, AusAID

National budget allocation:

GEF-SCCF: \$750,000;
AusAID: \$1,707,232

Co-financing:

\$1,588,000

Programme Period:

2009-2013

Target area:

Haatafu, Ahau & Kanokupolu in the Hihifo district

National Implementing Agent:

Ministry of Environment and Climate Change, Government of Tonga

Regional Implementing Partner:

SPREP

Implementing Agency:

UNDP



relation to management of water resources and supply, at the national, sectoral, and local levels,

- sets of objectives and actions to reduce vulnerability and build resilience of the nation and communities to climate change impacts and disaster risks,
- provide basis for planning and actions particularly in relation to water resources and water supply in Tonga.

Policy mainstreaming:

The PACC approach to mainstreaming has a dual purpose: 1) to strengthen the ability of institutional frameworks, policies and plans to take climate change risks into consideration and 2) to improve the capacity of key national government and community decision-makers to integrate adaptation measures in key decisions.

Tonga developed the National Water Policy under the PACC project. The Policy was formulated to address the following fundamental considerations:

- views from stakeholders (government agencies, NGOs, private sectors and local communities) on how Tonga's freshwater resources and water supply be sustainably managed;
- emphasise the importance of mainstreaming climate change and disaster risk consideration into planning, policies, legislations, project design and executing of programs in relation to water resources and supply management at the national, sectoral and local levels;
- define actions to reduce vulnerability and build resilience of the nation and communities to climate change impacts and disaster risks; and
- provide a basis for planning and actions in relation to water resources and water supply in Tonga.

Community-based adaptation:

The second PACC outcome is to design and demonstrate innovative decision systems, approaches, technologies and practical measures to improve climate-resilience.

PACC Tonga measures include reducing leakage of reticulated systems and water storage facilities by installing enhanced water pipe schemes. Additional activities include the introduction of water production pumps (both diesel/solar), equipment to improve water quality, metering for all households and water monitoring boreholes. Site specific vulnerability and adaptation (V&A) assessments have been completed and a socio-economic survey to collect information about the current water use situation was launched, in co-ordination with a water distribution survey and underground water monitoring.

Effective management of water catchments will minimise negative climate change impacts while providing immediate benefits for residents in areas that already suffer seasonal shortages. Catchment management will result in wider environmental benefits, including reduced erosion and soil loss, maintenance of biodiversity and land productivity.

Improved management and maintenance of water supply networks to reduce wastage will also reduce vulnerability in both urban and rural areas. In Hihifo, improved water conservation and management will require training in maintenance of taps, tanks

and pipes as well as access to appropriate hand tools. As part of PACC Tonga's community consultations, planning efforts involving rural landholders, departments of lands, agriculture, forestry, mines, water supply and environment will facilitate training and promote the development of more climate-resilient infrastructure.

Other initiatives include dry sanitation systems which can decrease the amount of water used to flush toilets, and repairing of leaking toilets, should save considerable quantities of water. Expansion of rainwater collection schemes will add additional construction costs, but as a long-term strategy they provide a means of 'climate proofing' to cater for future droughts especially on islands relying on rainwater as a major source of water supply.

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PACC Tonga has also designed and introduced climate change awareness programmes at the primary school level, coupled with the dissemination of learning materials, textbooks, story books, brochures and detailed information presented in the local language. Additional media outreach and awareness raising includes a PACC TV Program and Radio announcement.

Impacts

By improving the current water resource infrastructure of Hihifo district, PACC Tonga will increase resilience and enhance the adaptive capacity of communities in the Hihifo District. With planned agricultural expansion, improved coastal and ground water management systems, water quality and availability in the Hihifo district will be enhanced. Working in collaboration with various departments, government and national authorities will improve science and the local technical knowledge base. Increasing community awareness will provide a better understanding of climate change and disaster risks, and promote sustainable use of water resources.

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