

# CASE STUDY

Empowering Water-Scarce Communities on effective Water Management Practice

## BACKGROUND

Water resources management continues to be a strong concern for many communities worldwide, particularly those with water scarcity issues, pollution, and inadequate infrastructure. Lack of efficient water management practices hinders the sustainable use and conservation of this valuable resource.

Given that climate change issues will further exasperate existing water concerns, responding to water scarcity and supporting climate-resilient communities in rural areas requires water resources management and water supply monitoring to work hand in hand, ensuring long-term sustainability. It is therefore, essential to ensure water availability and infrastructure sustainability.

Over 80% of Timor-Leste's rural population relies on rain-fed agriculture, and many domestic water-supply are fed by mountain spring sources from high-altitude vulnerable shallow aquifers. The Acumau region of Timor-Leste is characterized by mountainous topography, with a total population of 2858 and 588 households.

The agrarian communities of Acumau cultivate fruits, vegetables and raise livestock to generate income. Therefore, consistent access to water is crucial for their livelihoods.

Community interviews showed that between 2017-2020 the water situation in the village was the most challenging. There were only one or two available water springs with small debit volume, which made it impossible to cater to most of the community's need.



During the dry season, between August to October, communities had to walk to the nearby river to collect water. The scarcity of water had led to conflicts between communities, disputes over access, and issues with water distribution including instances of pipe cutting.



## MULTIPLE INTERVENTION APPROACH

There have been multiple interventions conducted by the government, international NGOs, and local NGOs in the Acumau area to improve the provision of the water supply for the community. Both the government and NGOs built reservoir tanks (RVTs) near the water springs to collect water for community distribution.

Additionally, a community water tank has been constructed near the health centre to reduce the walking distance required to access it, and water taps have been installed near houses for easy access. However, there have been no activities to tackle water resource management with a particular focus on sustainability.

In 2020, the Klibur Juventude Lerolissa Oan (KJLO), the youth group from Acumau community, took proactive measures and started water and land conservation activities. KJLO is a youth-based community group that supports community awareness activity including water and land conservation.

In 2021, KJLO approached Permaculture Timor-Leste (PERMATIL) for technical supports on the water and land conservation activities. PERMATIL is a non-governmental organization based in Timor-Leste and focuses on promoting sustainable agriculture practices and permaculture principles in Timor-Leste to address food security, environmental conservation, and community development.



PERMATIL then provided technical support and expanded Water and Land Conservation activities in all Remexio area totalling 8 sucos. The water and land conservation intervention activities included: creating retention ponds, building land forming terrace and reforestation. These activities were accompanied by community awareness messages to stop deforestation and protect various animal species. The community members were also introduced to recognize and select specific types of trees for reforestation which contribute towards the protection of water springs and the local ecology thereby preventing disaster risks such as landslide, erosion and flooding.



## OUTCOME

The water and land conservation activities have led to water springs revival and as well as emergence of new water springs. Community therefore has more frequent access to water, especially nearby their houses. As a result, there are now fewer water related problems within the community compared to the past. Communities are now able to plant vegetables right next to their houses, and despite lower volume during dry season, the water is still available.



“Things have changed compared to the past years from 2017–2020. In the last couple of years around August, we used to collect water near the river, but that is not the case anymore. Now, the water supply is much better, allowing us to plant vegetables right next to the house.”

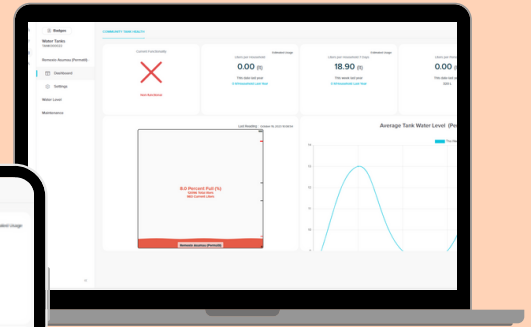
**Abilio Frederico**  
**Chief Leader Delegated Focal Point**

To further continue empowering Acumau community become climate resilient, and to ensure long-term sustainability, it is essential to implement both good water management practice and water supply monitoring simultaneously.

To address this water management approach, a collaborative effort was established between PERMATIL and Similie, a tech innovative company. The collaboration has led to the recent installation of an Automatic Weather Stations and a Water Supply Monitoring System in Acumau.



An initial positive indication from this management practice through the remote monitoring system is its ability to promptly detect under-supply of water in the tank and immediately inform community members to further investigate the issue. This led to the identification of a problem in the distribution pipes, caused by animal interference with the distribution line. As a result, pipes were disconnected leading to a disruption in water supply to the community tank. Moreover, it helps detect the wastage of water during the distribution.



“This is good that the technology can detect issues in the community water system. We can wait for the alert system to inform us to investigate further issues and better manage our water system and respond quickly to issues encountered.”

**Jose de Jesus Carvalho**  
**Youth**

Considering the positive results achieved through various interventions and conservation, it is essential to ensure the long-term sustainability of these achievements. This can be achieved by continuing the effective management of water resources and further strengthening the water supply monitoring system to facilitate timely response for prompt actions. Consequently, there is a need for transformative technology solutions because the presence of technology can support the community to monitor water remotely and relay information for immediate actions.

The effective water management approach requires the active participation of all stakeholders, including communities, who play vital roles through behavioural changes and their knowledge of management practices. Incorporating nature-based solutions, such as

water and land conservation activities is crucial for maintaining and protecting the ecology. Additionally, the integration of transformative innovative technologies serves to monitor and validate these nature-based solutions, contributing to the Government of Timor-Leste's effort in building climate resilience within the WASH sector. The expectation for the future is that these nature-based solutions and technology innovations will significantly enhance water management practices and provide valuable information through the national data management system, ultimately strengthening community resilience in the face of climate-related challenges.



similie

