

CRAFT Technical Assistance Facility

Case Study:

SOURCE Global Hydropanel Pilot in Papua New Guinea

Location: Roku Village & Daugo Island, Papua New Guinea

Project Period: October 2022 – June 2024

October 2024



The **Lightsmith** Group



Nordic Development Fund

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Executive Summary

From October 2022 – June 2024, Lightsmith's CRAFT Technical Assistance Facility worked in partnership with SOURCE Global to pilot the deployment and business models for hydropanels in Papua New Guinea. The project's objective were to demonstrate the feasibility of structuring and deploying financeable, community-scale hydropanel projects in rural and water challenged areas. Eighty hydropanels were installed across 2 pilot sites in collaboration with local partners - Roku Water Committee in Roku village, a remote village outside of Port Moresby; and with the Daugo Island Primary School on Daugo Island, located south of the capital.

Project activities included stakeholder engagement with local community members, establishing water management agreements for the usage of the water generated by the panels, site selection and preparation, installation of the panels and operation of the site. The project created five jobs for ongoing operation and management, overseen by the local Roku Water Committee, a woman-run water distribution committee. On average 800L per week were generated and sold to community members. It is anticipated that the panels can remain operational for 15-20 years. Over 850 community members benefited directly and indirectly from these pilots – 45% were women.

Through the project, it was found that the "Pay-Per-Liter" business model was not a viable strategy for SOURCE Global. Challenges with local customer familiarization and training local organization counterparts on a site-by-site basis are cost prohibitive and it would be more conducive to work with a larger organization or government to streamline the process and allow for more efficiencies by operating at multiple sites at once. Engagement with local governments and increased funding could secure the level of local interest and buy-in to deploy at a community level. Following on from the results of this pilot, SOURCE Global has signed an MoU with the Department of Education to focus on over 750 schools across 11 provinces that are serving more than 240,000 students. SOURCE Global plans to sign another agreement with the PNG Department of Provincial and Local Government Affairs to expand the Roku Village pilot into surrounding communities.

Project Partners



SOURCE Global (“SOURCE”), founded in 2014 and headquartered in Scottsdale, Arizona, is a leading water security company producing safe, on-demand drinking water essentially anywhere. Their proprietary Hydropanel technology utilizes advanced materials science to pull water from dry conditions for industrial, commercial, residential, and community applications.



The Lightsmith Group (“Lightsmith”) is a private equity firm pursuing superior financial returns along with measurable social and environmental impacts by investing in companies that address major societal needs. Lightsmith partners with growth-stage companies like SOURCE to deploy impactful projects and help them scale their solutions globally.



Total Waste Management (TWM) is one of PNG’s leading waste and water service providers for the petroleum, mining, industrial and commercial sectors. TWM and SOURCE led the installation of the Hydropanel array, and train the water committee to operate, clean and maintain the Hydropanels.

Community Partners

- **Roku Water Committee:** local, women-run water distribution committee selling trucked water to the population to ensure water security.
- **Roku Women’s Fellowship:** local women’s group running community awareness and education campaigns.
- **Pacifund:** Local consulting firm to support business development education for the Roku Water Committee
- **Center for Excellence in Financial Inclusion (CELI):** provided training in financial literacy and inclusion, microbusiness management, and the digital skills necessary to manage the pay-go system.



Climate Change and Water Scarcity in Papua New Guinea

Climate change is exacerbating water scarcity globally, depleting the supply of safe drinking water and increasing the occurrence and severity of droughts and floods in Small Island Developing States.

Nearly 40% of people in Papua New Guinea (PNG) do not have access to safe drinking water.

PNG's estimated **8.5 million people** have among the least access to safe water in the world.

87% of the PNG population lives in rural areas. Only **33%** of those in rural areas have access to safe drinking water.

Women and girls can spend **hours** walking over harsh terrain to collect water for their families.

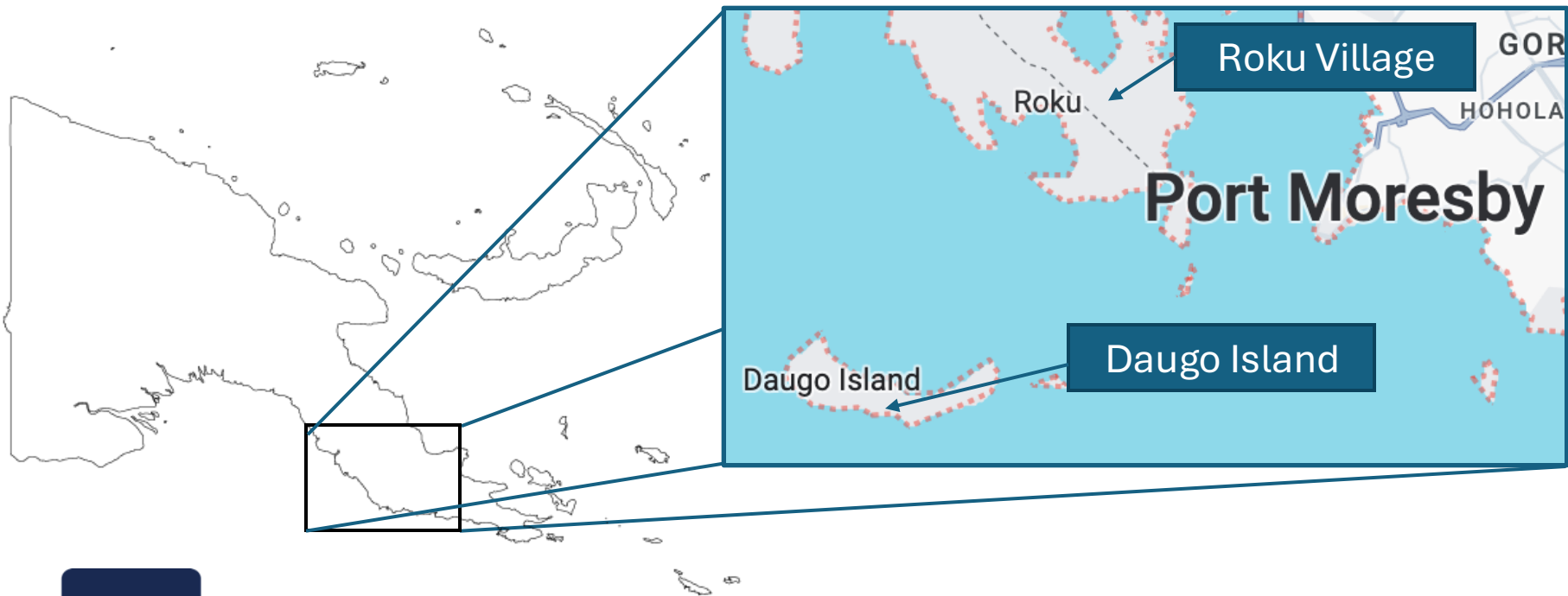


[Radio New Zealand News](#), [World Bank](#)

Project Objectives

Objective: Deploy SOURCE Hydropanels in Papua New Guinea to supply clean drinking water to communities in Roku Village and Daugo Island, increasing climate resilience in a water stressed region.

Stakeholders: 130 households (~700 residents) in Roku Village, 150 students and teachers at Daugo Island Primary School, Papua New Guinea Department of Education, Business Council of Papua New Guinea, other PNG Government Agencies.



Water Security in Roku Village and Daugo Island

Need 1: Steady water supply through the dry season from March to November.

During the long dry season, education on Daugo Island is often interrupted so students can search for and procure enough drinking water for them and their families. Roku village residents rely on bottled or trucked water, which can be contaminated.



Objective 1: Install SOURCE Hydropanels on Roku Village and Daugo Island and facilitate water distribution, supplying clean water close to residents' homes.

Need 2: Low-cost drinking water.

Some Roku Village residents struggle to afford trucked water, which is sold at a US \$0.02 per liter margin. Residents on Daugo Island need to boil water to ensure safety using imported firewood. The estimated total cost of drinking water on Daugo Island is US \$0.12 per liter.



Objective 2: Price SOURCE water affordably from US \$0.01-\$0.03 per liter while maintaining the US \$0.02 margin for the Women's Water Committee, enabling all beneficiaries to access safe drinking water.

Need 3: Capacity building for local water delivery partners and customers.

Local organizations like the Roku Water Committee lack business development experience in providing water to their local community.



Objective 3: Partner with and engage local organizations in business development training to increase water management capacity in PNG.

Project Activities: Hydropanel Pilot in Roku Village

- 40 hydropanels installed at the community Mauri Nadina Church in March 2023.
- Established a Water Management Plan with the local Roku Water Committee in January 2023.
- Conducted stakeholder engagement to understand the local community's needs
- Pacifund provides ongoing business advisory support to help the Roku Water Committee facilitate the sale of water and operation of hydropanels.
- Hydropanel Grievance Reporting Mechanism formalized in Fall 2023.



Project Activities: Hydropanel Pilot at Daugo Island Primary School

- 40 hydropanels installed at the Daugo Island Primary School in August 2023.
- Established a Water Management Plan with the Daugo Primary School in September 2023.
 - Excess water can be sold to the community on non-school days, and revenue collected from the sale to the community can be used to offset hydropanel operation and maintenance costs.



Project Impact



- 850 direct and indirect beneficiaries (700 Roku Village residents, 150 Daugo Island students and staff) – 45% women
- 5 jobs created for local women
- 32,300 liters of water sold (average of 800L per week)
- Installed hydropanels can remain operational for 15-20 years



Lessons Learned and Recommendations



- Deploying hydropanels on a “Pay-Per-Liter” business model was not a viable strategy for SOURCE Global. Challenges include local customer familiarization with the technology as well as operational and business administration challenges.



- SOURCE faced costly and time-intensive hurdles surrounding partner selection and expansion efforts, including individually negotiating sites and hiring contractors and consultants. Future pilots can allocate funding through the government would streamline this process and allow for efficiencies arising from installing and operating multiple sites at once.



- For community-oriented projects, more funding and focus is needed to secure additional interest, buy-in and adoption from the local community. Collaborating with local government and other local leaders is necessary to identify community needs, ideal locations, and competent business partners to oversee hydropanel operation and water distribution.



- Implementation at Daugo Island was much more efficient and easier compared to Roku Village. This demonstrates that the more viable path forward for SOURCE Global is to engage with and deploy hydropanels in partnership with government. Government organizations have existing relationships with community leadership and structures in place for training and overseeing hydropanel management.

Replicability and Scalability



- Within current discussions in PNG and in the broader Pacific Islands, SOURCE Global has the potential to supply clean, safe drinking water to over 90,000 people, across 15,000 households, 750 schools and 100 rural health facilities.



- The project has led to expanded conversations and agreements in other Pacific Islands with the governments of Vanuatu, Tonga, Federated States of Micronesia, and the Marshall Islands.



- To date, SOURCE Global has signed an MoU with the Department of Education to focus on over 750 schools across 11 provinces that are serving more than 240,000 students. SOURCE Global plans to sign another agreement with the PNG Department of Provincial and Local Government Affairs to expand the Roku Village pilot into surrounding communities.



- Engaging with government agencies across PNG and getting community buy-in has provided the pathway to large scale planning around aggregated forward purchase agreements that will help drive down the cost for customers through economies of scale and cross pollination of best practices.

CRAFT Technical Assistance Facility

- + CRAFT TA is a grant facility designed to accelerate application of climate resilience and adaptation technologies in developing countries, particularly in Low Income Countries (LICs) and Small Island Developing States (SIDS). It is a deployment-oriented strategy focused overcoming up-front barriers to application of adaptation & climate resilience solutions in LICs, SIDS, other ODA countries
- + This project was funded in part by a grant from the United States Department of State and in part by a grant from the Nordic Development Fund. The opinions, findings and conclusions stated herein are those of the authors and do not necessarily reflect those of the United States Department of State.

