



green empowerment

# Evidence of Impact

## Understanding the Efficacy of Community Owned and Operated Micro-Utilities



21/26 communities have paid technicians



21/26 committees are upholding their regular election cycle



20/26 communities with households in good standing for payments



23 committees reported having funds available, with \$613 on average



### Evaluation shows 97% of Green Empowerment projects still functioning

In the interest of evaluating Green Empowerment's core mission, we embarked on a comprehensive study to understand the effectiveness of Green Empowerment's model, analyze common challenges and disseminate best practices in the sector. The study focused on micro-utilities (community-owned and operated potable water and renewable energy projects) completed in partnership with local organizations in Latin America between 2009-2019. Our evaluation found that 26 of the 27 systems studied are still in operation!

#### EVALUATION METHOD

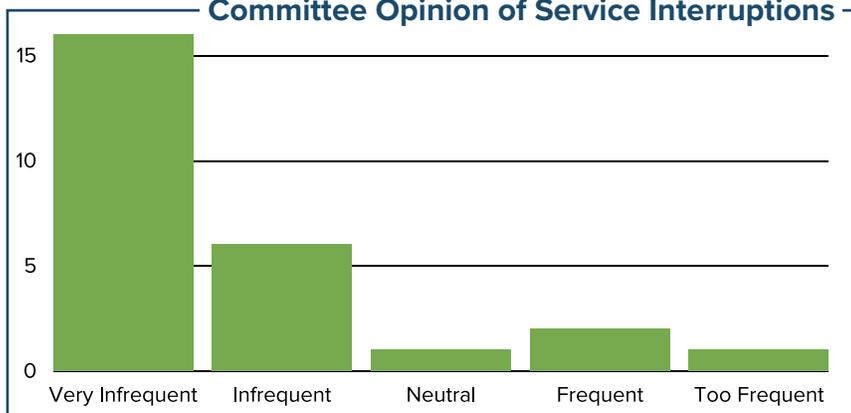
A multidisciplinary team of Green Empowerment staff developed a Community Management Assessment (CMA) study in both English and Spanish. The tool was then reviewed, revised and tested by a second team of Green Empowerment and partner staff based in Nicaragua, Peru and Ecuador. We hired third party Project Evaluators in Ecuador and Nicaragua. In Peru, a new Green Empowerment team member who had not previously visited or worked on any of the systems conducted the evaluation. All Green Empowerment staff, contractors and partner staff participated in a training to review and practice using the CMA tool and minimize bias. Of all projects completed from the time period and in the selected countries, 27 micro-utilities were selected (representing 80% of projects that fit the micro-utilities criteria). Evaluators made site visits to each community, completed the Community Management Committee survey through a focus group with the full committee and followed up with field verification of infrastructure.

*"In the pandemic, [electricity] has helped us a lot to charge laptops and cellphones so children can study. Some families use it for carpentry and welding as well. Before, with a lantern, we could barely see a single step, but now we have energy."*

Esteban Guevara Herrera, Community Leader, Suro Antivo, Peru  
Renewable Energy Micro-Utility completed in 2011/2012



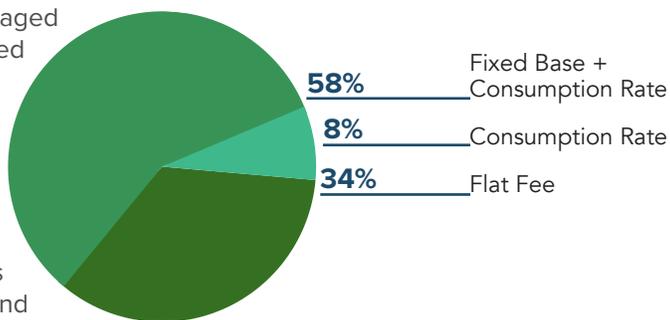
### Committee Opinion of Service Interruptions



We asked community management committees their opinion on the frequency of interruptions to understand their perception of the system. This gives us context to the level of interruptions and helps us to understand how committees, as a representative body of the community, discern the quality of system performance.

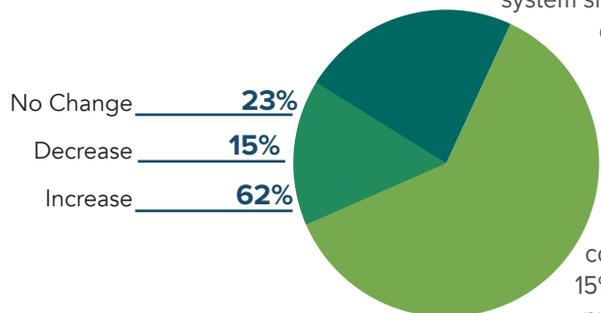
### Tariff Structure

A major focus of this evaluation was to assess the effectiveness of our community managed model. We looked at the tariff structure as a key element of this model, as it provides funding for paid technicians and operation and maintenance needs.



### Number of Communities that Extended Service

Additional connections to a system since installation shows community buy-in and continued investment in the system. Since installation, 85% of community systems have either the same or increased connections, while only 15% have decreased the number of connections.



## Reflections & Opportunities

This analysis broadens the understanding of our work and provides areas of focus as we continue to work with partners across the globe to deliver community-scale infrastructure projects in hard to reach, underserved and vulnerable areas.

### INVEST IN CONTINUOUS EDUCATION

The evaluation confirmed that water committee turnover can create a stress point for system management. In late 2021, we successfully piloted an approach to ongoing water committee training in the Rio Cayapas watershed, Ecuador, which builds skills with new committee members and deepens knowledge of veteran members. We are currently implementing this training module in additional regions.

### IMPROVE PROJECT MONITORING

We found that only 16 of the 26 micro-utilities had preserved their Operations and Maintenance plans. For this reason, we are piloting an App on nine potable water systems along the Rio Cayapas in Ecuador.

### ENSURE WATER IS POTABLE

The evaluation identified opportunities to retrofit water systems to improve water quality and support technicians in maintaining water quality standards across all water projects.

### INCENTIVIZE COMMUNITY-LED CONSERVATION

Only 50% of committees had active watershed protection plans. We are updating our Watershed Conservation training and tools and will continue to incentivize watershed conservation for the success of the microuilities and the health of our planet.

*“These results are incredibly impressive when we compare them to global standards. It really speaks to our approach - our partners go above and beyond to foster community buy-in which ensures that systems and their benefits are sustained over time.”*

Andrea Johnson, Executive Director