



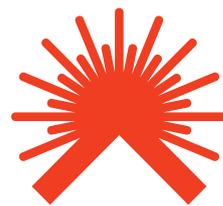
Solar Electric Light Fund

self.org

SELF taps into the sun—a universally distributed and carbon-free source of power—to help lead the effort to make clean, modern energy available to all—narrowing the divide that exists between the privileged and the poor. The organization designs and implements solar-energy solutions to assist those living in energy poverty with their economic, educational, health care, and agricultural development.

SELF was founded in 1990 by Neville Williams, a solar energy pioneer who has promoted solar power applications around the world since 1988. In 1997, Robert Freling assumed leadership of the organization and has served as its executive director ever since. Under Freling's leadership, SELF has installed more than 550 solar energy systems in 25 countries, making it one of the world's leading nongovernmental organizations that designs and implements solar energy-based solutions for those living without access to electricity.

A traditional Arhuaco roof sits in contrast to a 6.8 kW PV array.



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Recent Projects & Programs

- Ghana and Uganda, United Nations Foundation: Solar-electrified 62 rural clinics.
- Haiti, CDC/Ministry of Health: Installed 145 solar-powered vaccine refrigerators.
- Haiti, National Solar Training Center: Created and established a two-year solar training program.
- Haiti, Hurricane Restoration: Facilitated 12 health center PV system repairs.
- Haiti, Fe-Yo-Bien: Established a PV microgrid for homes and businesses.
- Colombia: Invented and field-tested first excess-energy-harvest controls for solar direct-drive refrigerators.
- Colombia, Gunchukwa: Established a PV-based microgrid for an eight-building communal complex.
- Benin, Clean Water Stations: Designed and installed three solar-pumping systems.
- Benin, Solar Market Garden: Built 12 solar-powered drip-irrigation systems.

Solar electricity will help enhance the lives of Katansama's children.



Courtesy SELF (3)

Solar Supports Indigenous Traditions

The Arhuaco people who live in the Sierra Nevada de Santa Marta mountains of northern Colombia have maintained their indigenous traditions over many centuries. Among those traditions is honoring their spiritual mandate to be nature's stewards. Intuiting that those in the industrialized world do not share their reverence for Mother Earth, they are motivated to teach us—their “little sisters and brothers”—by example.

Viewing conventional sources of power generation as corrupting and polluting, the Arhuaco reached out to SELF for an alternative source of clean, reliable electricity. SELF was invited by a community leader to make the case for using solar electricity to support modern health-care services, educational resources, commercial opportunities, and more. This led to the spiritual elders giving it their blessing and asking for SELF's assistance.

Since 2011, SELF has worked with the Arhuaco, as well as the nearby Kogi and Wiwa peoples, to assess their energy needs. A survey of 12 villages led to 15 PV system installations. These installations generate clean electricity and provided hands-on solar training for community members, who now maintain the systems.

All of the installations had been in the Sierra Nevada de Santa Marta mountains where the Arhuaco have been living since colonial powers drove them from their ancestral coastal homes. When Colombia's civil war recently ended, the Arhuaco began to recover their ancestral lands. Of special significance is Katansama, a newly founded seaside village and their first direct link to the Caribbean in 500 years.

A village-wide assessment was carried out in January 2017 with support from Switch Energy Alliance, a nonprofit with the mission “to inspire the public to learn about energy, engage in informed conversations, and make smart decisions about our global energy future.” Interviews with tribal community leaders revealed a desire to establish an indigenous cultural center and a digital library. The village also has a school complex and community social service buildings for which they wanted electricity.

In consultation with village leaders, SELF developed a PV microgrid plan. Phase 1 was completed in 2018 with a 6.8 kW PV system to power the school building complex that includes three classrooms, a dormitory, and a cafeteria. Phase 2 will power the communal social center buildings used for meetings, cooking, and microenterprises. Phase 3 will support the indigenous leadership center and digital library.

Interviews with village authorities provided sufficient information to estimate electrical load requirements for the Phase 1 school project, which was used to select appropriate PV system components. The seaside location poses a challenge for equipment due to corrosion from the salt air, and care was taken to select components with corrosion resistance, such as waterproof LED tube lights and wet-location-rated ceiling fans.

Katansama is located along the route to internationally recognized Parque Tayrona, a coastal and mountainous national park. With plans for an Arhuaco cultural center that will attract thousands of visitors annually, the village will have a unique opportunity to generate income for sustaining operation and maintenance costs of the community's battery-based PV systems.



Courtesy SELF

On the Horizon

- Nine new water stations have been funded for installation in Benin.
- Solar-direct vaccine refrigerators coupled with energy harvest controls are being field-evaluated per WHO requirements in Senegal beginning late 2018.
- Funding is being sought for continued indigenous projects in Colombia, including the next two phases of Katansama microgrids, as well as solar power for the Gunchukwa Health Center.
- Funding is being assembled to start a program in Uganda to use solar applications in an effort to curtail sexual violence against women and girls who collect water and fuel wood for their households.

PV-Powered School in Colombia

Project name: Katansama School Complex, Colombia

System type: Stand-alone PV minigrd

Installer: SELF

Date commissioned: April 2018

Location: Katansama, Colombia

Latitude: 11.25°N

Average daily peak sun-hours: 4.25

System capacity: 6.8 kW, STC

Estimated annual production: 8,000 kWh

Number of PV modules: 24

PV manufacturer & model: REC 285 TP2; 285 W

Inverters: Two OutBack FXR3048

Inverter rated output: 6 kW

Battery: GS Yuasa SLR-1000-2, advanced lead-acid nanocarbon chemistry; 48 VDC; 1,000 Ah at C/10

Array installation: Preformed Line Products pole-mount

Array azimuth: 0°

Tilt angle: 10°

Check out this SELF project at bit.ly/SELFvideo.