



Putting Sustainable Energy to Work in the Developing World

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More than one billion people around the world do not have access to electricity. Given their remote, sparsely populated locations, the majority will probably never be connected to a major power grid. Without electricity, most lack access to modern education, effective healthcare, food and water security, and economic opportunities. In an effort to balance this injustice, the United Nations (UN) designated as one of its 2030 sustainable development goals to “ensure access to affordable, reliable, sustainable and modern energy for all.”

The Solar Electric Light Fund (SELF), a non-profit organization based in Washington, D.C., has been working toward that same goal for 25 years in rural villages in more than 20 of the world’s poorest countries. Providing access to sustainable energy alone does not guarantee a community’s sustainability. Sustainability has to be systemic.

When SELF delivers a solar installation, we concentrate on training and capacity building to ensure that the community can maintain it. Concurrently, we develop innovative energy applications and economic models that use the electricity to transform poor communities, putting them on a path to sustainability. Access to electricity is certainly a catalyst, but ultimately it is the power of people that determines their quality of life.

A case in point is SELF’s Solar Market Garden (SMG) initiative, recently showcased by the UN’s Momentum for Change program at COP 21 (also known as the Paris Climate Conference) this past December. The SMG project combines solar water pumps (typically powered by 1-2 kW photovoltaic systems) with drip irrigation to provide a cost-effective, environmentally friendly way to pump water for irrigation from underground aquifers.

The solar concept came about when we proposed to bring solar electricity to the Kalalé district of Benin, in sub-Saharan Africa. The local people, suffering from malnutrition and hunger, said they needed food more than lights. Sustainable energy meant nothing to them if it couldn’t deliver what they needed to survive. We took on the challenge of figuring out how to use

solar power to overcome the difficulties faced by women farmers when, every year, a six-month dry season prevents them from growing enough food to feed their families.

To date, there are 11 half-hectare-sized SMGs in the Kalalé district, with 30 to 40 women working in each. One garden supplies two tons of produce monthly. Twenty percent is for home consumption—improving family nutrition and health across the board. The balance is sold at market, generating a profit of \$7.50 weekly for each woman vendor.

Everyone is expected to put a small percentage of their income into a fund that sustains the operation of the gardens. The balance helps pay for children’s school fees and healthcare. We recently learned that the women have been investing some of their earnings from the gardens in livestock to generate a new revenue stream. Having had no status in their community until the SMGs came along, the women farmers are now regarded as savvy entrepreneurs who grow enough food from the 11 gardens to sustain more than 66,000 people. As new support is identified, the organization will bring gardens to more of the 32 remaining villages in Kalalé—and, ultimately, other parts of sub-Saharan Africa.

Haiti Embraces the Sun

Sustainability in Haiti is a different story. Since the devastating earthquake in 2010, photovoltaic (PV) installations have grown tremendously in that country. SELF, one of the leaders in this movement, initially brought solar power to hospitals, clinics, and schools. It has since expanded its work in Haiti to include specialized solar applications: a micro-enterprise center, two microgrids, a solar-powered fish farm, solar-powered vaccine refrigeration, and two SMGs. In addition to SELF’s work, more solar projects are being installed throughout the country by other non-governmental organizations and commercial enterprises.

It’s gratifying to see Haiti embrace the power of the sun to help in the country’s recovery, but there has been a missing piece to the puzzle. Local people need technical training so they can help build and take responsibility for their new solar infrastructure and enjoy the employment benefits that result from it.

In response to this need, SELF—with core support from the Norwegian government—has created Haiti's National Solar Training Center (NSTC) in partnership with the Centre de Technologie Moderne d'Haiti (CETEMOH) in Port-au-Prince. CETEMOH's mission is to provide Haitians with high-quality academic and technical training programs. SELF has the solar-power expertise to design the curriculum and provide instruction in the classroom and extensive training in the field. Together, the two organizations will prepare students for jobs that will maintain their nation's new PV infrastructure and help develop Haiti's economy.

The NSTC will offer two- and three-year degree programs to its students. There will be a strong emphasis on hands-on learning to allow program graduates to be immediately employable, without having to go through long apprenticeships or post-graduate on-the-job training. In addition, basic PV courses designed for use in other vocational

training schools in Haiti will be offered through the NSTC. It is expected that the school will begin classes in September 2016.

While the NSTC is specifically designed for Haiti, we believe it is a model that can be replicated throughout the developing world, providing exponential benefits—like many of SELF's other projects. We know that sustainable, solar energy is the engine that drives our agenda to make a difference in the developing world.

But it's just the engine. It's up to us to steer our work in the direction that will help the most people achieve a better quality of life.

To learn more about SELF, visit self.org.

Mr. Freling has spent more than 20 years fighting energy poverty in the developing world.

SELF's Solar Market Gardens provide women farmers in Benin, Africa, the ability to feed their families while generating an income. It also provides technical training to Haitians so they can sustain their country's growing solar infrastructure. Photos courtesy of SELF

