

Distributed Renewable Energy & Microfinance: A Potent Combination for Rural Electrification

 By [Andrew Burger](#) | January 15th, 2013



Access to electricity is a keystone of modern society and socioeconomic development, but there are different ways of getting there, and they have vastly different impacts and ripple effects at the nexus of society, economy and environment. As opposed to the centralized and mass-produced, Industrial Era electricity grids that have come to characterize our energy infrastructure, policies that foster development of distributed, clean and renewable energy systems afford developing and developed countries substantial advantages and benefits that address these challenges.

Significant strides in providing access to clean, renewable electricity are being made across Central America, but financing large-scale, grid-connected renewable energy projects continues to pose significant challenges to Central America's governments and private sector. Moreover, taking this energy development path doesn't address the problem of providing last-mile connectivity, a particularly salient point given the size of these countries rural populations.

In a June 2012 [Worldwatch Institute blog post](#), Allie Goldstein highlights the cross-cutting benefits fostering small-scale, distributed renewable energy systems can have across the region and beyond.

Sustainable energy for all

Building utility-scale solar, wind and geothermal projects and large grid infrastructure has been deemed the most efficient and fastest route to provide access to electricity, but this approach also creates social, economic and environmental problems that have come to be well recognized. Rapid urbanization and migration from rural areas is putting tremendous strains on the capacity of government, the private sector and ecosystems across Central America. Contributing significantly to urbanization are centralized, mass-produced power generation systems, which effectively act as a magnet for migration to cities and urban areas.

Solar, wind, geothermal and other renewable energy systems are sprouting up across Central America, while construction of the region-wide [SIEPAC](#) electricity grid is nearly complete, developments that fall right in line with UN Secretary General Ban-ki Moon's [Sustainable Energy for All](#) initiative, the Worldwatch Institute noted in June 2012 blog post. As of the end of November, the Central America electricity grid was 99.5% complete.

Progress notwithstanding, an estimated 7.7 million Central Americans have limited access to electricity, relying on traditional biomass for energy, Goldstein points out.

“Though this model has facilitated a dramatic increase in electrification in Central America, ‘last-kilometer’ electrification makes little economic sense in areas where people’s ability to pay for energy remains low. In extreme cases, if users can’t afford a replacement, electrification initiatives effectively have the lifespan of a single light bulb.

“Projects that pair income generation with power generation illustrate how off-grid rural electrification initiatives might be financially self-sustained.”

Nicaragua’s PERZA program

Worldwatch holds up [Nicaragua’s Off-grid Rural Electrification Program](#) (PERZA), funded in the main by the World Bank, as an example. As Goldstein notes, PERZA adds a twist that addressed one prominent obstacle to fostering adoption of local, distributed renewable energy systems: how to make the electricity produced affordable for community members with little in the way of disposable income.

Installation of mini hydropower systems and solar battery charging stations are subsidized through PERZA. The crucial twist comes with a microfinance scheme that offers small business loans and training to rural residents so that they can start businesses and generate the additional income they need to spend on access to electricity.

PERZA concluded at year-end 2011, but its success is clearly evident: 6,863 rural Nicaraguan households gained access to electricity via solar photovoltaic (PV) home energy systems. In addition, seven solar PV charging stations and four mini-hydro power systems were built.

PERZA also was successful in stimulating sustainable local entrepreneurial and business activity. More than 3,000 rural residents participated in PERZA program workshops and meetings. Forty-three business plans were developed, and 10 microfinance institutions now offer loans for rural electrification, according to Worldwatch’s report.

As Goldstein highlights, “According to the 2012 Climate Scope report, Nicaragua now has the highest level of green microfinance penetration in Latin America and the Caribbean, with 10 institutions offering green microfinance loans to thousands of low-income borrowers.

“Only time will tell whether the advent of microfinance helps sustain rural energy systems in Nicaragua for decades, but PERZA is an early example of a national-level attempt at integrating electrification with bottom-up small business development.”