

Solar Sister Is Addressing Gender Equity, Energy Poverty, and Climate Change

The Transformational Tech series highlights Cisco's nonprofit grant recipients that use technology to help transform the lives of individuals and communities.

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L to R: Solar Sister Business Development Associate, Omotola Ajao, and Solar Sister clean energy entrepreneur, Rachel Joke Olakanye. Photo credit: Solar Sister, Fid Thompson

By **Charu Adesnik**

When a person lives in a community that doesn't have access to a power grid, it means no electricity. When you lack access to sustainable and affordable energy services and products, it is called energy poverty.

People experiencing energy poverty are forced to use higher-cost fuels, like running diesel fuel through a generator and using kerosene lamps. The cost for this fuel could be 20 to 30 percent of your household income each year. In comparison, most households

across the United States spend **between 2 and 3 percent of their annual income on electricity**.

Energy poverty has negative consequences for the environment as well. Eighty percent of people in Africa use solid fuels for cooking, like wood-burning stoves and charcoal stoves, which emit black carbon. One Kg of black carbon (from a wood-burning stove) creates 70 Kg of CO₂ circulating in the air for 100 years.

Founded in 2009, **Solar Sister** is a nonprofit recipient of Cisco's social impact grants that recruits, trains, mentors, and supports women entrepreneurs – Solar Sister Entrepreneurs (SSEs) – and supplies them with durable, affordable energy products. SSEs sell basic solar lanterns, solar home systems (multiple lamps, phone charger, etc.), clean cookstoves, radio, fans, water filters, etc., to people in their communities, nearly all of whom live off-grid.

So far, Solar Sister's solution has avoided 926K metric tons of CO₂e emissions; empowered local entrepreneurs, resulting in increased household income; and improved community members' health by reducing their exposure to solid fuel emissions.

I recently sat down with Solar Sister CEO and founder Katherine Lucey to learn more about the organization, why an entrepreneurial model works, and the impact they have made so far.

What inspired you to start Solar Sister?

Katherine: I had been working in banking and the energy industry, raising funds to build power plants. Through that, I knew that you really couldn't come into the modern era if you didn't have access to energy.

I took a break from banking, spent time with family, and pursued passions, including the environment and women's empowerment. I became involved with a small family foundation working on rural electrification in sub-Saharan Africa. We ended up in a rural area of Uganda, and in addition to schools and clinics, we put solar in homes. I got to talk with people who had modern energy in their homes for the first time. Instead of lighting a kerosene lamp for light, they could turn on a bulb; instead of cooking over an open fire, they had more efficient cookstoves.

Just a single light bulb changes everything in a family's wellbeing. They do not have to burn fossil fuels, so it's better for the environment, and it's so much cheaper. The family is no longer spending up to 30 percent of their income just on something like kerosene.

Mothers were so proud that their children were studying and doing better at school, and women used the light to power up small businesses. One woman is a basket weaver, and

she does that in the evening after taking care of her family and taking care of the farm. Once everyone goes to bed, she can weave baskets and earn money by selling them. I'm so inspired by women making these changes in their lives and supporting their families from this simple little intervention.

What challenges do communities without energy face?

Katherine: In rural Africa when the sun goes down, it becomes pitch black because there are no streetlights. There's no ambient light. That's it, that's the end of the day. It's also a real issue for safety. Women are much more vulnerable just walking home from town after dark. Even if you are trying to walk to an outdoor latrine at night, you can trip on a root or step on a snake without a well-lit path.

Productivity ends in the evening when you don't have any energy. People must travel farther to use light or power. If you want to charge up your cell phone, it means you can't charge it up at home; you must walk into town and pay to charge your phone at a generator-run kiosk.

If you want to light up your home, you must buy kerosene, which is the most expensive lighting option because you're buying it in very small quantities. That's money that you cannot spend on other things, and that kerosene causes fires. It's very smoky. It's terrible for indoor air pollution.

The combination of the kerosene lamps and the indoor cooking fires is equivalent to smoking two packs of cigarettes a day. That significantly impacts women, who are the ones tending to the home. Their youngest children, often strapped on their backs throughout the day, are leaning over and breathing in those fumes. So, lack of energy has multiple effects, and that's why I'm bringing in clean energy, which has an immediate and powerful ripple effect of positive impact.

Why did you choose an entrepreneurial model to distribute your clean energy products?

Katherine: One problem we had to solve was 'How do we bring the products to people and get them to switch from kerosene to solar?' Figuring out how to do that in a market-based, scalable way eventually brought me around to using a network of local women entrepreneurs as the distribution network for these products, because that solves two challenges. The first includes last-mile distribution - just physically getting the products into these very remote, hard-to-reach, underserved, overlooked communities.

The second challenge was bringing a new technology solution into a household. By embedding local women as entrepreneurs, women reach out to other women and tell them, 'I use this product myself, and my baby doesn't cough anymore. My eyes have not

been having problems because of smoke. I am saving so much money, look at my new shoes.' They're able to explain to another woman what the benefits are, and the customer will trust her because she knows her. The strength and the backbone of Solar Sister is this local women-to-women network.

Finally, using a market-based model where people are purchasing the products means that we can scale exponentially. This model reaches more people than if we were doing a philanthropic giveaway of products because we are not limited by the amount of donations we generate.

How are you using technology to support your work?

Katherine: Solar Sister couldn't exist without technology because it enables us to operate a global grassroots movement.

We support our entrepreneurs through a network of staff members called business development associates, who live and work in those communities. Each associate has a tablet, through which all transactions run. The data they collect is sent to our central data management system, where we can analyze information about sales and the different entrepreneurs. That gives us this incredible abundance of data that we can use to manage the business and make predictive assumptions about future business.

We work in areas where people don't have access to electricity, but most people have cell phones. A rural area may have 10 percent access to electricity but 90 percent cell phone penetration. We have a program where entrepreneurs can upgrade to first-level smartphones. We then load those smartphones with the Solar Sister business app, and teach them how to use it. There's a whole digitization program that we're excited about, and Cisco is helping us execute it.

What kind of impact are you having so far?

Katherine: We have three goals that we look at and measure. One is gender equity: how are we providing women with economic opportunity. To date, we have provided over 6,800 entrepreneurs with the opportunity to build clean energy businesses. Eighty-six percent of those businesses are women-centered businesses. We do have some men, but we focus on supporting women. We want to make sure that women can bring clean energy businesses to their communities and thrive and get the support they need to do that.

The second one is climate justice. The people who are suffering the most from climate change live in rural, low-resource areas where they already feel the effects of climate change. And yet, they are not the ones in power to do much about it. Climate justice

means supporting people at the front lines of climate change. They can now turn from fossil fuel to clean energy, which is empowering.

The third one is energy access and making sure that everyone, everywhere, has it. Solar Sister directly affects that because we focus on serving those last-mile, overlooked, and underserved communities. And that has a profound effect at the household level, at the community level, to access power.

Can you share a success story with us related to one of your clean energy entrepreneurs?

Katherine: Rachel Joke Olakanye has run a successful tailoring business for over 20 years in a neighborhood on the outskirts of Ibadan, Nigeria. She has her own shop and mentors girls who are apprenticing to follow in her footsteps.

In 2016 she heard about Solar Sister from a friend and thought it would be a perfect addition to her tailoring business. Her neighborhood has some electricity, but it is erratic, so she thought the solar lamps would succeed. As her solar business grew, Rachel and her Solar Sister Business Development Associate, Omotola Ajao, formed a bond and a friendship.

Rachel has paid for her daughter's fees at a teaching college in Lagos with the additional income from her solar business. She is also making long-needed repairs on her house.

Solar Sister provides 12 months of business training to each entrepreneur. As Rachel's business grew, she was able to call on Omotola for advice and support. Rachel, in turn, teaches girls her trade and passes on her business knowledge. Investment in women is an investment in our shared futures for a brighter world.

What are your plans for the future?

Katherine: We plan to keep doing what we do and more of it. We want to scale up so that we have more entrepreneurs to benefit more people. We just passed a milestone of 3 million people who have access to energy because of Solar Sister. We're very proud of that, but it's not nearly enough, so we are looking at ways to take that milestone and multiply it by ten so that we can reach 30 million people with access to energy. Instead of just 6,000 women entrepreneurs, we want 30,000 women entrepreneurs.

We have seen the success of what happens when you give a woman economic opportunity, and she takes it, and she invests in her family and her life, and it changes the woman's view of herself. It changes her standing in the family, it changes her standing in the community, and has this incredible positive impact at all levels. There are currently 600 million people in sub-Saharan Africa without access to energy. It continues to be a

problem we need to address because if you don't have access to energy, you cannot improve your quality of life.

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