



SOLAR HOUSEHOLD ENERGY

Solar Cooking for Human Development and Environmental Relief



Solar Household Energy Annual Report 2016



© Bolivia Inti Sud Soleil



2016: Moving Forward on All Fronts

Advancing the collective efforts of the many hundreds, perhaps thousands of individuals who have been promoting the use of solar cooking throughout the world in recent years requires a combination of vision, passion, creativity and persistence. It also calls for action on multiple fronts: technology improvement and standard-setting, public education, and on-the-ground promotion activities. In 2016 Solar Household Energy has had impact on all of these fronts.

We have continued the work that began nearly 20 years ago, in 1998, when Solar Household Energy was founded with the conviction that solar cooking is an underutilized resource that can address urgent global challenges: environmental degradation (including global warming), poverty, adverse health impacts and injuries associated with traditional fire-based cooking methods. Our mission is to provide affordable, practical and sustainable solar cooking options to improve social, economic and environmental conditions in sun-rich areas around the world.

I invite you to read our latest report to learn about what we have been up to over the past year, including the latest on projects we have been working on for several years. I also hope you will engage with us with your ideas, questions, encouragement and tangible support as we strive to remain faithful to the vision of our founders.

David Grossman

President of the Board



Work on the Ground

Haiti

Solar Household Energy's multi-year involvement in efforts to promote solar cooking in Haiti continued in 2016. A project launched late in 2015 to distribute 25 "SolSource" parabolic solar cookers in Tilori and train their new owners was wrapped up at the end of the year. This project built upon 2011 and 2014 projects by SHE and The Nature Conservancy to promote Sun Ovens, Sun and Ice solar parabolic stoves, and StoveTec fuel-efficient stoves. In 2015, SolSource recipients were selected based on need and interest, with preference for low-income, single women.

After SHE consultant Onel Joseph carried out training on SolSource usage and a baseline assessment, local leaders carried out monthly surveys assessing solar cooker adoption and led quarterly focus group meetings for further feedback. Preliminary project analysis suggests that SolSource parabolic solar cookers have displaced three-stone fires, and are used about one-third to 40% of the time, along with fuel-efficient stoves, depending on variables such as fuel availability and weather. Over a year after their introduction, all SolSources are in good condition. The SolSource stoves have a lifespan of over six years.

In 2017 we will continue to work with the Solar Electric Light Fund and the Agua Fund, which commissioned and financed the project.



Philippines

Early this year, youth in two marginalized Philippine communities learned how to cook low-cost nutritious food with solar cookers, thanks to financial support from Solar Household Energy. The project was a part of the U.S. State Department's Young Southeast Asian Leadership Initiative. SHE worked with Brainfood, a Washington, DC-based nonprofit dedicated to youth culinary education, to provide some of the equipment used in the project, administered locally by the Kapatiran-Kaunlaran Foundation Inc. (KKFI.)

After meeting with Rex Dayao, Program Director of KKFI, and learning of his interest in promoting solar cooking in his community, Solar Household Energy donated 2 *Sun and Ice* parabolic solar cookers to the project, allowing them to provide even more training and meals. This project aimed to reach some of the most marginalized communities in the Philippines. They worked with families who reside in the Pulilan dumpsite, the Manila North Cemetery, and with unemployed and at-risk youth at the Gilead center.



In the initial stage of the project, 195 young adults and 75 mothers were shown how to use parabolic solar cookers to prepare the traditional Filipino foods they already enjoy. 240 people were able to enjoy solar cooked food during this project.

In May, SHE Board President David Grossman was in the region and took advantage of the opportunity to meet with

Mr. Dayao, and was able to see highlights of the project and use of solar cookers in this community.

During the subsequent rainy season, KKFI began gearing up for another sunny summer of cooking. The next steps KKFI plans to take with the project include:

- Cooking regular meals for 100 children ages 2-6 who reside in Manila North Cemetery
- Creating a feasibility study to come up with an income generating project using the solar cookers
- Touring schools and campuses to demonstrate solar cooking to students, and to teach them to advocate for alternative and environmentally friendly ways of cooking

SHE is excited to follow KKFI's progress with their solar cooking project in the coming year, and will continue to provide our expertise and support to ensure a successful implementation.

Chad

Since the 2003 genocide in Darfur, UNHCR has installed 12 refugee camps on the border between Sudan and Chad. Some 300,000 refugees live in these camps, including 24,000 refugees residing in the Gaga camp.

As resources are used up close to the camp, refugees are forced to travel even farther to gather wood for cooking, putting them in competition with the local population. The least poor families buy the wood at the local market. Previously, about 10% of the camp's wood was distributed by the United Nations High Commissioner for Refugees (UNHCR), but as of 2016,



due to increases in refugees elsewhere, **the distribution of wood was stopped in all camps**. The refugee population has no possible alternative to reduce their dependence on the wood resources around the camp. Only programs supported by international organizations and donors leave a glimpse of solutions for these populations.



Based on these conditions, in 2011 the UNHCR contracted with Solar Household Energy to promote the use of renewable energy. A pilot project of discovery and training in the use of “HotPot” solar cookers was launched, and 50 families were supplied with solar cookers in the Gaga camp. Due to the success of this pilot project, in 2012 Africare decided to order an additional 200 HotPots.

Earlier this year, Solar Household Energy sent Patrick Fourrier to Gaga camp in order to gain insight on the current state of solar cookers distributed in the 2011 and 2012 programs, and to study the potential to expand the use of solar cooking in the camp. New HotPot and Haines solar cookers were also tested and distributed.

HotPot owners in the camp are happy with the equipment, but the current number of HotPots in the camp only serves 4% of the population. Without dedicated resources to train users, the challenge SHE faces in the coming months will be finding the resources necessary to create a long-term project to support the refugee populations in Gaga with clean, safe solar cooking.

UNHCR's draft Energy Strategy for Chad supports a massive distribution of HotPots in refugee camps, but this cannot be validated without the required funding.

Based on the findings of this report, SHE is seeking to build a coalition with Lutheran World Federation and other partners to be able to furnish solar cooking technology and training for these vulnerable populations.

On a positive note, UNHCR has supported ADES, a local NGO that has sought support from SHE, to pursue solar cooker distribution in other camps in Chad, and ADES is currently discussing procuring cookers for a 50 solar cookers pilot in the Iriba region, to the Northeast of Chad.

Mexico

Back in 2003, Solar Household Energy, Inc. (SHE) partnered with Fondo Mexicano para la Conservación de la Naturaleza, A.C. (The Mexican Fund for the Conservation of Nature, FMCN) to set up a manufacturing and distribution network for the HotPot solar oven.

Earlier this year, SHE commissioned a study to learn more about distribution and adoption of the HotPot in Mexico since then. The goal of this study was to gather available information related to the distribution of the HotPot in order to understand the adoption of this solar cooking technology after 13 years, and to learn how to incorporate these findings into design distribution projects moving forward.

Since 2003, over 25,000 HotPots have been distributed in Mexico, with an additional 15,000 deployed in other countries. Most distributions have taken place in rural or semi-rural areas with high poverty rates, and/or communities located in or around natural protected areas and in regions of high ecological value.

The Vida Rural Sustentable (VRS) program is the vehicle through which FMCN continues to participate in HotPot distributions in Mexico. VRS has worked with more than 40 institutions including federal protected areas, local, state and federal public institutions and NGOs.

The goals of this program are to encourage the utilization of eco-technologies that improve public health and foster a stable family economy in rural Mexican communities, promote the sustainable use of natural resources, and diminish forest cover loss and reduce greenhouse gas emissions.

FMCN commented that the HotPot is an integral part of the VRS project. By including the HotPot in the VRS project, the communities see first-hand both the power and the utilitarian aspects of solar energy. Thus, the HotPot serves as a teaching tool as much as a practical, money and time-saving cooking device.

The information gathered by SHE in this report can be used to design solar cooking projects going forward, and we're excited to share this knowledge with the solar cooking community.



Research and Technology

Testing Solar Cookers

Solar Household Energy Board member and Volunteer Director of Research Paul Arveson has taken advantage of sunny weather in the Washington, D.C. area to collect a high-quality set of sunlight and temperature data from several solar cooker models. This data will be processed and studied in order to learn as much as possible about these cookers, and how their performance may be improved. He is also developing a portable, automated system for collecting solar cooker power and efficiency measurements using the American Society of Agricultural and Biological Engineers S.580.1 protocol.

Paul already has submitted one manuscript for publication based on this research, and will continue to publish his work as the research continues.



Solar Inclusion in ISO Standards

Solar Household Energy continues to advocate for the inclusion of solar cookers in the development of the International Standards Organization-19867 standard for clean cookstoves. Director of Research Paul Arveson continues to participate in ongoing meetings to develop these standards, and to work with the clean cookstove community to demonstrate the value of solar cookers.

As part of this vital work, it will be important for Solar Household Energy to study all the different solar cooker standards that exist in countries around the world, to find the best practices, and to defend the current standards and the inclusion of solar cooking in the future of improved cookstoves.

Outreach

Meet and Greet with SHE

Public education has always been an important element of Solar Household Energy's mission. Over the years we have introduced, directly and indirectly, thousands of people to solar cooking. Our hope is that this knowledge will lead people both to apply it to their own cooking needs, as well as support the efforts of SHE and other organizations seeking to spread the technology in the developing world.

In March, Solar Household Energy hosted a "meet-and-greet" event in Washington, D.C. to introduce members of the community to solar cooking in general, and our projects in particular. It was a great opportunity for our board members and staff to reach out to our supporters, and to introduce solar cooking to curious members of the community.

As part of this event, we raffled a HotPot and solar cooking lessons with SHE co-founder Louise Meyer, a small fundraiser which raised several hundred dollars and led to the creation of a new solar cook!



Training Arcadia Farm

In August, Solar Household Energy had the opportunity to train Morgan Maloney, the Farm Education Director of Arcadia Center for Sustainable Food & Agriculture in the use of the HotPot for solar cooking. Arcadia hosts a series of summer farm camps to introduce sustainable food and farming to students, and SHE was excited to partner with them to incorporate solar cooking into their mission.



After training with SHE, Morgan was able to lead her campers in preparing food they harvested themselves in the HotPots borrowed from Solar Household Energy, and in creating their own solar cookers with pizza boxes and foil. SHE was able to provide continued support with help in recipes, solar cooking tips, and other advice.

It is vital for Solar Household Energy to partner with other organizations focused on nutrition, energy, sustainability, and education to show the role solar cooking can play in a sustainable future.

We are excited to continue to build these relationships and look forward to the new partnerships we will develop in 2017.

Maury Elementary Think Tank STEM Expo

In early May, Solar Household Energy was asked to demonstrate the science and use of solar cooking around the world to students and their families at the Maury Elementary [Think Tank STEM Expo](#). This event, open to all Washington, DC elementary school-aged children, brought scientific organizations from around the city to demonstrate various technologies, from basic coding and circuits to beekeeping and composting.



Many of the students who attended the event were already learning about solar cooking in their classes, and were curious to know if the HotPot was capable of melting marshmallows for s'mores, like the foil and cardboard cookers they were designing for their class (The answer is yes.) These students were able to explain the science of solar cooking to their families in attendance, and it is our hope that their excitement about solar cooking will spread in their families and communities.

Mt. Pleasant Farmer's Market



Summer Saturdays found Solar Household Energy demonstrating solar cooking at the Mt. Pleasant Farmer's Market in Washington, D.C. This market gave SHE the opportunity to show the simplicity of using a solar cooker to prepare summer favorites, such as peaches, corn, and tomatoes. We had the chance to not only meet with locals, but visitors from around the country as well.

Our demonstrations also are targeted to relief-oriented NGO employees and government agencies. It is our hope that these events will help to normalize solar cooking as a means of cooking for communities around the world.

STAR-TIDES

As in previous years, Solar Household Energy presented various solar cooking technologies, in partnership with Solar Cookers International, at the annual STAR-TIDES (Sharing To Accelerate Research-Transformative Innovation for Development and Emergency Support) technology demonstration event, a research effort that promotes sustainable support to stressed populations – post-war, post-disaster, or impoverished, in foreign or domestic contexts, for short-term or long-term (multi-year) operations.

The annual TIDES event, held in September at Ft. McNair in Washington, is always a great opportunity to introduce solar cooking technology to organizations such as the U.S. Agency for International Development, U.S. military branches, and other organizations working in disaster relief or refugee support. Other solar organizations are also present at the event, giving Solar Household Energy the opportunity to make connections with organizations that may focus more on solar panels and batteries, building connections that may lead to further partnerships or support for solar cooking practices.

Demonstration at Lafayette Elementary School

In late October, SHE board members Louise Meyer and Paul Arveson demonstrated solar cooking to 100 5th grade students at Lafayette elementary in Washington, DC. The students were learning about famous inventors and inventions in their English courses, and astronomy in their science unit, so solar cooking was a perfect way for these students to combine their studies while experiencing cooking with the sun.

SHE is excited for the opportunity to introduce the next generation to solar cooking, and will continue providing these educational resources in our community.

No outreach effort would be complete without utilization of social media. Solar Household Energy maintains an active presence on Facebook, and has cultivated a strong and growing set of “friends.”

What lies ahead for SHE

In January, Board member Paul Arveson will attend Solar Cooker International’s 6th World Conference at an ashram in Gujarat, India, where he will educate attendees about his work in the development of an ISO standard for measuring solar cooker performance.

This conference also will provide an opportunity for SHE to share our experience with solar cooking in refugee camps, and to collaborate with partners in the solar cooking community to share fund-raising, project design, and oversight and evaluation activities.

More broadly, we will maintain our ongoing efforts with technology advancement, public education and on-the-ground initiatives in places like Haiti, Uganda, Mexico, and possibly Chad, working in tandem with like-minded organizations to maximize the impact of our collective efforts.

Our People

Solar Household Energy is primarily a volunteer-based organization, with active participation by board members and others. Solar Household Energy’s Board of Directors is led by **David Grossman**, Director of International Programs for the International City/County Management Association. This year we have added two new members of our board, **Roger Haines** and **Pari Kasotia**.



Roger, retired attorney, is a board member of the Alliance for African Assistance, and RI Foundation Chair of San Diego Rotary Club 33. He created the [Haines Solar Cooker](#) as a low-cost, durable panel cooker suitable for refugees and low-income users. Roger is active in solar cooking promotion efforts in eastern Africa. Our other new board member, **Pari Kasotia**, serves as the Deputy Director of The Solar Foundation, a bi-partisan, non-profit organization based in Washington, D.C. She is the Founder and CEO of Unfolding Energy and was named a 2015 Midwest Energy News’s Emerging Clean Energy Leaders 40 Under 40.

Other board members are:

Louise Meyer, a co-founder of Solar Household Energy who has been active in solar cooking promotion for nearly 30 years,

Cora Shaw, a former World Bank senior economist and consultant on rural development issues,

Paul Arveson, a retired research physicist and Solar Household Energy's Director of Research,

Margarita Battle, a resident of Queretaro, Mexico, where she has worked with the U.S. Peace Corps and local NGOs to promote solar cooking in that country, and

Kristin Panerali, an energy sector professional with extensive experience in the development, financing and operations of utility-scale renewable energy projects.

Volunteers are vital to the work of Solar Household Energy, including **Esperanza Sanz**, who keeps the organization active on social media, particularly Facebook. Other volunteers who have assisted the organization in 2016 include **Afzal Syed, Zainab Syed, Samina Syed, Peg and Will Barratt, Will Hayes, John Stewart, Mark Mugerwa, Jack Gray, Sandy Tarpinian, Sahil Patni, and Michaela Borghese**.

Solar Household Energy's day-to-day operations are carried out by a small team. Members include **Richard Stolz**, who holds responsibility for the financial management of Solar Household Energy. Richard has been associated with Solar Household Energy since 2003. **Sophie Brock Lyman**, SHE's operational director, leads our strategic partnership development, project design and analysis. Sophie's career has included work with Greenpeace, USAID, and local NGOs in the Republic of Congo, India, and Haiti. During 2016 SHE was also supported by program manager **Kate McGarrity**, who came to SHE with a broad background in non-profit operations, including education, outreach, and promotion.

Although volunteers play a vital role in our ongoing ability to carry out our mission, we also require funds to conduct projects and manage operations. We welcome and encourage all financial support, large and small. Please consider making a tax deductible contribution via www.she-inc.org or by mail to 5 Lochness Ct., Rockville, MD 20850-2950, attn: Richard Stolz. We also encourage inquiries about our finances and operations, and suggestions. All of our board members and staff can be reached via email to: inquiries@she-inc.org

Thank you for your interest and support for Solar Household Energy.