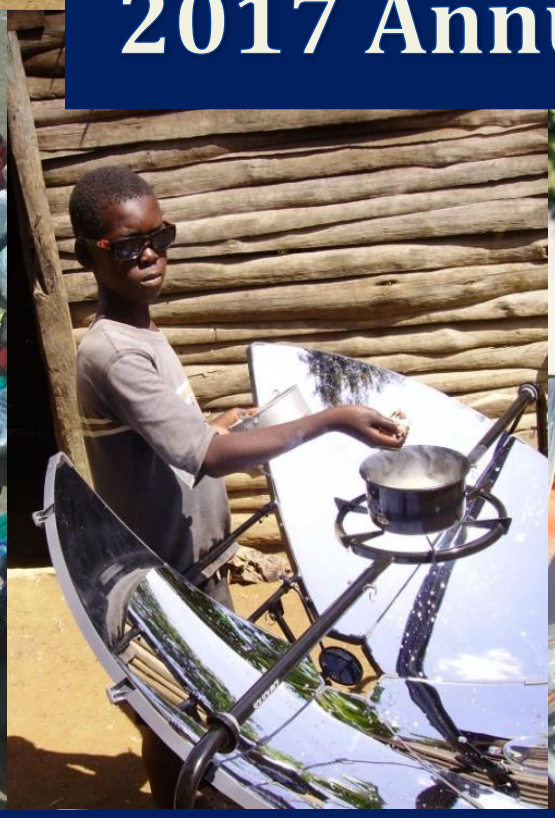
Solar Household Energy, Inc.

Solar Cooking for Human Development and Environmental Relief

2017 Annual Report



Our mission:

Solar Household Energy (SHE) leverages the power of solar cooking to improve social, economic and environmental conditions in sun-rich areas around the world.

Our 2017 accomplishments in a nutshell:

On the Ground: Launching solar cooking enterprises

- Haiti: The *SolSource*™ solar stove project shows high adoption after one year. (p.4)
- Mexico: SHE launches sustainable solar cooker enterprise distribution model, and also aids earthquake victims in Oaxaca. (p. 5-6)
- Chad: 100 *Haines*™ solar cookers are put to the test in three refugee camps. (p. 7)
- Kenya: Solar Cooking Festival in Kakuma refugee camp teaches 500 children to solar cook and equips them to continue the practice. (p. 8-9)
- Uganda: "Go Green" solar cooker social enterprise launched following the distribution of 500 solar cookers to low-income families. (p. 10)

Research and Design: Enhancing Solar Cooking Technology

- Development of methods and tools for optimizing standards' measurements accuracy and pot efficiency. (p. 11)
- Advancing the development of international solar cooker power measurement standards. (p. 12)

Education and Advocacy: Spreading the Word, Building Support

- SHE co-founder Louise Meyer wins "Leaders in Energy" Award. (p. 13)
- Environmental education from a refugee camp: art exhibit and Green TV interview. (p. 13)
- Participation in STAR-TIDES, Solar Cookers International 6th World Conference, Library solar cooking demonstration, and Washington, DC meetup group. (p. 14)

Children in Oaxaca, Mexico, about to enjoy their solar-baked cake. Photo credit: Lorena Harp

He said,
SHE said,
You said…

From the President

Dear friends,

In 2018, Solar Household Energy will be celebrating twenty years of leveraging solar cooking to improve social, economic and environmental conditions in sun-rich areas around the world. From our humanitarian field projects introducing various types of solar cookers in Mexico, Mali, El Salvador, Senegal, Haiti, and Chad, to our new projects supporting the launch of solar cooker social enterprises in the marketplace, we have seen first-hand the benefits of solar cooking as a positive tool for human development and environmental relief.

It is clear, now more than ever, that solar cooking, still a relatively unknown, unsung, and unharnessed renewable energy technology, has enormous potential in saving our planet from the ravages of climate change. These fuel-free clean cookstoves are essential to curbing deforestation, reducing greenhouse gas and black carbon emissions, and lessening our dependence on fossil fuels. We will persevere in advancing solar cooking's potential to help achieve these vital goals.

Three billion people – nearly half the world population – still burn wood, charcoal, animal dung, crop residue or coal for their daily cooking and heating needs. **Black carbon, a product of incomplete combustion of biomass, is the second strongest contributor to climate change, with a climate forcing estimate equivalent to as much as 55% of that from carbon dioxide.**[1] 84% of residential black carbon emissions are from households in developing countries.[2] Solar cookers can help these households transition from depleting their scarce biomass resources to harnessing sunshine, which is abundantly available year-round in most developing countries.

SHE is a small, efficient non-profit organization with far-reaching impact, thanks to the combined experience, knowledge and passion of its team members, and the incredible volunteer force responsible for much of SHE's achievements. This year, in particular, we wish to recognize SHE's co-founder and Board member Louise Meyer, who was recently honored as a winner of the "Leaders in Energy" Leadership Award.

Throughout the years, we at SHE have been honored to get to know people like you who wish to improve lives and the planet through solar cooking. We hope you will stay – or for new readers, become – actively involved in our solar cooking community, through reaching out to us, with your offers to volunteer, and through your financial contributions. If you are new to the world of solar cooking, we welcome you. If you are a veteran, thank you for your ongoing interest and support.

David Grossman
President of the Board
Solar Household Energy

Haiti: A Success for SHE's SolSource solar stove project

In September 2015, thanks to a generous grant from the Agua Fund, Solar Household Energy (SHE) entered into a partnership with Solar Electric Light Fund (SELF) to introduce 25 SolSources, parabolic solar stoves developed by One Earth Designs, in Tilori, Haiti, expanding the existing clean cooking efforts. (Parabolic solar ovens – see photo – are the most powerful type of solar cooking device, generating temperatures sufficient to fry food.) SHE managed the project, contracting solar cooker expert Onel Joseph to carry out the project training and assessment mission in Tilori in October 2015, and to collaborate with SHE in supporting local leaders to carry out monthly follow-up surveys and quarterly focus group meetings for one year.

In 2017, the project evaluation revealed that according to the scoring system promoted by the UN Foundation's Global Alliance for Clean Cookstoves, the SolSources had "Very High Adoption" and "High Impact." The adoption value stems from average SolSource usage frequency (10.4 times a week), average SolSource condition (most were in good condition but dirty), average SolSource satisfaction levels (4.9 out of 5), and the interest in replacing the SolSource at the end of its lifetime (overwhelming demand for more solar stoves, and 98% who would recommend it to a friend). The impact level value stems from average stove usage frequencies and stacking (SolSource 10.4 times a week, fuel-efficient stove 17.9 times a week), the traditional stove usage and its location (the three-stone fire was virtually no longer used), perceived health improvements (98% reporting "three or more" signs of improved health), and perceived fuel savings (97% reporting "some savings").

SolSource training session with SHE trainer Onel Joseph. Photo credit: Onel Joseph for SHE.

Open feedback from survey comments and focus group meetings revealed that participants were deeply appreciative of the SolSources and their many benefits including absence of smoke, improved health, and fuel savings. Many said that they shared the SolSources with the whole neighborhood (one specified five people), and that there was high demand for more SolSources from Tilori and beyond.
Read more about our projects in Tilori, Haiti, including SHE's full evaluation report, and photos on Facebook. SHE is currently seeking funding partners to invest in a parabolic stove manufacturing shop in Tilori.

Mexico: SHE launches solar cooker enterprise in Oaxaca

SHE first became engaged in promoting solar cooking in Mexico in 2003 after winning a "Development Marketplace" grant from the World Bank. Fifteen years later, 40,000 *HotPot*™ solar cookers have been disseminated worldwide, thanks to partnerships instigated by SHE. The HotPot, a "panel" design solar oven, was developed by SHE in collaboration with the Mexican Fund for the Conservation of Nature in 1998. It is more economical than a parabolic oven, and cooks food in a manner similar to a "crock pot."

SHE is now partnering with Mexican solar cooking expert Lorena Harp to bring solar cooking to the rural women of Oaxaca State through a sustainable social enterprise. Lorena has been promoting the HotPot and other solar cookers in Mexico for more than a decade, and is now devoted to developing her own solar cooker social enterprise. She is introducing an affordable but durable panel-style solar cooker called the Haines Solar Cooker (HSC). Lorena is training rural women to become "solar cooking ambassadors" to sell HSCs on a commission basis to members of their communities and provide follow-up support to maximize adoption of this alternative cooking model.

Bibiana, solar cooker ambassador-in-training, learning how to assemble the Haines solar cooker. Photo credit: Lorena Harp

Children in rural Oaxaca watching a cake solar bake. Photo credit: Lorena Harp

Prior to launch of the initiative, Lorena conducted local market research, and optimized the Haines solar cooker for local consumer preferences.

In 2018, once five ambassadors have completed their training, their goal will be to sell several dozen HSCs with black pots, for 500 pesos each, or around $25. Ambassadors will survey their customers on a monthly basis to assess the success not only of the solar cooker, but of the ambassador model for marketing solar cookers, training customers, and ensuring their satisfaction. These findings will serve to improve the social enterprise, and ultimately help provide more opportunities for ambassadors to thrive, both financially and as environmental leaders in their communities.

Mexico: Aiding Oaxaca earthquake victims

In September 2017, as Lorena's market research in small Oaxacan villages was under way, Mexico was hit with the strongest earthquake in a century, at magnitude 8.2. Oaxaca state was devastated, with over 76 deaths and more than 11,000 homes damaged or destroyed (The Washington Post, 2017).

"Truly, everything has been very difficult in the state – all the time, they find and report on more small communities that have suffered a lot of damage, that no one is supporting because of communication difficulties or lack of action from the government or citizens." - Lorena Harp

Thankfully, Lorena and her loved ones are safe. Lorena assisted several organizations to help bring solar cookers to those who needed it the most, traveling to the earthquake disaster zones to carry out solar cooking workshops in Juchitán de Zaragoza and San Mateo del Mar.

In 2018, she will conduct follow-up visits and carry out additional workshops in these two towns, as well as in Ixhuatán.

Lorena Harp (wearing yellow apron) carrying out solar cooking workshops in a town devastated by the September 2017 earthquake in Oaxaca, Mexico. Photo credit: Lorena Harp

Chad: Testing out 100 Haines solar cookers in refugee camps

In 2011, Solar Household Energy partnered with UNHCR and its then local implementing agency, Africare, to launch a pilot project introducing 50 HotPot solar cookers in Gaga refugee camp. Based on the results of that initial effort, Africare quadrupled the scale of the project. SHE's consultant Patrick Fourrier returned to Gaga camp in March 2016 to measure the HotPots' long-term impact, test the new Haines Solar Cooker in situ, and assess project expansion feasibility. The Haines Solar cooker is similar to the HotPot in that it is a durable panel slow solar cooker, but its lower price range could lead to faster project expansion. However, it was concluded that more field testing and training would be needed to ensure high potential adoption levels by local refugee women.

In December 2016, at the request of ADES (Agence de Développement Economique et Social), a Chad-based international NGO, SHE shipped 100 Haines solar cookers to N'Djamena, Chad. ADES purchased the solar cookers at the recommendation of Chad's UNHCR staff. UNHCR had stopped distributing firewood to refugees at the end of 2015, due to financial constraints, increasing the need for a cheap and ubiquitous fuel. The Haines solar cookers were distributed in early 2017 in three refugee camps in the northeastern Iriba region: Touloum, Iridimi, and Amnakak.

The Haines solar cooker is an affordable yet durable solar cooker that holds promise for Chad refugee camps. (Left. Photo credit: Roger Haines). It is being tested as an alternative to the HotPot distributed in 2012 (Right. Photo credit: Patrick Fourrier for SHE).

Kenya: Solar Cooking Festival in Kakuma refugee camp teaches 500 children to solar cook

On April 29, 2017, a Solar Cooker Festival for 500 schoolchildren was held at the vast Kakuma refugee community in Kenya. This celebration not only made solar cooking possible for 500 households, but was the inception of a sustainable solar cooker social enterprise to meet the high demand for solar cookers in Kakuma camp. A 2016 study by World Food Program (WFP) engineer Godfrey Mawira showed that solar cooking was the second-most preferred method of cooking in Kakuma, even though very few solar cookers were available.

Inexpensive, durable solar panel cookers called *Haines-Copenhagen*™ cookers were assembled in Kakuma by refugees from materials donated by Haines Solar Cookers.

500 children in Kakuma refugee camp learn to cook in Haines-Copenhagen solar cookers.
*Photo credit: NTV Kenya (**Click on photo** to see video that aired on NTV shortly after the Festival)*

Training was provided by Faustine "Mama Solar" Odaba, and her Nairobi NGO, NAREWAMA. Ms. Odaba had been one of the trainers in 1995 when Solar Cookers International (SCI) first introduced solar cookers in Kakuma. Before the festival, 50 refugee women were trained to use the cookers, and they in turn trained the children. During the festival, Mama Solar used multiple cookers to cook rice, vegetables chicken, eggs, cabbage, ugali, beans and a cake. All the children subsequently assembled their own cookers, and cooked noodles before an enthusiastic crowd of family members and relatives. The children were elated and proudly showed off their new cookers.

This project involved multiple partners, including Haines Solar Cookers, WFP engineer Godfrey Mawira, the National Council of Churches of Kenya, and Simplified Technologies for Life, which

has already produced solar cooking festivals for almost 120,000 participants in India, and holds the Guinness Record for the most people solar cooking at the same time: 7,438. Funding was provided by Haines Solar Cookers and the San Diego, California, Rotary Club.

Faustine Odaba, known as "Mama Solar" (in bright colors) instructing children in solar cooking. Photo credit: Roger Haines

Additional support and resources came from Solar Household Energy (SHE). Other partners included Eco-Mandate, which sells solar cookers in Chuka, Kenya, the Alliance for African Assistance, a San Diego-based refugee resettlement organization, and the Rotaract Club of the University of California, San Diego, which made 500 Water Pasteurization Indicators (WAPIs) for the Festival participants.

Follow up studies are planned, and SHE board member Roger Haines is working with Eco-Mandate and a local entrepreneur to offer Haines-Copenhagen solar cookers for sale in Kakuma for a sustainable price of around $25.

Uganda: 500 solar cookers distributed to low-income families, "Go Green" solar cooker social enterprise launched

In 2016, SHE board member Roger Haines spearheaded a project to distribute 500 Haines solar cookers to low-income families in Gulu and Atiak in Uganda, in partnership with the Rotary Club of Gulu, and with funding from San Diego Rotary Club, with the Alliance for African Assistance (AAA) in Gulu implementing the project on the ground.

In April 2016, Roger visited solar cooker recipients in a suburb of Gulu and the northern town of Atiak. Excerpts from his trip report, below, show that solar cookers were appreciated and successfully cooked local dishes.

"There were light fluffy clouds all day, but that did not seem to affect the cooking. The women were very excited to show what they had cooked. As each one lifted the lid, others would turn to see, shouting, "look here, okra," "rice and fish," "ugali," "goat stew." A favorite dish was "white ants," which is really termites." "One disabled woman said what a blessing it was that she did not have to ask others to collect firewood for her. The only "dislike" was that they could not cook at night."

Solar cooking demonstration as part of the "Go Green!" solar cooker enterprise project. Photo credit: Roger Haines

Follow-up interviews were conducted with users several months later, and the reports were positive. This free distribution of solar cookers in 2016 succeeded in creating a demand for Haines solar cookers.

In 2017, AAA, supported by SHE and other partners, started making, marketing, selling and training people on using Haines Solar Cookers, naming the project "Go Green! Cook with no smoke, no sweat!"

So far the organization has sold more than forty solar cookers. As the region bordering Uganda and Southern Sudan, the current insurgency in Southern Sudan has made Northern Uganda home to over 180,000 refugees all of whom need a reliable source of energy for preparing their daily meals. It is against this background that AAA is making arrangements for a solar cooking festival in the refugee camps of Pagriringa and Paluda.

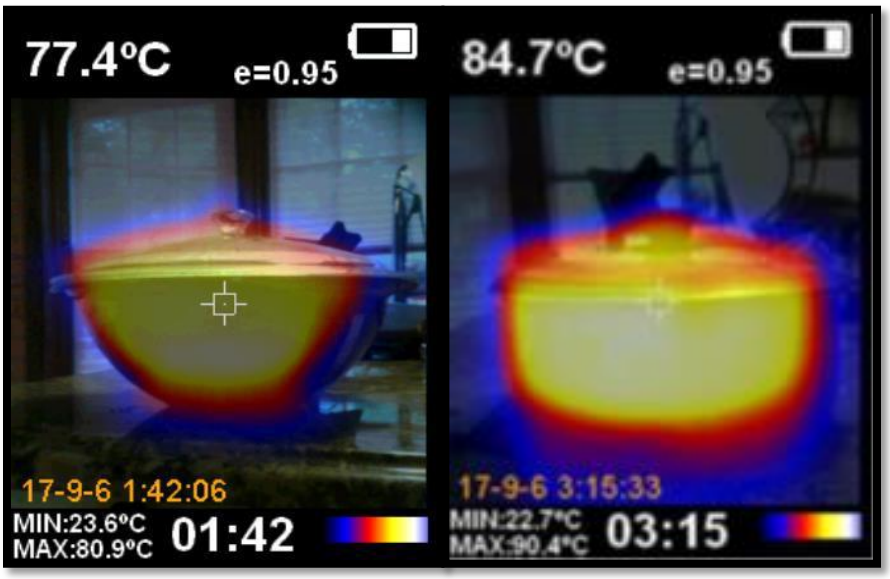
Research: Development of methods and tools for optimizing standards' measurements' accuracy, and pot efficiency

SHE's ongoing R&D efforts represent a fundamental element of our strategy to disseminate solar cooking technology. While the state of the art of solar cooking device model design has come a long way over the years, there is more progress to be made in bringing efficient, durable and affordable solar cookers to places where they can be put to use. Long-time board member Paul Arveson, a retired engineer, leads SHE's R&D efforts.

Paul and intern Everest Bloomer, a student in the Blair High School Magnet Program, carried out research in 2017 to advance that effort. Their findings, documented in a series of technical reports (TRs), available upon request, are summarized below.

TR 31: Measuring Solar Irradiance with a Sun Tracker for the Solar Cooker Power Standards – By Everest Bloomer and Paul Arveson
Solar cooker standards measure the efficiency of converting direct beam irradiance into heat for cooking. Ensuring accuracy requires the pyranometer (an instrument to measure solar irradiance) to face the sun, following it as it moves the sky. This technical report describes the construction and testing of a sun tracker, upon which a pyranometer was mounted, to improve the accuracy of direct beam radiation and ultimately solar cooker power measurements.

TN-28 Infrared Imagery of HotPot and Haines Dutch Oven
TR-30 Infrared imaging to identify heat loss in the Haines Solar Cooker
These experiments used an infrared thermal imaging camera to measure heat loss areas in the Haines solar cooker, its pot, and the HotPot enameled bowl. Main areas of heat loss were gaps between the Haines polycarbonate cover and reflector, and the HotPot pot-lid gap, highlighting the importance of the Haines pot's silicone gasket.



Hotpot enameled steel pot (left) and Haines Dutch oven (right) seen in mix of visible and infrared light. Photo credit: Paul Arveson for SHE

TR-32 Test Procedure for Cooking Pot Heat Loss Measurement
In light of previous findings that pot heat loss was a critical factor in performance of the Haines solar cooker, this report describes a simple way of measuring this heat loss.

TR-33 Thermal Performance of Some Mexican Cooking Pots
Using methods described above, Paul Arveson compared the thermal performance of four pots manufactured and sold in Mexico. Among other findings, glass lids were found to increase performance, probably due to an increased greenhouse effect inside the pot. This comparison of local Oaxaca pots informed the selection of a pot for the Haines solar cooker set that will be sold in Mexico by Lorena Harp's social enterprise, with SHE's support.

TR-34 Preliminary Work on Gasket-Making for Cooking Pots
Paul Arveson experimented with developing a simple, portable tool to quickly create gaskets for pot-lid sets of any size, such that solar cooker recipients could easily add gaskets to pots they already own, instead of buying a new pot for the solar cooker. It was found that the round gaskets initially produced by this method were not soft enough to seal adequately, but the concept will be pursued further in 2018.

Research: Advancing the development of international solar cooker power measurement standards

The lab testing standard, ISO-19867-1, has reached the stage of Draft International Standard, and it will be released soon to the public. The field testing standard is expected to reach this stage early in 2018. Both standards refer to the ASAE S.580.1 standard protocol for power measurements of solar cookers. The scope of both standards includes solar cookers, as well as biomass and (in some cases) liquid and gas fueled cookstoves. Ensuring solar cookers were kept in the drafts required careful vigilance and frequent discussions. There will be future periodic updates of the standards, so additional solar cooker standards could be included if there is a consensus to do so among member states. Dr. Paul Funk, Paul Arveson and Alan Bigelow attended plenary meetings in Kenya, Ghana and Nepal respectively to participate in working groups developing these standards. We also appreciate leaders including Ranyee Chiang (Global Alliance for Clean Cookstoves), John Mitchell (US Environmental Protection Agency (EPA)) and Jim Jetter (US EPA testing lab) for their support and guidance.

Having the solar cooker power protocol included in an international standard will provide a fair and scientific basis for comparing power for all household-scale solar cooker types. Moreover, the ASAE S.580.1 document is an open standard that is freely available. Solar Household Energy and Solar Cookers International (SCI) have developed instruments and software that can be used to measure solar cookers in accordance with the protocol. We hope that these efforts over the past four years to establish standards for solar cookers will add credibility to the whole industry.

Education and Advocacy

Janine Fennell (left), Executive Director of "Leaders in Energy," bestows a Leaders in Energy Award to Louise Meyer (right). Photo credit: Richard Stolz for SHE

Louise Meyer, SHE's co-founder, Board member, and volunteer Education and Advocacy Director, has been speaking up for people around the world who suffer from the effects of dirty cookstoves for over two decades. This year, her work to alleviate their suffering and protect the planet through solar cooking was recognized by Leaders in Energy, a nonprofit organization**. Louise won a "Leaders in Energy" Award** for her lifetime achievements in promoting solar cooking.

In October**, Louise Meyer showcased artwork on solar cooking by Vicente Lunda**, a Congolese man living in a refugee camp in Zimbabwe, to raise awareness of the potential of solar cooking to change lives, but also to help Vicente find a way to start a new life outside of the refugee camp. To learn more, **watch Green TV's interview** of Louise by clicking below:

Louise Meyer (left) is interviewed by Green TV's Angela Trusty (right) at the GooDBuddY Gallery in Washington, DC regarding her art exhibit "Environmental Education from a Refugee Camp" featuring artwork (center) by refugee Lunda Vicente. Photo credit: Green TV

Artwork promoting solar cooking, by Vicente Lunda, a Congolese refugee in a camp in Zimbabwe. Find out more at: https://lundavincente.wordpress.com/

Paul Arveson, SHE volunteer Director of Research, promotes solar cooking for SHE and SCI at STAR-TIDES. Photo credit: Paul Arveson for SHE

For the 10th year in a row, SHE, in partnership with Solar Cookers International, participated in the **STAR-TIDES** (Sharing to Accelerate Research – Transformative Innovations for Development and Emergency Support) public exhibition. Paul Arveson gave a one-hour presentation on solar cooking that was attended by experts in innovative development programs with civilian and military applications.

Other solar cooking educational events this year include holding a solar cooking demonstration at the Point of Rocks library in Maryland, and organizing a social event for solar cooking lovers through Meetup.com in Washington, DC.

What lies ahead for SHE

SHE is one the leaders in the solar cooking movement, with a strong history of partnerships with internationally recognized leaders in their field. Those include the World Bank, the Mexican Fund for the Conversation of Nature, the United Nations High Commission on Refugees, University of California at Berkeley, the Nature Conservancy, the Global Alliance for Clean Cookstoves, and the International Standards Organization. On the ground, we collaborate with local organizations with expertise in their own conditions and culture, to identify local needs and strive to meet these with the most suitable cooking technologies. Sometimes those include, as a complement to solar cookers, highly efficient hydrocarbon fuel consuming cookstoves.

SHE was founded twenty years ago by Darwin Curtis, Louise Meyer, and Barbara Knudsen, who had the vision of sparking the development of self-sustaining solar cooker enterprises. In 2002, SHE won funding from the World Bank to make this a reality for our HotPot in Mexico. To this day, over 40,000 HotPots have been sold or disseminated worldwide. SHE is honored to have instigated this fruitful HotPot enterprise and these Mexican-led solar cooking projects. However, we do not have any vested interest in the HotPot – or any other solar cooker or clean cookstove product. In the last few years, we have carried out pilot projects introducing several other types of solar cookers which have passed our tests for performance and durability: the *Sun Oven*™ box cooker, the SolSource parabolic stove, and Haines panel solar cooker.

Our present goal is to build upon our solar cooking promotion activities with scalable social enterprises. Our two pilot projects in Haiti showed that powerful parabolic stoves capable of frying foods were better adapted to local culinary tastes and habits than box ovens. There is now a high demand for more parabolic stoves, waiting to be fulfilled. SHE is collaborating with the Germany-based nonprofit E.G. Solar to study the feasibility of establishing local shops to manufacture SK14 parabolic stoves with mostly local materials, and sell them at a subsidized price, possibly with carbon financing.

Our pilot project in Gaga refugee camp with the HotPot showed substantial success, with the UN recommending the introduction of 80,000 more HotPots in their draft strategy report for Chad. Sadly, the UN cannot meet its funding goals, to the point where they can no longer distribute firewood. SHE is testing the Haines solar cooker in Chad refugee camps as a more affordable alternative, and seeking outside funding.

In Uganda and Kenya, free distributions of Haines solar cookers gave women and children in need a fuel-free way to cook their food, and ignited a demand for solar cookers which is being slowly met with two budding solar cooking enterprises.

In Mexico, we are launching a solar cooking enterprise employing local solar cooking ambassadors on a commission basis, a scalable and replicable model we hope will result in the rapid spread of solar cooking throughout Oaxaca in 2018.

On the solar cooker technology research and design front, SHE's Director of Research Paul Arveson will continue advancing the design of solar cookers, as well as instruments and methods to test them according to international standards, in collaboration with other solar

cooking technology experts, including Dr. Paul Funk and Alan Bigelow of SCI. In 2018, they will begin to deploy standardized solar cooker power testing systems around the world. They will continue to advocate for the inclusion of solar cooker standards through their participation in International Standards Organization meetings organized by the UN Foundation Global Alliance for Clean Cookstoves. It is anticipated that these efforts will ultimately ensure solar cookers are valued and priced fairly, according to precise measurements of power, performance, durability, and other parameters, leading to customer satisfaction and strong solar cooker markets.

SHE's Director of Outreach and Education Louise Meyer will continue inspiring generations old and new with demonstrations of solar cooking in action, eliciting surprise and wonder at this fireless cooking technique, while also relating the experiences of so many across the world who suffer from the effects of cooking over open fires or with unimproved cookstoves. This message, through SHE's participation in international development forums, also reaches potential project partners and decision-makers with the power to invest more resources into clean, renewable energy technologies like solar cookers.

All these solar cooking projects and budding enterprises hold great potential for mitigating climate change and deforestation, empowering women, lifting families out of poverty, and many other benefits. It is to realize this potential that we have started growing our small team, starting with our new Associate Director Heljye Mounkala, who joined our team last October. We will also continue to identify and collaborate with partners for research and field projects. Your support is essential in enabling the necessary growth, both in SHE and the various enterprises and partnerships we've launched, to bring the benefits of solar cooking to as many people as possible.

Our People

SHE is a small but productive organization with far-reaching impact, thanks to the combined experience, knowledge and passion of its team members and dedicated volunteers. This year we wish to recognize the activities of Board members who have been leading SHE programs on a volunteer basis.

SHE Co-founder, Board member, and volunteer Director of Education Louise Meyer has been carrying out solar cooking education in Washington, DC for decades, and she was recently honored as a winner of the "Leaders in Energy" Leadership Award. SHE's Board member and volunteer Director of Research Paul Arveson has been advancing solar cooking standards though his participation in International Standards Organization forums and carrying out research to optimize solar cookers and their testing. Board member Roger Haines, on top of inventing a promising new solar cooker, has been investing his own time and funds to bring solar cooking to refugees and low-income villagers in Kenya and Uganda. Board member Margarita Battle, a Mexico native, has been invaluable in SHE's project to launch a social enterprise in Oaxaca, Mexico. Board member Cora Shaw led SHE's project in Gaga refugee camp, Chad, and assists in efforts to scale it up. Solar Household Energy's Board of Directors is led by David Grossman, Director of Global Programs for the International City/County Management Association.

Regretfully, we also say goodbye to two Board members, Kristen Panerali and Pari Kasotia, both leaders in the solar energy field, who have been tremendous assets to SHE. They were greatly appreciated, and will be missed.

SHE's ongoing operations are carried out by a small team. As SHE's Executive Director, Sophie Brock Lyman's responsibilities include leading our strategic development, project design and analysis, and partnership development. Sophie has been working in environment and international development since 2005 with Greenpeace, USAID, and local NGOs in Democratic Republic of Congo, India and Haiti. She began her association with SHE as a Research Associate in 2010, and later became SHE's Senior Program Manager before being promoted to Executive Director in October 2014. Richard Stolz oversees SHE's financial administration. John Nash provides SHE IT support and guidance. Lynn Patton is SHE's bookkeeper.

We are happy to welcome a new member to our team, Heljye Mounkala, as Associate Director. She has over 16 years in international development, with a focus on Africa and South America. Her expertise is in project management and resource mobilization.

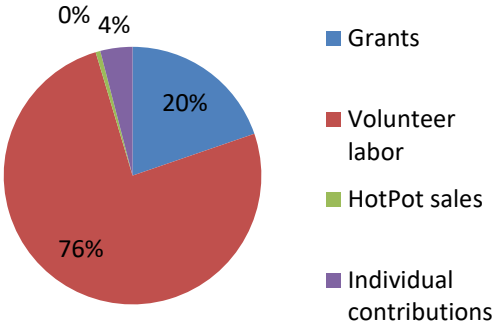
Volunteers are vital to the work of Solar Household Energy. Esperanza Sanz keeps the organization active on social media, particularly Facebook. Everest Bloomer served as an intern to advance solar cooker research. Samantha Huntoon provided general support during her summer internship. Raphaëlle Ortiz helped develop a project proposal for a Haiti solar cooker shop. Christine Kohler assisted with website design. Afzal, Zainab, and Samina Syed helped with solar cooking demos. Heljye Mounkala, our new Associate Director, started at SHE with volunteer fundraising work.

All of SHE's Board members and its other volunteers have been paramount to fulfilling SHE's mission, dedicating their time, efforts and personal funds to ensure the highest standards and results, for human development and environmental relief. We are deeply grateful for their service.

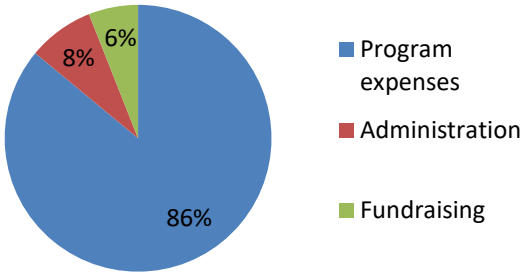
Committed to accountability and transparency

Solar Household Energy is a 501(c)(3) non-profit corporation and public charity. We are committed to accountability and transparency, and are GuideStar Gold certified. We will be happy to send you our 990 tax return upon request.

SHE FY 2017 Sources of Support



SHE FY 2017 Expenses



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 to SHE via Network for Good or by mail to: 5 Lochness Ct., Rockville, MD 20850-2950, attn: Richard Stolz. We also encourage inquiries about our finances and operations. 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.

Solar Household Energy is a 501(c)3 non-profit. Please like us on Facebook, join our Washington, DC area solar cooking meetup group, follow us on Twitter @SolarHouseholdEnergy, and check out our website: www.solarhouseholdenergy.org

References

1. V. Ramanathan and G. Carmichael, *Global and regional climate changes due to black carbon*, 1 Nature Geoscience 221-22 (23 March 2008) ("The BC forcing of 0.9 W m–2 (with a range of 0.4 to 1.2 W m–2) … is as much as 55% of the CO_2 forcing and is larger than the forcing due to the other GHGs such as CH_4, CFCs, N_2O or tropospheric ozone.")

2. Global Alliance for Clean Cookstoves. Impact Areas. Environment. <http://cleancookstoves.org/impact-areas/environment/>