

Solar Household Energy, Inc.

Solar Cooking for Human Development and Environmental Relief



2022-2023 Biennial 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. COVER PAGE credits: Top half photo credits: Solar education Project, for projects in Kenya. Left to right: Buying local pots (top) and painting them black for solar cooking (bottom) in Eldoret county; Making reflectors (top) and heat-retention baskets (bottom), and adding ingredients to the solar cooker, in Kakuma refugee camp; Dadaab refugee camp beneficiaries receiving their solar and heat retention cookers and certificates. Bottom half, left to right: 100 Families Project member with her KoKo stove. Photo credit: S. Odhiambo; Solar cooker beneficiaries in Mexico. Photo credit: L. Harp.

Letter From the President

Dear Friends of Solar Household Energy,

Thank you for your interest and support for SHE. Your contributions enable us to offer low-income families, families in refugee camps, and remote off-grid communities in developing countries comprehensive programs introducing efficient, clean-energy solar cookstoves to prepare wholesome meals. Your ongoing contributions also will enable us to continue our work into the future (see "What lies ahead for SHE" on page 19).

I am pleased to write that our steadfast work during the COVID pandemic has paid large dividends in the ensuing two years. While our work was notably limited at that time, SHE continued to support our ongoing projects and the participating families. SHE developed new approaches, including a remote training capability and enhanced delivery systems promoting women's entrepreneurship. SHE contributed field experience and project evaluation results to improving the functionality of the Haines solar cooker (rated "Best Overall Solar Cooker"). Perhaps most importantly, SHE maintained and cultivated our many partnerships throughout the global solar cooking community.

This combined 2022-2023 report covers our advances in these areas now applied in renewed field projects. I invite you to enjoy the many photos and videos reflecting the importance of our work and which provide a sense of the people and cultures benefitting from your support. The report also conveys how SHE greatly leverages your support by means of the several U.S. and local host country partners contributing funding and participating in implementing joint projects and programs.

Please continue your support for SHE and our global network of trusted international partners to deliver a proven solution to the critical challenge of clean-energy cooking.

and formal

David Grossman President, SHE-INC



Contents

Letter From the President	1
On the Ground: Lifting Women and Families out of Poverty	4
Mexico: Going on twenty years of empowering women	4
Nairobi, Kenya: The 100 Families Project	10
East Africa: Solar Cooking for Refugees	
R&D in design, testing, and worldwide adoption	14
Advancing the science of solar cooker power and testing	14
Breaking barriers to widespread distribution and adoption	15
Education and Advocacy: proving long-term project success	
Building transatlantic bridges, academic recognition of the Oaxaca project at national & international conferences	
Offering a taste of the sun in Washington, DC	18
Supporting solar education	
What lies ahead for SHE	
About SHE	20
Our People	20
Get involved	
Partner with us	
Committed to accountability and transparency	
How you can support SHE	
Contact us	23

On the Ground: Lifting Women and Families out of Poverty

Mexico: Going on twenty years of empowering women

SHE first became engaged in promoting solar cooking in Mexico in 2003 when the HotPot, a panel-design solar slow cooker, was developed by SHE in collaboration with the Mexican Fund for the Conservation of Nature and the Florida Solar Energy Center. In 2003, SHE won a "Development Marketplace" grant from the World Bank to promote solar cooking in Mexico. Thanks to partnerships instigated by SHE, over 40,000 HotPots have been sold or distributed worldwide. Several years later, the noble HotPot was retired and primarily replaced by a more affordable and light-weight alternative, the Haines solar cookers, in SHE projects (see photo p.16)

SHE's "solar cooker ambassador" program in Oaxaca led by Lorena Harp

Since 2017, SHE has supported Mexican solar cooking expert Lorena Harp in her goal to bring solar cooking to the rural women of Oaxaca State through a self-funding "solar cooker ambassador" program, providing both technical and financial aid. Ambassadors promote and sell on commission an affordable and durable panel-style solar cooker, the Haines Solar Cooker (HSC) at a subsidized cost of \$32, provide follow-up support to maximize adoption of this alternative cooking model, and survey users to report back to SHE. You can follow Lorena's activities on her "Cocineros Solares" Facebook and Instagram pages. This 2018 academic poster summarizes pilot project findings.



Beneficiaries of the ambassador program holding boxed-up Haines solar cookers in the community of San Marcos, Tlapazola, Mexico. Photo credit: Jimena Rangel

In 2023, the five-year evaluation of the ambassador program in Oaxaca, whose results were presented at international academic conferences, showed high adoption and durability of the Haines Solar Cookers. In 2022, Lorena Harp increased her collaboration with civil society organizations (CSOs) working directly with rural community women, taking advantage of their

many years of experience in the more remote regions of the large state of Oaxaca, as well as their entire network of collaborators and beneficiaries. In 2023, she continued these activities but also completed various educational projects including working with SHE on five-year project evaluation, creating a solar cooker recipe book, speaking at international conferences, and managing a solar cooker distribution project funded by Cashmere Rotary Club. More on these projects can be seen below.

Oaxaca Ambassador Program Highlights:

- ✓ More than 350 solar cookers sold to low-income customers in remote rural communities
- \checkmark Ten ambassadors who earn a commission of \$15 per sale
- ✓ 50% savings in fuel use reported by users
- ✓ Over 400 solar cookers donated or sold to local organizations for emergency relief

Five-year evaluation (2017-2022) in Oaxaca



Solar cooking frequency chart from five-year evaluation of the ambassador program in Oaxaca. Image credit: SHE

In December 2022, 43 people in 18 poor rural communities of Oaxaca, Mexico, who had participated in SHE's "solar cooking ambassador" program launched in January 2018, were interviewed about their cooking habits and related factors. For the 38 users who solar cooked, the average solar cooking frequency per user in the sunny season was 2.9 days per week. However, overall usage may be higher, as many users commented that they used it several times per day, or more often in earlier seasons or years, or that they shared their solar cooker with family members. Previous studies showed that usage decreased by less than half in the cloudy season. Dishes most frequently solar cooked were meat

and bean dishes which take hours to cook over a fire, using more fuel. Solar cooker appreciation, condition and impressions on fuel savings and health impacts were also assessed. Sophie Lyman, SHE Director, wrote a <u>research paper</u> and presented full evaluation results at two international conferences (see the "Education" section).

Partnerships with civil society organizations

In 2022, SHE Field Project Manager Lorena Harp partnered with Espiral por la Vida (EplV) for solar cooker promotion and sales to low-income community women. EplV is an NGO dedicated to the human rights, health, and nutrition of indigenous people in Oaxaca and its surrounding regions. In the last two years, EplV, with the logistical support of collaborators such as the organization "El Poder del consumidor," invited Lorena to hold five workshops at events promoting economic rights of indigenous women, solar technologies, healthy eating, food waste reduction, and culinary arts. Lorena educated over 150 people on solar cooking benefits and usage, including high school students and women from rural communities. Workshop participants solar cooked and shared a wide variety of local dishes. Some participants agreed to promote the solar oven within their communities, since they were already leaders in various issues such as political rights and women's health. Lorena received requests for more workshops, including one for a group of traditional healers on preparing solar medicinal ointments. Espiral de la Vida facilitated the sale of at least 29 Haines 2 solar cookers at 750 pesos (around \$35 USD) through installments and followed up with users to ensure adoption and impact.



At the CAMPO A.C. Festival "Energy in the Hands of the People," Lorena and three ambassadors showcase Haines solar cookers (left), and ambassador Bibiana demonstrates usage (right). Photo credit: Lorena Harp

In partnership with CAMPO, A.C., solar cookers are to be installed at 11 CAMPO renewable energy demonstration centers. The NGO CAMPO (Support Center for the Peasant Movement of Oaxaca) is a pioneering organization in solar technologies. They purchased 52 Haines solar cookers from Lorena in 2021. In May 2022, CAMPO held a festival in Oaxaca named "Energy in the Hands of the People" to publicly present their new project "Community Centers for the Generation and Use of Renewable Energy in Indigenous Regions of Oaxaca." They will install renewable energy technologies including Haines solar cookers at 11 community centers. Lorena and three of her ambassadors demonstrated solar cooking, sold solar cooked food, and provided

testimonies at this event. You can follow the development of these 11 CAMPO renewable energy demonstration centers <u>here</u>.

The "Women of the Red Clay" Artisan Co-op received 33 solar cookers thanks to US-Oaxaca Rotary Club partnerships. Thanks to funding from the US-based Cashmere (WA) Rotary Club, and solar cooker donations by Haines LLC, Lorena worked closely with the Guelaguetza Women's Rotary Club in Oaxaca in a project to donate 40 Pop-Up Haines solar cookers to the artisans co-op called "Mujeres del Barro Rojo" (Women of the Red Clay) in the community of San Marcos Tlapazola. Four thematic workshops were held, with Guelaguetza Rotary assisting with training and logistics. The last seven solar cookers will be donated to women demonstrating high solar cooking usage and interest in teaching others. Surveys will be applied in early 2024 to assess solar cooker adoption and impact. Watch local news television coverage here.



Canal 13 Television news report (click on picture) about SHE's project with Red Clay Artisans in Tlapazola, Oaxaca. Video credit: Canal 13, Mexico

"Recetario Horno Solar Haines" – Recipes from our Oaxacan beneficiaries



SHE's "Recetario," featuring recipes from our Oaxaca solar cooking beneficiaries. Image credit: SHE & Lorena Harp

SHE is proud to present our "Recetario," a collection of 31 authentic rural Oaxacan recipes for the Haines solar cooker, contributed by our Oaxacan program beneficiaries and collected by Lorena Harp, solar chef. The recipe book also includes a mini-manual with graphic design illustrations explaining how solar cookers work, and tips and tricks. We hope to provide this booklet to every beneficiary to enhance their solar cooking journey. You can enjoy these delicious recipes as well! We will send a digital copy of the book to anyone donating \$20 or more, upon request. 100% of proceeds go towards supporting the ambassador program.

Solar cooking promotion: reaching new audiences

Lorena has reached thousands of people through her solar cooking promotion efforts. Beyond working toward solar cooking promotion and adoption, hand-in-hand with her solar cooking ambassadors in low-income communities, she receives invitations from stakeholders at every level to share her knowledge of solar cooking through workshops, demonstrations, public interviews, etc. She frequently gives in-person workshops to groups of 20 to 30 people. The organizations or audiences she educated in 2022 and 2023 are too numerous to list here; they include a Jesuit group on the Oaxaca City "Zócalo" (main square) with its many vendors and tourists; the agroecological center Pochote Reforma organic produce market; Casa Allende for the Enmolarte artistic project; GIE students from Canada building an ecological house in Oaxaca; Mobile Surgery International which offers cleft lip and palate medical services (the risks of these conditions increases with smoke exposure during pregnancy); the Free and Open University of Eco-Sustainability; the Faculty of Social Sciences of the Benito Juárez Autonomous University of Oaxaca; and over a hundred students at CONALEP, the National College of Technical Professional Education.

Zaachila, where solar cooks live on the edge of Oaxaca's garbage dump

Of all the communities in Oaxaca where the Haines solar cooker has been promoted, those in Zaachila district are the most active in solar cooking. Meet some of these solar cooks in SHE's short video "Living on the Edge." These communities, some of the poorest in Mexico, live on the periphery of Oaxaca city's garbage dump, and most of their residents eked out a living by sorting through trash before the dump was covered and closed in October 2022. Beneficiaries are convinced of the advantages of solar cooking, having used them for over five years. At their request, Lorena continued providing workshops in 2022 and 2023, and they continued to acquire more solar cookers, to increase fuel savings with a second solar cooker, or to give them to family and friends. In March 2023, the federal government, recognizing this positive impact, donated 30 Haines 2 solar cookers to residents in the Zaachila district.



"Living on the edge," a heartbreaking yet inspiring video about our Zaachila solar cooking beneficiaries, click the image to see on YouTube. Video credit: Cienega Cine, Lorena Harp, SHE

Lorena Harp bestowed Solar Cooking Leadership Award, 2004-2022

Lorena's partnership with SHE began in 2004, when she worked with SHE founder Louise Meyer in various regions in Mexico as a field trainer and manager for HotPot adoption projects. She credits this experience for sparking her passion for solar cooking. SHE's association with Lorena continued, with Louise visiting Lorena in Oaxaca every few years. In 2017, Lorena formally joined the SHE team again as our field project manager for the ambassador project. In 2022, Lorena travelled to Washington, DC to meet the whole SHE team for the first time. We took advantage of this occasion to bestow upon her a Solar Cooking Leadership Award and congratulate her on her many impressive accomplishments over her 18 years in this field.



Photo on left: SHE bestows award to Lorena Harp in Washington, DC (from left to right: SHE Director Sophie Lyman, Lorena Harp, SHE Founder Louise Meyer.). Right photo: Louise Meyer and Board Member Margarita Battle visit Lorena at an Oaxaca project site. Photo credit: SHE, L. Harp

Nairobi, Kenya: The 100 Families Project

SHE continues efforts begun during the pandemic by solar cooking expert Tom Sponheim to lift 100 Nairobi families out of extreme poverty. Using a radically transparent model, project manager Samuel Odhiambo transfers donor funds directly to each family and sends back photos to show how the funds are used. As the COVID lockdown lifted, project participants were able to return to their former activities to support their families. In 2023, we stopped direct money transfers to all 100 Families members, freeing money to support the families in emergencies. However, we still provide food assistance to twelve families who otherwise would go hungry.

Solar Cooking

Currently, 18 of the families have their own solar cookers and use them regularly, whenever the weather permits. This reduces the money these families spend on fuel and allows them to meet other needs.

Heat-retention cooking

Fifty-nine families have been trained in heat-retention cooking, which involves heating food over a stove or in a solar cooker, and then placing it in an insulated basket where it continues to cook until done. Twenty-one of these families have built their own heat-retention cookers. Many families were also given two-liter stainless steel thermoses to keep foods hot, reducing the need for fuel for reheating.

Koko Stoves

All 100 families now rely on their two-burner ethanol Koko Stoves, replacing charcoal or LPG stoves that require costly refills. These stoves allow families to purchase small amounts of fuel, as needed.

Sewing Workspace

The sewing workshop continues to be used actively by individual project participants. We also sponsor regular classes where participants are taught how to use sewing machines. With the cloth we supply, many mothers make school uniforms for their children without which the children are not allowed to attend school.



Woman from 100 Families project sews school uniform at SHE-funded sewing center. Photo Credit: Samuel Odhiambo

Computer Lab

We purchased another computer to add to the computer lab—now with five Internet-connected desktop units and a printer. Regular classes are held to improve the users' computer skills. The lab

is in demand by high school students to do research and to complete their school assignments, and all around continues to be a very useful resource for the 100 families.

Borrowing Fund

Families who wish to participate in the Borrowing Fund each deposit 100 Kenyan Shillings (approximately \$0.77) per month into the fund. As long as this monthly deposit is made, the family has the right to borrow money from the fund at a rate of 10% interest per month. This gives the families a ready source of money for emergencies and often is used to pay annual school fees. Loans must be paid back completely in the month following the issuance of the loan. At any time, any of the 57 participating families can withdraw all the money that it has deposited and stop participating in the fund.

Details of other community endeavors including community cleanup, litter-picking competitions, Chess Club, education support, sprouting, and more, are available at <u>http://100fams.org</u>



100 Families member with her nutritious sprouted mung beans. Photo Credit: Samuel Odhiambo

Donating to the Project

You can make a tax-deductible donation to the 100 Families Project here: <u>https://www.she-inc.org</u> (you will be able to indicate that you wish your donation to go directly to the 100 Families Project.)

East Africa: Solar Cooking for Refugees



Woman in Kakuma refugee camp making her heat-retention basket for keeping solar-cooked food hot until dinner time. Photo credit: YEDA

SHE has been active in East Africa since 2011, when 250 HotPot solar cookers were distributed in Gaga refugee camp in Chad in partnership with the United Nations High Commissioner for Refugees (UNHCR), Africare, and Bolivia Inti-Sud Soleil. Since 2017, SHE Board member Roger Haines has initiated several projects in refugee camps in partnership with the Alliance for African Assistance and the San Diego Rotary Club, among others. In 2017, a Solar Cooker Festival for 500 school children was held at the immense Kakuma refugee camp. In 2019 and 2020, Ecomandate Ltd, a solar cooker distributor, renewable energy research and promotion firm based in East Africa, in partnership with Tonembee foundation, manufactured and sold over 25 Haines solar cookers. Further promotion and

sales were restricted by COVID-19 social distancing requirements. In 2020, 33 Palabek refugee women received Haines 2 solar cookers and were trained in their usage.

East Africa program highlights:

- ✓ Over 850 solar cookers distributed to refugees in East Africa
- ✓ Solar cooking rates up to 4.6 times per week
- ✓ Solar Thermal Cooking Workbook in Swahili for beneficiaries
- ✓ Solar Thermal Cooking Instruction manual in English for managers
- ✓ Solar cooking awareness raised for thousands of people

In 2022, SHE collaborated with the non-profit Global Development Solution's <u>Solar</u> <u>Education Project</u> (SEP) and other partners to carry out three solar cooker focus group projects in three communities in Kenya. SEP managed the projects and created a <u>Solar Thermal</u> <u>Cooking Instruction Manual</u> in English and <u>Solar Thermal Cooking Workbook</u> in Swahili. Roger Haines provided materials for making Haines Pop Open solar cooker reflectors. Local pots were purchased and painted black. Heat-retention baskets were made from local materials. WhatsApp groups were created with beneficiaries and trainers to ensure follow-up support. SHE provided technical and financial support.

The three training workshops for these three projects were:

- an <u>11-person focus group in Kakuma refugee camp</u> in May 2022, in partnership with the Youth Education Development Association (YEDA). Ten-day training was carried out by solar cooking facilitator Camily Wedende Ramonyi and insulated basket facilitator Grace Chepkemei Rono. Funding was provided by the San Diego, CA Rotary Club.

- a <u>10-person focus group in Dadaab refugee camp</u> in June 2022, in partnership with Relief, Reconstruction and Development Organization, in cooperation with UNHCR. Ms. Adhieu Achuil Kueth, a refugee herself, a Dafi Kenya scholar, and a regional leader of the Tertiary Refugee Students Network, carried out ten-day training for solar and heat-retention cooking from June 13 through 23. Funding was provided by the Cashmere, WA Rotary Club.

- a <u>20-person focus group at St. Joseph Church in Eldoret</u> county in September 2022. This location was chosen as it is the home church of Grace Chepkemei Rono, the solar and heat retention cooking trainer who had carried out the training in Kakuma refugee camp. Her colleague and solar cooker trainer Camily Wedende Ramonyi, also from Eldoret county, assisted with the seven-day solar cooking training to participants who had already received 3 days of training in heat retention cooking in May of that year. Funding was provided by the San Diego, CA Rotary Club. Learn more by watching the <u>Eldoret workshop video</u>.



20 people in Eldoret receiving training in solar and heat-retention cooking. Photo credit: Grace Chepkemei

Solar cooker usage frequency was assessed thanks to WhatsApp photos of solar cooked dishes sent by beneficiaries, with total counts summarized in SEP evaluation reports. A May 2023 evaluation of the Kakuma project, 11 months after the workshop, revealed that all women were still using their solar cookers, with an average of 4.6 times per week, and all women reported saving fuelwood and charcoal.



Trainers from focus group projects in Kenya promote solar cooking at national events. Photos credit: Grace Chepkemei.

The local trainers continued to enthusiastically promote solar cooking after the projects. Grace Chepkemei and the St Joseph Solar Cooking Champions participated in the Eldoret National Show (under The Agricultural Society of Kenya), with 700-1000 visitors to their booth. Camily Wedende distributed and carried out training for Haines Pop Open solar cookers in West Pokot, Kenya. This was thanks to support from Haines LLC and SEP.

R&D in design, testing, and worldwide adoption

Advancing the science of solar cooker power and testing

SHE contributes to the development of solar cooking technologies and their testing standards to improve solar cooker quality, durability, regulation, affordability, and accessibility for all. SHE's **Research Director and long-time Board member, physicist Paul Arveson has participated in International Standards Organization (ISO) committees** to develop laboratory test protocols (ISO 19867-1:2018) and field testing protocols (ISO 19869:2019) and continues to carry out research to improve solar cooking testing protocols in terms of both quality and affordability.



SHE's Technical Report 38 describes how a low-cost lux meter can be used in place of a pyranometer for measuring solar irradiance. Photo credit: Dr. Meter

Paul produced Technical Report 38 describing a method for measuring standard solar cooker power with low-cost commercial instruments. A previous Technical Report, TR-17, concluded that a low-cost lux meter can be used in place of a pyranometer for measuring solar irradiance. TR-38 combines a lux meter into a complete package of common instruments for measuring power in accordance with international standards, provided proper calibrations and procedures are followed. It also provides an excel sheet for data entry which calculates required variables such as a solar cooker's intercept area on the day of testing given testing latitude and maximum intercept area. The technical report can be found here.

The research paper <u>"Is a Greenhouse Heated by Radiation Trapping or Convection Blocking?</u>" by Paul Arveson was published in the Spring 2023 issue of the Washington Academy of Sciences. It refutes the conclusion of an often-cited 1909 experiment by Professor R.W. Wood stating that the main cause of heating in a greenhouse is by blocking air convection. The paper states: "The "greenhouse effect"– at least as applied to a real greenhouse– is heated primarily by selective filtering of infrared radiation. [...] It is important to clarify whether the greenhouse analogy is valid or not. The reason is that numerous climate skeptics have sought to refute the main claims of the IPCC based on an alleged failure of the analogy." This research also advances science on solar cooker greenhouse components.

Roger Haines, SHE Board member and maker of Haines Solar Cookers, partnered with the University of Malaga in Spain to test the Haines 2.0 solar cooker. This study, entitled <u>"Experimental characterization of the thermal performance of the Haines 2 solar cooker"</u> was published in Elsevier's *Energy* Journal in July 2022, with authors Prof. Xabier Apaolaza-Pagoaga, Antonio Carrillo Andres, and Celestino Rodrigues Ruivo. Results include standardized power (87.7 W at 3.5 kg load, 70° solar altitude angle), and effects of load and solar altitude on power.

The study confirmed the Haines 2.0 red snaps should be used at solar altitudes above 75°, in other words, study confirmed the Haines 2.0 red snaps should be used at solar altitudes above 75°, in other words, when an object's shadow is less than a third of its height.



Figures from the study "Experimental Characterization of the thermal performance of the Haines 2.0 solar cooker" published in Elsevier's "Energy" Journal, by Prof. Xabier Apaolaza-Pagoaga, Antonio Carrillo Andres, and Celestino Rodrigues Ruivo.

Breaking barriers to widespread distribution and adoption

Carbon credits, also known as carbon offsets, are a way to measure and trade reductions in greenhouse gas emissions. SHE has calculated estimates of potential carbon credit revenues using data from our Mexico projects, as a potential source of funding to scale up solar cooker projects. Factoring all project costs including distribution, training, monitoring, and evaluation amounts to a cost of around 100 USD per Haines Pop Open solar cooker. **A carbon credit price of US\$19 t/CO2 would be needed to cover all project costs,** or a carbon credit price of US\$15 where users purchase the solar cooker for US\$20 (not including certification costs). Find out more <u>here</u>.

SHE Research Director Paul Arveson has created a draft protocol to scientifically test the claim that solar cooked food tastes differently from foods cooked on a regular stove. It outlines a method for conducting a randomized, double-blind taste test using two common foods: a chicken stew (a vegetable stew may be substituted) and a cake. To help us improve this draft protocol, we welcome solar cooks around the world to carry out this taste test and provide their experimental results as well as feedback on the protocol. Find out more <u>here</u>.



Haines 2.0 solar cooker and towel in "heat retention basket" configuration. Photo credit: Roger Haines

Haines solar cookers LLC continues to improve on the design and affordability of its solar cookers thanks in part to feedback collected from SHE project evaluations. Since 2023, the new transparent sleeves and circular covers are polyester, which has a higher deformation temperature than polycarbonate, and loops are closed with die-cut tabs and slots rather than office clips that can be lost. The Haines 1 rollable reflector in a net holder was discontinued in favor of the Haines Pop Open with its folding reflector in a box for improved durability. The Haines 2.0 reflector parts were packaged pre-assembled with two wing configurations: one for

solar cooking, and one for <u>heat-retention</u> (with added towels). Tests showed that 2 $\frac{1}{2}$ liters of boiling water was 153 F after 4 hours – still

piping hot, and well above the 140 F danger zone. Assembly and usage instructions were improved with graphic design images and <u>translated into Spanish</u>.



In Mexico, Lorena Harp created a "mini" Haines solar cooker, perfect for teaching children to cook in a fun, safe way.

Lorena Harp's "mini" Haines solar cooker next to a Pop Open solar cooker. Photo credit: Lorena Harp



Haines Pop Open solar cooker components and advantages. Feedback from users of Haines solar cookers in SHE-supported field projects over the last eight years has helped improve their design. Photo credit: Haines Solar Cookers LLC

Education and Advocacy: proving long-term project success

Most of SHE's solar cooking education and advocacy work is carried out "on the ground" by our field project managers for solar cooker beneficiaries in sun-rich, fuel-poor areas in developing countries, as described in our field project summaries above. We also advance the science of solar cooking adoption and impact by presenting at international academic conferences, and our volunteers promote solar cooking at events in their areas and respond to inquiries to our website.

Building transatlantic bridges, academic recognition of the Oaxaca project at national & international conferences

SHE participated as panelist and presenter at a France-USA transatlantic discussion on "Low-Tech Innovation," on April 21, 2022, a virtual event hosted by the French Embassy in Washington, DC's Science and Technology Service to celebrate Earth Day. Eight speakers from the US and France discussed the emerging and promising topic of "low technologies" with a panel at the crossroads of science and industry in the fields of water, construction, energy and agriculture. Part II of the discussion can be viewed on <u>France Science's YouTube</u> page, with SHE's 10-minute presentation starting at 7:30 minutes and Q/A starting at 40 minutes.

In 2022 and 2023, SHE's experiences and evaluation of the Oaxaca solar cooking ambassador program were presented at conferences attended by academics around the world:



"Avances y desafíos en la apropiación de la cocina solar en comunidades rurales del Estado de Oaxaca"

Figure 1 -CONSYCSA 2022 pamphlet extract Signal Bero-American Congress of Solar Food Drying, Cooking and Refrigeration in Campeche, Mexico, November 2022 (CONSYCSA-2022). Lorena Harp, SHE Field Project Manager for Mexico, gave an hourlong keynote presentation on the "Advances and challenges of solar cooking adoption in rural communities in Oaxaca state." She was also one of six experts in a Round Table on the integration of renewable energies in food preservation technologies. Thanks to Lorena's 20 years of experience working directly with rural community members on clean energy technologies, she was able to bring a unique perspective to this conference.

CONSOLFOOD2023 – Advances in Solar Thermal Food Processing, Coruña, Spain, August 2023: Sophie Lyman, SHE Executive Director, presented <u>"The Solar Cooking Ambassador Program in Oaxaca: 5-year evaluation.</u>"

4th Ibero-American Congress of Solar Food Drying, Cooking and Refrigeration (CONSYCSA-2023) in Guadalajara, Mexico, November 2023: Sophie Lyman presented "<u>El Programa Embajadores de Cocina Solar en Oaxaca: evaluación de 5 años</u>"

Offering a taste of the sun in Washington, DC

Our audiences local to our base in Washington DC in 2022 and 2023 included:

- Rotary Clubs in Columbia, MD and North Bethesda, MD in January 2022. SHE Board Members Paul Arveson and Roger Haines gave a 35-minute virtual presentation to the Environmental Sustainability Rotary Action Group (ESRAG) in December 2021, invited by ESRAG leader Chris Puttock, a world expert on mangroves. The presentation was repeated by popular demand in January 2022. This presentation inspired ESRAG efforts to include solar cooking as a solution to deforestation of mangroves in coastal areas. Find out more <u>here</u> and view the presentation <u>here</u>.
- Capitol Technology University's (CTU in Laurel, MD) "Robotics in Disaster and Environmental Research" event with Disaster Aid USA on January 22, 2022. Paul Arveson, SHE Research Director, demonstrated the "sun burner," a parabolic solar cooker, gave a presentation on solar cooking, and donated solar cookers including the Sun Burner, HotPot and a Haines solar cooker to CTU for students' solar cooking projects.
- The 2022 Montgomery County, MD "GreenFest" held at Brookside Gardens on April 23rd, showcasing over 60 sustainability-minded exhibitors. SHE volunteers solar cooked food using a variety of solar cookers for GreenFest visitors and educated hundreds of people on the science and benefits of solar cooking.



SHE President of the Board David Grossman volunteering at "GreenFest," where hundreds of people learned about solar cooking and tasted solar snacks. Photo credit: SHE

- The Sheridan school, on May 19, 2023, where Louise Meyer taught 5th graders about solar cooking science, and solar cooked some tasty treats for all.
- The Mid-Atlantic Grain Fair by Friends of Peirce Mill at Rock Creek Park on October 22, 2023, where Louise Meyer demonstrated solar cooking in a celebration of the long history of whole-grain farming, milling, baking, and cooking in the Mid-Atlantic.

Supporting solar education

SHE was happy to contribute information about solar cooking and our projects, as well as solar cookers, to various parties promoting solar cooking, and we are honored to be mentioned in their works. These include:

- an article entitled "<u>Carbon-free cooking</u>" by Elizabeth Wilder published in EnergiesMedia Magazine in March 2023, showcasing solar cooking projects by SHE and other organizations.
- STAR-TIDES (Sharing To Accelerate Research Transformative Innovation for Development and Emergency Support) exhibit in April 2023, featuring solar cookers provided by SHE.
- Solar cooking expert and SHE Advisor Pat McArdle's speech to the Foreign Service Association in February 2023, to several hundred retiring diplomats on the topic "Volunteerism: How Can the Foreign Service Best Contribute?"
- the SlowCookSolar book by Lorraine Anderson and website. Thank you to Lorraine for sending us a free copy of her book, featuring delicious solar recipes!

What lies ahead for SHE

In 2024, SHE will be winding down pilot projects, having paved the way for local partners to build on SHE efforts; and where opportunity arises, replicate these successes. For example, in Oaxaca, we will be completing the "Red Clay Women" pilot project with a comprehensive project evaluation (see Mexico section); and use its lessons learned to replicate this project in Queretaro in partnership with Caritas International and the Queretaro Food Bank.

We also hope to develop novel projects with our global community of partners. For example, we are exploring opportunities to leverage the carbon credit market to scale up projects in refugee camps in East Africa.

Finally, we will continue our applied R&D agenda and our many outreach and public awareness activities, such as those sponsored by the U.S. Government Combined Federal Campaign in which we have been participating as a recipient organization.

About SHE

Our People

Solar Household Energy, Inc. is run by a small, dedicated team composed of its Board of Directors, one paid part-time Executive Director, and much-valued volunteers.

Board President **David Grossman** will soon celebrate ten years on the Board, and eight years as its president. David's experience with USAID and service as Director of Global Programs for the International City/County Management Association makes him a particularly knowledgeable and effective leader. David's favorite food to solar cook is Ratatouille.

Louise Meyer is our Vice-President. A founding member of SHE, she has been a passionate and active advocate and educator on solar cooking at home in Washington, DC and abroad for many years. She continues to travel, most recently to Oaxaca, Mexico to support our projects there. Louise's favorite food to solar cook was a stacked-pot double-decker of rice and stewed tomatoes.

Richard Stolz has supported SHE for over two decades in the roles of consultant, Executive Director, Chief Operating Officer, and now volunteers as SHE's financial consultant. Richard's favorite food to solar cook is chocolate cake – "or any dessert!"

Paul Arveson is Treasurer of the Board and Director of Research. His latest endeavors have focused on standards for testing solar cookers, dissemination of information for those without access to internet. Paul always keeps boxes of brownie mix on hand for quick solar cooking demos for friends and colleagues.

Odile Brock is Secretary of the Board. A lifetime of living overseas in the Foreign Service inspires her dedication to grassroots, women-led, sustainable and affordable solutions. Odile's favorite solar cooking moment was assembling a CooKit from cardboard and foil in Kinshasa, DRC, with Congolese friends, and then cooking rice in it. Their amazement at the "magic" of solar cooking was unforgettable.

Board member **Roger Haines,** in addition to inventing top-rated solar cookers, has been investing his own time and funds to bring solar cooking to refugees and low-income families in Mexico, Kenya and Uganda. Roger's favorite food to solar cook is Cheese Soufflé.

Board member **Margarita Battle**, a Mexico and US citizen living in Queretaro, Mexico, has been our invaluable liaison on the ground for our projects in Mexico for over 20 years. Margarita's favorite solar dish is preparing "nixtamal masa" to make tortillas.

Executive Director for the last ten years, **Sophie Brock Lyman** started as a volunteer research associate, then program manager. Her detailed knowledge of our programs is irreplaceable, and her responsibilities are many and broadly varied, including project design, management and evaluation, partnership development, participating in international conferences, writing our publications, and creating and presenting reports and scientific posters. Sophie's favorite solar

cooking moment was winning over her husband to solar cooking with delicious solar cooked Moroccan Chicken with Apricots.

Volunteer **Tom Sponheim** is the creator of the Solar Cooking Wiki, solarcooking.fandom.com. Tom initiated and manages our "100 Families" project in Nairobi, Kenya. During his career at Microsoft, he was awarded numerous patents, and is the author of "Flex Thinking: A Step-by-Step Guide to Thinking Outside the Box."

Volunteer **John Nash** provides IT support and guidance. Volunteer **Esperanza Sanz** keeps the organization present on social media. **Lynn Patton** is invaluable as SHE's Bookkeeper. We were also joined for a few months by Program Assistant **Mary Katherine Hoag** and volunteer **Richard Singh.**

All of SHE's Board members and volunteers have been paramount to fulfilling SHE's mission, dedicating time, efforts, and personal funds to ensure SHE continues to bring the benefits and empowerment of solar cooking to very deserving people around the world.

Get involved

We have many volunteer opportunities, such as promoting solar cooking in your locality as a SHE ambassador. For more information, please check out our "<u>get involved</u>" page.

Partner with us

Are you part of an organization helping low-income families in a sun-rich, fuel-poor country? We collaborate with partners working in areas such as women's empowerment, poverty alleviation, environmental sustainability, clean cooking, and appropriate technology development, among others.

Thanks to our 20 years of expertise, extensive resources, and adaptability, we can tailor our services to your needs and your vision. These include solar cookers at discounted rates, proposal development, in-person and virtual training, monitoring and evaluation, data analysis, multi-language direct communications with stakeholders, etc.

Please email <u>sophie@she-inc.org</u> or <u>solarhouseholdenergyinc@gmail.com</u> for more information.

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, are <u>Candid</u> - <u>GuideStar</u> Platinum certified, and encourage inquiries about our finances and operations. All our board members and staff can be reached via email to: <u>inquiries@she-inc.org</u>

Candid.

We will be happy to send you our 990 tax return upon request.



How you can support SHE

Although volunteers play a vital role in our ongoing ability to carry out our mission, funds are required 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:



- Writing a check to "Solar Household Energy" and send by mail to: 5 Lochness Ct., Rockville, MD 20850-2950, Attn: Richard Stolz.
- <u>AmazonSmile</u>, for Solar Household Energy Inc



Buying a <u>HotPot</u> on our website.

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

Please like us on Facebook, watch us YouTube, and check out our website: www.she-inc.org



Contact us

Phone: 202-743-5519 Email: <u>inquiries@she-inc.org</u> solarhouseholdenergyinc@gmail.com



Solar cooker beneficiary's son, waiting for solar-baked cake, in Oaxaca, Mexico. Photo credit: Lorena Harp