



## 2013: A Year of Progress on All Strategic Fronts

### *Our Mission:*

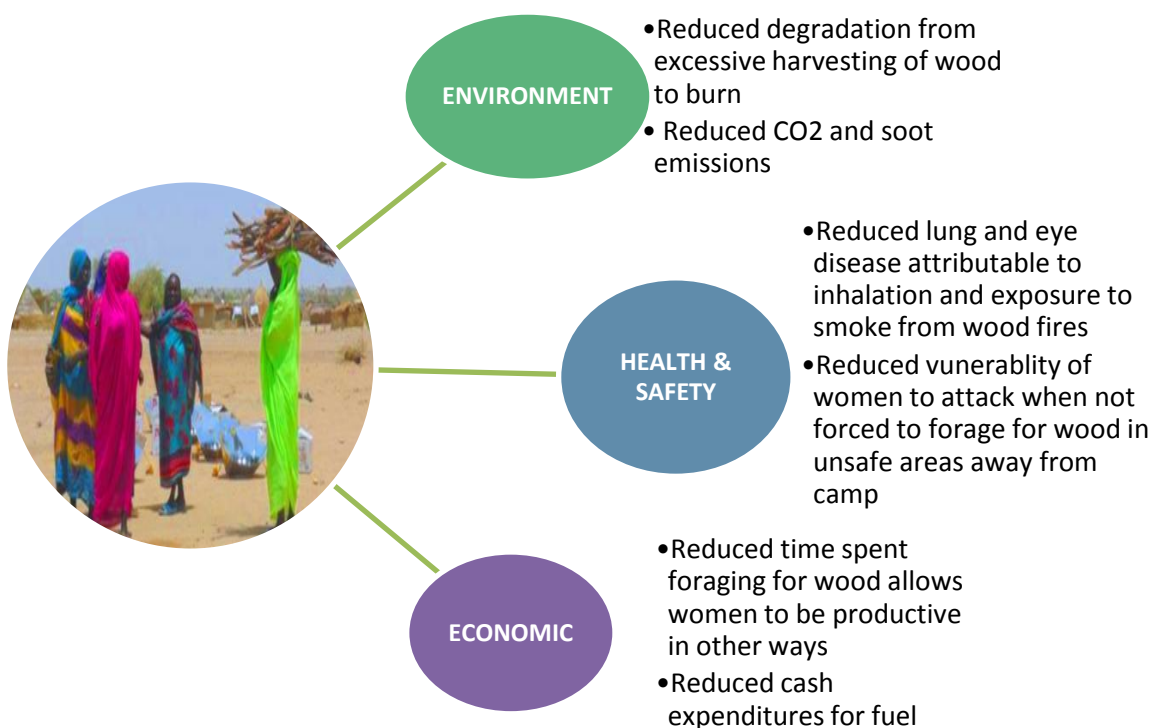
*Solar Household Energy (SHE) strives to unleash the potential of solar cooking to improve social, economic and environmental conditions in sun-rich areas around the world.*

Solar Household Energy continues working towards the mission it began back in 1998, using a holistic and sustainable approach to development. Key activities have been to develop and demonstrate the effectiveness and practicality of solar cooking technology, to train thousands of “solar cooks” and to raise awareness of private citizens, relief organizations and public officials. Through this holistic approach, Solar Household Energy has contributed toward improving the health, livelihoods and quality of life of those reached, while at the same time safeguarding the environment for the benefit of all.

This report highlights some of our recent achievements across the three principal strategic focus areas:

- **Making solar cooking available** to those who can benefit from it most, through partnerships with local organizations,
- **Educating** the public and policy leaders on the multiple benefits of solar cooking as part of an integrated cooking solution incorporating fuel- efficient stoves and retained heat devices, and
- **Investigation and research** aiming to improve solar cooking technologies and dissemination.

### 2013 Solar Household Energy and Impact of Solar Cooking



## Making Solar Cooking Available

Although it cannot occur on a significant scale in the absence of education or investigation and research; enabling availability of solar cooking is at the heart of our mission. This involves a number of different processes from the practical hands on approach in implementation of a project to the more bureaucratic approach of targeting governments and the public, as the following examples illustrate.



South Korean President Lee Myung-Bak addresses the quadrennial World Conservation Congress in Jeju. *Photo D Zbicz*

### IUCN “Nature Based Solutions” Include Solar Cooking

The International Union for the Conservation of Nature (IUCN) adopted a resolution on the use of solar cookers that fits into its new ‘Nature Based Solutions’. This resolution was presented by Solar Household Energy and Grupo Jaragua from the Dominican Republic. Not only has it facilitated raising the profile of solar cooking in an international setting but it has tasked IUCN members to seriously consider solar as a viable cooking fuel alternative.

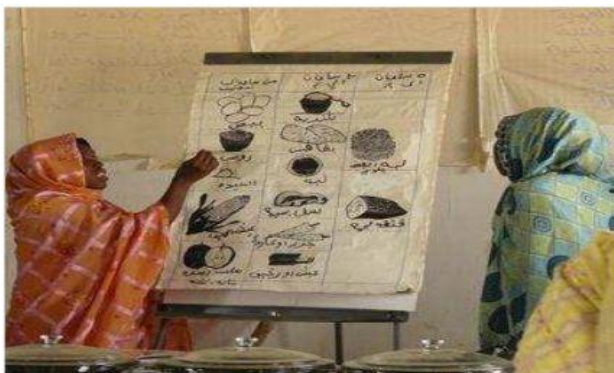
### Introduction of Solar Cookers in Tilori, Haiti

The pilot solar cooking project in Tilori, a hard to reach village in Haiti, was undertaken in collaboration with The Nature Conservancy (TNC) as part of their larger regional reforestation program. Aiming to reduce the high use of wood fuel the Tilori residents collected across the border in the Dominican Republic, an integrated cooking approach using solar cookers, fuel efficient stoves and heat retention baskets, was introduced. Louise Meyer revisited the project one year on to evaluate progress. Overall the project was deemed



Haiti - Solar cooking is child safe

successful and partners expressed their interest in scaling up the project. As is the aim of a pilot in learning what does and does not work, the evaluation identified some areas for improvement. In this instance, the learning mainly related to the choice of cooker and a need for development of robust solar cookers which effectively meet the demands of rough terrain and environmental conditions of an off road remote area. Solar Household Energy is already applying this learning and is in communication with partners, globally and in Tilori, exploring potential for design and in-country manufacture. As an unintended outcome of involvement in this project, Solar Household Energy became instrumental in the Oregon Archdiocese funding purchase of trees for Tilori.



Chad Refugee Camp – Teaching, Learning and cooking with solar

Photos P. Fourrier

### 40 Wishes Grant - Solar Cooking Devices for Burma and Haiti

The COMO Foundation granted two Wishes (less than \$800 each) to Solar Household Energy, financed by their committed staff, some who will become COMO Ambassadors and visit the projects in the field. The winning Wishes were:

**Monywe, Myanmar:** The Yada Na Man Aung Monastic Education School in the Monywa village, in Monywa, Sagaing Division has about 170 children. The head monk has been considering all different practices to save fuel consumption in preparing foods for the children, so appreciated receiving the SunFocus Hybrid Solar-Electric Oven. Our volunteer trained the cooks and translated all the manuals into Burmese. The monks have been testing it out in making different foods and boiling water for tea.



Yada Na Man Aung Monastic Education School



Palmiste, Haiti

**Palmiste, Haiti:** Our partner, World Central Kitchen (WCK), was investing on creating a Smart Kitchen and community garden in Palmiste, in rural Haiti. We saw this as a perfect opportunity to support them while promoting solar cooking in an area suffering massive deforestation and unemployment; as well as supporting the larger efforts of like-minded organizations. WCK purchased a parabolic cooker and are teaching the local youth healthier cooking methods using clean cookstoves, while feeding the school's 300 students.

## Educating the Public and Policy Leaders

The importance of raising awareness and introducing solar cooking to new audiences is integral to our work at Solar Household Energy. With this in mind, many promotional and educational events on the benefits of solar cooking took place during this reporting period, some noted here.

Louise Meyer, with assistance from volunteers, participated in exhibitions and demonstrations throughout the year. These are too numerous to list but included networking and collaborating with fellow solar focused organizations such as Solar Cookers International and the American Solar Energy Society. Participation at the National Sustainable Design Expo, DC Solar Flare and the UN World Environment Day provided opportunities to share information about solar energy whilst learning about new and innovative approaches towards sustainability.



Collaborative solar cooking at TIDES –  
P McArdle (SCI) and L Meyer (SHE)



Volunteers at 2013 National  
Sustainable Design Expo, DC



Building solar ovens at school

Educational institutions continue to provide a mechanism for introducing the younger generation to solar cooking. Training demonstrations took place across a number of schools in the area. During some perfect sunny weather, sixteen high school students participated in a workshop on how to build and use solar ovens and the U. S. Surgeon General came to see the results. An important and what has become an annual event in the calendar, is Solar Household Energy's participation at the TIDES (Transformative Innovation for Development and Emergency Support) events. This year, the locations were Ft. McNair and the Pentagon. TIDES promote sustainable support to stressed populations and along with solar cookers, solar powered items feature strongly amongst the emergency devices on display.

### Art and Solar Cooking:

One of the many ways Solar Household Energy has been raising awareness of solar cooking is through the arts. It enables our message to reach a wider audience than through the traditional mediums. Moshood Salu, born in Nigeria, was a senior at Bell Multicultural High School in Washington, D.C., when he created a BLOG to accompany the traveling art exhibit *"Environmental Education from a Refugee Camp"* featuring illustrations, comics, essays and poetry by Vincente Lunda, a refugee from Democratic Republic of the Congo living in a Zimbabwe refugee camp.

There is inspiring solar energy themed artwork at <http://lundavincente.wordpress.com/my-artworks>



Illustration by Vincente Lunda

## Fundraising and Promotional Event

A committed solar cooking advocate, former SHE Board President and current Solar Cooking International Board member Patricia McArdle, headlined a very successful fund raising event for Solar Household Energy. Her debut novel, *Farishta*, which she shared with the attendees, is based on her experiences in Afghanistan and solar cooking plays a key role in the plot.

## Investigation and Research

### Measurement of Heating Power

During the past two years, Solar Household Energy Board Vice-President and researcher Paul Arveson, in partnership with Bruce Joseph of Citizens for Solar in Tucson, AZ have collaborated on measurement of heating power of solar cookers. Using a digital data logger and other instruments, they have conducted several experiments to examine how variables such as air clarity, wind speed and sun angle affect the heating power of solar cookers.

Based on this research, Paul Arveson with assistance of intern Michael Dadok, prepared the first in a series of planned research papers. The research is exploring the potential for producing a general physical model of solar cookers to improve the performance of existing designs and compare alternatives in a controlled and meaningful way. Now that all the testing equipment is available, more experiments are planned and Solar Household Energy is interested in recruiting other partners around the country to conduct similar measurements. Protocols for these measurements have been developed, and they allow quantitative data to be easily compared. It is hoped that the solar cooking community will shift from reporting data as peak temperatures achieved (which says nothing about cooking power) to heating curve measurements in order that power and other parameters of a cooker may be determined.

### Development of a Reflector

Solar Household Energy consulted the designer of the HotPot's aluminum Morningstar reflector about a cheaper alternative. He proposed a model using highly reflective Chinese building insulation material. It is made of polyethylene foam sheet, about ½-inch thick and metalized on one side. He estimates a production cost of about \$6. His device is at least as efficient as the Morningstar and less than 20% of the cost. However, it does not collapse as conveniently and is somewhat less durable. He was unable to conclude his research and funding has not been available to pursue this promising research elsewhere. We are seeking a volunteer for this task.

### Impact and Learning:



## The Gaga Refugee Camp Project

In late 2012, Solar Household Energy hired an expert from Bolivia-Inti Sud Soleil (BISS) from Nantes, France, to conduct a follow up evaluation of the 250 solar cooker distribution in the United Nations High Commission for Refugee (UNHCR) run Gaga camp in Chad. The evaluation concluded that both the 5 and 3 litre HotPot technology was effective. It noted specifically its durability and suitability in meeting the needs of the family. Their continued use in cooking the main meal illustrates an acceptance of the technology and an estimated weekly fuel wood saving of 15-20 kilos per family. Adoption and effectiveness was subsequently confirmed by informal reports from the field. A change in implementing partner within the camp has resulted in a need for training replacement staff, requiring additional funding not initially included in the budget. This change also resulted in a lack of rigorous monitoring and evaluation data and precludes in-depth results reporting. Solar Household Energy is however following up its efforts to obtain such data. Based on the positive outcomes of the pilot and subsequent discussions with the partners, this investment has the potential to enable enhanced use of the solar cookers already provided and lead to further expansion of this project, incorporating identified improvements, such as inclusion of heat retention devices. Solar Household Energy appreciates and recognizes funding from the COMO and Dorothy Ann Foundations to support this endeavor.

### Feedback from the Field:



Haiti - Tilori Project participant solar cooking



Residents of Chad refugee camp assembling solar cooker panel

Feedback, such as in the Chad evaluation report referred to above, consolidates and facilitates Solar Household Energy's learning and enables improvement going forward. Especially beneficial are solutions to problems some users and critics make about solar cooking, such as resistance to alternative technology, lack of constant sunshine or inadequate size of cookers. Apart from the first quote by a Kenyan professional, the remaining feedback is from participants of SHE's Mexico HotPot project:

- **Training** - Margaret Owino, a long-time solar cooking training organizer in Kenya, highlights the need for more than one-off training:
  - *"Initiating solar cooking projects require a long term commitment and funds, to undertake training and follow - up so that the practice and skill is instilled in the beneficiaries."*
- **Culture/technology acceptance** - Clara Matos from Santiago, Ixcuitepec in Mexico:
  - *"I bought the solar oven last year and I took it home by Holy Week. My parents loved the cooker, and they are now using it. Now we cook everything in the solar oven -- beans, chicken, and vegetables. At first my parents didn't believe it would work. They said it was impossible to cook things with the sun. I just placed the cooker in the sun, and I placed the chicken inside. When it cooked well, they started to believe and my dad was grateful because he is the one who gets the wood."*
  - *"At home we have one, and here in Doña Lila's house, we have two because here are more people that eat in the house. We put the two cookers in the sun for ten people to eat"*
- **Advantages** - Solar cooker users in Oaxaca, Mexico indicated how solar cooking made a difference in their lives:
  - *"There is more taste with the solar cooker because it comes out juicy and the chicken comes complete. In the stove the chicken tends to rip apart."*
  - *"I put the cooker in the sun. It saves me time and in my case electricity."*
  - *"It has changed my life, I just leave it there and I don't worry about cooking any more."*
  - *"The difference was very big; I saved like 30% of electricity."*

## Strategic Initiatives

### International Standards for Cookstoves

ISO (International Organization for Standardization) is the world's largest developer of voluntary International Standards. They are beginning to set up a working group to develop standards for clean cook stoves and clean cooking solutions. Paul Arveson of Solar Household Energy, attended the first meeting of the new US Technical Advisory Group, resulting in the inclusion of solar cookers in this process. Identification and arrangements to enable participation of a suitably qualified technical solar cooking representative to attend the next meeting scheduled to take place early in 2014 in Kenya, is underway. Development of such a standard is a significant step on the road to establishing best practices in cooking globally and Solar Household Energy is pleased to be a part of this groundbreaking process.



Tilori, Haiti - monitoring fuel

## Collaboration:

In March 2013, Solar Household Energy's Board President Cora Shaw participated in the BISS (Bolivia Inti Sud Soleil) General Assembly to report on joint activities and deepen the partnership. The result was a successful joint grant request to the French Embassy in Washington to support trans-Atlantic NGO partnerships. The funding will be used to raise awareness of the benefits and successes of solar cooking to the Global Alliance for Clean Cookstoves, which has mostly focused on biomass stoves.

Discussions and subsequent communications on opportunities for Solar Household Energy and Solar Cookers International to work more collaboratively are ongoing. Both organizations shared booths and demonstrated solar cooking at a number of events during 2013 and are exploring ways of extending this partnership going forward.

Solar Household Energy continues to work together with institutions and organizations, such as Citizens for Solar, in development and testing of solar cooking technology and NGOs working in some of our project countries, as well as UN bodies such as UNHCR. Discussion were also held with a number of individuals who are involved in either the production or shipping of cookers, including Dr. Dieter. Seifert on the 'Save 80%' fuel-efficient stoves which are used in some African refugee camps.

## Organizational Developments



Solar Household Energy Co-founder, Darwin Curtis  
with the HotPot Solar Cooker

### Board Changes

**Darwin Curtis**, Solar Household Energy Co-founder and a central player in the organization since 1998, resigned his position as President in 2012 and stepped down from the Board in September 2013. He has been a key enabler of the work achieved during these past 15 years, including development of the popular HotPot solar cooker. He will however continue to advise and share his expertise and skills with Solar Household Energy as well as working on select projects.

In early 2013, **Mrs. Margarita Battle** joined the Board of Directors. She has been closely involved with the efforts of various non-governmental organizations in Mexico in the areas of youth development and clean energy. A Mexican and U.S. national and a resident of Queretaro, Mexico since 2007 where she has worked closely with the U.S. Peace Corps efforts to promote solar cooking methods in poor rural communities, participating in the distribution of Hot Pots. Margarita has also been active with a

local civic organization, El Puente de Esperanza (The Bridge of Hope), which brings talented youth from indigenous rural communities into Queretaro to complete their education. After years as a simultaneous interpreter of Spanish, English, French, and Portuguese in Mexico and France, Margarita completed her university studies in psychology at the Sorbonne in Paris and the University of Sao Paulo in Brazil before moving to Boston where she became the head of medical interpreters for 12 years at the Massachusetts General Hospital, training interpreters in multiple languages and cross cultural communication in the medical environment. She is a founding member of the organization which developed the new profession of medical interpreter.

### Advisory Council

The American physicist, environmental scientist, writer, and Chairman/Chief Scientist of the Rocky Mountain Institute, Amory Lovins, has joined the existing Council members. He has worked in the field of energy policy and related areas for four decades and was named one of the World's 100 most influential people in 2009 by Time magazine.

Solar Household Energy continues to depend on volunteers to carry out the tasks required to keep it such a dynamic and significant force in the field of solar cooking. The Board of Directors and leadership team have actively engaged in all aspects of Solar Household Energy's work, from the day-to-day tasks to strategic planning. Elected Board President **Cora Shaw** is at the helm and works closely with fellow Board members: **Paul Averson**, VP and Treasurer, **Dorothy Zbicz**, Secretary, and **Louise Meyer**, **Scott Hajost** and **Margarita Battle** complete the Board. **Richard Stolz** takes care of day-to-day affairs as the Executive Director. The Board's attendance at a number of important meetings and conferences, such as at the GACC, ISO and IUCN, has helped to keep Solar Household Energy abreast of relevant developments in solar energy. It also gave Board members an opportunity to educate others at those meetings about progress in the solar cooking world. To ensure essential administrative tasks are completed on time, the Solar Household Energy Board employed consultants on a part-time basis: Sophie Brock and Trish Sheehan, previously valued volunteers.

Retention of existing volunteers and recruitment of new has enabled a number of activities, including solar cooking related research and participation at fairs and cooking demonstrations.

- |                     |                          |                         |
|---------------------|--------------------------|-------------------------|
| • Michaela Borghese | • Gunjan Gautam          | • Sherry Pettie Fizdale |
| • Sophie Brock      | • Cecily Kohler          | • Trish Sheehan         |
| • Caroline Curtis   | • Lauren Rachel Labovitz | • Afzal Syed            |
| • Michael Dadock    | • Taylor Markwith        | • Bernard Veuthey       |
| • Travis Dittmer    | • Anne Pellicciotto      |                         |

The **Solar Household Energy office** has moved from Maryland to 3327 18th St. NW, Washington, DC 20010.

## Looking Forward

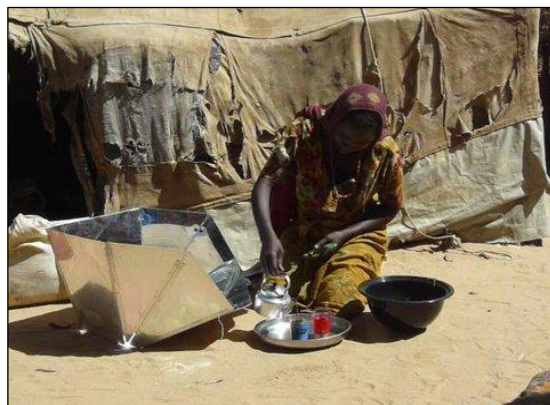
Solar Household Energy, with your support and that of many others, is expanding its capacity to expand or complete several initiatives.

## Field Projects

Following a temporary period of relatively modest “on the ground” efforts, Solar Household Energy Board members seek to expand our field projects. To collect the funds needed to do so, Solar Household Energy sought and received a small capacity-building grant to build public awareness and expand fundraising efforts.

### Gaga Refugee Camp Project

Plans to consolidate and expand this project have already started with a visit by Solar Household Energy President, Cora Shaw, to the UNHCR office in Geneva. Based on the informal feedback from the field, and Solar Household Energy’s evaluation and recommendations, and provided funding is available, the proposal would aim to train the implementing partner and select group of camp residents on solar cooking, training and monitoring and reporting on results. This will allow cascading of training to those who already have the cookers and any new recipients as well as facilitate ongoing training and monitoring.



## Website Development

The Solar Household Energy website enables access to information and judging by the number of visitors, over sixty three thousand in this reporting year, many people are interested in solar cooking and what we have to say. However, we think we could reach many more and help meet our mission even more effectively. With this in mind and in order to enhance the public face of Solar Household Energy and facilitate more interactive communication, plans are underway to revamp Solar Household Energy’s website. Through the UniversalGiving NGO, a team of MBA students from University of Southern California Marshall School of Business has volunteered their time assisting with the preliminary design. The next step will be in incorporating these new design features into the Solar Household Energy website.

## Partnership

Solar Household Energy, represented by Cora Shaw, jointly with the French NGO Bolivia Inti Sud Soleil (BISS), were successful in securing a grant from the French Embassy in Washington DC. BISS and Solar Household Energy subsequently commenced working on a joint advocacy activity on solar cooking, with Sophie Brock coordinating efforts to collate examples of best practices and target relevant organizations such as the GACC. Helping to unite the solar cooking community and give it a stronger voice is a central focus of this project. An event to share best practices and raise awareness is planned for the spring of 2014.

## Committed to Staying the Course

Through these and other efforts Solar Household Energy will continue to play a vital and growing role in global adoption of solar cooking technology. We will do so both for the benefit of new solar cooks, as well as all others who must live with the costs and negative consequences of less efficient, less healthy and more environmentally destructive methods of cooking.

