

GoSun Stove: Can Evacuated Tubes Scale to Meet Global Cooking Needs?

Patrick Sherwin, Founder and Inventor

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GoSun Stove

www.GoSunStove.com

ABSTRACT

Over the past three years, GoSun Stove has emerged as a leader in the United States solar cooking market based on well-designed vacuum tube solar ovens and several successful product launches, social media campaigns and powerful customer feedback. Founder and Social Entrepreneur, Patrick Sherwin, has maintained a focus on entering emerging markets in developing countries with GoSun's technology. This presentation will detail the successes and failures of building a social enterprise in developing countries around this new technology.

In 2014, GoSun was awarded a grant from the United Nations Global Alliance for Clean Cookstoves for a pilot study in Guatemala. GoSun's team of industrial designers partnered in several communities to experiment with cooking inside lower cost, larger volume tubes with indigenous women in urban and rural communities. Many iterations of the technology were explored during a user-centered, participatory design process conducted over six months. Participants reported a significant decrease in solid fuel consumption, even during the rainy season, and an average of two hours of time saved each day. The study ended with a successful "buy-back" where many of the families purchased the GoSun Stove at a fair market price.

Initial success was fairly easy, but GoSun found a gap in developing markets between early success and creating a lasting, market-based solution with established distribution and financial support. During 2015, GoSun went back to the drawing board and spent time examining the many technology options, financial mechanisms and distribution pathways. Product complications compelled the design team to increase testing, research and development.

Deeper cooperation with engineers and manufacturers helped to illuminate the possibilities while carefully constructing a cost-effective solution. The GoSun For-All is a family-scale solar oven that is reliable, safe and affordable. The flexible design enables local markets to influence the final product with regards to cuisine, access to resources and in-country manufacturing. It's estimated that GoSun For-All can eliminate over 50% of cooking fuel consumption and with a unique partnership, GoSun will eliminate 100%

of a qualifying household's indoor air particulates.

Now in its third year, with thousands of satisfied customers (primarily in developed countries) and stable cash flow, GoSun is ready to fuel social enterprise by providing fuel-free cooking solutions to emerging markets. A business eco-system approach will ensure that GoSun builds in markets where it can provide financial mechanisms, appropriate training, robust distribution, and customer service to encourage mass adoption.

An evacuated tube makes an excellent solar oven.

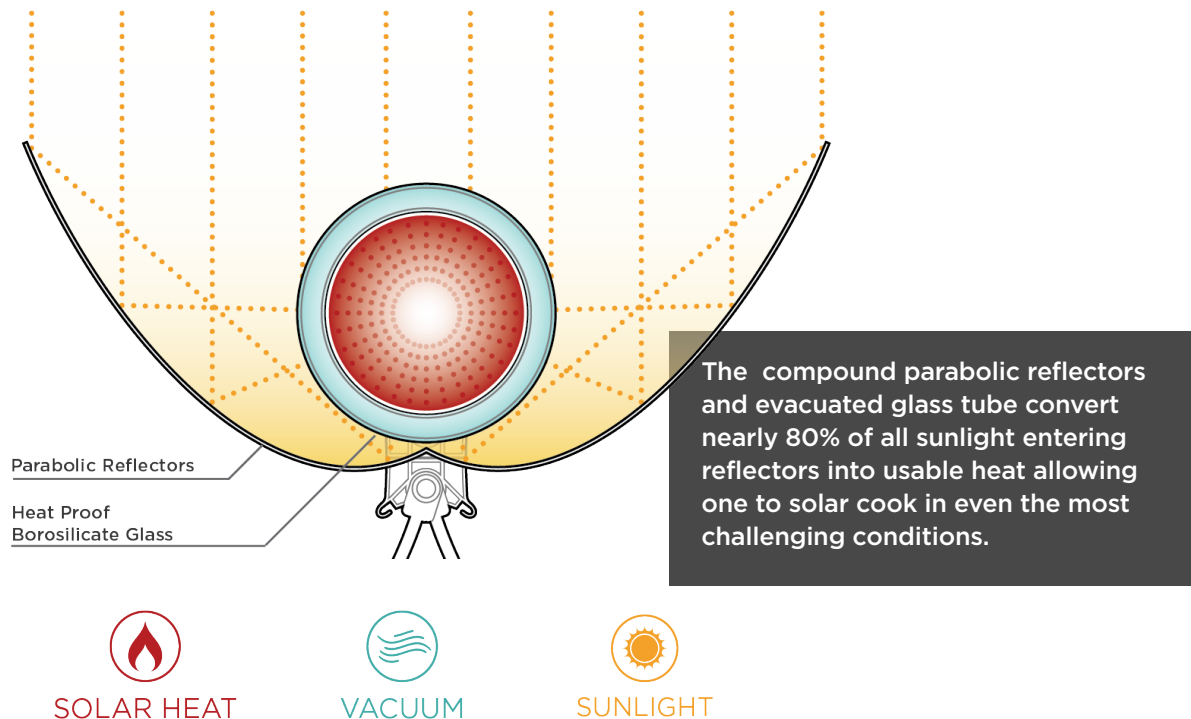


INTRODUCTION

Fire was first adopted by man 350,000 years ago. It helped humans advance tremendously but, since this great discovery, things have not changed. The vast majority of the world's kitchens are still placing food over flames. GoSun aims to stop the use of solid fuels for cooking in homes.

Over the past three years, GoSun Stove has emerged as a leader in the United States solar cooking market, introducing vacuum tube solar cookers that excel in their reliability, speed and versatility. In the process, founder and social entrepreneur, Patrick Sherwin, has maintained a focus on entering emerging markets with GoSun's technology. This paper will detail the successes and challenges of building a social enterprise around this new technology, as well as what the future has in store for GoSun.

HOW IT WORKS



GOSUN GLOBAL
PROVIDING CLEAN, SAFE, AND VIABLE SOLAR COOKING SOLUTIONS WORLD WIDE

SOLAR VACUUM TUBE COOKING: HOW IT WORKS

The GoSun cooking technology is a relatively new approach to solar cooking, utilizing a staple of the solar hot water heating industry, the solar vacuum tube, for a new capacity: to heat food. Food is placed within a sliding tray that is then inserted into the double walled vacuum tube. The tube's absorbing layer traps light as heat within a vacuum envelope, providing an excellent layer of insulation from wind and cold. Furthermore, the GoSun's compound parabolic reflectors direct light from a broad range onto the tube's absorbing surface, allowing one to cook in diffused light, albeit slower than in full Sun. Leveraging the tube's insulation properties, food can stay hot for hours without the need for additional sunlight.

GACC SUPPORT



The Global Alliance for Clean Cookstoves is a public-private partnership hosted by the UN Foundation to save lives, improve livelihoods, empower women, and protect the environment by creating a thriving global market for clean and efficient household cooking solutions.

In 2014, GoSun was awarded a \$75,000 Pilot Innovation Fund grant from the GACC to pilot our technology in Guatemala, the first solar cookstove to receive such support. With promising results, GoSun is now expanding to several countries including India, Nepal, and Ghana.



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GUATEMALAN PILOT

In 2014, GoSun was awarded a grant from the United Nations Global Alliance for Clean Cookstoves (www.cleancookstoves.com) to pilot its solar cooking technology in Guatemala. GoSun's team of designers and researchers partnered in several communities to experiment with cooking inside lower cost, high capacity tubes with indigenous women in urban and rural communities. Many iterations of the technology were explored during a user-centered, participatory design process conducted over six months. Key benefits of the technology identified during the exercise included reducing fuel use, saving time, the convenience of use compared to cooking with bio-mass and access to baking, which is uncommon within Guatemalan households. Participants reported a significant decrease in solid fuel consumption, even during the rainy season, and an average of more than two hours of time saved each day. The study ended with a successful "buy-back" in which many of the families purchased the GoSun Stove using micro finance at a fair market price, near \$80 USD.

POST PILOT

Despite finding early success in Guatemala, GoSun found a daunting gap between that success and creating a lasting, market-based solution with established distribution and financial support. In 2015, GoSun went back to the drawing board to further refine their design and business approach, examining the many technological options, financial mechanisms and distribution pathways to market success. The result of this effort is the GoSun For-All, a family-scale solar oven that aims to be a reliable, safe and affordable offering within emerging markets.

A woman wearing a colorful, patterned blouse and a green headscarf is cooking with a GoSun solar oven. She is holding a large metal tray filled with food, likely rice and beans, and is using a spoon to serve it. The oven is a large, rectangular, silver-colored metal box with a glass door. The background shows a rustic outdoor setting with a wooden fence and some laundry hanging on a line.

WHY THIS CHANGES EVERYTHING

 COST SAVINGS	 CONVENIENCE
 TIME SAVINGS	 BAKING
 HEALTH	 ECOLOGY

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GOSUN'S EMERGING MARKET SOLUTION

The GoSun For-All is designed to make an exceptional solar cooking experience for emerging markets by incorporating: usability, culinary versatility, durability, heat management and maintenance. The stove's flexible design enables local markets to

influence the final product in regards to cuisine, access to resources and in-country manufacturing.

With a target price of less than \$100, the For-All aims to find traction within *both* middle class and BOP consumers in emerging markets. This multi-market approach comes from a profound realization learned in Guatemala and Ghana: that many of the world's poor are as much driven by aspiration as utility. GoSun believes that by playing into the stove's ease of use, cook qualities, time savings, and fuel savings, a strong middle-class following can be attracted in emerging markets. With that following, solar cooking can then be reframed as an aspirational technology, as worthy of investment as the cellphone or LPG stove seen on TV.

DUAL BUSINESS MODELS

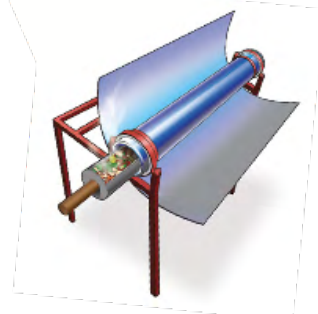
DEVELOPED MARKETS

Selling high-end products in low volumes, at high margins



EMERGING MARKETS

Strategically placing durable solutions in high volumes, at low margins

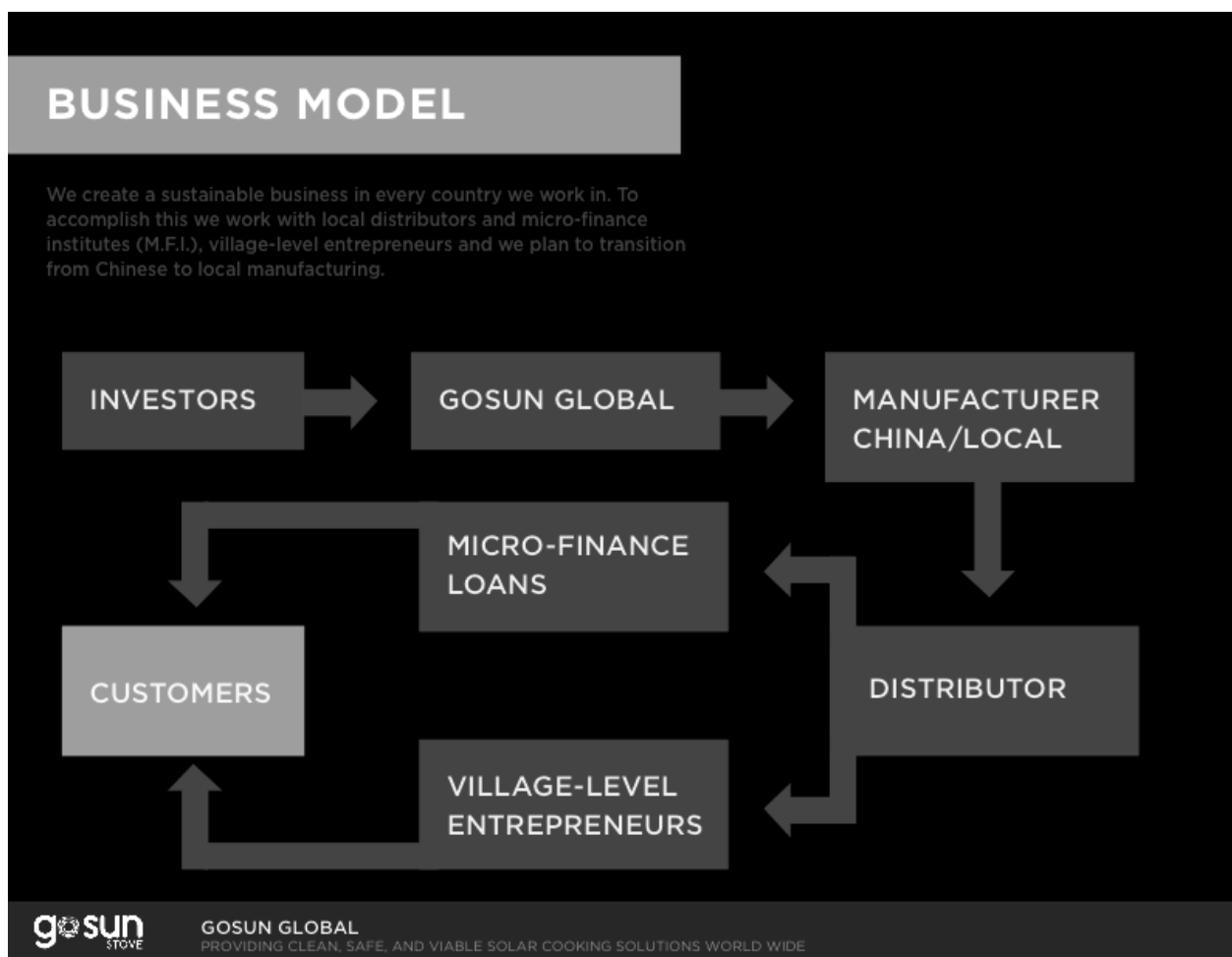


With the ability to cook most staple grains such as cassava, beans, dhal and rice, as well as bake bread, GoSun aims to position the stove as an *auxiliary cooking device* with a proven ability to save time and money. It is not intended to be a cook-all solution to replace the main method of cooking. By focusing the product's use to the most energy heavy dishes in the kitchen, consumer expectations can be met and surpassed while providing significant fuel savings, *including those who have*

already adopted improved cooking technology. In short, it is GoSun's conclusion that only by integrating with other clean cooking technologies can solar stoves find a lasting foothold in kitchens globally.

It's estimated that GoSun For-All can eliminate as much as 50% of a family's cooking fuel consumption when properly utilized for high energy dishes.

Aiming to find both middle-class and BOP adoption, GoSun is taking a multi-pronged approach to entering emerging markets, utilizing strong partnerships with Micro-Finance Institutions and BOP Distributors, as well as a more typical retail approach for a more affluent target market. With the intention of entering multiple emerging markets including India and Ghana in 2017, GoSun's go-to-market approach may vary greatly per given context and consumer feedback.



CHALLENGES

Bringing new technology to cultural adoption and financial sustainability in an emerging market is not an easy task. To find success, GoSun will need to acquire a constellation

of micro-finance partners, distributors, and highly spirited on-the-ground entrepreneurs to help lead the charge. Exceptional customer service and follow-up will be a necessity to assure longer-term cultural adoption.

There are also very real capital costs required on the front end of any business for initial market development. Acquiring capital support will be an essential next step before GoSun launch a self-sustaining social enterprise.



CONCLUSION

Evacuated tube solar ovens are positioned to help the 2.5 billion people still cooking over solid fuels. GoSun is leveraging existing business and the technology's merits of ease, reliability and affordability to eliminate indoor air pollutants and deforestation. It is time to move beyond fire, embrace innovation and collaborate with conventional distribution pathways to create a market driven success.

Partners capable of supporting market development are encouraged to contact GoSun here: patrick@gosunstove.com or 1-888-868-6154