

THE GLOBAL ALLIANCE FOR CLEAN COOKSTOVES, AND ITS GLOBAL PARTNER BASE, IS WORKING TO INCREASE ENERGY ACCESS AND SAVE MILLIONS OF LIVES BY UPDATING A UBIQUITOUS TECHNOLOGY: THE TRADITIONAL STOVE

We all need to eat. But what if home cooking endangered your family's health every day? That's the case for almost half the population of the planet. "Globally, three billion people rely on solid fuels to cook, causing serious environmental and health impacts that disproportionately affect women and children," says Radha Muthiah, CEO of the Global Alliance for Clean Cookstoves. "According to the World Health Organization, household air pollution from cooking kills over four million people every year and sickens

millions more,"

To tackle this vast challenge, the Alliance was launched in 2010 by the United Nations Foundation, the US State Department, and Shell, along with 16 other partners. The public-private partnership aims to achieve largescale behavioural change by creating a market for clean cookstoves and fuels, and enable 100 million households to



HOW TO FIX A BURNING ISSUE

adopt clean and efficient cooking stoves and fuels by 2020.

"We're stimulating demand through awareness building and behaviour change, and strengthening supply by developing a pipeline of businesses to supply products that customers value at affordable prices," says Muthiah.

One such business is New York City startup BioLite. In 2006, Alec Drummond and Jonathan Cedar were working as designers for Smart Design, a consumer product development firm. They were both avid campers, but hated carrying gas canisters on the trail, so Drummond began trying to design a clean, efficient wood stove. He realised that by integrating a fan into the combustion system, the stove could burn wood almost as cleanly as gas. Cedar brought his engineering background to the table and the two completed the first prototype BioLite CampStove in May 2008.

The breakthrough innovation came by integrating a thermoelectric generator, which works "like a solar panel for heat," says Cedar. "What we could do is take a bit of waste heat from a fire, turn it into electricity, and power the fan system, as long as you had sticks."

This elegant solution not only created the energy to power clean, efficient combustion, but it also produced extra electricity enough to charge a phone or power lights. When the team learned that open fire cooking kills more people than HIV, TB and malaria combined, they expanded their focus to the three billion people using such cooking methods. The resulting HomeStove model reduced smoke by 90 per cent, which is estimated to reduce the health risks to its users.

In 2009, Cedar and Drummond

auit their jobs to turn their design

into a marketable business. They

pioneered a new business model

called "parallel innovation", in

which BioLite designs products

with the same core technology for both emerging and established

markets - reinvesting revenue

from outdoor recreation sales

into the emerging markets

business, until self-sufficient.

Across markets, BioLite has

/// COOKS

/SHELL

since enabled clean cooking and charging in more than 70 countries. The co-generated electricity has been key in engaging husbands in the stove purchase alongside their wives.

Concurrently, the US EPA's Partnership for Clean Indoor Air, working with the UN Foundation, the Shell Foundation and the US Department of State, identified the need for an independent global initiative to address household air pollution. The Alliance, a multi-stakeholder partnership was developed to address the gaps in funding, awareness, and strategic focus for the sector. Shell Foundation, an independent UK charity set up in 2000 to create new business solutions to development challenges, was beginning to demonstrate how new models for the design, production and distribution of clean cookstoves could operate at scale in Asia and Africa. The move coincided with Shell's identification of access to energy as a key social investment theme.

"What we'd learnt at Shell was that producing energy doesn't always result in universal access to it," says Anna van Remundt, social performance advisor,

access to energy at Shell, "We believe Shell can, and should, continue to play a role in enabling energy access by leveraging its resources and investing in innovation. There is no one-size-fits-all solution to energy access. Instead, we need tailored solutions driven by local markets, needs and opportunities. This requires effective collaboration between governments, businesses and others."

Radha Muthiah says, "From day one, Shell has been an effective partner in the Alliance's efforts to support entrepreneurs and raise awareness of this issue."

The partnership between Shell and the Alliance combines Shell's financial pledge of \$12 million with in-kind support through participation on the Alliance's Advisory Council, a secondee, and the provision of technical and business skills to assist the Alliance in its goals.

Jennifer Tweddell, Shell's secondee, has helped develop three catalytic enterprise development grant programmes - including the Spark Fund - which are working to raise investor awareness of the sector. The Alliance has attracted over \$50 million in grant funding, and calculates that over \$58 million in new **BIOLITE HOMESTOVE - HOW IT WORKS**

The BioLite HomeStove is as simple to operate as a traditional stove, but comes with significant benefits.

1. Light the HomeStove To get the stove burning, users feed local fuels - whether wood, cow dung or crop residue - through the side of the stove. Then they light the fire any way they normally would.

3. Utilise the power of oxygen The internal fan forcefeeds oxygen into the flame, eliminating smoke, and leading to near complete and clean combustion of the solid fuel. The fuel now burns almost

as cleanly as gas.

the in-built fan Excess heat from the flame is converted into electricity through a thermoelectric generator. This powers the internal fan and the USB port, for phone charging or LED lighting.

2. Power up

- 4. Re-fill with fuel as necessary All the user needs to do to keep the feedback loop going is keep the
 - HomeStove supplied with a viable biomass fuel. This results in an almost limitless energy solution.

'THERE IS NO ONE-SIZE-FITS-ALL SOLUTION TO ENERGY ACCESS... WE NEED TAILORED SOLUTIONS"

A BioLite HomeStove in use in the village of Gheghta, in Bihar, India





investments to the sector have occurred since the Alliance was launched in 2010. The Spark Fund, developed by the Alliance in 2012, is a grant facility designed to mirror early stage investment. With a pool of \$1-2 million a year, of which \$1 million is funded by Shell, Spark aims to help enterprises working in the household cooking sector reach commercial viability and scale. The Alliance leverages Shell's commitment with support from multilateral and bilateral donors such as the Climate and Clean Air Coalition, Germany's Federal Ministry for Economic Cooperation and Development, and Sweden's Ministry of Foreign Affairs.

During each round of the Alliance's Spark Fund, four to six enterprises receive financial support. In partnership with Impact Carbon, BioLite was part of the first round of beneficiaries in a cohort that included EzyLife Kenya, which provides efficient cookstoves, as well as solar lighting and water purification systems. This funding was exactly what BioLite needed to expand into new territories. "Being involved in the Spark Fund provided us with the high risk dollars that were critical to the growth of the company in a new market," says Cedar. In 2013, the Alliance awarded Spark grants to six more enterprises including Greenway Appliances, an Indian-based company with sales of more than 250,000 cookstoves.

The partnership between the Alliance

and Shell, and their collaboration on the Spark Fund, have impacted the health of millions, but have also provided climate and gender empowerment benefits. For example, black carbon, which results from incomplete combustion of solid fuel, is estimated to contribute the equivalent of up to 50 per cent of carbon dioxide warming globally, and residential solid fuel burning accounts for up to 25 per cent of black carbon emissions. "Cooking is a gender issue," says Anna van Remundt. "Women and girls are most affected and, in some regions, spend up to five hours a day gathering wood, or allocate up to a third of their household income on fuel. Using an improved cookstove frees up to 60 days a year for women, and increases in efficiency could equate to enough savings to send two children to school." But the job is not yet done. According to Radha Muthiah, while the Alliance has made strong progress in developing the sector over the past five years and is on target to reach its mid-term and long-term goals - that of getting cleaner cookstoves into 60 million homes by 2017 and ultimately 100 million homes by 2020 - much work is still needed to tap the full benefit of clean cooking for the wellbeing of the world's population. "If we get this right," says Cedar, of his BioLite technology and others. "We could see the same kind of global health impact as penicillin." #makethefuture

BIOLITE: A SPARK FUND RECIPIENT

The Spark Fund was crucial in helping BioLite co-founders Alec Drummond and Jonathan Cedar explore new markets



Alec Drummond It was Drummond's initial curiosity and love for camping that started the BioLite story. He wanted to design a stove to be used on trail. without taking fuel.



Jonathan Cedar A colleague of Drummond's, Cedar gave engineering advice in the project's infancy. His input helped bring the first HomeStove prototype into existence.



The Spark Fund aims to invest \$2 million in grant capital annually. The funding is designed to support enterprises with scalable approaches that have the potential to transform the sector. Spark grants target the specific capital and capacity development needs of enterprises across the value chain that have passed the proof-of-concept stage, BioLite was one of several recipients of the grant in 2012. Using the fund, BioLite partnered with Impact Carbon in Uganda to

establish and support a national network of distribution and retail partners. This network helped drive the cookstove market in Uganda. It's Impact Carbon's goal to improve health, reduce poverty, and improve local environments while slowing climate change. The partnership resulted in a full scale product launch of **BioLite's HomeStove** the fan stove that reduces household air pollution while enabling phone and light charging.