



Helping the world breathe easier.

We design efficient, durable, culturally appropriate cook stoves — that all can afford.



Who we are

Burn Design Lab designs efficient, durable, culturally appropriate cook stoves — that all can afford.

According to the WHO, 3 billion people around the world cook their food and heat their homes with open fires, and use solid biomass fuels. This system of cooking negatively affects the health, environment, and livelihoods of those in low- and middle-income countries without access to reliable and sustainable energy. By designing clean-burning cookstoves from our lab in Vashon, WA, that produce fewer emissions and require less fuel, we aim to save lives, reduce deforestation, and promote the economic empowerment of women in the developing world.

What your dollar does

A \$40 stove like the Jikoko saves a woman:

- 104 hours/year in backbreaking labor gathering firewood
- Adds 3 months to her life
- Reduces 4.5 tons of CO₂ per year
- Saves 450 pounds of charcoal every year
- Saves 23 trees each year
- Saves a family over 325 hours cooking time every year

Your donation to BDL enables the development of stoves like these.



Since 2010, You've Made an Impact:

4.4 million

Stoves

22.5 million

Lives Impacted

9.5 million

Tons of Wood Saved

17 million

Tons of CO2 Reduced

2,500

Jobs Created

\$683 million

Household Savings

The stove is much safer for my kids. The protector bars on the side prevent the children from getting burned. It was a lot more dangerous in the past, because coals from the fire would fall on the floor where children ran around."

- Eulalia Valtasar Mateo, Buena Vista, Guatemala



Our Year At-a-Glance

6 countries

Our 2023 projects: Democratic Republic of Congo, Ghana, Kenya, Madagascar, Mozambique, and Sierra Leone .

110 days in the field

Getting user feedback and on-the-ground testing is critical to our success.

270 tests in the lab

That's 230 hours spent testing.

11 volunteers

Contributing more than 3000 hours of work.

10 staff

8 based on Vashon and 2 based in the field.



Improved Shea Nut Roaster Ghana

Shea nuts are grown and harvested across much of West Africa. It is a multi-billion-dollar industry, and most of the processing is done by women who get paid very little. The current process for roasting shea kernels needs improvement to address significant health and environmental shortcomings, including low fuel efficiency and high particulate emissions, and inconsistent roasting quality.

The shea roaster project (shea roaster manufactured and used) is currently being implemented in northern Ghana. By expanding the availability of improved roasters, we are increasing the impact and efficiencies of the production of hand-crafted shea butter.

Over the the 2022-2023 (July-July) season, the 9 roasters that were installed in the northern Ghana have been used on:

417 different occasions, for a total of 119,111 minutes, roasting an equivalent of 135,786 kg of shea nuts.

Based on the performance data of actual usage by women, collected in Oct 2022, this estimates a reduction of :

**14 tons of wood fuel,
26 tons of CO2, and
1060 women operating hours.**



Over the next couple years, our objectives include:

- Provide access to improved roasting technology through education and financing.
- Continue to locally source improved roasters and implement in communities along with training.
- Field test and user research studies to gather data on performance, adoption, and durability.
- Maintain and continue to develop best manufacturing practices with partners to produce roasters affordably.
- Handoff full production, marketing, and distribution to our partners on the ground.

Sala Makala Stove

Democratic Republic of the Congo

IMA World Health, an international non-profit, embarked on the application of a gasifier stove as a solution to multiple health, environmental, and socio-economic challenges in the DRC. BDL is working with IMA DRC to improve the efficiency of the original Top Lit Up Draft Sala Makala stove (TLUD). As another key aspect of the project, BDL is working to reduce both particulate and carbon monoxide emissions from the stove.



The project's goals are to:

- Improve the stove's thermal efficiency to over 40% (from a baseline of 28%) - lowering wood fuel consumption and cost. **Our improvements have achieved 42% efficiency.**
- Reduce the stove's particulate (PM2.5) and carbon monoxide emissions below the current baseline emissions levels.
- Develop a reliable design and method for turning down the stove to save fuel while simmering rice, beans, and similar foods.

Improved Institutional Stove Sierra Leone



Sierra Leone's school feeding program, which provides food for about 750,000 children, relies mostly on traditional 3-stone open fires which are inefficient and generate high levels of smoke, adversely impacting the environment, climate, and human health.

BDL partner and local manufacturer, Westwind Energy (WWE), has developed an institutional stove to address these issues. BDL and WWE are partnering to increase the stove's efficiency, improve its durability, make it easier to manufacture, and lower the stove's cost. WWE and BDL are also working together to design a production system.

Project goals include:

Reduce stove price by 30%

Bring WWE's **manufacturing capacity up to 500 stoves per month** compared to the current capacity of 50 stoves per month.

Achieve a minimum of **15% increase in efficiency**.



Cocotte Minute Gasy Pressure Cooker Madagascar

In 2023, BDL partnered with Justin Wimpey to continue his pressure cooker initiative in Madagascar. The Cocotte Minute Gasy (CMG) is a locally-appropriate pressure cooker that was developed in Madagascar to address the challenges of cooking with charcoal and wood. The CMG is affordable, robust, reliable, safe, and efficient, and it can save users many hours of cooking time on a daily basis.



Project Stats

Over 1,000 stoves sold to date.

Produced and distributed by a woman-led team of three.

They are currently developing a store.



UNDP Improved Stove Mozambique

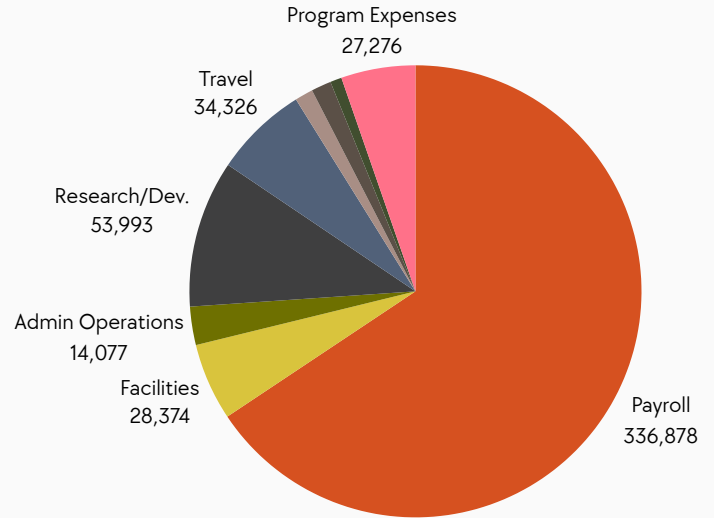
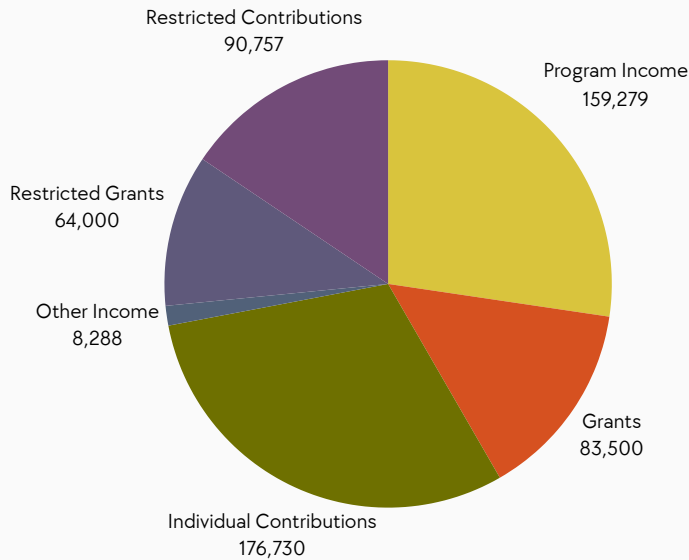
Over the last 10 years, the fastest growing cities of Mozambique have seen such a growth in the consumption of charcoal for cooking, that the prices have increased by more than 200%. There are no more forests left in the province that can meet the demand for charcoal production. Finding a solution to this situation by providing a more efficient cooking method which uses less fuel is key.

Working with the United Nations Development Program, BDL traveled to Mozambique to assess the stove landscape and make recommendations to the UNDP about how to achieve an improved stove that is simultaneously more durable, more efficient, has lower emissions, lower cost, and of course perfectly meets the cultural and functional needs of the target users.

Financials

Income \$582,554.00

Expenses \$513,150.00



Progress Toward 2027 Goals

	Households Impact	CO2 Reduced	Disability Adjusted Life Years (DALYs) Avoided*
Goal	25 million	1.5 gigatons	4.5 million years avoided
Progress	4.6 million	17 million	13,000 years avoided

*Calculated using the WHO BARHAP tool

Acknowledgments

Supporting Organizations

Osprey Foundation
 Clean Cooking Alliance
 1% for the Planet
 The Sitchin Foundation
 evanhealy
 New England Biolabs Foundation
 Meal-a-Day
 Powder Coating Research Group
 Henry E. Niles Foundation
 Baraka Impact
 Meadow Creature
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