burn
DESIGN LAB

Transforming School Kitchens Across Sierra Leone

Burn Design Lab **Spring 2025 Newsletter**

Cleaner Cooking for Sierra Leone: New Wonders Stoves on the Way

Across Sierra Leone, many school kitchens still rely on traditional open fires to prepare meals for students. These fires consume large amounts of firewood, create hazardous smoke, and pose serious health and safety risks to the women who do the cooking. Recognizing these challenges, BDL partnered with Westwind Energy SL Ltd. (WWE) to design a cleaner, safer, and more efficient cooking solution for schools and large institutions.

Together, BDL and WWE developed the Institutional Stove 3.0–engineered to drastically reduce fuel use, increase thermal efficiency to over 40%, and significantly improve air quality and working conditions in school kitchens.

BDL's approach combined engineering innovation with local capacity building. By redesigning the stove for easier manufacturing and lower costs, the material and manufacturing costs were reduced by close to 20%. BDL engineers also helped implement a streamlined production system, boosting WWE's manufacturing capacity from 20 to over 60 stoves per month. This transformation enabled WWE to fulfill an initial pilot order of 250 stoves from the World Food Programme (WFP).

With the successful implementation of the pilot and given that WFP feeds over 750,000 children across Sierra Leone, there is demand for additional stoves to meet the need, not just in Sierra Leone, but also the greater West African Region.

Each stove is estimated to save up to 3 tons of firewood and reduce over 5 tons of CO_2 emissions per year. With over 100 stoves already installed and the additional stoves in progress, the initiative is expected to benefit over 31,250 students and 375 volunteer cooks. Women who once cooked in smoke-filled, hazardous conditions now work in clean, cool, and efficient kitchens.

One of the volunteer cooks, Kadiatu Conteh, added, "The stove they brought us is very good. It cooks really well without burning the rice. With the old kitchen, there was so much smoke. Our eyes would get irritated… but with these new stoves, we don't feel any of that anymore."

By modernizing local production, creating skilled jobs, and improving health and education outcomes, BDL is helping drive systemic change. This work shows how user-centered design and partnerships can deliver not just better stoves–but dignity, opportunity, and a more sustainable future for communities across Sierra Leone and beyond.

Top: Children attending school in Sierra Leone receive daily meals, often prepared over dangerous open fires. Right, Top: "With the open fires, my eyes, nose, and chest would burn. I used to get headaches. But now, the kitchen stays cooler and we are healthier." - Kadiatu Bangura. Right: A WWE Wonder Institutional Stove in use in a school feeding kitchen. Once filled with smoke and heat, the kitchens are now calm, cool, and safe.

Finding Funding in a Changing World

Over the past year, Burn Design Lab has been renewing and revising our strategic plan in order to focus all of our attention on what matters most: improving lives.

Our work is focused on one of the world's greatest preventable public health concerns: indoor air pollution. Each year, more people die from problems related to Indoor Air Pollution than Malaria, TB, and HIV/AIDs combined. At Burn Design Lab, we want women and their families in the developing world to live better, healthier lives because they have access to cleaner-burning cookstoves.

Thanks to the dedicated support of individuals and organizations, our work has already contributed to the improvement of women's health and wellbeing in over 5 million households, and we aspire to impact another 10 million households by the end of 2035. BDL and our partners will focus on high impact, scalable cookstove designs and manufacturing systems to accomplish this.

But we need help. 2025 has been a challenging year for a lot of individuals and organizations across the globe. Organizations improving the lives of those in the developing world have been hit hard by US government decisions to reduce or eliminate foreign aid investment. BDL estimates the reduction of available foreign aid from US and UN based agencies will reduce access to grants and funding by millions of dollars over the course of the next four years. And if nothing is done to address this, millions of women will not have access to a cleaner burning cookstove.

In response, BDL is looking to create a more sustainable revenue stream, allowing us to be more resilient to external pressures while continuing our mission to improve lives. The best support that nonprofits, like Burn Design Lab, can receive in times like this comes from individuals like you. Dedicated people who share in our passion for improving lives around the world. This spring, we are raising money to support the development of life-changing clean cookstoves and strategic manufacturing partnerships that have the potential to produce over a million stoves in the next five years. Together, we have raised over $70k towards our goal of $250k this spring. By reaching our goal, we will remain a sustainable, resilient, and impactful organization now, and into the future - furthering our impact on as many lives as possible. To make a gift supporting our spring campaign, visit our website or interact with the QR code on the back cover.

Funding for BDL's cookstove projects directly benefits women and children around the world. Thanks to improved institutional stoves, for example, children in Sierra Leone (above) spend less time collecting firewood and more time in school while hardworking women processing shea butter (below) at the Gubdanda cooperative in Ghana have reduced risk of injury and improved health at their jobs.

Staffing Updates at Burn Design Lab

We've welcomed several additions to the engineering team in recent months. Patrick Flores, BDL's newest Project Engineer, began at BDL in January of 2025. With a background in science and art, having studied both Mechanical Engineering and Theatre & Performing Arts at Stanford University, Patrick aspires to bring technical expertise and artistic sensibility to solving sustainability problems. He is also joined by Sofia Montalbano, who began at BDL in March. Sofia got her B.S. in Mechanical Engineering and a minor in Humanitarian Engineering from Oregon State University. Sofia began as a Lab Engineer and will soon assume the role of Lab Manager, as Cooper Sloan finished his 3 years with BDL in April.

Most recently we've welcomed Sally König to the BDL's 12-month internship program as Usman Riaz returns to Purdue University. Sally is currently a Mechanical Engineering student at TU Ilmenau in Germany, with a concentration in Thermodynamics and Fluid Dynamics. We thank Cooper and Usman for their contributions to BDL during their tenures and wish them well beyond BDL!

Top Right: The BDL staff welcomed new team members and toasted to the departure of others this spring at a cookout, featuring functional and efficient clean cookstoves. Above, left to right: New BDL team members Patrick Flores, Sally König, and Sofia Montalbano.

OUR WORK IS POSSIBLE BECAUSE OF SUPPORTERS LIKE YOU

Name _____ Email _____

Address _____

City, State, Zip _____ Phone _____

☐ Check enclosed ☐ Bill my credit card for $ _____ ☐ I'd like to volunteer ☐ Keep me udpated on BDL

Please indicate your commitment: ☐ Monthly ☐ One-Time

☐ $1000 ☐ $500 ☐ $250 ☐ $100

Card Number _____ Exp. _____ Sig. _____

Mail to: 18850 103rd Ave SW, Suite 220, Vashon, WA 98070

Burn Design Lab is a 501(c)(3) non-profit organization. Your Contribution is 100% tax-deductible

- info@burndesignlab.org
- +1 (206) 507-8956
- burndesignlab.org

Donate Now !

FOLLOW US @BURNDESIGNLAB