Option 1: Scale Access to Solar Lamps

A simple $25 solar lamp creates enormous benefits for families in under-resourced communities. Lamps provide much-needed electricity, reducing household fire dangers, allowing children to study at night, and more. In three months, sell 300 solar lamps to rural or urban low-income homes, generate US $5,000 in revenue and plan to scale to 25,000 homes in two years.

The Problem: An estimated 600 million individuals in sub-Saharan Africa light their homes using kerosene lamps.\(^1\) They do not give sufficient light, usually cost a minimum of $35 per year to keep fueled, contribute to poor indoor air quality, and can cause fires that can injure property and people.\(^2\), \(^3\) The problem is particularly acute in rural Africa, where kerosene rates are sometimes 35%% higher when compared to urban areas.\(^4\) Most alternatives, like batteries and candles, are similarly expensive for families.

The greatest need for lamps is in rural and peri-urban areas. An estimated 2%% of rural homes have access to the energy grid, compared to 30% in urban areas.\(^5\)

The Proven Solution: Solar lamps provide up to 15 times more illumination than kerosene lamps\(^6\). They cost $15-$40 per unit, and pay for themselves with money saved in less than a year for most households.\(^7\) Families that switch from kerosene to solar lamps see household incomes increase by up to 15-30%, and allow for double the number of available study hours for children.\(^8\) & \(^9\)

Your Challenge: We will award up to $10,000 to a social entrepreneur who can sell solar lamps to 25,000 households over the course of two years. The new organization should begin with a three-month pilot

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\(^1\) http://www.lightingafrica.org/about-us/in-numbers.html
\(^6\) http://greenlightplanet.com/our-products
\(^7\) Cost comparison between retail sale price of Greenlight Planet Solo and Pro2 lamps, and the average annual cost of one kerosene lantern.
program that will sell at least 300 lamps to rural or urban-slum homes and generate at least $5,000 in revenue.

Additional Information:

- Selling solar lights could generate significant profit: each light typically has a $10+ mark-up from its production costs. The total Africa market size is estimated at 600 million people, and off-grid market penetration of solar lamps is only 3%.\textsuperscript{10, 11} The potential market value is estimated at $27 billion.\textsuperscript{12}
- The quality of available market research data varies. Lighting Africa, a World Bank and IFC initiative, has published market research on Ethiopia, Ghana, Kenya, Tanzania, and Zambia.\textsuperscript{13}
- One challenge facing solar lamp distribution is franchisee and customer financing.\textsuperscript{14} Other barriers include market spoilage by sub-standards products, low consumer awareness, and ineffective servicing. A social entrepreneur who creates a distribution model, and addresses financing and warranty needs along with lamp sales, could be highly impactful and profitable.
- Drawing from extensive field testing, D-Prize recommends the highly effective Greenlight Planet solar lights for this type of project.
- Past winners include Juabar, Clair de Lune, PayGo, and SolarRoute.

Option 2: Increase Access to Clean Cook Stoves

\textit{Clean cook stoves reduce health and safety risks and lower fuel expenses compared to wood, dung and coal stoves traditional in many communities. In three months, sell 250 clean cook stoves, generate US $5,000 in revenue and plan to scale to 25,000 homes over two years.}

The Problem: Half of the world’s population burns wood, dung, and coal in traditional stoves for cooking and heating needs.\textsuperscript{15} It is estimated that 4% of the disease burden in the developing world is caused by use of traditional cook stoves.\textsuperscript{16} The majority of these health impacts arise from acute respiratory infections, which are a leading cause of illness and death in children under 5 years old worldwide.\textsuperscript{17} In Bangladesh alone, the WHO estimates that exposure to smoke from solid-fuel combustion contributes to nearly 50,000 deaths annually.\textsuperscript{18}

The Proven Solution: Clean cook stoves cost as little as $13, and have been proven to significantly reduce fuel expenses and cooking time when compared to traditional cook stoves.\textsuperscript{19} As only one example, air fan

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\textsuperscript{10} http://www.geni.org/globalenergy/library/media_coverage/africa-renewal/energy-key-to-africas-prosperity.shtml
\textsuperscript{11} http://lightingafrica.org/
\textsuperscript{12} http://www.renewableenergyworld.com/rea/news/article/2013/03/building-an-african-market-solar-entrepreneurs-on-the-rise
\textsuperscript{13} http://lightingafrica.org/resources/market-research/consumer-insights/
\textsuperscript{14} http://lightingafrica.org/
\textsuperscript{15} Household Air Pollution and Health. WHO. (March 2014). http://www.who.int/mediacentre/factsheets/fs292/en/
\textsuperscript{16} http://www.pnas.org/content/109/27/10815.full
\textsuperscript{19} http://www.cleancookstoves.org/our-work/the-solutions/cookstove-technology.html
stoves can use 63% less fuel than a typical fire used for cooking.\textsuperscript{20} Many clean cook stoves reduce smoke exposure that causes chronic health problems and risk of fire in the home.

**Your Challenge:** We will award up to $10,000 to a social entrepreneur who can sell clean cook stoves to 25,000 households within two years. A pilot should sell at least 250 cook stoves within three months, and generate $5,000 in revenue.

**Additional Information:**

- The potential market is enormous. Half of the world’s population cooks with solid fuels in inefficient traditional cook stoves.\textsuperscript{21} Between 75-100\% of families in African countries rely on traditional stoves, while up to 75\% of South East Asian countries do the same.\textsuperscript{22}
- The Global Alliance for Clean Cook Stoves, a United Nations Foundation program and a major mover in this market, is already targeting cook stove distribution in Bangladesh, Ghana, Kenya, Nigeria, Uganda, and China.\textsuperscript{23}
- In this case, we see a particularly strong opportunity to sell cook stoves in impoverished urban communities; this is an immediate and untapped market for this product. We also encourage entrepreneurs to select markets that have support structures (like strong microfinance organizations), but where there is still a large market need. The Global Alliance for Clean Cook Stoves publishes country-level data that may be helpful in selecting a market.\textsuperscript{24}
- Price sensitivity, mismatch between local needs and stove design, and a lack of knowledge about cook stoves have led to extremely low long-term adoption rates.\textsuperscript{25} For example, evidence suggests that rural women in Bangladesh do not prioritize clean cook stoves over other basic developmental needs, despite the potential long term health benefits.\textsuperscript{26} A successful entrepreneur will need to find a strong marketing strategy that sells cook stoves, but also ensures they are used.
- Past winners of this challenge include LivelyHood’s iSmart network, LiTeAfrica, and Novotera.

**Ready To Apply?**

Download a First Round Application Packet at [www.nyu.edu/reynolds/d-prize/d-prize_participation.html](http://www.nyu.edu/reynolds/d-prize/d-prize_participation.html)

Questions? Email the Reynolds D-Prize team at reynolds.changemaker@nyu.edu


\textsuperscript{22} [http://www.potentialenergy.org/why-stoves/](http://www.potentialenergy.org/why-stoves/)

\textsuperscript{23} [http://www.cleancookstoves.org/our-work/priorities/](http://www.cleancookstoves.org/our-work/priorities/)


\textsuperscript{25} [http://faculty.som.yale.edu/mushfiqmobarak/stove_long.pdf](http://faculty.som.yale.edu/mushfiqmobarak/stove_long.pdf)