Energy Challenges

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Scale Access To Solar Lamps

A simple $25 solar lamp creates enormous benefits for developing world families. Lamps create massive cost savings, allow children to study more, and reduce household fire danger. In three months, sell 500 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. A successful model will be evidence-based, will include continuous monitoring and testing, and a commitment to change if evidence suggests your approach is not working.

The Problem

Almost 600 million people in sub-Saharan Africa light their homes using kerosene lamps.[1] They are dim, cost a minimum of $35 per year to keep fueled, create poor indoor air quality leading to health problems,[2,3] and cause fires that can injure children.[4,5] The problem is particularly acute in rural Africa, where kerosene rates can be 35% higher than in urban areas.[6] Alternatives like batteries and candles are similarly costly. In the aggregate, kerosene lamps contribute significantly to climate change.[7]

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1 http://www.lightingafrica.org/about-us/

2 Lam, Nicholas; Smith, Kirk; Gauthier, Alison, Bates, Michael. Kerosene: A Review of Household Uses and Their Hazards in Low- and Middle-Income Countries. J Toxicol Environ Health B Crit Rev. 2012; 15(6): 396–432.

3 https://www.lightingafrica.org/wp-content/uploads/2014/10/SolarAid-Impact-Report-2014.pdf

4 Howe, Charles; Lawrence, Joanne; Patel, Hitendra. SolarAid: Revolutionizing the Way to Make Energy Affordable for Everyone." Hult International Business School Publishing. January 2012.

5 E. Mills, "The Specter of Fuel-based Lighting," Science 301, 1263 (2005).

6 Cost of Kerosene in Africa Threatens Access to Lighting. Lighting Africa, 2012. http://lightingafrica.org/cost-of-kerosene-in-rural-africa-threatens-access-to-lighting

7 Black Carbon and Kerosene Lighting: An Opportunity for Rapid Action on Climate Change and Clean Energy for Development, 2013. http://www.brookings.edu/~/media/research/files/papers/2013/04/climate_20change_clean_energy_development_hultman/04_climate_change_clean_energy_development_hultman.pdf

The Proven Solution

Solar lamps provide up to 16 times more illumination than kerosene lamps.[8] They cost $15-$50 per unit, and can pay for themselves in 10 weeks.[9] Families that switch from kerosene to solar lamps can see household incomes increase by 15-30%, and double the number of available study hours for children.[10, 11]

Your Challenge

We will award up to $20,000 to a social entrepreneur who can design a business and sell 500 solar lamps and generate $5,000 in a three-month pilot, and who can grow to reach 25,000 home within two years.

A successful proposal will include a localized plan that can manage uncertainty, including:

- A evidence-based approach that can identify the strongest factors limiting solar lamp access, specific to the region in which you will operate
- A model of how and why your intervention will boost use of stoves in long run
- A plan for continuous testing and evaluation of the program
- A commitment to change the plan if the evidence suggests that the approach isn't working

Other Market Information

- 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.[12] Lighting Africa, a World Bank and IFC initiative, has published extensive market reports on Ethiopia, Ghana, Kenya, Tanzania, and Zambia.[13]
- One challenge facing solar lamp distribution is franchisee and customer financing – it can often take six months between placing an order for new products and when cash is finally received from customers. Other barriers include market spoilage by sub-standard 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.
- In poor areas the lamps can represent a sizeable expense for end users, and this has been a hindrance to adoption. "Pay-as-you-go" models are emerging to overcome the end-user financing problem.[14]
- Solar lights could actually be very profitable to sell: each light has typically at least a $10 mark-up from its production costs. The total Africa market size is estimated at almost

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[8] https://www.greenlightplanet.com/shop/pro-2

[9] https://www.lightingafrica.org/wp-content/uploads/2014/10/SolarAid-Impact-Report-2014.pdf

[10] http://www.thegef.org/gef/sites/thegef.org/files/publication/gef_renewenergy_CRA_rev.pdf

[11] Agoramoorthy ; Hsu: Lighting the Lives of the Impoverished in India's Rural and Tribal Drylands. In: Human Ecology 37 (2009), S. 513–517

[12] Howe, Charles; Lawrence, Joanne; Patel, Hitendra. SolarAid: Revolutionizing the Way to Make Energy Affordable for Everyone." Hult International Business School Publishing. January 2012.

[13] http://lightingafrica.org/resources/market-research/consumer-insights/

[14] https://www.lightingafrica.org/wp-content/uploads/bsk-pdf-manager/5_Market-Brief-Report-ElectronicREV-1.pdf

600 million people, and off-grid market penetration of solar lamps is estimated around 3.5-4%.[15, 16] The potential market value is estimated at $27 billion.[17]

- Drawing from extensive field testing, D-Prize endorses Greenlight Planet solar lamps.
- Past winners include Juabar (Tanzania), Essmart (India), PayGo Life (Ghana), Qorax (Somaliland), Bright Renewables (Zimbabawe), Phoenix Solar (Nigeria), AL Tech (DR Congo), SoLight (Uganda), Azimuth Solar (Sierra Leone), Sage Inc. (Cote d'Ivoire), Deevabits Green Energy (Kenya), The Solar Army Project (Uganda), Last Mile (Tanzania), Empower Generation (Myanmar).

Ready To Start?

Download a Round 1 application packet at
https://www.d-prize.org/s/Round-1-Application-Packet-September-2019.pdf

Questions? Email the D-Prize team at help@d-prize.org

[15] http://www.geni.org/globalenergy/library/media_coverage/africa-renewal/energy-key-to-africas-prosperity.shtml

[16] https://www.lightingafrica.org/wp-content/uploads/bsk-pdf-manager/5_Market-Brief-Report-ElectronicREV-1.pdf

[17] http://www.renewableenergyworld.com/rea/news/article/2013/03/building-an-african-market-solar-entrepreneurs-on-the-rise