



A Breath of Fresh Air

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Proposal

Context & Purpose

When Philip Wong returned from his summer of 2013 in Rwanda, we found ourselves fixated on one troubling aspect of his time there: children and adults alike coughed constantly, thanks to an unidentified malady known colloquially as the “Black Lung.” As we have discovered, respiratory diseases are the second leading cause of death in Rwanda.¹ Prolonged exposure to the fumes of the cooking fires proves particularly sinister to women who cook and the children that cling to them. In their developing years, these children are especially susceptible to respiratory diseases that can threaten the quality of their education, physical growth, and even their lives. In addition to the health hazards of using firewood, firewood collection has been largely responsible for Rwanda’s 37% loss of its forestry in the past 20 years;² if the country were to continue down this path, it would face disaster.

Goals & Methods

Our project seeks to promote peace by: 1) improving respiratory health in primary cooks and children; 2) limiting greenhouse gas emissions associated with deforestation from firewood collection; 3) generating income opportunities from fuel pellet production and decreased foraging time; and 4) easing the strain on scarce resources in the most densely populated country in continental Africa. We will work toward these goals in three stages: 1) a cooking practices survey; 2) an educational campaign; and 3) distribution of alternative, improved stoves and training in stove maintenance and fuel pellet production.

Partners

We want to work with a combination of partners, most importantly with the health cooperative Dusangire Ubuzima - Ruhunda in Rwamagana (where Philip Wong spent his summer) because they will understand the community’s situation in great depth. Women have a strong presence in the cooperative and this will aid us in our project because they bear the primary burden of collecting and burning firewood. The advantage of working with an extremely local organization is that we will have very close access to the community in order to enable them to take control of the challenges they face, rather than acting from an outsider’s perspective. We will also work with Inyenyeri, a social enterprise that already has biomass cook-stoves and the method of production of the fuel. Additionally, we would like to collaborate with the Kigali Institute for Science and Technology (KIST) to train community members to repair these stoves when broken, to ensure the longevity of this solution. Philip Wong has access to both KIST and Inyenyeri via his supervisor from the previous summer.

Part I: Cooking Practices Survey

In Rwamagana and with the cooperative, we plan to begin our project with a cooking survey to collect information on that cooking fuel economy, based on the Food and Agricultural Organization’s resources on such surveys.³ For example, soaking beans before cooking them has proven to limit the amount of fuel needed to cook the beans. The stove, whether the traditional three-stone stove or biomass, plays a large role in the effectiveness—in terms of health, deforestation, and time spent—of food preparation, but there are also other simpler and cheaper ways of improving the process. The benefits of these appropriate practices are not exclusive to those who can afford certain technologies, and this will

¹ “Global Health - Rwanda,” Center for Disease Control, <http://www.cdc.gov/globalhealth/countries/rwanda/>.

² “Rwanda CAP Reference Documents,” Global Alliance for Clean Cookstoves.

contribute to equity in our project. We understand that some may be hesitant to change long-used cooking practices, but we will offer these alternative methods all the same.

Part II: Educational Campaign

We will next move onto the crux of the project by conducting an educational campaign to spread awareness about the negative effects of burning firewood on health and sustainable livelihoods. In the same way that doctors in the United States often show a model black lung to demonstrate the consequences of frequent smoking, we will use a black lung to illustrate the havoc that cookfire smoke can wreak. We will also seek Rwandans who can testify about health issues and possibly personal losses due to this smoke. With regards to the environment, while we will incorporate the effects of deforestation at the country and global level, we feel that the communities will be able to relate easiest if we focus on sustainability through the lens of fuel accessibility: if deforestation for firewood continues at its current rate, no fuel will be left for the community's children.

Part III: Biomass Stove Distribution & Training

As an alternative to this bleak future, we will offer biomass stoves, which release negligible pollutants relative to current practices and which use pellets composed of agricultural residue and twigs. We will heavily subsidize these stoves, for which the market price is approximately 50 USD⁴--and disseminate the method of production of the fuel pellets for these stoves. After that, adapting the micro-consignment model that has known success with wood-fuel stoves in Central America,⁵ we hope to get the owners of stoves to "sell" more stoves at very low cost (subsidized by this project) to their friends and neighbors. Since the cost of the stove will be extremely small, the "selling" will consist of convincing potential users of the benefits of these stoves, like improved health and less time spent looking for wood for cooking. The "sellers" will be able to keep the proceeds of the sales and will be able to sell fuel pellets. We will use a variety of educational materials, mostly visual and demonstrational, to teach proper usage, and we hope to collaborate with KIST to teach community members how to make repairs.

Impact

The major challenges we anticipate are a lack of resources, lack of time, and a reluctance or inability by many to change their way of life. This project intentionally addresses these concerns by targeting a small community that we have experience with so that we can tailor our educational and training campaign and spend extensive time on these components. Through micro-consignment, we will be able to use positive socialization to reinforce valuation of the stoves.

Ultimately, we recognize the potential of biomass cook-stoves to help eliminate the respiratory health scourge and impending deforestation disaster facing Rwandans. Further, less time spent foraging, stove repairs, and fuel pellet production will generate income opportunities. In the long term, if the project continues beyond the nine-month processing time for validation of Clean Development Mechanism (CDM) projects, then it could be eligible to receive Certified Emissions Reductions (CERs),⁶ which can be sold on the world market so that we can return further dividends to the project's participants.

While we have no aspirations of providing this technology en masse to people this summer, we hope to create a successful model that could be expanded or replicated on a much larger scale in the future. We feel that there is great potential in this technology that is currently being smothered by information problems and prohibitive costs. Our work this summer will directly confront these issues and while it will not be easy, we feel that we have the resources, ability, and time to continue moving down the path of peace and prosperity.

⁴ "Micro-Gasifying Stoves - with a Fan," Inyenyeri, <http://inyenyeri.org/stoves/>.

⁵ Greg Van Kirk, "The MicroConsignment Model: Bridging the 'Last Mile' of Access to Products and Services for the Rural Poor," *Innovations: Technology, Governance, Globalization*, 2010, vol. 5, issue 1, pages 101-127.