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## Cookstove dissemination in Haiti: Improving collaboration and information-sharing

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*In April 2010, a Berkeley-based team visited Haiti on a fact-finding mission. The team encountered a high level of interest in cookstove projects, in part due to the outpouring of humanitarian aid and increased attention to economic and social development in Haiti in the wake of the January earthquake. However, one of the key findings of the trip was that because most aid organisations are still focused on immediate relief efforts, there is room to improve the coordination of stove dissemination activities, increase information sharing between interested parties and provide an independent assessment of the efficiency and cultural appropriateness of the stoves currently being considered for distribution in Haiti.*

Figure 1: Port-au-Prince cooking demonstration (Source: Robert Cheng)

### Background

With funding from the Lawrence Berkeley National Laboratory (LBNL) and coordination provided by Technology Innovation for Sustainable Societies (TISS), the parent organisation of the Darfur Stoves Project (DSP), a team of two engineers and one

social scientist visited Haiti for two weeks in April 2010. Their aim was to determine how LBNL and TISS/DSP's expertise could most effectively be leveraged to contribute to fuel-efficient cookstove efforts in Haiti. The primary goal of the trip was to assess the current situation regarding stove use and to determine opportunities and

needs for intervention. To do so, the team observed cooking practices in the camps, households, the markets of Port-au-Prince and the market in Mirebalais and held discussions with around 40 Haitian street vendors, household members and employees of several international non-governmental organisations (NGOs).



Figure 2: Pot on stove made of Rebar (Source: Kayje Booker)

## Observations of Haitian Cooking Practices and Materials

The majority of the team's conversations in Port-au-Prince neighbourhoods and camps revealed that residents cook one large meal midday, with smaller meals for breakfast and dinner when food and money are available. The vast majority of Haitians cook some kind of rice and bean dish every day, with *sos pwa*, rice with bean sauce, appearing most frequently. For this reason, *sos pwa* was selected as the dish to be prepared in the cooking demonstration. The demonstration included five stoves: the Mirak, StoveTec and EcoRecho stoves, a commonly available Haitian stove made of metal rebar and LBNL's own Berkeley-Darfur Stove. Each local cook prepared *sos pwa* simultaneously on five separate stoves while the team timed the entire cooking process, recorded food and water measurements, the amount of charcoal consumed and specific instructions for each stage of the process.

## Fuel

The most commonly observed fuel was charcoal in the form of small sticks, sold either in large sacks, small plastic sacks or marmites (a volumetric measurement roughly equivalent to the size of a large coffee can, holding on average 0.65 kg). In the cooking demonstration, each stove consumed between 1-1.5 kg of charcoal for the entire meal. Generally, Haitians stated that their household use of charcoal was 1-1.5 marmites (roughly 0.65 to 1 kg) per day, slightly less than was observed in the cooking demonstration. Given that each marmite costs 20-25 Haitian gourde

(HTG) (US\$0.5-0.62), households spend 20-30 HTG (US\$0.50 – 0.97) per day on fuel (Booker 2010).

In addition to charcoal, the team also observed cooking with fuelwood in the smaller city of Mirebalais and the more rural areas of the Central Plateau. Even within Port-au-Prince, there appear to be some households cooking on three-stone fires with fuelwood, usually when people cannot afford either stoves or charcoal.

In Port-au-Prince the team observed kerosene stoves in households and on sale but were unable to observe one being used. Those who did have a kerosene stove, due to fuel cost, seemed to reserve it for preparing smaller meals that take less time to prepare, or for making coffee or tea.

An additional fuel mentioned was liquefied petroleum gas (LPG), common in upper class homes in Port-au-Prince (Booker 2010), but not generally available to the poor or widely available outside the capital. There was also mention of a proposed programme to switch large numbers of Haitians to LPG use. This idea is reportedly popular with upper and middle class Port-au-Prince residents but raised concerns in some quarters. Such concerns included import dependence, the need for massive subsidisation, lack of infrastructure, switching from a locally available and income generating fuel to a foreign one, and moving towards fossil fuels instead of trying to sustainably manage what could be a renewable resource.

In Haiti, there are currently various groups working to develop fuel alternatives to both wood charcoal and fossil fuels. Some of these alternative fuel sources cook much the same as current wood charcoal and can be used in current charcoal stoves, while others offer entirely

new approaches to cooking, such as gasification of biomass pellets that would require new stoves as well. At this stage, these charcoal alternatives are limited in their distribution but seem to have drawn considerable interest from NGO and government actors.

## User Feedback

Based on observations and conversations with stove users, the team compiled a list of desired stove characteristics including an ash pan; easy access to charcoal during the cooking process in order to control thermal power of the stove to match the particular stage of cooking; capacity to support large pots; ability to cook pot contents evenly; adjustable height to be comfortable while standing; a stove lifespan of multiple years and a cost comparable to current stoves. (Cooking demonstration participants thought that 250 HTG (US\$6.25) would be a reasonable price for any of the improved stoves from the demonstration.)

## Supply Chain

The preference for local manufacture was extremely strong, both in Port-au-Prince and the Central Plateau. Haiti is known for its metalwork, and the currently available traditional and rebar stoves are made by local artisans from scrap metal. Large-scale manufacturing of a metal stove in-country is possible. One important note regarding the metal supply in Haiti is that there are large quantities of recycled metal available in Port-au-Prince, and there are many skilled artisans able to create almost any kind of stove from that material. If a metallic improved stove were to be introduced, and if that stove cost more than other locally available models, informal discussions in the market place implied that there would almost certainly be a problem with competition from inferior copies produced from scrap metal.

## Recommendations

Given the abundance of improved stoves targeted towards Haiti, the team did not

Figure 3: Sos Pwa (bean sauce) preparation (Source: Scott Sadlon)



believe that development of a new stove should be a priority at this time. While there certainly are technical opportunities for stove improvement, given the breadth of currently proposed stove activities and the number of organisations already involved, the team thought it necessary to identify what unique contributions are still needed. One critical area in which there is much work to be done is the removal of the information barriers that prevent optimal decision making by NGOs and Haitian stove users alike. In order to remove or reduce these information barriers, one valuable contribution which LBNL and TISS/DSP hope to make is to provide an unbiased, independent assessment of different stove types, a cooking protocol, and recommendations to current stove projects on design modifications that incorporate factors such as local pot size/shapes and user feedback.

The project has developed a Haiti Cookstoves Google Group where it has posted the draft of the Haitian Controlled Cooking Test (CCT) using a Haitian cooking protocol and is seeking feedback to ensure that the Haiti Cookstove CCT is compiled in a collaborative manner and that distinct testing groups create comparable results.

## Stove Testing

The team found extensive NGO interest in stove dissemination projects, both for short-term relief and longer-term development. Much of the current stove activity appears to be ad hoc relief efforts; with NGOs unable to invest the time and effort needed to find the most appropriate stove for the needs of the Haitian recipients. Given the team's observations of Haitian cooking, they believe that not all proposed stoves would meet the particular needs of Haitian cooks nor operate efficiently under the conditions imposed by Haitian cooking. In collaboration with local NGOs, LBNL and TISS/DSP hope to provide a valuable service to NGO stove efforts by characterising the performance of various proposed stoves in terms of both efficiency and cultural appropriateness.

## Contribution to Development Efforts

Over the medium and long-term time frames, a different type of intervention will be required. Reports by various agencies have documented the negative impacts of the current stove and fuel situation in Haiti. To ameliorate these negative effects on a large-scale will require a much more sustained, broad and thorough intervention, probably a large-scale switch to an alternative fuel source in addition to more efficient stoves.

This type of intervention would require more time and resources than the minor stove modifications being considered for the short-term. This longer-term, larger intervention strategy will likely involve technology development in both stoves and fuels. To be successful, such an intervention will require a much more systematic analysis than was possible in the two week fact-finding mission.

LBNL and TISS/DSP plan to take steps to begin such an analysis to lay the groundwork for a larger, longer-term intervention. An effort on this scale will need partnership between scientific agencies such as LBNL, international aid agencies (both governmental and non-governmental), the private sector in Haiti and the Haitian government agencies.

## Conclusion

At this stage in Haiti's reconstruction process, the LBNL team and its partners have decided that they will most effectively contribute to the reduction of fuel consumption and indoor air pollution by providing an unbiased, independent assessment of different stove types.

Hesitant to introduce another stove to the market before fully assessing what is currently available in Haiti, focus will be placed on developing a more nuanced understanding of the different players, stove models, dissemination approaches and impact assessment strategies existing or planned.

Analysis will be shared with the aid community to promote coordination and further collaboration.

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