UNHCR Shimelba Camp

Progress Report

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INTRODUCTION

One hundred and eight UNHCR Shimelba Camp households were selected as part of Project Gaia's CleanCook Stove Pilot Study. The selection of the households was based on the following criteria: mud block houses, households' participation in the seed planting activities, and the ethnic composition (approximately 40 Kunamas and 60 Eritreans as per the percentage of ethnic composition in the camp). Out of the 108 selected households, 99 households (58 Tigrayan, 38 Kunama, and 3 Saho) participated in the baseline survey, which surveys each household's primary food preparer. This progress report is based on the information gathered from the baseline survey of the 99 participating households.

Education Levels of this Study's Primary Cooks

The educational level of the primary cooks in the study are as follows: 23% completed high school, 21% attended but did not complete high school, 21% have no education, 16% attended but did not complete elementary school, 6% completed vocational school, 5% attended church/mosque school that teaches literacy (reading and writing), 4% completed college/university, and 4% attended but did not complete college/university. (Refer to Table 1 in the Appendix.)

Comparing the education levels between the ethnic groups, particularly the Tigrayan and Kunama, the Tigrayan primary cooks in this study received a higher education than the Kunama primary cooks. The Tigrayan education levels are as follows: 36% completed high school, 24% attended but did not complete high school, 12% have no education, 9% completed vocational school, 7% completed college/university, 7% attended but did not complete elementary school, and 5% attended but did not complete college/university. In comparison, the Kunama education levels are: 37% have no education, 26% attended but did not complete elementary school, 18% attended but did not complete high school, 13% attended church/mosque school, 3% completed high school, and 3% attended but did not complete college/university. There are only three Saho primary cooks, two who attended but did not complete elementary school and one who completed vocational school. (Refer to Tables 2, 3, and 4.)

Regarding the universal right to education, the UNHCR states,

> "The situation for girls is particularly bad, with reports in several countries showing a much lower utilization by refugee girls of educational programmes at all levels (primary through university) than is true of refugee boys . . . Refugee women face many of the same impediments to education and skills-training as do children . . . In addition, women face other barriers . . . including need for day care and lack of time and energy after household work and/or jobs as a wage earner" (UNHCR, Section IV, Education and Skills Training, Points 103 and 108).

In response to this problem, the UNHCR further cites possible interventions to help refugee girls and women "overcome the barriers that impede their utilization of the educational . . . and training programmes" (UNHCR, Point 110). We believe that the

CleanCook Stove would allow fuel gatherers, mostly women and girls, to have more time and energy available for education and training. As evidenced by our pilot studies in Addis Ababa, women and girls who use the CleanCook Stove have been able to use their extra time with educational or income-generating activities instead of gathering fuel.

STOVES & HOUSEHOLD COOKING

Types of Stoves used by Study Households

There are 14 types of stoves used by the 99 study households. Some households use more than one type of stove. Table 5 in the Appendix shows that the most common types of stoves currently in use by study households are: charcoal, traditional metal stove (fueled by either charcoal or fuelwood), open fire three stone seat, etengena, Lakech charcoal, and the fornella. Other types of stoves used by study households are listed in Table 5. Unlike the ethanol-fueled CleanCook Stove, stoves currently used by the study households produce large amounts of indoor air pollution and soot on the walls and pots.

According to the following three interviews of UNHCR Shimelba Camp study participants conducted by Melat Esayas, Project Gaia-Ethiopia Director, the CleanCook Stove is favored over other stoves, such as kerosene, charcoal, and wood stoves.

Mrs. Tigist Belay is a Tigrayan refugee in Shimelba Camp and is a pilot study participant testing our alcohol-fueled CleanCook (CC) Stove. Tigist is a ZOA animator and participates in environmental activities. She lives with her husband, who also cooks. Before the pilot study, she used a kerosene stove and told Melat Esayas, Project Gaia-Ethiopia Director that health-wise, kerosene is very bad, burns her eyes, causes her headaches, and costs 6 Birr per 300 ml (Esayas Interview).

This is Tigist's kerosene stove, which she no longer uses, for she has completely shifted to the CC Stove. As shown in the picture (bottom right), the fill valve on her kerosene stove is not capped, as is common in many households, thereby causing danger of explosion. Tigist worries that Project Gaia may take the CC Stove and that she will run out of ethanol after the pilot study's three month supply. She says she is willing to pay for ethanol, because it is clean and efficient. Tigist is using her ethanol economically to save it for the rainy season when fuelwood and charcoal are completely absent. In the past, her family has spent three days without eating cooked food due to a shortage of fuelwood/charcoal (Esayas Interview).

Miss Sara Gebre Medin, 28 years old, lives in Shimelba Camp with her mother and six brothers. She calls the CleanCook (CC) Stove a "luxury household equipment," handling it with great care during the pilot study. Her CC Stove looks as though it is new, and she covers it with cloth to protect it against dust when it is not in use. Sara says she is so accustomed to the CC Stove that she fears she may not be able to return to her wood and charcoal stoves once the pilot study ends (Esayas Interview).

Mrs. Lemlem, 25 years old, was born in Shimelba and married a refugee. She uses the CleanCook (CC) Stove for all types of food except for baking enjera. (Project Gaia is in the process of designing a CC Stove for enjera.) Lemlem told Melat Esayas, Project Gaia-Ethiopia Director, the alcohol-fueled CC Stove saves her time for other housework, because it is very fast and she can keep it in the house while doing something else in the same room (Esayas Interview).

Based on the above-noted interviews of three UNHCR Shimelba Camp study participants, there is a preference for the CleanCook Stove over other stoves, including kerosene, charcoal, and wood stoves.

Where the Households in the Study Cook

Many households use more than one type of stove, and the type of stove may determine the location where they cook. Yet, despite the various types of stoves, the majority (40%) of all cooking takes place in the main indoor room of the household, while another 29% of cooking occurs in a separate indoor room. Thus, 69% of all cooking occurs inside the homes, thereby raising concerns of indoor air pollution from cooking, particularly since the average size of the homes is 3m x 4m / 4m x 4m with few or no windows. Further, 3% of cooking occurs in an open air room attached to the house, and so cooking pollutants from this location may easily enter the house. Lastly, while 28% of cooking occurs outdoors, the cooking pollutants would still affect the health of the primary cook as well as anyone in the path of the smoke, particularly since there is not much space between homes and they lack trees in the yards to block the pollutants. (Refer to Table 6.)

The exposure to a high concentration of smoke inside the home would be greatly reduced by the CleanCook Stove, as there are minimal-to-no emissions given off by the stove.

Housing Materials of Study Households

Seventy-three percent of our study households have thatched roofs. This poses problems of fire with many of the stove types used in these households. Other study household roofs consist of the following materials: 9% cane, 3% mud brick, 3% cane with mud, 3% bushes, 3% grass, 2% wood, 1% corrugated, 1% wood and earth, 1% sticks, 1% cane and stick. Many of these other roof materials (cane, bushes, grass, and wood) are also flammable. (Refer to Table 7.)

Ninety-nine percent of our study households have walls of mud brick, and 1% (one household) has walls made of wood. All study households have earth floors.

FUEL

Fuel Gathering

Fifty-one study households gather fuelwood. According to the baseline survey of fuel gatherers, fuelwood gathering takes on average: 1.47 people to travel a distance of 4.35 km in 2.03 hours.

Eight households gather charcoal according to the baseline survey. Gathering charcoal takes on average: 1.20 people to travel a distance of 2.80 km in 1.10 hours. Charcoal gathering may require less distance because charcoal is probably gathered from other households' leftover fires from outdoor cooking.

Ten households gather sawdust. Sawdust gathering takes on average: 1.11 people to travel a distance of 3.06 km in 1.69 hours.

Only 4 households gather roots, for an average of: 3 km, 1.34 hours, 1 person. Only 3 households gather eucalyptus leaves, for an average of: 3 km, 2.33 hours, 1 person. According to the baseline survey, only one household gathers agri-residue, taking one person an hour to travel 4 km to gather this fuel. (Refer to Table 8.)

Problems Facing Fuel Gatherers

Of the 99 households in the study, 52% (51 households) gather fuel. When asked about the problems they face when gathering fuel, these fuel gathering households gave the following responses: 34% cited a scarcity of fuel, 20% stated that they do not have enough help gathering fuel, 16% stressed local community issues, 13% expressed that fuel gathering takes too much time, 8% expressed physical pain of gathering fuel, 4% cited wild animals, 3% noted other security threats, and 2% noted robbers. (Refer to Table 9 in the Appendix.)

Scarcity of Fuel

The number one concern of fuel gathering households is scarcity of fuel. The scarcity of fuel for gathering raises concerns about the ability of low-income households to purchase fuel to cook and feed their families. This problem also highlights the need for families to walk farther and farther for fuelwood and other biomass fuels, thus increasing problems with the local community, increasing safety risks, and creating larger time constraints for the families themselves. The CleanCook Stove reduces the need for refugees to gather fuel from the local community and it reduces deforestation resulting from fuel gathering.

Not Having Enough Help

The problem of not having enough help raises concerns that children become more needed to help gather fuel, thereby taking time away from their education or social development, increasing their risk for physical injury due to carrying heavy bundles and walking long distances, and increasing safety risks, particularly for unaccompanied girls. Indeed, we find in the baseline survey that some households report using a "child load" for fuel gathering.

Local Community Issues

Issues with the local community are of particular importance, because the UNHCR Shimelba Camp must maintain good relations with the local communities. In Shiraro, there are many military personnel and several military settlements in the surrounding area. A forty minute drive from Shiraro, Shimelba is a fairly new camp. Since the refugees were moved from Welanebi to Shimelba for safety reasons in June 2004, it is important that the camp is well-received by the locals, so that new safety concerns do not force the refugees to be displaced again. This fuel gathering problem reflects the local community's dislike of the refugees' fuel gathering activities. Moreover, the UNHCR cites that questions regarding local reception and attitudes must "be asked in assessing the protection situation of refugee women" and these questions include:

- How are they received by the indigenous population of the area?
- How are they received by the military or police forces in the area?
- Are the refugees placing strain on the area's resources (including water, food and cooking fuel) and services? (UNHCR, Section II, Local reception and attitudes).

Noting that the UNHCR recognizes the importance of local attitudes as they affect the safety of refugee women, this problem cited by fuel gatherers in the UNHCR Shimelba Camp highlights the need for alternative cooking fuels like ethanol so as to maintain positive relations with the local communities.

According to a phone conversation that Melat Esayas, Project Gaia-Ethiopia Director, had with UNHCR on August 5, 2005, UNHCR is planning to open a new refugee camp located between Shire and Gondar, Ethiopia for Eritrean refugees. Due to the local community's request that the new refugees be banned from cutting trees, UNHCR will give these refugees access to CleanCook Stoves and ethanol. Regarding enjera, the

refugees will use the same stove and small pans. (As noted earlier, Project Gaia is in the process of designing a CleanCook Stove for enjera.) This decision by UNHCR to outfit a new refugee camp with the CleanCook Stove exemplifies the issue of fuel gathering as a problem affecting relations between local communities and refugees.

Takes Too Much Time

Fuel gathering takes too much time according to 13% of the study's fuel gatherers. Fuelwood gathering in Shimelba on average takes 1.50 people 2.21 hours. As the fuelwood or other biomass fuels become scarcer, households will have to travel farther and take more time to gather fuel. This time could be better spent on income-generating activities, education, child care, and so on.

Physical Pain

Physical pain of fuel gathering includes neck, back, leg, and feet aches. This pain can have serious long-term health effects, particularly when men, women, or children are walking long distances and carrying the fuel by foot. According to Rural Energy Development, the approximate weight per type of load for fuelwood/roots/leaves/agri-residue is as follows: child, 10-15 kg (22-33 lb); woman, 15-20 kg (33-44 lb); man, 30-50 kg (66-110 lb); mule/donkey, 80 kg (176 lb); and camel, 100 kg (220 lb) (Rural Energy Development). Most fuel gatherers do not have access to a mule/donkey/camel, so the load is often carried by an adult or child. On a daily basis, this can cause severe strain to the human body. Even with a mule/donkey/ camel, they need to lift the 80-100 kg (176-220 lb) loads onto and off of the animal and they need to walk long distances guiding the animal. Lastly, there is very little rain in the Shimelba Camp area and dehydration is another health concern with the physical labor of fuel gathering.

Other Problems Cited by Fuel Gatherers

Wild animals, other security threats, and robbers were cited as problems to fuel gatherers, and they can have short- and long-term health effects, whether physical and/or psychological. A fuel gatherer could be physically harmed by a wild animal, a robber, or another security threat. Since these problems are noted by fuel gatherers, they are clearly known risks to the refugees and can cause anxiety.

Other security threats may include the threat of rape, which has been a recognized problem in some refugee camps in the world and is underreported in every society, whether "developing" or "developed." The threat of gender-based violence to refugee women, who hold the primary responsibility of fuel gathering, is well-documented. "Refugee situations are beset by gender-based violence…" (USAID 22). Further,

> "While refugee situations present problems of safety to all refugees, women and their dependents are particularly vulnerable. Their physical security is at risk both during flight and after they have found refuge . . . During flight, refugee women and girls have been victimized by pirates, border guards, army and resistance units, male refugees, and others with

> whom they come in contact . . . Violence against women and girls does not necessarily abate when refugee women reach an asylum country . . . Unaccompanied women and adolescent girls are particularly at risk of such sexual and physical abuse" (UNHCR, Section III, points 30, 31, 33).

In comparison to the obvious problem of scarcity of fuel, the psychological fear of these security threats may be underreported regardless if the fuel gatherer has ever been raped or harassed. However, if a fuel gathering refugee has been raped or harassed at any point during flight or refuge, she may suffer from Post Traumatic Stress Disorder (PTSD); she would likely feel vulnerable when traveling to collect fuel, and this could trigger PTSD episodes. While we do not measure the effects of such fears in this study, we do note that such fears on a daily basis can cause psychosomatic symptoms, such as pelvic pain, headaches, and chest pain.

Fuel gatherers comprise 52% of our study population, and the CleanCook Stove would help alleviate all of above-mentioned problems by decreasing the need to gather fuel.

Fuel Purchased by Study Households

Sixty-nine of the 99 study households purchase fuel, and many households purchase more than one fuel to meet their cooking needs. (Refer to Table 10.)

The purchased fuels by the study households are noted as follows:

- 58 households purchase charcoal, representing 42% of the purchased fuels;
- 42 households purchase fuelwood, representing 31% of purchased fuels;
- 21 households purchase kerosene, representing 15% of purchased fuels;
- 8 households purchase roots, representing 6% of purchased fuels;
- and 8 households purchase sawdust, also representing 6% of the purchased fuels.

Since 70% of the households in the UNHCR Shimelba Camp Study purchase fuel, this shows a significant demand and willingness to purchase fuel for stoves. The CleanCook Stove would certainly create a demand for ethanol, and our pilot studies in Addis Ababa prove a willingness and desire of participants to purchase ethanol and the ethanol-fueled CleanCook Stove.

Fuel for Lighting

Out of the 99 study households, only one (1%) household did not use a fuel for lighting. Thirty-eight percent of the study households use kerosene for lighting; 33% use electricity for lighting; 21% use fuelwood for lighting; 5% use a candle(s); 1% use agri-residue; and 1% use charcoal for lighting. (Refer to Table 11.) While we are not using ethanol for lighting in our pilot studies, there have been lanterns designed by Dometic, the producer of the CleanCook Stove, that use alcohol fuels.

HEALTH ISSUES

Primary Cook's Perceived Negative Health Impact Regarding Gathered Fuel

When asked if the fuel gathered has a negative impact on their health, the fuel gatherers responded as follows: 66% stated the gathered fuel has a Very High negative impact, 28% stated it has a High negative impact, and 6% (3 fuel gatherers) stated it has a Low negative impact on their health. Not one of the households believed the gathered fuel has No impact on their health. It is significant that 94% of the primary cooks who gather fuel perceive the gathered fuel to have a high or very high negative impact on their health. (Refer to Table 12.)

Primary Cook's Perceived Negative Health Impact Regarding Purchased Fuel

Fifty percent of primary cooks who purchase fuel believe the fuel has a Very High negative impact on their health; 29% believe it has a High negative impact on their health; 21% believe it has a Low negative impact on their health. None of these primary cooks believe that their purchased fuel has No negative impact on their health. Thus, 79% of all primary cooks who purchase fuel believe that the purchased fuel has a high or very high negative impact on their health. (Refer to Table 13.)

Primary cooks in the UNHCR Shimelba Camp Study have overwhelming negative perceptions toward gathered/purchased fuels regarding the impact that these fuels have on their own health. Since the primary cook is the most affected by the air pollution of cooking, they will provide the demand for the CleanCook Stove fueled by ethanol, which will not produce the smoke or soot resulting from the current gathered or purchased fuels.

Health Problems of Primary Cooks in the Study

Eighty-six out of 99 primary cooks reported one or more health problems. Out of these 86 primary cooks, 74% report a cough, which is symptomatic of respiratory problems caused by air pollution. Sixty-four percent of these 86 primary cooks suffer from headaches, which can result from a lack of oxygen. Fifty percent of them experience eye irritation, which can be linked to their time spent cooking and raises concern of potential cataract problems as cited below. Thirty-one percent of them suffer from shortness of breath, which can be symptomatic of respiratory and cardiovascular problems. Twenty-one percent have constant phlegm (which can reduce airflow), 12% suffer from backaches (possibly from fuel gathering), and 1% suffered a heart attack. Only 13 out of 99 primary cooks did not report any of these health problems. (Refer to Table 14.)

Alarmingly, the health problems cited by 86 of our study's primary cooks resemble symptoms of serious health problems in the list below. For example, shortness of breath (dyspnoea) is a hallmark of patients with chronic airways disease of which chronic respiratory failure and/or pulmonary hypertension may ensue (Bruce 17). According to Nigel Bruce (Department of Public Health, University of Liverpool), Rogelio Perez-Padilla (National Institute of Respiratory Diseases, Mexico), and Rachel Albalak

(Department of International Health, Rollins School of Public Health of Emory University, Atlanta), the following are *some* health problems that can be caused by key household cooking pollutants that may increase the risk of respiratory and other health problems:

*Acute: bronchial irritation, inflammation and increased reactivity
*Reduced muco-ciliary clearance
*Reduced lung function in children
*Wheezing and exacerbation of asthma
*Respiratory infections
*Acute respiratory illness in children, mostly upper respiratory illness (URI)
*Middle ear infection (otitis media), which can be fatal or cause deafness
*Chronic bronchitis and COPD (Chronic Obstructive Pulmonary Disease)
*Exacerbation of COPD
*Chronic airways (lung) disease, emphysema, and fibrosis
*Excess mortality, including from cardiovascular disease
*Reduced oxygen delivery to key organs and the developing fetus
*Low birth weight
*Increase in perinatal deaths
*Lung cancer, cancer of the mouth, nasopharynx, and larynx
*Nasopharyngeal and airways irritation
*Longer term exposure increases susceptibility to bacterial & viral lung infections
*Absorbtion of toxins into lens, leading to oxidative changes
*Cataract (Bruce 11, 14, 17).

Further, mothers often carry young children on their backs while cooking, so infants and children may spend several hours breathing smoke on a daily basis (Bruce 13). In this report, the focus is on the primary cooks, but the implications of indoor air pollution and its effects on others in the household are evident. Lastly, indoor air pollution causes considerable demands on the health system in "developing" countries.

Primary Cooks' Perceptions of the Causes of their Health Problems

The 86 primary cooks who reported health problems also reported one or more causes of their health problems. Seventy-four believe that the smoke from their stove is a cause of their health problem(s). Twenty-nine believe that their problem(s) is caused by work. Two believe that smoking tobacco is a cause of their health problem(s). One person cited hereditary disease as a cause. One cited another sickness. One cited the "hard sun," and another cited "I am wounded." Only 7 of the 86 cooks who reported health problems did not state a known or perceived cause of their health problem(s). Since 74 of the 86 primary cooks believe that smoke from their stove is a cause of their health problem(s), the CleanCook Stove would be a marketable stove to these primary cooks. (Refer to Table 15.)

Medical Treatment of the Primary Cooks

Eighty-seven percent of the 99 primary cooks in the study reported health problems. Only 13 of the primary cooks either reported no health problems or did not reply to that question.

When asked if they have sought medical treatment within the last six months for the above-mentioned health problems, the 86 primary cooks who reported health problems gave the following responses: 67% sought medical treatment, 23% did not seek medical treatment, and 10% who reported health problems did not state whether or not they sought medical treatment. The large amount of primary cooks reporting health problems highlights the medical costs (short-term and long-term) associated with air pollution from cooking in the UNHCR Shimelba Camp. Many, if not all, of the reported health problems are preventable if the primary cooks have access to a clean cooking fuel like ethanol. (Refer to Table 16.)

Lastly, addressing access to health care, the UNHCR states: "There are also logistical problems that impede access to health care for refugee women. Inconvenient clinic hours may prevent women from coming for health services or bringing their children. Other time-consuming responsibilities limit women's flexibility [to access health care]" (UNHCR, Section IV, Point 101). The time spent gathering fuel for daily cooking needs limits fuel gatherers' access to medical treatment. Thus, the use of non-gathered "clean" fuels like ethanol would not only decrease health problems, but it would also allow more refugee women and children to access medical treatment during clinic hours.

CONCLUSION

Worldwide, energy policy-makers should be encouraged to help reduce exposure to indoor air pollution (IAP). "Acute lower respiratory infections (ALRI) remain the single most important cause of death globally in children under 5 years and account for around 2 million deaths annually in this age group. There are some sixteen studies in LDCs [Less Developed Countries] which have reported on the association between IAP exposure and ALRI . . . [T]he measurement of exposure has relied in almost all studies on proxies, including the type of fuel and stove" (Bruce 14).

Links between IAP and health problems reveal the need for cost-effective household energy and stoves that reduce exposure to IAP, and the ethanol-fueled CleanCook Stove is a viable option. Project Gaia pilot studies in Addis Ababa have shown that the CleanCook Stove decreases many of the health problems in our primary cooks; these reduced health problems found in our Addis pilot studies include: coughing, phlegm, eye irritation, and asthma attacks. Future reports on the UNHCR Shimelba Camp will also address such issues.

From a health perspective, IAP is the most important aspect of household energy. However, there are other health risks directly associated with household energy, such as: burns, kerosene ingestion, and injuries associated with the collection and carrying of fuel

(especially wood). Alternative fuels like ethanol can reduce the incidence of serious burns resulting from kerosene fires, and a concerted effort to reduce human exposure to IAP will impact the other health risks stated above.

There are also issues of the use of women's time, opportunities for income-generating activities, and effects on the local and global environment, which can also impact health. Our pilot studies in Addis Ababa suggest that the CleanCook Stove saves time for fuel gatherers and cooks, and some of our study households are able to do income-generating or educational activities in their extra time. Further, the scarcity of forest resources is increasing worldwide. Refugees struggle to meet the daily household needs for food and fuel, and the CleanCook Stove will engage households in sustainable household use of natural resources.

Policy Implications with the UNHCR

In the UNHCR Shimelba Camp, there are approximately 9,000 refugees with an average rate of immigration of 200 people per month. The majority of these refugees are women and children. "The World Health Organization (WHO) estimates that worldwide, there are at least 30 million refugees and displaced people, 80% of them women and children . . . [and] women refugees form one of the world's most vulnerable populations" (Population Reference Bureau 16). The UNHCR is committed to protecting refugees and recognizes the unique issues affecting women and girl refugees; cooking fuel is an important issue with this population as noted in the *Guidelines on the Protection of Refugee Women* (UNHCR). In this document, the UNHCR states: "[I]nternational protection of refugee women must be understood in its widest sense…Refugee women who must bribe guards to obtain firewood, water or other essential goods will be more susceptible to sexual harassment" (UNHCR, Introduction, Point 9). Two key issues for long-term refugee situations according to the UNHCR are:

- Assistance policies that ensure that single refugee women and women-headed households gain access to food, shelter, health care, clean water, firewood, etc.
- Access of women to income-generation and skills-training programmes to ensure their ability to support themselves and their families (UNHCR, Section II, Key Issues).

The CleanCook Stove can help address aspects of these two key issues if it is utilized in refugee camps. Regarding the first key issue, the CleanCook Stove would decrease, if not eliminate, the refugees' need to gather scarce cooking fuels that may be inaccessible due to local regulations, distance, or safety concerns. Second, the refugees would save time by not having to gather fuel, and based on interviews with pilot study cooks in Addis Ababa, they would save additional time when cooking some foods with the CleanCook Stove. As a result, they would have more time for income-generating activities or education, again evidenced in Addis Ababa pilot studies. Thus, the ethanol-fueled CleanCook Stove could be utilized in refugee camps to work towards addressing two key UNHCR issues cited above for long-term refugees.

Another benefit of the CleanCook Stove for refugee camps is that it addresses the UNHCR's concern with fuel gathering. "[C]ollection of fuel for cooking and heating is a task for which women are generally responsible. In a refugee context, efforts to find water or firewood can be not only time-consuming (if located at some distance from the camps) but dangerous (if located in mine-infested areas or the site of conflict)" (UNHCR, Section IV, Water and Firewood, point 87). The UNHCR could provide ethanol through companies like FINCHAA in Ethiopia to fuel the CleanCook Stove, so refugees would not have to travel to dangerous areas to collect fuel.

We hope the pilot studies in four UNHCR camps (Shimelba, Bonga, Kebrebeyah, and Sherkolle) will encourage the UNHCR to continue providing the CleanCook Stove to the refugees in those camps as well as consider expanding the use of the CleanCook Stove to other camps.

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APPENDIX

Table 1: Education Level of Cooks from Ethnic Populations in UNHCR Shimelba Camp

Table 2: UNHCR Shimelba Camp Study Tigrayan Primary Cook's Education

Table 3: UNHCR Shimelba Camp Study Kunama Primary Cook's Education

Table 4: UNHCR Shimelba Camp Study Saho Primary Cook's Education

Table 5: Stove Types Used in UNHCR Shimelba Camp Study Households

Table 6: Household Cooking Locations in UNHCR Shimelba Camp

Table 7: UNHCR Shimelba Camp Study Household Roof Materials

Table 8: Averages of Cooking Fuel Gathering in UNHCR Shimelba Camp

Table 9: Problems Faced by Fuel Gatherers in the UNHCR Shimelba Camp

Table 10: Fuel Purchased by UNHCR Shimelba Camp Study Households

Table 11: Fuel for Lighting UNHCR Shimelba Camp Study

Table 12: How fuel gatherers rate the overall negative impact of the gathered fuel on their health? UNHCR Shimelba Camp Study

Table 13: UNHCR Shimelba Camp Study How would you rate the overall negative impact of the purchased fuel on your health?

Table 14: UNHCR Shimelba Camp Study Health Problems Reported by 86 of the 99 Primary Cooks

Table 15: UNHCR Shimelba Camp Study Primary Cook's Perceived Causes of their Health Problems

Table 16: Have you sought medical treatment for your health problem during the last 6 months? UNHCR Shimelba Camp Study

Table 1: Education Level of Cooks from Ethnic Populations in UNHCR Shimelba Camp

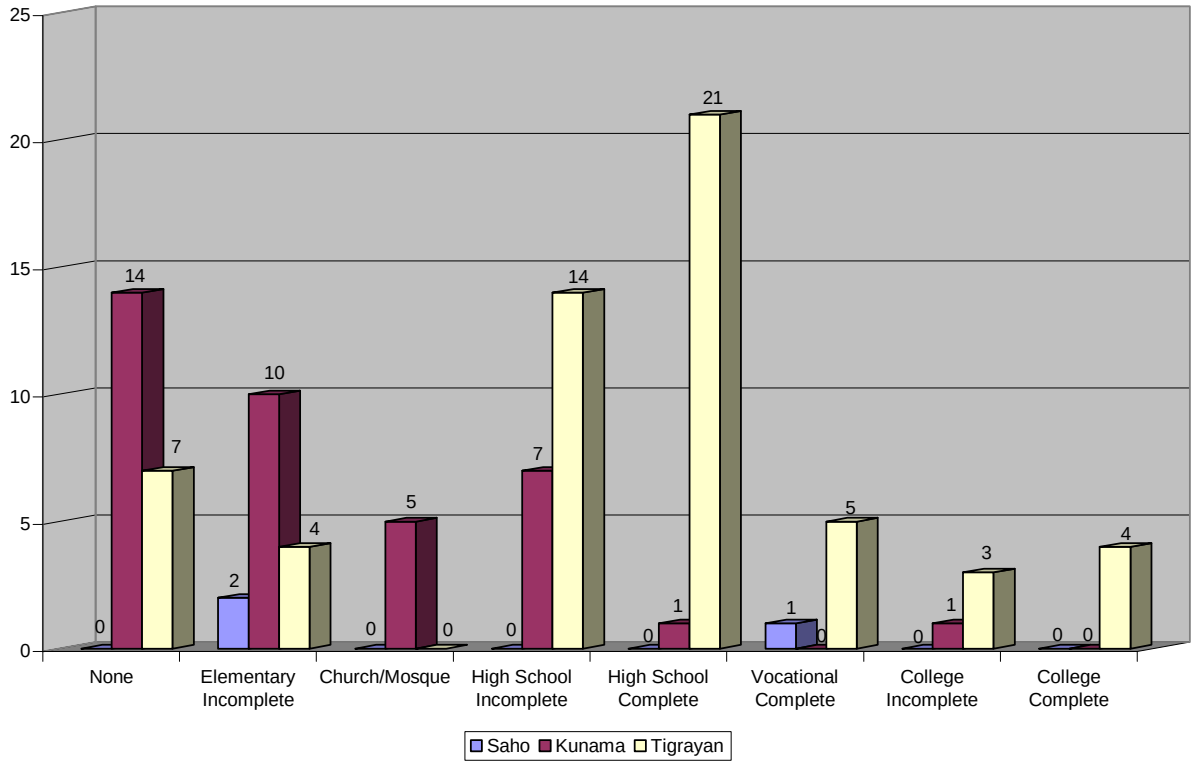

Table 2: UNHCR Shimelba Camp Study
Tigrayan Primary Cook's Education

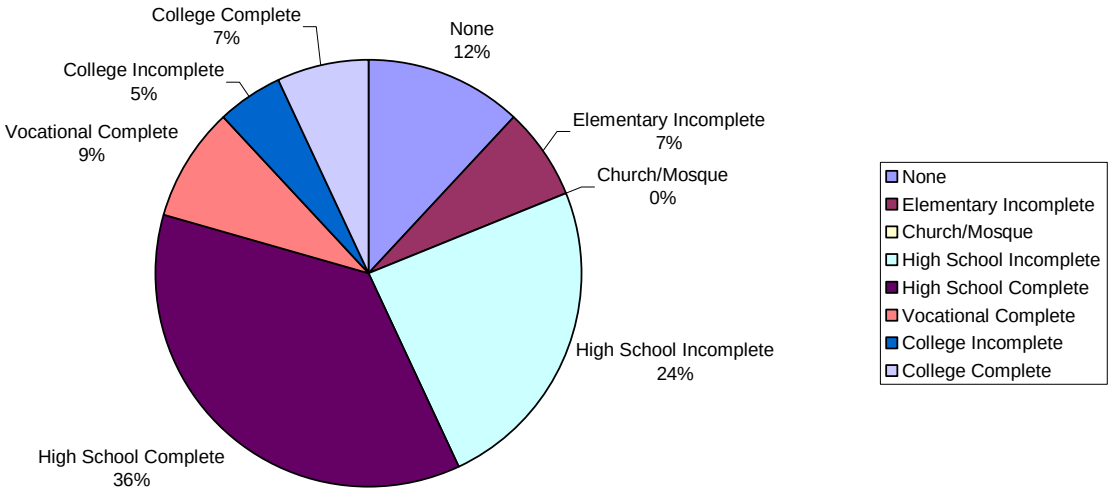

Table 3: UNHCR Shimelba Camp Study
Kunama Primary Cook's Education

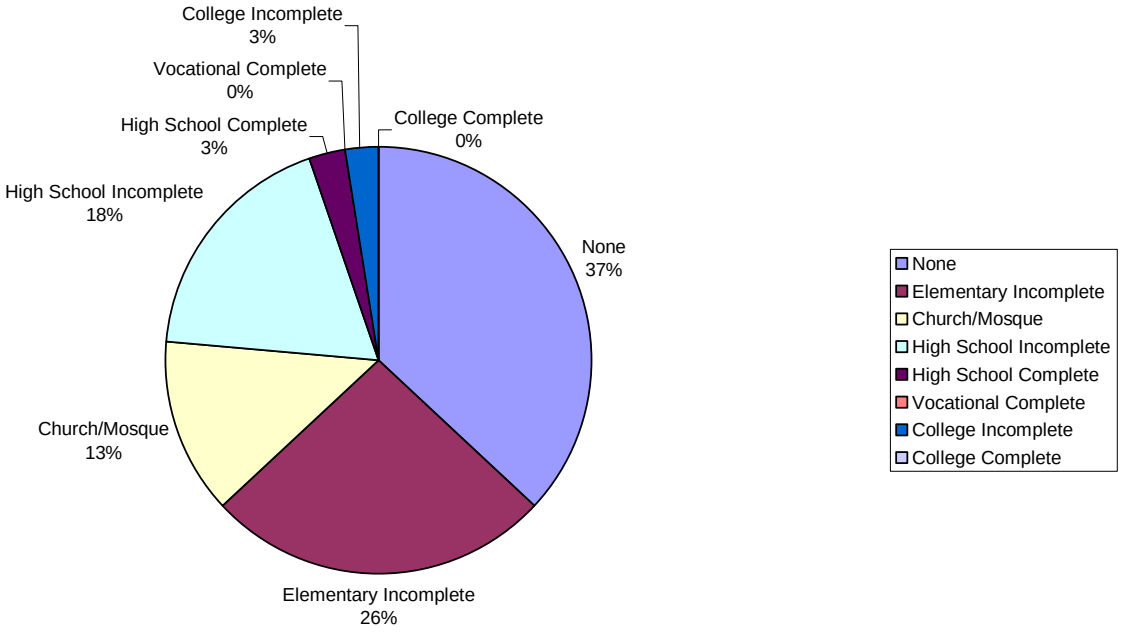

Table 4: UNHCR Shimelba Camp Study Saho Primary Cook's Education

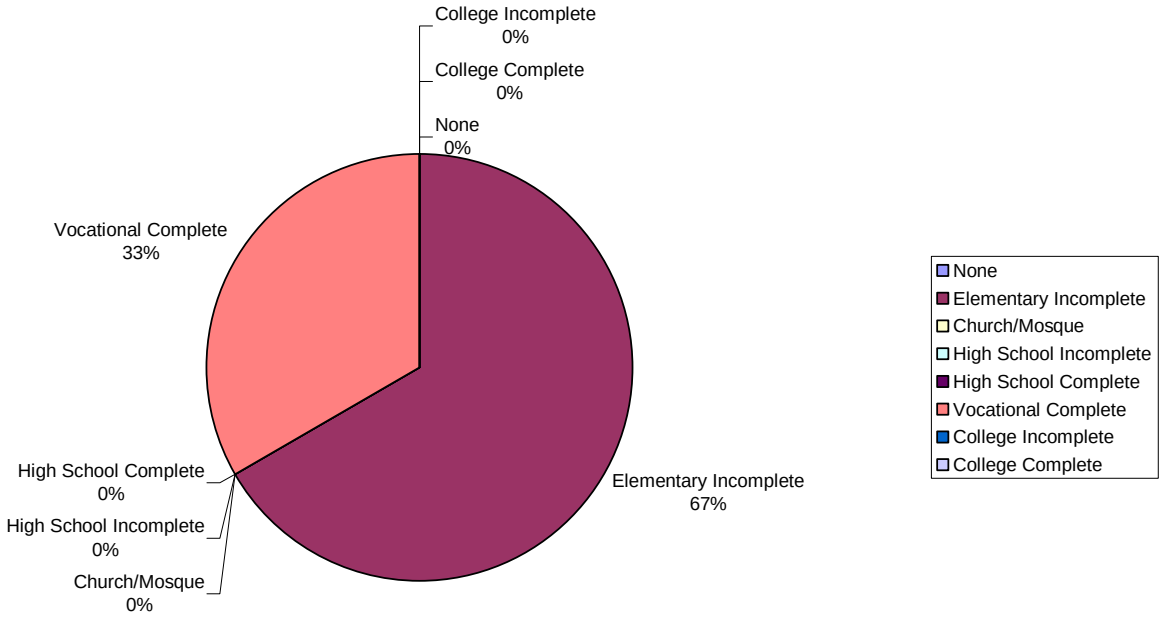

Table 5: Stove Types Used in UNHCR Shimelba Camp Study Households

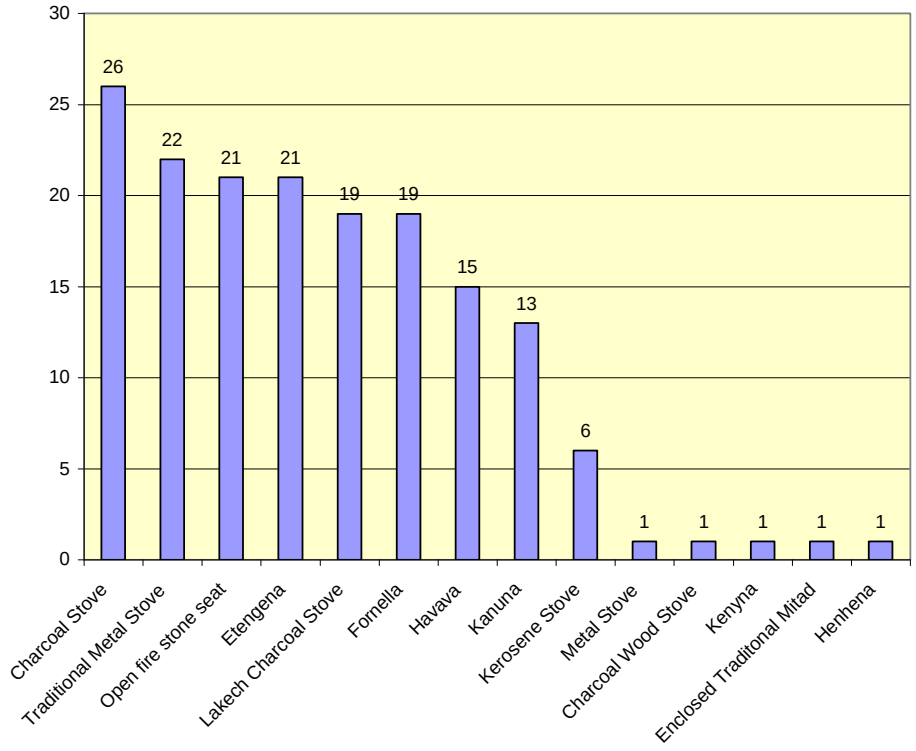

Table 6: Household Cooking Locations in UNHCR Shimelba Camp
(some households cook in more than one location)

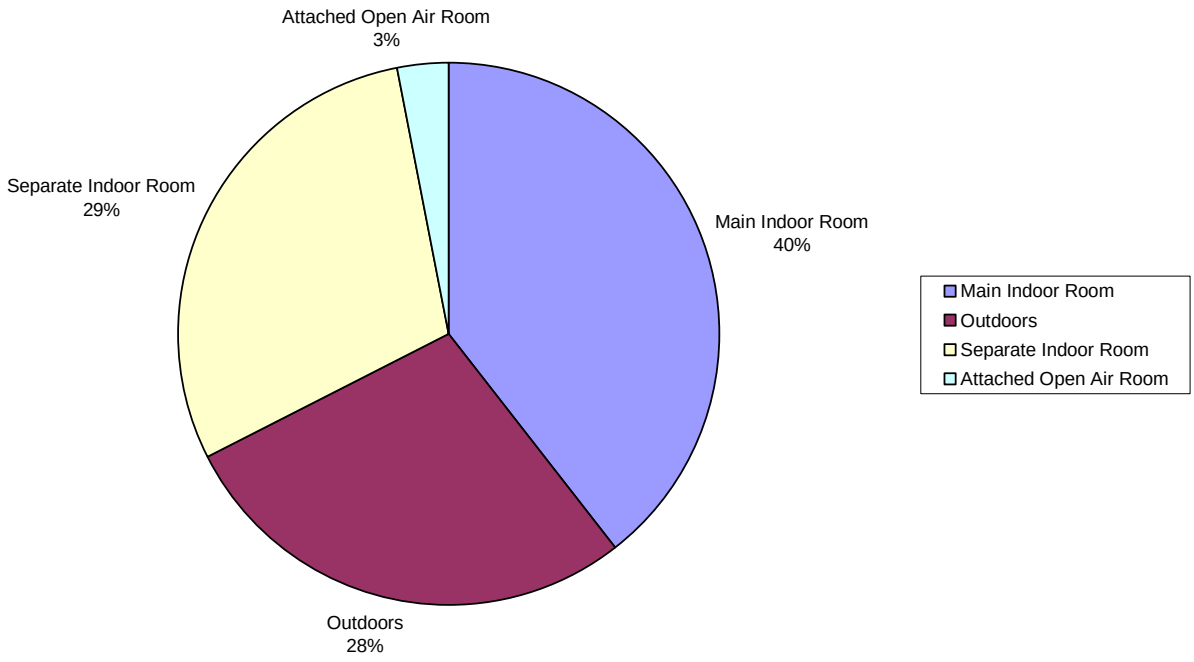

Table 7: UNHCR Shimelba Camp Study Household Roof Materials

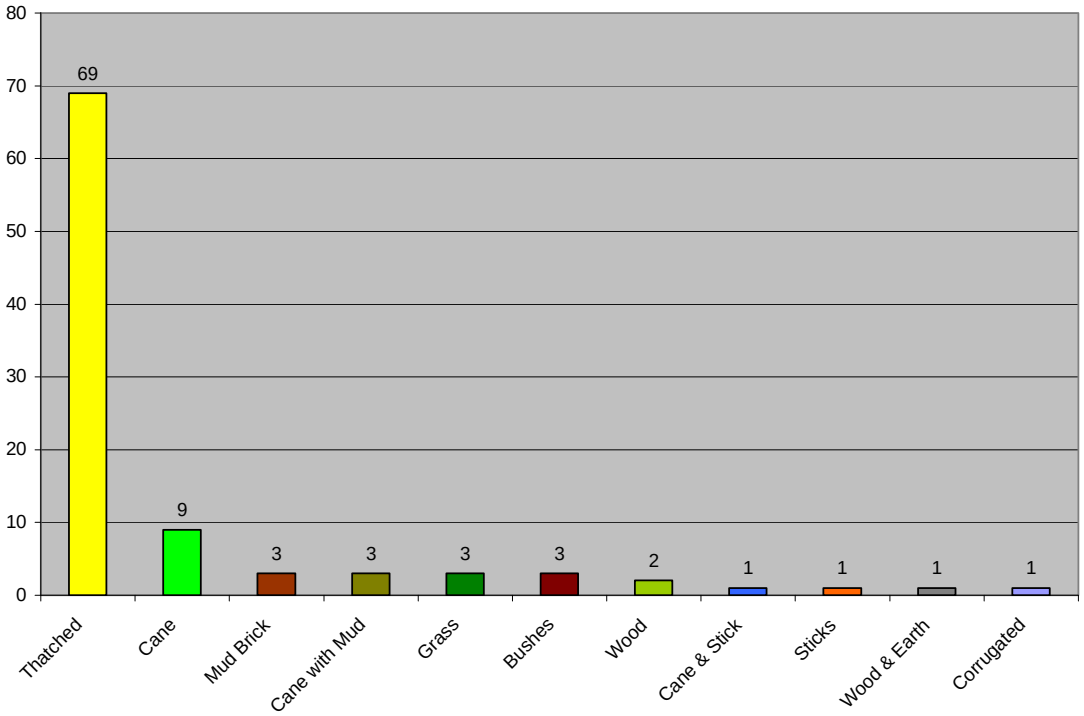

Table 8: Averages of Cooking Fuel Gathering in UNHCR Shimelba Camp

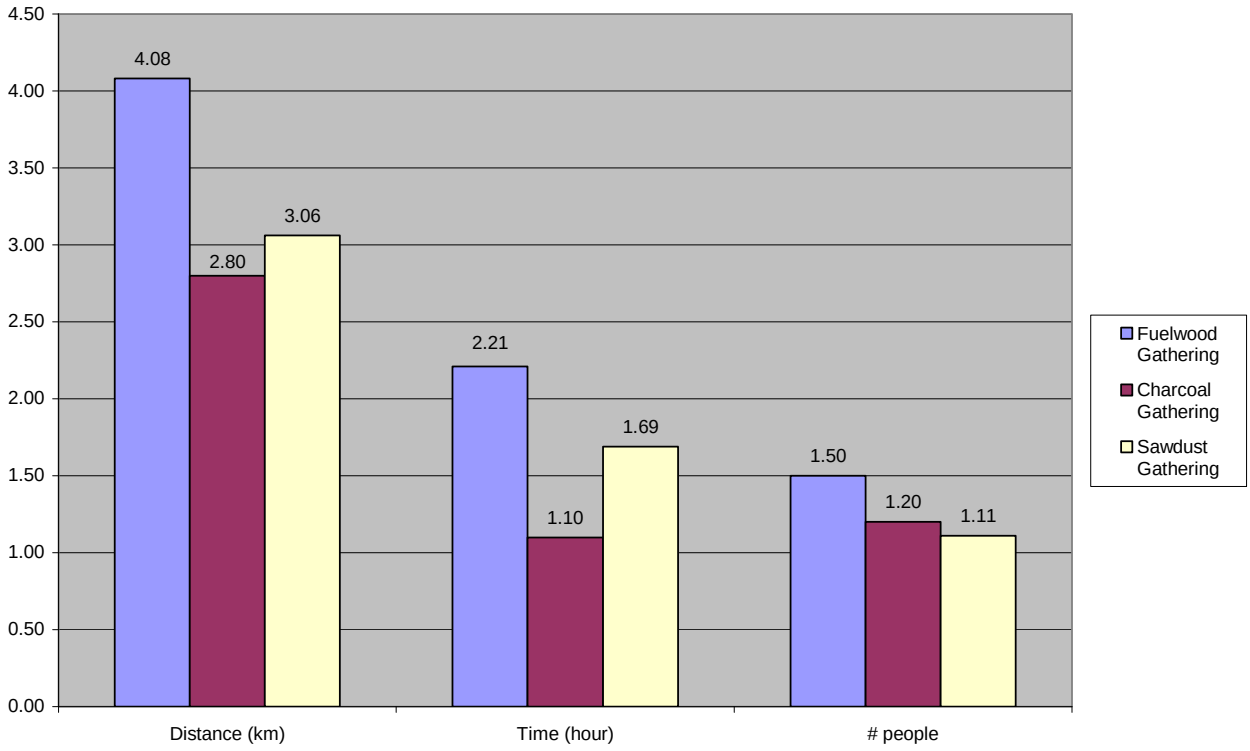

Table 9: Problems Faced by Fuel Gatherers in the UNHCR Shimelba Camp (52% of the Study Households Gather Fuel)

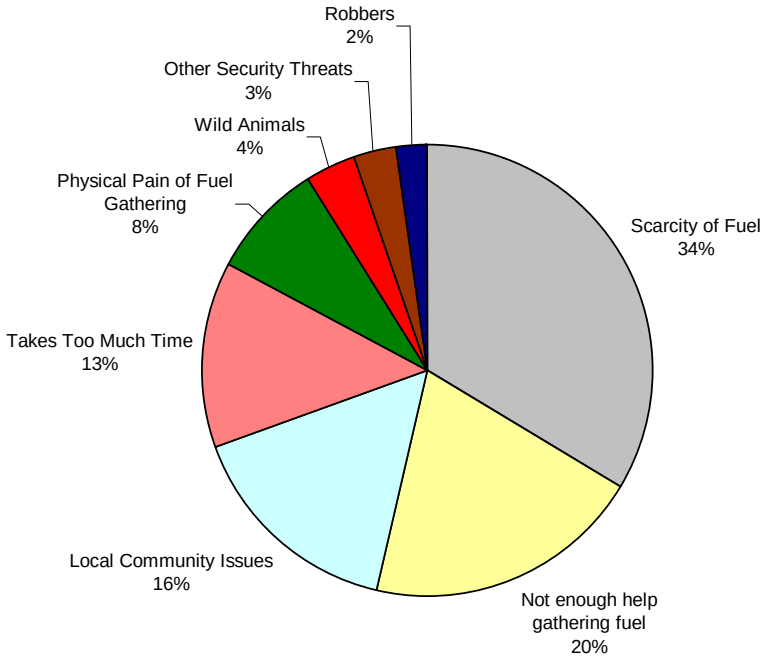

Table 10: Fuel Purchased by UNHCR Shimelba Camp Study Households (30 households did not report purchasing any fuel.)

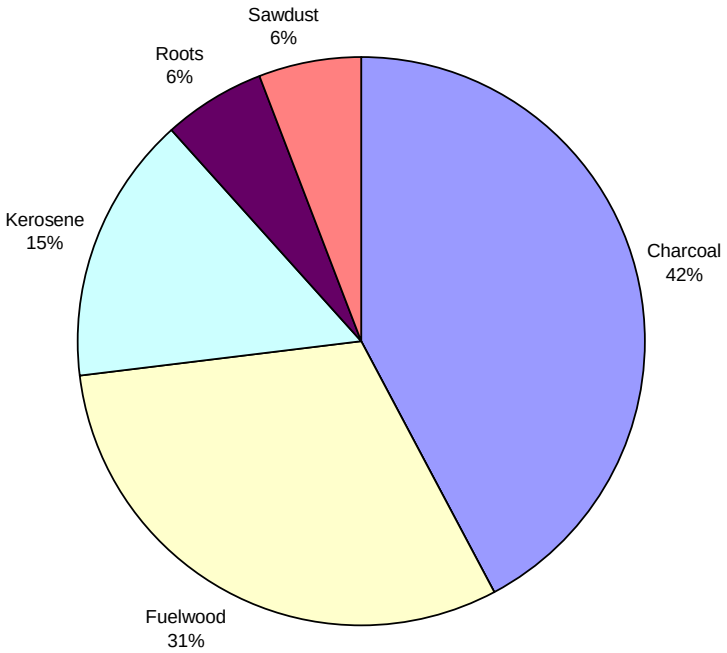

Table 11: Fuel for Lighting
UNHCR Shimelba Camp Study

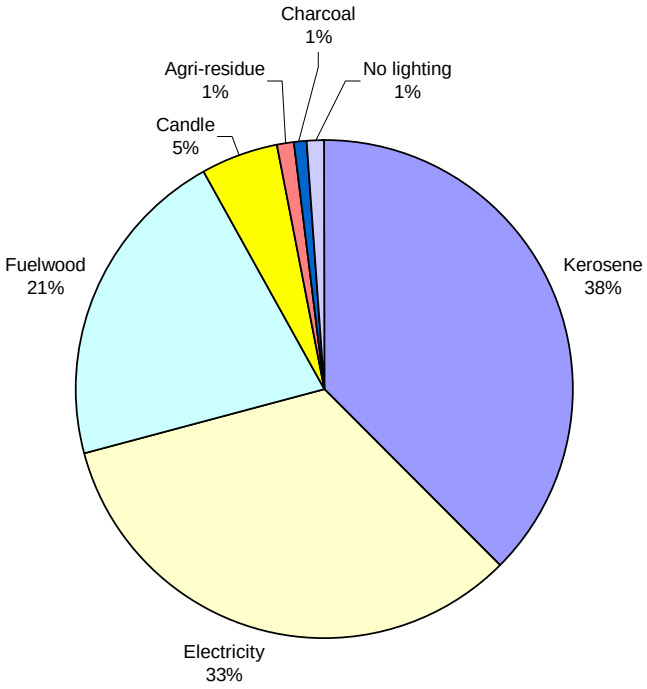

Table 12: How fuel gatherers rate the overall negative impact of the gathered fuel on their health?

UNHCR Shimelba Camp Study

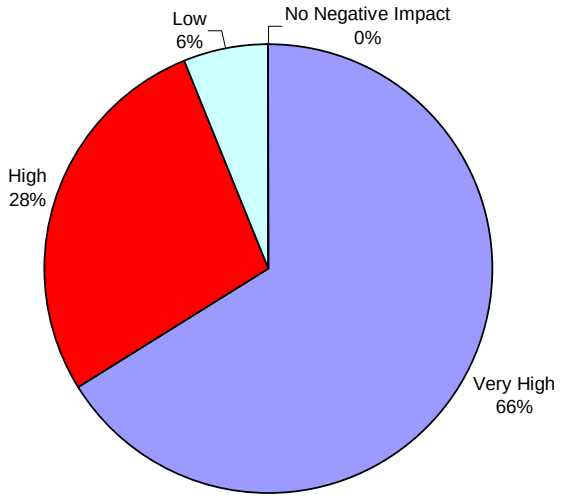

Table 13: UNHCR Shimelba Camp Study
How would you rate the overall negative impact of the purchased fuel on your health?

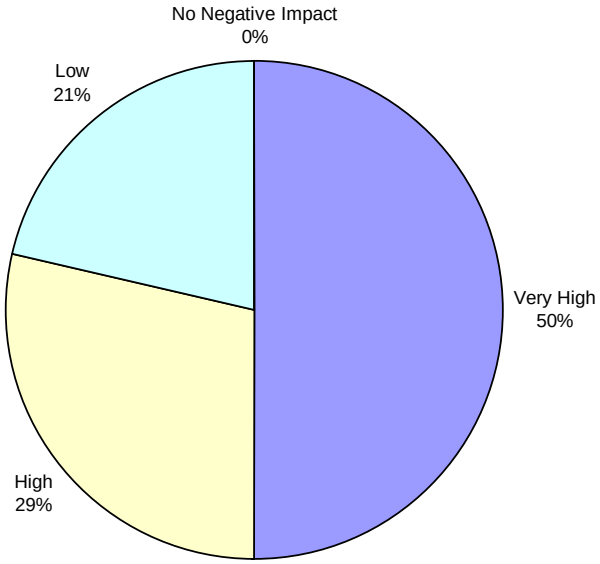

Table 14: UNHCR Shimelba Camp Study

Health Problems Reported by 86 of the 99 Primary Cooks

(86 cooks reported one or more of the following health problems; only 13 out of 99 did not report these particular health problems)

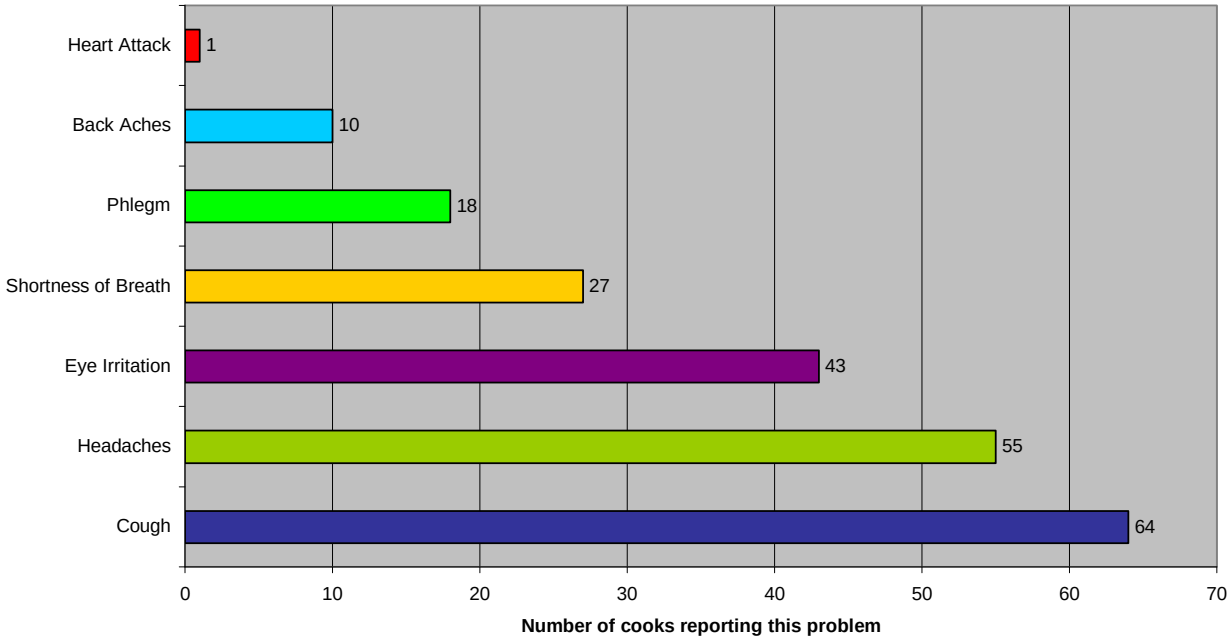

Table 15: UNHCR Shimelba Camp Study

Primary Cook's Perceived Causes of their Health Problems
(These are the perceptions of the 86 cooks who reported health problems.)

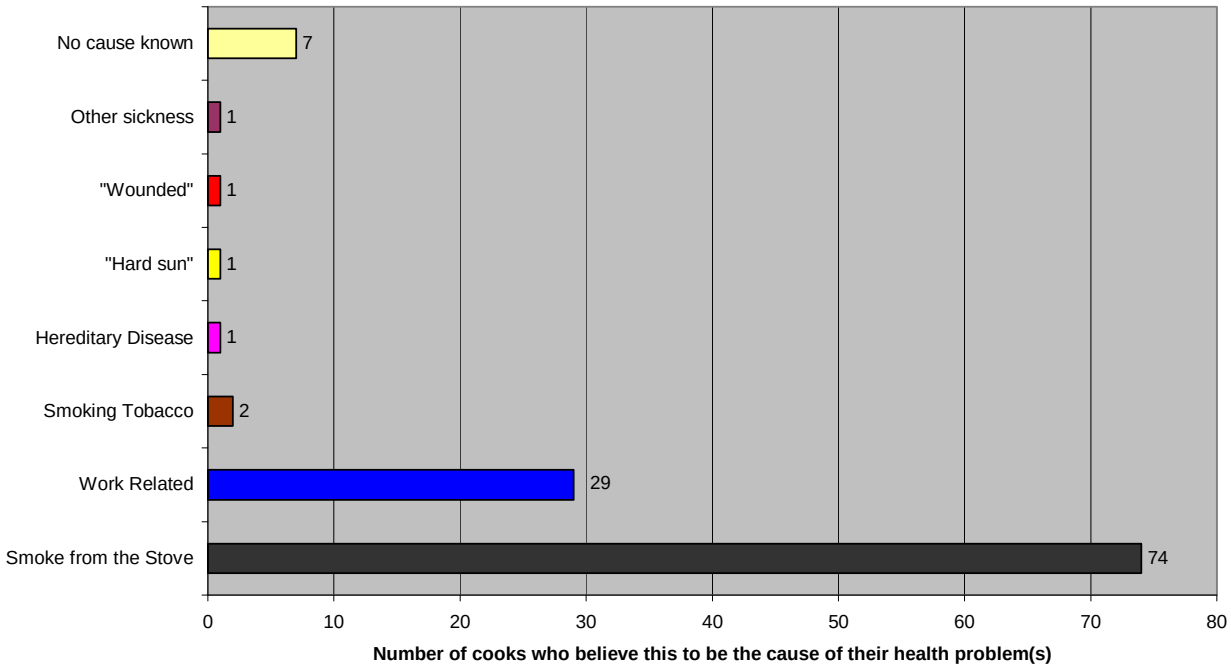

Table 16: UNHCR Shimelba Camp Study

(Only 12 out of 99 primary cooks either reported no health problems or they gave no reply regarding health problems.)

Have you sought medical treatment for your health problem during the last 6 months?