WFP SAFE Project in Kenya

Kakuma fuel-efficient stoves and gender-based violence study report

June 2013

This report focuses specifically on the impact of fuel-efficient stoves and gender-based violence sensitization on the exposure to risk of gender-based violence during firewood collection for refugees and the host community in Kakuma, Kenya.
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1. Introduction
1.1 Background
Since the Horn of Africa crisis, the World Food Programme has been working with its partners to scale-up the distribution and use of fuel-efficient stoves in the region to:

a) Reduce the vulnerability and exposure of women to risk of violence during the collection and sale of firewood,
b) Help mitigate the potential environmental and protection threats associated with the cooking requirements of beneficiaries in the drought-affected areas, and
c) Strengthen and inform future humanitarian response strategies on cooking fuel.

In 2007, the Inter-Agency Standing Committee Task Force on Safe Access to Firewood and alternative Energy (SAFE) in Humanitarian Settings was established and co-chaired by WFP, Women’s Refugee Commission (WRC), and UNHCR. Based on the guidance material and outcomes of the Task Force, WFP undertook a series of studies in 2009-2010 focusing on a number of countries with large displacement populations\(^1\). These studies sought to understand how beneficiaries cope with fuel scarcity and the related consequences, to take stock of existing responses by both WFP and partners, and to propose a comprehensive approach that addresses the protection, environmental, and livelihood concerns associated with cooking needs.

In July 2010, WFP undertook a SAFE feasibility study in Kenya, which underscored the daily risks that women confront as a result of the need to access fuel to cook WFP rations.\(^2\) The assessment mission revealed that WFP beneficiaries too often resort to negative coping mechanisms in order to cook WFP food. Bartering and selling of food rations to purchase firewood, skipping meals, reducing the meal size, and undercooking food are all common mechanisms adopted by women to cope with the increasing scarcity of cooking fuel. Moreover, as the main collectors, women confront a range of protection risks when they search for firewood.

The Horn of Africa crisis led to a massive influx of people into Kenya, and the environmental impact of such large refugee populations depending mainly on local wood fuel for cooking quickly became apparent. In the semi-arid areas of Kakuma and Dadaab, the high population

\(^1\) In 2009-2010, the following eight countries were selected for in-depth feasibility: North Darfur Sudan, Uganda, Haiti, Sri Lanka, Kenya, Ethiopia, Chad, and Democratic Republic of Congo. Each feasibility study included three keys parts: a) field assessment, b) report detailing the main challenges in each context, on-going activities, and recommendations for programmatic response, and c) detailed response proposal.

\(^2\) Following an extensive desk review, Mariangela Bizzarri (Independent Consultant, WFP), Catherine Bellamy (WFP), Maria Katajisto (WFP) and Erin Patrick (Women’s Refugee Commission) undertook a two-week assessment mission in July (2010) to Nairobi, Dadaab, and Kakuma. The mission involved interviews with WFP staff, UN agencies, Government officials, NGOs and focus group discussions with women in refugee camps. For the full study, please see WFP (2010) Safe Access to Firewood and alternative Energy in Kenya: An Appraisal Report.
density has added pressure to rapidly degrading land. Locations once covered in dense tree and shrub cover were cleared to make way for the refugee settlements, and the remaining tree cover in open areas in and around the camps was cleared by the refugees themselves for firewood. Environmental degradation and competition for the scarce natural resources, including cooking fuel have also intensified tensions between the host community and refugees and have consequently exacerbated protection concerns.

The Horn of Africa crisis also exacerbated the already negative impact of the coping mechanisms. Most of the refugees who arrived first settled with relatives thereby increasing the family size that had to depend on limited resources. WFP provided emergency supplies; however, some were sold to meet other unmet needs including non-food items, shelter, and firewood – as evidenced by the GAM rates of the camp population that moved from 7.9% before the HOA emergency to as high as 35% at its height.³

While WFP’s assessments were not able to verify quantity or degrees of gender-based violence incidences associated with access to cooking fuel (see WFP’s study on SGBV in Food Assistance in Kenya for more details on this issue⁴), it was clear that the protection risks and degree of drudgery involved with collecting firewood have a large, negative impact on the lives of women in the areas assessed.

⁴ Following an extensive desk study, Gina Pattugalan (WFP), Michela Bonsignorio (WFP) and Veronique Barbelet (WFP) undertook a three-week assessment mission in November (2010) to Nairobi, Dadaab and Kakuma, which entailed interviews with WFP staff, UN agencies, Government officials, NGOs and focus groups with women and men in refugee camps and host communities. For the full study, please see WFP (2010) Sexual and Gender-Based Violence in Food Assistance in Kenya
In Kakuma and Dadaab, for both the refugees and host communities, gender-based violence incidences related to access to cooking fuel were reported to predominantly occur during firewood collection in unsafe territory around and outside of the camps. Men and women also reported that domestic violence occurs in homes when there is no fuel for cooking. Women reported that transactional sex occurs in exchange for cooking fuel or for money to purchase cooking fuel.

1.2 WFP SAFE project in Kenya

BPRM and OFDA are supporting the implementation of the SAFE project in Kakuma and Dadaab with the aim to reduce exposure to risk of gender-based violence during firewood collection and to identify appropriate cooking technology for targeted refugee and host community populations. Having previously performed well in Kenya’s camps, the Jikopoa and Envirofit fuel-efficient stoves were chosen for this project.

The project originally started in September 2011 with a focus on Dadaab. However, unprecedented levels of insecurity within and around the camps not only delayed the project, but also rendered the camps virtually inaccessible for the in-depth monitoring activities required for the gender-based violence study component of the project. After thorough consultations with UNHCR, WFP, BPRM and OFDA, the project was restructured to include Dadaab and Kakuma with a focus on the latter for the purpose of studying the linkages between fuel-efficient stoves and gender-based violence. The project included three main components:

1) Training on effective use and maintenance of fuel-efficient stoves for all project beneficiaries in Dadaab and Kakuma
2) Fuel-efficient stoves distribution
   - Dadaab – planned provision of 8,000 and 6,000 fuel-efficient stoves to refugees and host communities, respectively, with limited monitoring due to security risks and accessibility difficulties
   - Kakuma – planned provision of 6,000 fuel-efficient stoves to refugees and 6,000 to host communities with comprehensive monitoring
3) Gender-based violence sensitization and study in Kakuma
   - GBV sensitization for all Kakuma beneficiaries
   - Baseline and end-line household surveys – 5,120 host community households and 7,000 refugee households served as the population of study
   - Baseline and end-line focus group discussions held with refugees and host communities separately
   - Technical testing component including controlled cooking tests, observational data gathering, usability tests, water boiling tests, and focus group discussions with the nine participants

1.3 Objective of the study

The objective of the study was:

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5 Two different models of each stove were distributed: Jikopoa and Jikopoa 2, Envirofit G3300 and Envirofit M5000. However, due to delays in procurement and delivery of the stoves, the end-line of the project was conducted at a time when the Jikopoa and Envirofit G3300 were the main stoves distributed.
To establish whether and how the provision of fuel-efficient stoves can reduce beneficiaries’ exposure to risk of gender-based violence when accessing cooking fuel.

More specifically, the study aimed to determine:

- If the fuel-efficient stoves provided were more efficient as compared to stoves previously used and the traditional three-stone fire;
- If there was a reduction in time spent, frequency of trips, and distance travelled by women and girls for firewood collection;
- If there was any evidence (direct or indirect) to suggest that a reduction in time, distance, and frequency of trips reduced beneficiaries’ exposure to risk of gender-based violence; and
- If the potential time saved translated into time spent on safer and more productive activities and allowed for more caring capacity.

2. Methodology

The following research design, project design, and methodological tools were used for the purpose of this study to help understand the correlation between fuel-efficient stoves and exposure to risk of gender-based violence for WFP beneficiaries in Kakuma, Kenya.

2.1 Research design and project design

For the purpose of the study, both the targeted host community and refugee community participants were divided into three groups:

- Control group (no intervention)
- Group with only fuel-efficient stove distribution and training on use and maintenance
- Group with fuel-efficient stove distribution and training on use and maintenance, plus GBV sensitization

Because women are the primary collectors of firewood and consequently face the associated risks of GBV, the project targeted them directly with the distribution of fuel-efficient stoves, training on use and maintenance, and GBV sensitization. However, it is assumed that each household as a whole benefited from the distribution of the stoves.

2.2 Methodological tools

Three main tools were used to collect data and gather information for the purpose of this study:

- Household surveys
- Focus group discussions
- Controlled Cooking Tests

In addition, regular monitoring conducted throughout the implementation of the project was used to gather additional information and help to triangulate findings. The household survey and focus group discussion methodology were used both for the baseline and end-line, while the controlled cooking tests (CCT) were conducted during the end-line as planned.
Through this approach, the study encompasses both quantitative and qualitative methods of research as well as technical testing of the fuel-efficient stoves.

2.2.1 Household Survey
The household survey was implemented for both the baseline and end-line periods. WFP developed the questionnaire based on existing tools, and in consultation with OFDA.

The sampling was done as follows:

- Using three groups (No intervention, Stove only, Stove and GBV sensitization)
- Disaggregated into refugee population and host community
- Statistically relevant sampling taking into account the overall population
- Panel design (same households interviewed at baseline and end-line)

The number of sites to be covered was determined by the total number of project sites. Sampling of the sites for baseline, end-line, and beneficiary contact monitoring was done through stratified random sampling by camp for the refugee population and by sites for the host community.

<table>
<thead>
<tr>
<th>Name of Camp</th>
<th>Total Sites</th>
<th>Fraction of Sample</th>
<th>Number of sites</th>
<th>Sample Fraction</th>
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<tr>
<td>1</td>
<td>6</td>
<td>6/30 = 0.2</td>
<td>0.2 x 10 = 2</td>
<td>6/2 = 3</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>8/30 = 0.2666</td>
<td>2.666 x 10 = 3*</td>
<td>8/3 = 3*</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>16/30 = 0.5333</td>
<td>0.5333 x 10 = 5*</td>
<td>16/5 = 3*</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td></td>
<td>10</td>
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* Data are rounded to the nearest whole number

The study was carried out among two distinct groups of people, the refugees and the host community (Turkanas). All 5,120 and 7,000 households selected as SAFE project participants in the host community and refugee camps respectively served as the population of study.

In the host community, the study population resided in four areas: Kakuma (16 groups and 2,376 households), Letea (7 groups and 994 households), Kalobeyei (5 groups and 740 households), and Gold (6 groups and 890 households). Kalobeyei and Gold, which are over 100km apart, are the furthest from the camps. Conversely, the refugee population under study stayed in three camps sub-divided into zones and blocks. They included Kakuma 1 sub-divided into four zones with 42 blocks with 4,013 households, Kakuma 2 sub-divided into two zones with 19 blocks and 1,090 households, and Kakuma 3 sub-divided into three zones with 36 blocks and 1,897 households.

Because of the social, cultural, and economic differences between the refugees and the host community, the two groups were studied separately.
Determination of Household sample size per strata

For both the host community and refugees, the baseline sample was calculated using a confidence level of 95 percent and confidence interval of 5 percent. The population sizes were 5,200 for the host community and 7,000 for the refugees. For the host community, this gave a sample size of 358 households, which was rounded off to 360 households. For the refugees, it gave a sample size of 364 households, on which 10 percent of the sample was added to make 400 households and then rounded off to 402 households so as to be easily divisible into three strata. The additional 10 percent for the refugee population sample was added to safeguard against the tendency of refugees to move into and out of the camp. Because the host community was recognized to be relatively stable and settled, the additional 10 percent was not added to its sample size.

The number of participant households to be administered in each site was determined by the total number of beneficiaries in the site, their nationalities, and the type of stove. Selection was done by stratified randomization. Households for the non-intervention strata were also selected from sampled sites.

The sample was then divided equally among the three strata (120 and 134 households per strata in the host community and refugee camp respectively), allowing for comparison of the three strata at the end of the project.

Since the host community study population was scattered across 34 project site locations in four broad areas, a sample could not be directly drawn out of all of them. The study used a multistage sampling technique that first saw the random selection of the FFA groups and later the respondent households from those groups. For Letea, Gold, and Kalobeyei areas, one project site constituted the strata selected to receive stoves and GBV sensitization and another site was selected to receive stoves only. For Kakuma area, two sites were randomly selected for each of the same two categories (stoves/GBV and stoves only). The third strata representing those households that received no intervention included the four project areas and the 10 selected sample sites.

2.2.2 Focus Group Discussions

A series of focus group discussions were conducted at both the baseline and end-line periods to triangulate the findings of the household surveys. The focus group methodology used was the same for both baseline and end-line periods and had been derived from the WFP Handbook on SAFE. This methodology was developed during the pilot phase of the SAFE project and based on implementation of the methodology in six country-based projects. The discussions were primarily held with women, the direct beneficiaries of the interventions and the ones predominately responsible for the collection of firewood. However, for the purpose of better understanding home life, gender roles, and acceptability of the stoves, men – generally husbands or close relatives of the direct beneficiaries – were also asked to participate in separate focus group discussions.

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2.2.3 Controlled Cooking Tests
As part of the end-line methodology, a series of controlled cooking tests (CCTs) was conducted to provide a technical testing base for the study. In total, 72 CCTs were conducted over 12 days in Kakuma with Turkana, Sudanese, and Somali women. The results of these tests can be found in a separate report. The tests identified a clear preference for the Envirofit stove and markedly lower fuel consumption for both the Envirofit and Jikopoa stoves as compared to the three-stone fire. They also revealed some challenges in terms of cooking with fuel-efficient stoves for some traditional dishes, e.g. flat bread cooking (injera and kissra commonly baked by the Ethiopian, Somali, and Sudanese communities).

2.3 Challenges and limitations

Challenges inherent to measuring gender-based violence
Measuring incidences of gender-based violence is inherently difficult due to its sensitive nature and general underreporting, often due to fear of social stigma and other negative consequences. In addition, there is typically no single actor to whom gender-based violence is reported. As indicated by the household survey, incidences are reported to a number of actors including community elders, police, and family members, making collection and verification of information more difficult.

Another challenge is that of attribution. Any changes in behaviour or reported incidences of violence could be a reflection of factors outside of the scope of the study (e.g. conflict and insecurity) or a combination of different factors, therefore making it difficult to attribute changes to any one particular intervention.

Overall, the stoves and gender-based violence sensitization intervention group had very similar end-line results to the stoves only group. Anecdotal evidence indicated that the sensitization positively influenced the adoption of better protection strategies during firewood collection and helped to inform participants about response options if an incident occurs. However, perhaps the sensitization intervention did not yield more varying results because it only entailed a onetime session, and behavioural change typically requires a more long term approach.

Challenge with panel design and missing respondents
Given their often unpredictable and fluctuating nature, humanitarian and camp settings provide challenges in terms of tracing individuals for study purposes. Due to the movements within and outside of the Kakuma camps, 27 refugee respondents who had taken part in the baseline survey were not traceable at the time of the end-line survey – some had either relocated to other areas of the camp, moved to live in urban areas, or had been resettled to other countries. As a result, the data from these people could not be captured. However, this movement was anticipated and factored into the sample size, which included an extra 10% (36 respondents) to cover such eventualities, allowing the data to remain statistically significant.

During the baseline, 360 people from the host community were interviewed to provide a small two-person cushion to help mitigate inevitable moves and changes in the community. However, the host community sample population was slightly more mobile than expected,
and five respondents were unavailable at the time of the end-line. This sample size of 355 resulted in statistical significance at a 94.9% confidence level – just shy of, but effectively the same as the originally planned 95% level. Considering the roaming nature of the pastoralist host community, it was very successful to reach 355 out of 358 sample size (98% of those participating in baseline participated in the end-line).

It is worth noting that future studies would benefit from having a larger cushion to be even more confident in the results. However, it can be reported with great confidence that the results of this study are significant, relevant, and reflective of the host community population at large.

**Lack of firewood distribution**

In the camps, most of the beneficiaries reported using the stoves when firewood was available, which for most meant when it was distributed by agencies, given that firewood collection is both illegal and dangerous. It was also reported that those who could afford to switch to charcoal were typically doing so after depleting the distributed firewood. Some beneficiaries reported undercooking and reducing the number of meals per day as firewood dwindled, while others reported going to the bush to collect it. Given the multiple factors contributing to inconsistent access to firewood, the use of the stoves is sometimes inconsistent and can affect the amount of cooking fuel used and or saved.

**Limitations of status assessment**

The survey in the refugee camps relied on a beneficiary list generated from a stove status assessment in the camp that was done over a 10-day period. As a result, the refugees could have discovered the motivation of the assessment and consequently hidden their stoves or exaggerated their household conditions in order to receive further assistance. While it is not believed that a substantial number of beneficiaries received stoves this way, it is important to acknowledge the possibility.

Having lived in the camps for many years, refugees are familiar with the strategies of aid providers and may associate surveys and research with a benefit of some kind. It is possible that responses solicited from participants were in part informed by their aspirations of receiving assistance. To mitigate this challenge as much as possible, data collectors were trained to use a variety of probing and verification methods to improve the accuracy of data collected.

**Capacity constraints**

The remoteness of Kakuma means it can be particularly difficult to find qualified enumerators with the required technical skills. Over 100 application letters were received for the end-line as compared to 68 for the baseline survey; however, nearly half were under-qualified. The technical skills among selected candidates also varied significantly. To help fill this gap and strengthen local capacity available for future work, data collection training was conducted for the enumerators prior to the commencement of field work for this study.

**Time and budget constraints**

The timeframe of the project was shortened for two main reasons: 1) security constraints in the fall requiring a restructuring of the project and 2) the unpredictable nature of the Kenyan
elections in the spring. Consequently, activities were implemented in five months instead of ten, and participants were required to do household surveys and focus group discussions for the baseline and end-line within a 4-month period. The monitoring was at a minimum of once per week for both the host and refugee communities after the baseline, however, easier access in the refugee camps meant that monitoring was more frequent, on average.

Budget limitations meant that the survey in the host community was conducted within a very short time span. Numerous questionnaires were filled in each day by each enumerator, thereby lending themselves to human error. For this reason, the process was closely supervised and the data was carefully cleaned.

It is also important to note that this was a pilot project in which the sensitization and activities were implemented in a relatively short time, and issues such as gender-based violence require a longer-term investment to substantially affect behaviour change.

Future projects, particularly in Dadaab, would benefit from a larger time cushion for unexpected delays and challenges given the precarious environment and context. They should also include more time for SAFE consultants to contribute to the reports and follow-up as needed once implementation has finished. A 12-month timeframe would have been more appropriate for this project.

**Difficulty with mobilisation and identifying trends for the refugee population**

The end-line focus group discussions with the refugee populations provided limited feedback, primarily because mobilisation was challenging in the camp at that particular time, which resulted in low turnout and smaller groups. Some refugee respondents claimed that the monitoring for the project had been too intensive and demanding – this is likely due to the short time-frame for and combination of the baseline and end-line household surveys and focus group discussions, the latter of which required approximately two hours of questions and, in some cases, long walks from one side of the camp to the other.

It was also difficult to obtain consistent information from the refugee population and identify trends during the end-line focus group discussions. The relative inconsistency could be attributed to their overexposure to surveys and monitoring activities, or an attempt to link their responses with anticipated compensation. The heterogeneous mix in refugee focus groups was helpful in terms of revealing information about GBV (e.g. some groups denied the occurrence of GBV or exchange of sex for cooking fuel, citing religious reasons in many cases, until others prompted them to speak more freely), but it was also a likely contributing factor to the difficulty in identifying trends.

The household survey results provided a better picture in terms of outcomes of the project for the refugees.

**Delays due to security constraints and subsequent change of project design**

Unprecedented levels of insecurity in Dadaab not only delayed the project, but rendered the camps virtually inaccessible for the in-depth monitoring activities required the gender-based violence study component of the project. After thorough consultations with UNHCR, WFP,
BPRM, and OFDA, the project was restructured to include both Dadaab and Kakuma with a focus on the latter for the purpose of studying the linkages between fuel-efficient stoves and gender-based violence. Although a solution was found that allowed for the continuation of assistance to affected populations and the study – albeit on a smaller scale than initially envisioned, security constraints and this re-formulation process did result in delays in project implementation.

3. Findings
3.1 Main findings
In order to establish whether and how the provision of fuel-efficient stoves can reduce beneficiaries' exposure to risk of gender-based violence when accessing cooking fuel, some assumptions must be validated. This section addresses each of the aforementioned research questions in order to draw out evidence and develop conclusions.

Question 1: Do the fuel-efficient stoves provided use less cooking fuel to cook as compared to other stoves used previously and the traditional three-stone fire?

This question requires two assumptions: (1) participating households adopt and use the fuel, and (2) participants use the stoves correctly so that there is an actual reduction in cooking fuel consumption.

The fuel-efficient stoves distributed were the Jikopoa (models 1 and 2) and the Envirofit (G3300 and M5000). In general, the adoption rate – the uptake and consistent use – of the fuel-efficient stoves was very high. According to the end-line household survey, in the refugee camp, more than 91 percent of the stove only group and approximately 95 percent of the stove and GBV sensitization group reported using the fuel-efficient stoves alone or in combination with other cooking devices (e.g. Mandeleo, mud stoves, and/or charcoal stoves).

Focus group discussions helped to clarify that the frequency and rate at which the stoves were being used at the time of the end-line depended on the availability of firewood, with distributing agencies such as GIZ and NRC being the primary source for the refugees. Firewood had only been distributed one time between the baseline and end-line. From this information, two deductions can be made – 1) the adoption rate would likely have been even higher if GIZ and others had been distributing firewood regularly, and 2) most refugees did find ways to acquire firewood to use in their stoves (e.g. purchasing or collecting it, bartering/selling food and other goods, or exchanging sex for firewood).

Regular project monitoring and focus group discussions in the refugee camps revealed that because firewood had not been distributed since December, some refugees were increasingly relying on charcoal. However, because charcoal is more expensive than firewood, it is not equally accessed by all. In fact, the majority of refugees are unable to regularly afford it.

Aspects of the SAFE project worth future exploration include looking at the potential correlation between income levels and choice of fuel (and therefore the need to rethink the targeting criteria for fuel-efficient stoves) and differences in fuel preferences and usage between different ethnic groups. Focus group discussions and household surveys both indicated some trends between fuel choice/usage and socioeconomic levels, which seemed to be quite closely linked with ethnic groups. Among the refugees, for example, Somalis seemed
to have a higher socioeconomic level than the Sudanese, Congolese, and other ethnic groups. During focus group discussions, Somalis reported being able to purchase fuel and avoid negative coping mechanisms more often than the others. For these reasons, it would be interesting to further study how socioeconomic status (and ethnicity if relevant) impacts fuel choice/usage.

In the host community, the adoption rate of both stoves was also high according to the household survey with almost 90 percent adoption in the stove only group and 95 percent in the stove and GBV sensitization group. The survey and focus group discussion feedback from the host community participants on adoption and use of the stove was extremely positive. Regular monitoring also highlighted that there was a high adoption rate in the host community and little negative feedback.

While the adoption trends were clearer and easier to identify for the host community participants than with the refugees, the fuel-efficient stoves were well received overall by both groups.

Both the household surveys and the focus group discussions highlighted a reported reduction in firewood consumption for the refugee and host community populations. During the controlled cooking tests, which provide the most technical evidence, both the Envirofit and the Jikopoa reduced fuel consumption by 30-34 percent. The range differs between the Somali, Sudanese, and Turkana, mainly as a reflection of their cooking habits, experience, and ability to make a three-stone fire more efficient.

The implications of this reduction in firewood consumption are many. One assumption is that a reduced need for firewood at the household level translates into a reduction in the frequency of firewood collection, and therefore reduces exposure to risk of gender-based violence. However, reducing the consumption of cooking fuel alone does not necessarily translate into a reduction in exposure to gender-based violence, particularly as the Turkana people typically collect firewood for both household consumption and as a source of income. Therefore, the second assumption, which highlights the proxy indicators to identify reduced exposure to risk of GBV during firewood collection, needs to be validated.

Other implications of the reduction in firewood consumption are less undercooking and skipping of meals linked with lack of firewood, fewer food rations sold or bartered for firewood, and consequently, reportedly less domestic violence linked with cooking. These outcomes were mostly emphasized during discussions with the Turkana women and men (and with the refugees to a lesser extent).

The issue of transactional sex for cooking fuel was reported during focus group discussions with the refugee populations (but not with the host community). It is important to note that there was no quantitative data collected that provides evidence of the impact that the intervention might have had on the issue of transactional sex. However, the study revealed some anecdotal evidence indicating that some transactional sex for cooking fuel amongst the refugees may have been mitigated through the provision of the stoves.

It is assumed that a reduction in fuel consumption would allow people who resort to such coping mechanisms to reduce transactions or switch to a less harmful coping mechanism.
This assumption can be supported by the fact that during the end-line survey, refugees reported that the money saved thanks to the fuel-efficient stoves was mainly used to buy fresh foods, household items, and transportation – some expenditures that may have previously led women to engage in transactional sex.

**Question 2: Is there a reduction in time spent, frequency of collection, and distance travelled by women and girls for firewood collection?**

Study results reveal a reduction in firewood consumption; however, this alone does not necessarily translate into decreased exposure to GBV. In order to establish this connection, three proxy indicators were chosen:

- Time spent away from home to collect firewood,
- Frequency of firewood collection, and
- Distance travelled to collect firewood.

The baseline highlighted some challenges in using these proxies. Time spent away from home and distance travelled were not considered to be key factors of exposure to GBV for the refugees. Risk of violence by host community members, who largely control access to firewood, generally prevented the refugees from collecting outside of the camp. Moreover, armed gangs and bandits also pose a threat. Consequently, majority of refugees who do collect firewood (and other vegetation) reported doing so in and around the camps – particularly when GIZ and other actors do not distribute it.

The refugee participants described the dangerous areas to be along or near the riverbed, which goes through the camp and surrounds the camp borders. For these reasons, frequency was determined to be a better proxy to evaluate the reduced exposure to GBV for the refugees.

Refugees, who can afford it, purchase firewood from host community members selling it at the markets. However, it was reported that refugees resort to negative coping mechanisms and experience GBV incidences within the camp. Selling and bartering food rations, skipping meals, and undercooking meals due to a lack of firewood, and exchanging sex for fuel are issues with which refugees clearly struggle. It can be difficult for some people to discuss GBV incidences that happen within their own communities, but future studies focusing on refugees could benefit from a closer look at GBV incidences within the camp including exchange of sex for fuel and domestic violence in the home related to a lack of cooking fuel. It would also be useful to look at GBV incidences that occur on the borders of the camps.

In the host community, the three proxies were considered to be factors of exposure to GBV. Distance and time spent away from home were reported to be long – in some cases women reported having to spend an entire day to walk to the collection site where they would sleep over night, and then spend the following day to walk home.

For the refugee community, the number of households that were collecting firewood at the end-line reduced to about a third of the number of households in each group, though the majority of collectors remained women. It is difficult to attribute this reduction to the distribution of stoves; however, some women reported in focus group discussions that they had stopped firewood collection as a result of the stove distribution.
The household survey data revealed that the majority of host community and refugee beneficiaries were collecting firewood one to two times per week at the time of the end-line as compared to two to three times per week during the baseline. This change was also reflected during focus group discussions.

The distance travelled did not seem to decrease. In fact, a slight increase across the groups can be seen, which may be attributed to the fact that the baseline occurred during the rainy season and the end-line during the dry season (which may mean that firewood is not readily available close to the households). Finally, there does not seem to be a significant difference in time spent away from home during the collection trips, likely because tree and shrub cover was still very sparse at the time of the end-line.

For the host community, there was very little change in the number of households collecting firewood – this may be explained by the fact that more than 50 percent of respondents reported collecting firewood for both cooking and selling, and 75 percent of all respondents claimed firewood and charcoal selling to be their main source of income. There was, however, a change of pattern in the frequency of firewood collection. An increased number of participants that received stoves reduced the frequency of firewood collection each week from an average of three times before the intervention to twice per week after.

The frequency of firewood collection for the host community reduced from an average of three to two times per week at the baseline to an average of two to once per week at the end-line for those who received a stove or a stove and GBV sensitization. The frequency of firewood collection for the control group went slightly up. It is very clear from both the household surveys and the focus group discussions that the fuel-efficient stoves helped to reduce the number of trips for the host community participants.

While there was a decrease in the number of firewood collection trips for the refugee intervention groups, the frequency of trips also went down for the control group, making it more difficult to attribute that reduction to the distribution of the fuel-efficient stoves for the refugees. However, focus group participants reported reduced frequency of trips thanks to the stoves with some even reporting that they had stop collecting completely thanks to the stoves.

The distance travelled to collect firewood remained the same for the intervention and non-intervention groups. Among the host community, however, collection time remained more or less the same when the intervention groups are compared with the non-intervention groups.

As mentioned, firewood collection in the Turkana community is carried out mainly for the purpose of generating income; however, the distribution of fuel-efficient stoves reduced the amount needed at the household level. This reduction in domestic fuel consumption translated differently for different women, the main collectors of firewood. Some women continued to collect as much firewood as before, but sell more of it to increase their income, thereby improving their ability to feed and care for their families. The majority of respondents decided to reduce the frequency of their collection trips in a way that would still allow them to sell more firewood.
Despite the aforementioned positive impacts, it is essential to highlight the importance of firewood collection for the Turkana host community. The food insecurity of the Turkana people and lack of alternative livelihoods means that the reduction in exposure to risk of GBV is unlikely to dramatically improve with a reduction in household firewood consumption alone.

To summarise, while the intervention had little impact on the distance and time away from home during firewood collection trips, the frequency of trips was reduced for both the refugee and host populations. The study provides preliminary evidence to indicate that a reduction in household consumption of cooking fuel thanks to the fuel-efficient stoves has led to fewer collection trips, thereby contributing to a decrease in exposure to risk of GBV. The frequency of firewood collection was found to be an important proxy in both the refugee and host community groups for exposure to GBV with evidence suggesting that there may be a reduction in the exposure to GBV with a reduction in the frequency of firewood collection.

Some anecdotal evidence suggested that transactional sex for fuel may have reduced; however, this information should be reviewed and studied in more detail for a stronger evidence base.

**Question 3: Does the potential collection time saved translate into time spent on safer and more productive activities and allow for more caring capacity?**

As mentioned above, the time spent during collection trips did not vary much, but both refugee and host community participants reported collecting fewer times per week. The evidence for time saved thanks to fewer trips translating into time spent on safer and more productive activities is rather limited. However, in the end-line survey, refugee and host community participants reported that time saved thanks to fewer firewood collection trips was used to care for children, perform domestic chores, bond with family and friends, and to a lesser extent, for income generating activities.

The degree to which those activities were undertaken in lieu of less safe alternatives requires further investigation with more indicators measuring baseline and end-line frequency of each relevant activity to substantiate the perceptions of the populations under study.

**Research objective: To establish whether and how the provision of fuel-efficient stoves reduce beneficiaries’ exposure to risk of gender-based violence when accessing cooking fuel.**

This study strengthens the evidence base for how the provision of fuel-efficient stoves can reduce beneficiaries’ exposure to risk of gender-based violence when accessing cooking fuel by reducing household fuel consumption, which has translated in a reduction in the frequency of firewood collection trips. The study also demonstrates that the availability of cooking fuel can have other positive impacts including a reduction in undercooking and skipping meals due to lack of cooking fuel.

Some beneficiaries reported during focus group discussions that increased ease and speed of cooking, along with the reduction in skipping and undercooking of meals contributed to a reduction in domestic violence. There is some anecdotal evidence suggesting that the provision of fuel-efficient stoves may also reduce the incidence of transactional sex for
cooking fuel; however the linkage could not be verified within the parameters of the current study.

There was little data collected to show that the gender-based violence sensitization resulted in a more significant positive behaviour change in terms of adoption of the fuel-efficient stove technology or firewood collection. However, anecdotal evidence indicated that the gender-based violence sensitization contributed to the adoption of better community-based protection strategies during firewood collection (e.g. collecting in groups, engaging men to accompany the women more often, and avoiding night-time collection), as well as better knowledge and understanding of the support and reporting options available after an incident.

3.2 Additional findings
The household survey revealed an increase in the sale of food rations in the refugee population, which can be attributed to the fact that firewood distribution had not occurred since December 2012 and that other sources of income (e.g. remittances) had decreased. Expenditure on cooking fuel in the refugee camp also went from fifth place during the baseline to second place in the end-line, which highlights the lack of firewood distribution during the period studied. While firewood and charcoal became a more important expenditure in comparison to other items, there was still a relative decrease in refugees’ expenditure on firewood and charcoal in the intervention groups, which was particularly more significant in the stove and GBV group. The focus group discussions in the refugee camps highlighted that respondents were not experiencing as many days without food in the house during the food distribution cycle as a result of decreased selling and bartering of food for firewood and charcoal. Women also highlighted a reduction in skipping meals and undercooking due to lack of firewood, as a meal could easily be cooked with small twigs.

For the host community, the household survey showed a sharp decrease in the number of skipped meals due to lack of firewood. The survey also highlighted a sharp reduction in undercooking due to insufficient cooking fuel – this was very much supported by focus group discussions. In addition, women emphasized that they were able to sell bigger bundles of firewood due to the reduction in household consumption, thereby increasing their incomes and allowing them to cook more often.

Another finding from the household survey was that health problems decreased in all groups studied, including in the non-intervention group. This decrease could be explained by the fact that many diseases are linked with the rainy season (the time of the baseline) and naturally decrease during the dry season (the time of the end-line). However, focus group discussion participants, particularly of the host community, reported a large decrease in smoke and eye irritation thanks to the provision of stoves.

4. Conclusion
This study provides preliminary evidence that the provision of fuel-efficient stoves and, to a less extent, that gender-based violence sensitization helped to reduce the exposure of women to the risk of gender-based violence associated with access to cooking fuel in Kakuma, Kenya. It is important to reiterate, however, that there were some methodological and operational limitations encountered during the study. The change in firewood distribution and
change of season from the baseline to the end-line period made it difficult to draw some comparisons.

The main outputs of the intervention and study included a high adoption rate of fuel-efficient stoves, a reduction in household consumption of cooking fuel, a reduction in the average number of firewood collection trips, and increased awareness of GBV and mitigation strategies – all of which were contributing factors to the overall objective of helping to reduce exposure to risk of gender-based violence associated with access to cooking fuel.

Going forward, it is recommended to implement a comprehensive SAFE programme with multi-sector interventions including alternative livelihoods, alternative sources of cooking fuel, and environmental activities to have a more profound impact on the exposure to risk of gender-based violence. In particular, the provision of safer and more sustainable alternative livelihoods is critical for the safety and well-being of these host community and refugee populations.