ENDLINE SURVEY REPORT

SUPPORTING SAFE ACCESS TO FUEL AND ENERGY FOR IDPS AND HOST COMMUNITY IN BAMA, BORNO STATE

BY

GREEN CONCERN FOR DEVELOPMENT (GREENCODE)

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EXECUTIVE SUMMARY

GREENCODE has supported various interventions designed to increase productivity and improve HH resilience of IDPs and host community members. Some interventions were designed to achieve crosscutting goals, such as the increased engagement of women in improved energy use. Implementation included Safe use of Fuel Efficient stove and lighting.

The end line survey was intended to provide an independent examination of the overall progress and accomplishments of the SAFE project activity in Bama. This evaluation identified the achievements, performance issues, and constraints related to activity implementation and how effective the activity has achieved its goals. The evaluation also identified results and lessons learned from implementation and provides concise, actionable recommendations to determine which component(s) of the project could be scaled-up, modified, or re-designed in future procurements in order to increase the impact of humanitarian investments in Borno, Nigeria

The SAFE project has worked well in creating access to alternative source of energy for beneficiaries both in the camp and the FES have been put to good use by the beneficiaries. However it is still early to access impact on income of beneficiaries as the maximum number of months the stove have been used is four months. There is great potential for FES to be used as an income generating activity.

The following are summary of recommendations to improved the scale up of the SAFE project activities to other IDPs

1. Awareness-raising activities should be targeted at a much wider audience than the direct project participants, including other IDPS and agencies working to address energy and livelihood needs of IDPs and host communities in Bama

2. Refresher training should be designed to include skills basic integrated microenterprise fundamentals, which will help the participants to expand their level of financial literacy and run the FES center as profitable business.
3. The FES should be refurbished as a reference centre and business model where available services are publicized to other organizations.
4. Future activities should consider how to better capture the impact of services on women. In future surveys, it would be valuable to capture these differences in greater detail to better understand how female FES beneficiaries can better be supported and strengthened.
5. The FES committee could be strengthened to run as cooperative, the members given franchise or act as sale agents for FES within the camp. Future activities should include activities that strengthen the capacity of beneficiaries to manage the replication of FES activities to other IDPs, such that those training could offer service for fees in repair of stove, construction and sales of FES to other beneficiaries
6. GreenCode should work with other NGOs to market the FES construction center and help sustain FES training and create synergies. The actual demonstration of stoves and visualization of practices would make the education on other related issues more interesting and direct

SECTION 1. BACKGROUND

The long and protracted violence conflict in the northeast region of Nigeria has left many untold hardship arising from loss of shelter, lives and livelihood among the affected population in the region. The main types of energy resources in northeastern Nigeria are firewood and charcoal and cooking in open fire. When using inefficient energy technologies, such as open fires, the demand for these energy resources is high. Armed conflict in northeastern Nigeria – Adamawa, Borno and Yobe States – has driven millions from their homes and uprooted agriculture-based livelihoods. In worst affected Borno State, poor energy access has exposed vulnerable people to a number of challenges linked to food insecurity and malnutrition (e.g. insufficient fuel to cook food), deforestation (e.g. unsustainable felling of trees for fuel), protection risks (e.g. harassment, assault, physical and sexual violence when collecting wood fuel) and health risks (smoke inhalation leading to respiratory illnesses) When using inefficient energy technologies, such as open fires, the demand for these energy resources is high. FAO 2019

While the demand for energy resources has been very high, the supply has been abysmally low. In response to the dwindling energy resource, FAO is implementing SAFE in some LGAs following a three-way programmatic approach, namely: (i) reducing energy demand by promoting fuel-efficient technologies; (ii) increasing energy supply through sustainable forestry management practices; and (iii) promoting safe and sustainable livelihoods. FAO reports informs that it is supporting the local production of fuel-efficient stoves and zeer pots, reinforcing tree nursery establishment and management, promoting improved fish smoking technologies and providing 2500 SAFE kits comprising of portable, durable and lightweight stoves and solar lanterns for highly mobile internally displaced and returnee households.

It is important to note that the SAFE initiative target mainly IDPs in formal camps Even within the formal IDP camps, in a survey conducted by FAO in December 2018 to evaluate the status of energy use by IDP who participated in the SAFE initiative. It showed 98.2 percent of the respondents were still using the fuel-efficient stove at the time of the assessment

Similarly, with the increase activities of security forces some of the Boko Haram captured territories were liberated and there is an increase in the influx of new arrivals in about 11 LGAs of Borno state. Relatedly because of the new arrivals, most of the camps are already experiencing congestion and Bama is one of them. These new arrivals and households in congested camps lack access to safe fuel and energy, thus the reason for their prioritization by the NHF SA1, 2018. GREENCODE has supported various interventions designed to increase productivity and improve HH resilience of IDPs and host community members. Some interventions were designed to achieve crosscutting goals, such as the increased engagement of women in improved energy use. Implementation included Safe use of Fuel Efficient stove and lighting.

This report is a write up of the end line survey carried out on the SAFE project. The write is divided into sections, Section one presents a brief background to the project energy situation in the North East and efforts to address energy needs, Section 2 describes the methodology used to collect data during field activities, while Section 3 discusses findings from the field and section 4 presents suggestions and recommendations for improvement of the project

Evaluation Purpose

The end line evaluation is intended to provide an independent examination of the overall progress and accomplishments of the SAFE project activity in Bama. This evaluation identified the achievements, performance issues, and constraints related to activity implementation and how effective the activity has achieved its goals. The evaluation also identified results and lessons learned from implementation and provides concise, actionable recommendations to determine which component(s) of the project could be scaled-up, modified, or re-designed in future procurements in order to increase the impact of humanitarian investments in Borno, Nigeria.

SECTION 2. EVALUATION DESIGN, METHODOLOGY

This evaluation used two key methods to collect, analyze, and triangulate quantitative and qualitative data to answer the evaluation questions. The evaluation

team carried out a quantitative household-level survey to quantify SAFE project achievement. A total of 202 beneficiary households, including -- male and -- Female respondent in GSSS IDP Camp and Bama community

The evaluation team also reviewed project to provide the survey findings with, contextual information. The evaluation team also conducted 10 semi-structured key informant interviews (KII) with IDPs, managers of the FES construction center
This training included orientation on the use of Kobo toolbox - a mobile App to administer questionnaire in the field.

Sampling, Sample Size and Data Collection

The description of sample design, sample universe, planned level of statistical precision and power, sample size calculation; sampling frame used and respondent selection procedures were provided.
The consultant constructed the sample frame for the end line survey from a SAFE Project dataset that listed 3,400 HH beneficiaries in the project area the sample size for the survey was calculated using a web-based sample size calculator. To get a representative IDP and host community for support provided by the SAFE project did sample of beneficiaries, sampling The total sample for the beneficiaries was 194 derived using 9 % margin of error and 99 % confidence level. Only SAFE beneficiaries formed the sampling frame of the beneficiary group in the intervention area.
The use of kobocollect ensured that data from the field was immediately fed to the GREENCODE database for real time review. Recruitment of the enumerators followed a phone interview with shortlisted candidates who among other criteria had experience in conducting data collection and have local knowledge

Evaluation Limitations

The greatest limitations to executing this evaluation occurred during the data collection and data cleaning phases of the evaluation. These limitations are outlined below.

The consultant only had time to conduct a half-day of training on the instrument using kobocollect app. There was not time to translate the survey into local languages, so enumerators had to translate from English into the Kanuri language largely spoken by the beneficiaries, which may mean questions may not have been interpreted to mean the same thing in every case. This meant that during data cleaning and analysis, it was particularly important to look for inconsistencies and outliers, eliminating questions and respondents/cases

SECTION 3. FIELD FINDINGS – DEMOGRAPHICS

This section provides key findings on demography of the respondents and responses

3.1 Sex Of Respondents

The study showed that women were the predominant respondents from the households. Out of 199 respondents interviewed, 166 (81.77%) were female- and men 33 (16.26%) of the respondents.

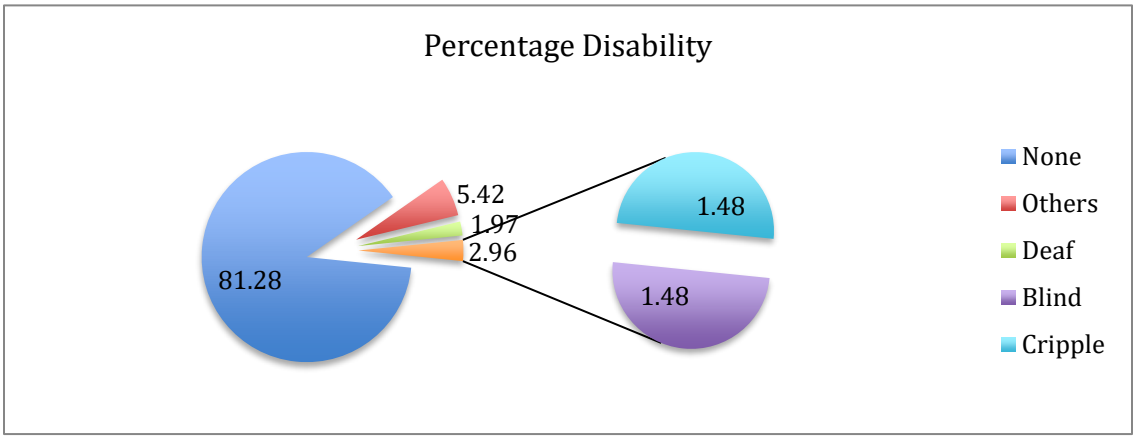
Table 1, Sex of Respondents

Sex of Respondent	Frequency	Percentage
Female	166	81.77
Male	33	16.26

3.2 Status in family

The figure below shows that out of 203 respondents who answered this question, 165 representing 81% were not with any form of disability, 3 person about 2% were blind, and another 2 were crippled on the legs

Figure 1. Status in the family

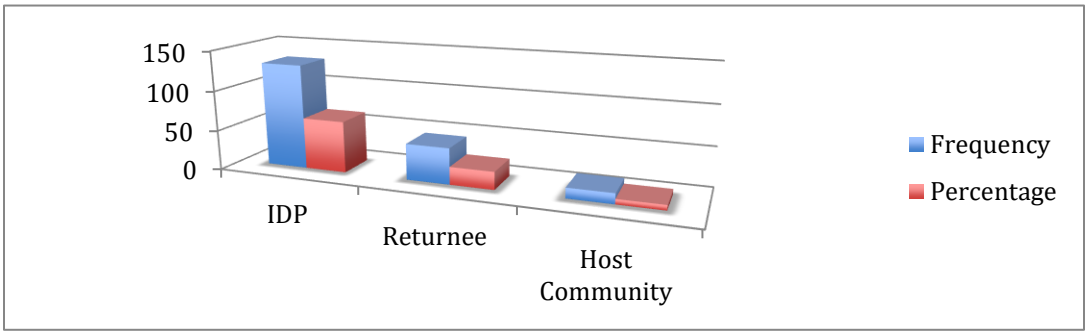


3.3 Household type

Three categories of respondents were selected for the survey namely IDP, returnees and host community member

The figure below shows frequency respondents were survey and the percentage representation

Figure 2. Household type



3.4 Local Government of Respondents

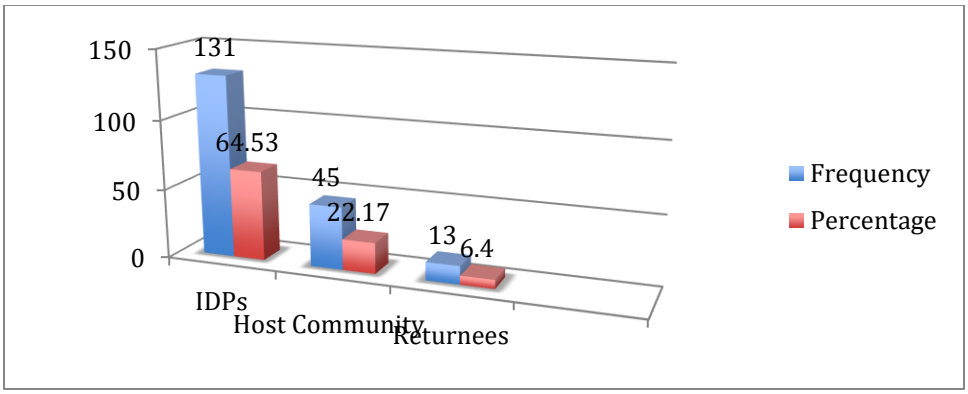
The respondents interviewed came from different communities but mainly from two LGAs in Borno State

Table 2 – LGA of Origin

LGA of Respondent	Number	Percentage
Bama	195	94.58
Gwoza	2	0.99

The IDP in camp interviewed during the survey were 131 representing 64.53 per cent of the sample population, this is shown in the figure

Figure 3. Household Type

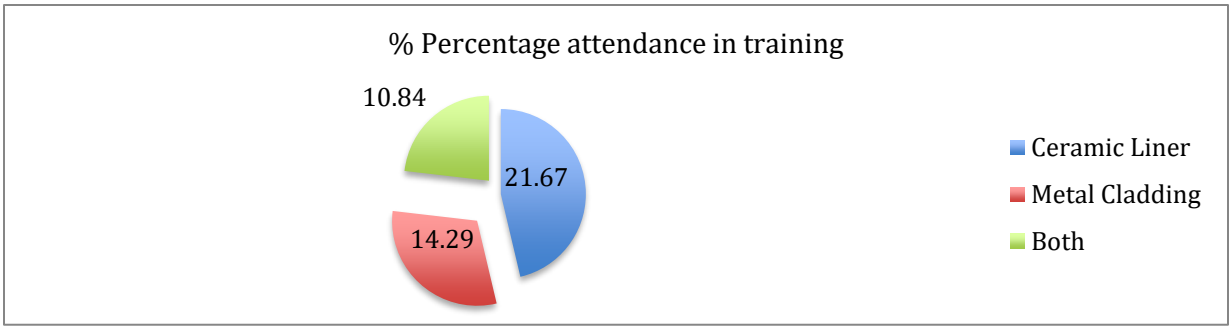


3.5 Fuel Efficient Stove Construction

Table 4. Participation in FES construction training

Attendance	Frequency	Percentage	Ceramic training	No. Who attended 44	Percentage 21.67
Yes	93	45.81	Metal Cladding	29	14.29
No	106	52.22	Both	22	10.84

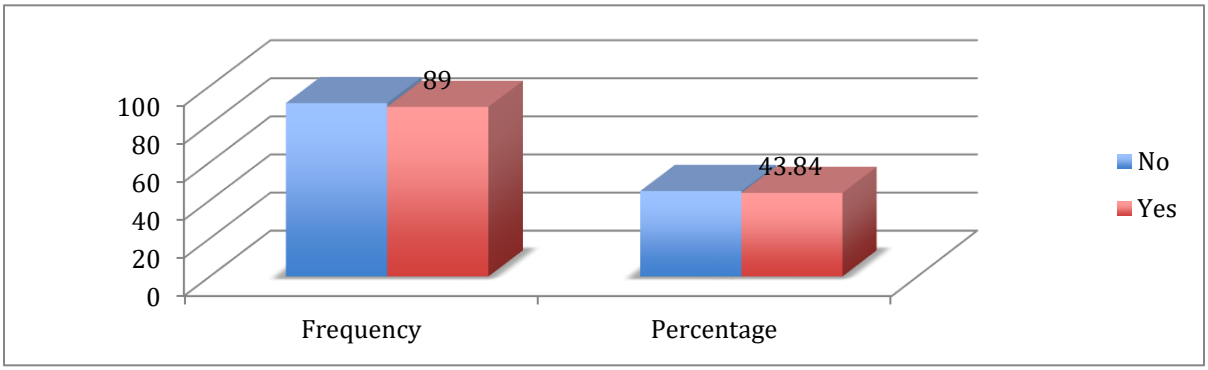
Out of the total respondents interviewed 93 attended Fuel Efficient stove However, respondents were also asked to mention their current cook fuel by households.



The activity has had positive impact on beneficiaries' use of fuel for cooking Female engagement in SAFE activity have improve cooking both in terms of time to provide for children and family nutritional well-being and health of the family education. However, use of training as source income-generating activity remains a barrier, especially FES centre have not been effectively put to use in training more beneficiaries, capacity of those managing the center needs to be strengthened

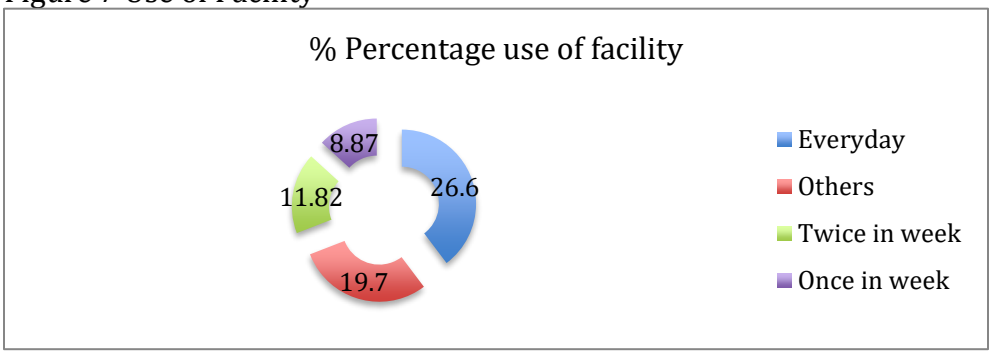
3.6 Ability to Independently Construct Fuel Efficient Stove

Figure 6-Construction of FES



Many of the respondents 43.84 per cent indicated that they are now able to independently construct fuel – efficient stove. However a number of the persons agreed that they are aware of the existence of the FES facility. The beneficiaries for various activities use the facility; the figure below shows higher percentage of respondents, use the facility every day the activity in at the FES centre. Activities at the center are primarily construction of new Fuel Efficient Stove and minor repairs of broken FES

Figure 7 Use of Facility



The baseline survey reported that majority of the households mentioned Firewood (91%) while 45% mentioned charcoal. 5% mentioned LPG while 14% mentioned Other Biomass Fuel as source of fuel for cooking.

Cook Fuel currently used by respondent households (baseline report)					
Firewood/ branches	Charcoal	Liquefied Petroleum and Gas(LPG)	Other biomass fuel (agricultural waste,shurbs,root etc.)	Kerosene	Others
448	220	23	70	11	0
91%	45%	5%	14%	2%	0%

64.23% of the respondents acquire cooking fuel by buying, while 17.89% and 16.46% of the respondents collect cook fuel from the bush and are given by the government/humanitarian agency.

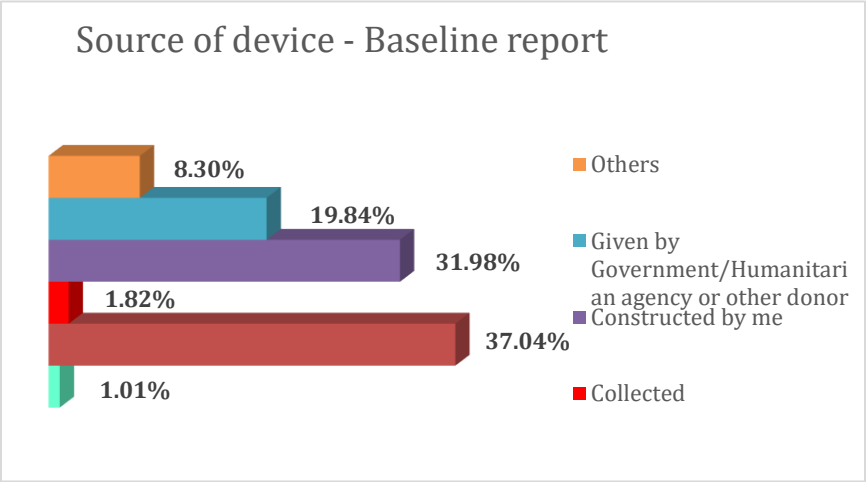
There is an reduction on dependence on other costly source of energy since the introduction of the Fuel Efficient Stove to the beneficiaries. This is in part due the fact that 45 per cent of the beneficiaries attended the FES training, the remaining 106 representing 52.22% did not attend training also benefited from the distribution of the FES.

Respondents recorded that they benefited by receiving FES, this is reflected by the response of 96.06 percent of those who responded to the question indicating that the benefited from Fuel Efficient Stove. Specifically the table below shows the type of stove beneficiaries received from the project

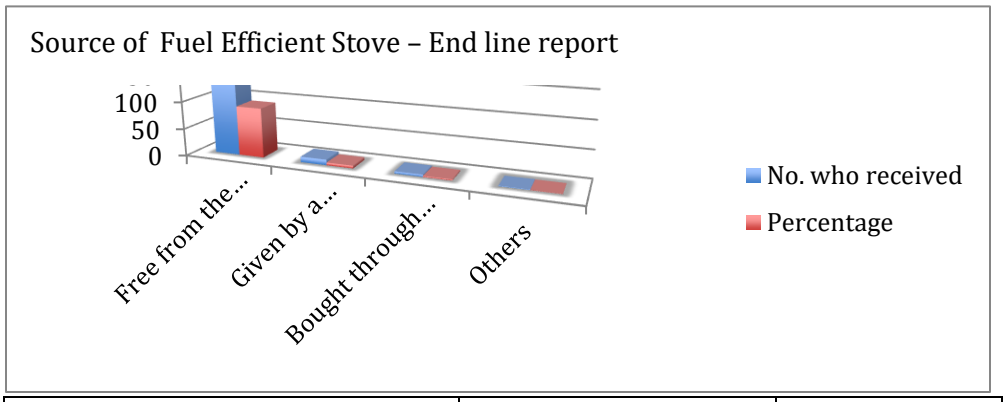
Table 5. Type of stove

Type of Stove	Frequency	Percentage
Firewood Stove	170	83.74
Charcoal Stove	29	14.29

Over 90 % of the respondents received their cooking device from the SAFE project, in comparison to the baseline findings on the source of the device being used by the respondent households for cooking, where 37% of the respondents bought the device/ method used for cooking from the market, 31% constructed by themselves, 19.84% benefitted from government/humanitarian agencies, 1.82% collected from neighbors/friends while 1.01% acquired the devices in exchange for an item.



Majority of the beneficiaries showed that they received the project free, however a few noted that they were given by their friends, a few sold the stove as indicated in the figure below.



Source of Stove	Frequency	Percentage
Free from the project	184	90.64
Given by a friend or family member	10	4.93
Bought through the project beneficiary	4	1.97
Others	1	0.49

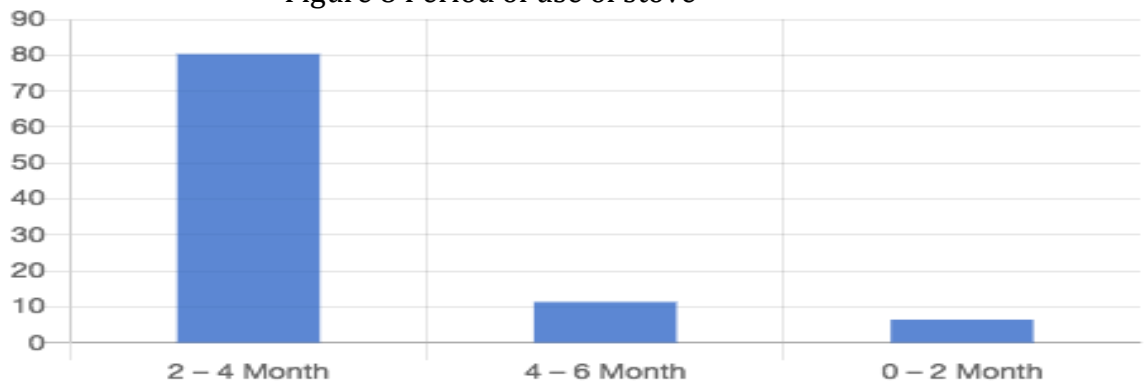
3.7 Use of Fuel Efficient Stove

There is a desired among the respondents to use the stove to increase their income, 80 percent of those interviews think the skill the acquired can improve their means of livelihood. In their responses majority agreed that if they construct the FES, they could sell the stove to make money, are self-employed and provide for their families

Many of those who answered in the negative regarding the value of the training did so because they did not attend the FES training due to various reasons. Particularly because they were not around during in the camp during the training

The beneficiaries have used the FES stove for different length of time, ranging from 80.3 percent using for 4 months being the longest period of use to less than 2 month, 6 % of respondent, see table below

Figure 8 Period of use of stove



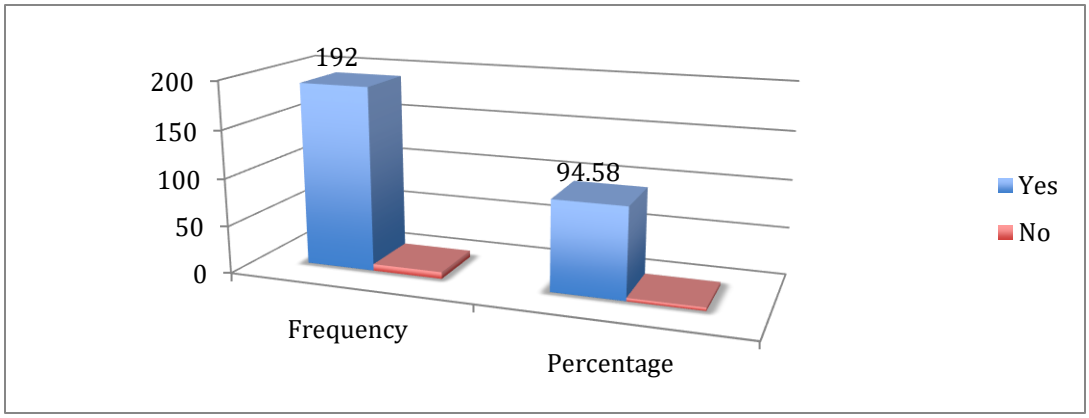
This is an improvement from the baseline report when respondents 95.3 percent recorded not being aware of any fuel efficient stove Only 24% of the respondents are aware of fuel efficient device that uses charcoal or wood (GreenCode 2019)

3.8 Satisfaction with your improved stove

Majority of the respondent are satisfied with the Fuel Efficient Stove, about 95 percent responded in the affirmative when asked if they were satisfied.

Some of reasons provide for their satisfaction with the stove were: The stove makes cooking faster and is less stressful, less smoke, now use less wood to cook so saves me some money

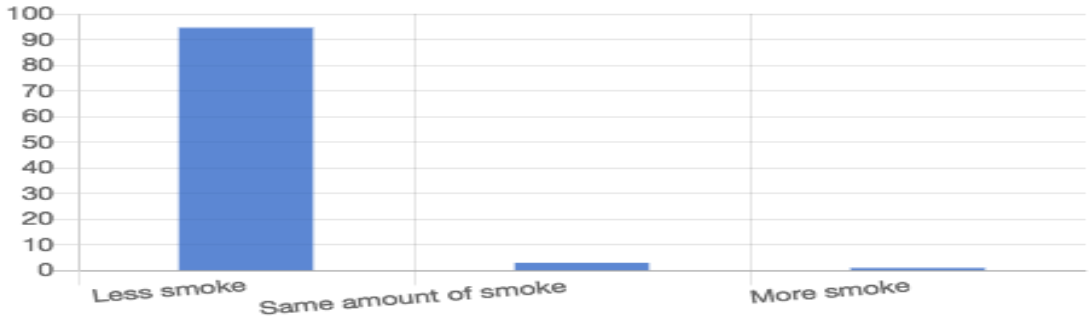
Figure 9 Percentage of respondents satisfied



3.9 Efficiency of Fuel Efficient Stove

The survey showed that FES is safer to use and is more efficient. The reference technology for firewood is the three-stone open fire and for charcoal the traditional coal pot made by scrap metal by local artisans, As shown in the figure below, over 90 percent of the respondent agreed that cooking in comparison to the old stove the improved stove produces less smoke and minimal incidence of users being burnt during cooking

Figure 10. Efficiency of FES



The figure above demonstrates that contrary to what the baseline report below which showed that the 3 stone fires has "too much smoke" (89%) longer time of cooking (53%), long distance to collect fuel (36%), fast burn out of firewood/charcoal (39%), the improve stove is more reliant and efficiency with less smoke. The Fuel Efficient Stove has a health advantage over the older version of Stove

In terms reduction of fuel cost and number of times per week to collect fuel for your old stove versus new stove. The survey showed there is a significant reduction in the number of times which respondents used to collect fuel for the new stove.

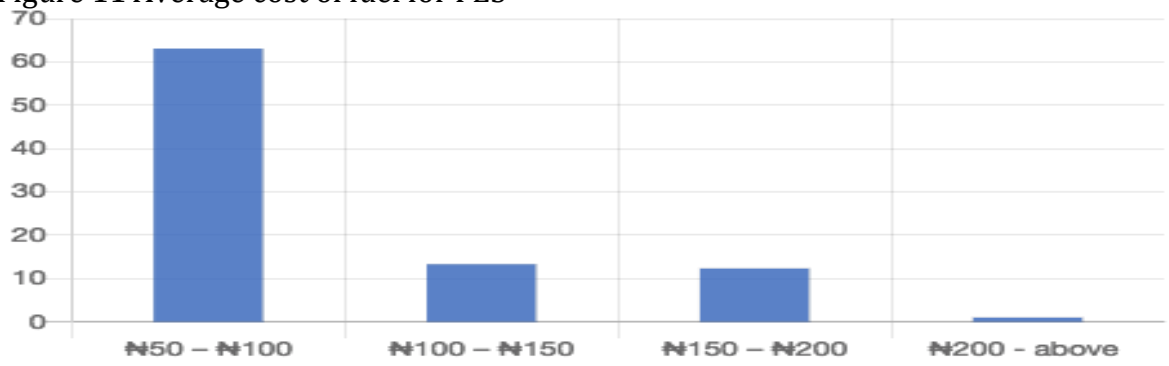
Table 7. Number of times per week respondents collect fuel

Fuel Efficient Stove			**Old Stove**		
Times/week	Frequency	Percentage	Times/week	Frequency	Percentage
0 – 2	130	64.04	0 – 2	28	13.79
2 – 4	52	25.62	2 – 4	78	38.42
4 – 6	12	5.91	4 – 6	57	28.08
More than 6	4	1.97	More than 6	35	17.24

Many of the IDPs particularly women reported that the risk to collect firewood outside the camps is far reduced

There is also a significant reduction in amount spent on fuel, on the average per week above 60 percent of the respondents spend between N 50 - N100 in a week to buy fuel for the new stove as against above 70 percent that spent between N150-N200 to buy fuel for the old stove

Figure 11 Average cost of fuel for FES



3.10 Ability to construct Fuel Efficient stove

It is crucial to establish continuous use of the facility and beneficiaries' capacity to independently produce FES, in response many respondents agreed that since the training ended, they have constructed Fuel-Efficient Stove.

Table 8 Ability to construct FES.

Able to construct stove	Frequency	Percentage
No	99	48.77
Yes	79	38.92

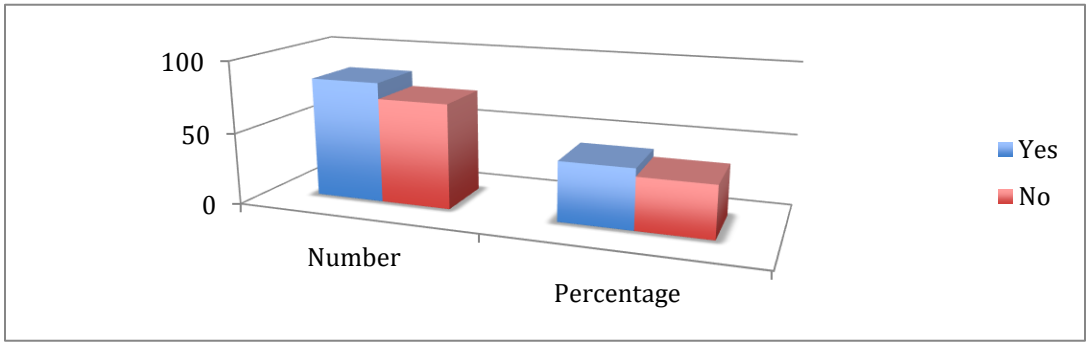
The confidence level of those who received the training to step down the training to others was not very high as about 42 per cent of those who were trained agreed that they can teach someone else how to build an efficient stove. There is need for refresher training and supervision of construction at the facility, which would give those, trained the confidence to produce more Fuel Efficient stove and train others

3.11 Used Of Solar Box Cooker

Apart from Fuel Efficient Stove, the project also introduced and distributed Solar Cookers to the IDPS. Out of 203 respondents, 157 answered this question 46 were

Without data

Those who were give the solar cookers were expected to use it on a daily basis, over



80 per cent agreed that the use the solar cooker frequently, those who responded in the negative, observed that they were not listed as on the list of beneficiaries, some others noted that they were not present during the distribution of the solar cooker

There are certain characteristics which made the respondents like the solar cookers, these included the advantages of food not getting burnt, does not require purchase of fuel thereby saving cost. The table below shows the attributes and corresponding percentage of respondents who chose solar cooker

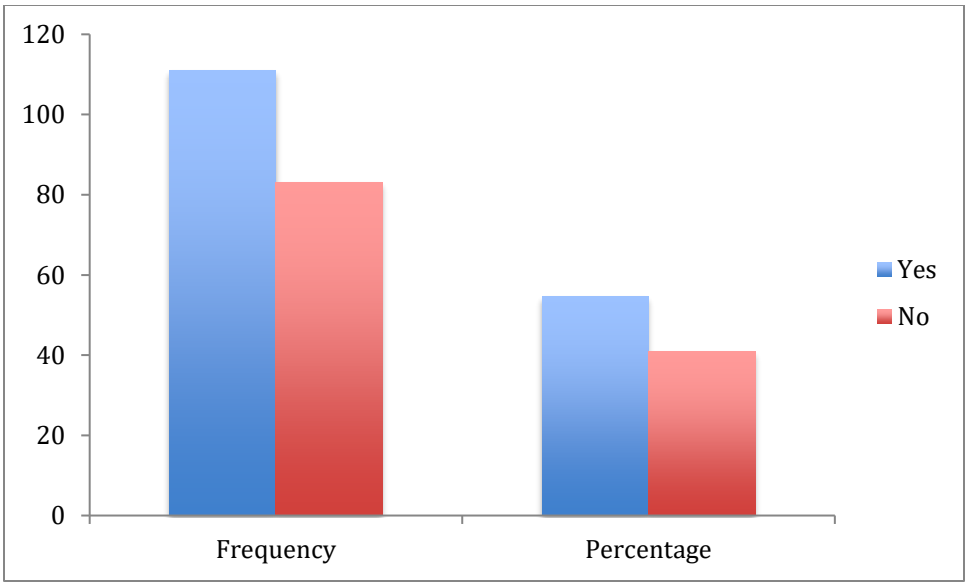
Table 8. Attributes liked respondent certain concerning the solar cooker

Characteristics of Solar Cooker	**Frequency**	**Percentage**
Food does not get burn	67	33
Does not require fuel	31	15.27
Saves cost	26	12.81
Others	14	6.9

3.12 Lighting Facility At Night

The predominant lighting device for the home before the SAFE project was torchlight with battery. The project distributed Solar Lamps to the beneficiaries during this survey, 53 percent accepted having solar lamps

Figure 12. Respondents with Solar Lamps



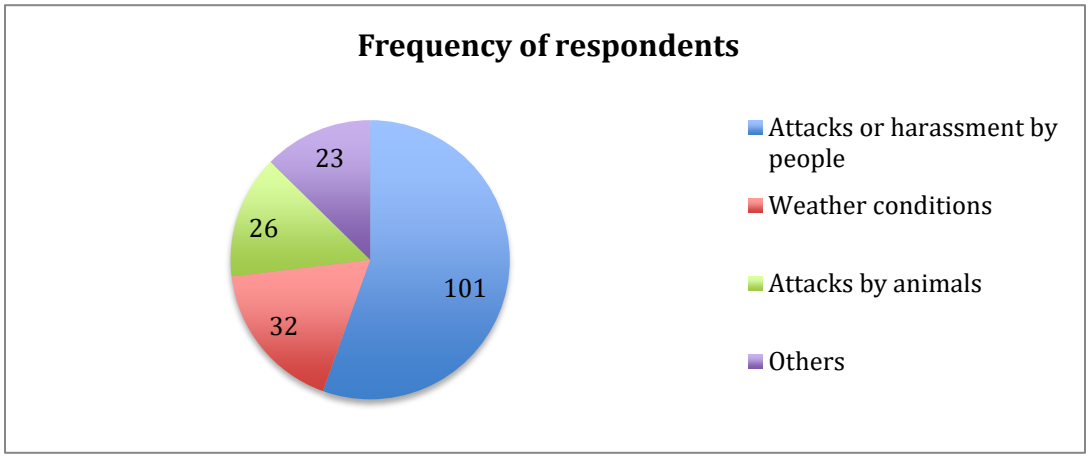
Out this number over 70 percent were satisfied with the solar lamp, because the lamp not only supplies light but also is useful for charging phones. Very importantly it there is no more battery cost, the solar lamp help reduced cost of lighting and the light is very bright.

There was a general agreement that the distribution proves of the solar lamp was properly managed, 180 out of 203 respondents answered this question, 167 representing 82.4 percent agreed that the distribution process properly organized. According to those who did not agree with distribution, the major reason was because they did not receive the lamp or was not listed as a beneficiary

3.13 Respondents Protection Issues

During the baseline survey IDPs indicated that they venture into the surrounding bushes to look for fuel for cooking, that trend has reduced but has not stopped Survey respondents agreed that when they go out to collect fuel, there are a number of things that makes them or their family members feel unsafe. Prominent among these are attacks or harassment, 49.79 percent of respondents were in this category

Figure 13. Response to fear of going out for fuel



Others feared attack by animals. The figure below shows number of respondents who feared either being attacked or harassed when the go to fetch fuel for cooking

This lend credence to baseline information collected from respondents who where asked if they felt safe going these distances and locations to fetch firewood. Only 17% felt safe while 83% of the respondents do not feel safe.

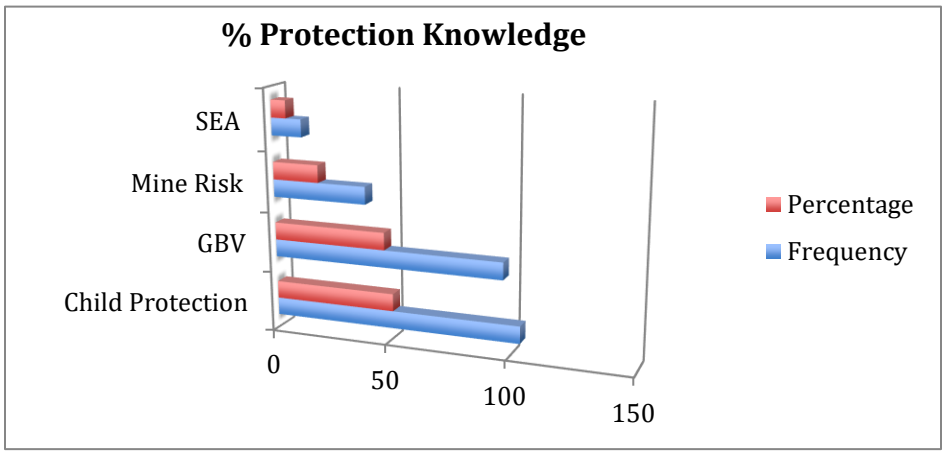
Respondents in the host community noted they are not afraid of going to fetch fuel for cooking because " we own the community"

Fuel Efficient Stove helps cut down cost and mean respondent household and family members go out less often to collect fuel

3.14 Knowledge of Protection

In considering the respondents' knowledge of protection issues 90 per cent respondents agreed the received training on various aspects of protection. As shown in the figure below 51.23 per cent received information on Child protection, while 47.78 per cent got information on Gender Based Violence (GBV), Those who got

knowledge of Mine Risk were 19.7 and Sexual Exploitation (SEA) information was received by 6.9 per cent of the respondents



Know of protection issues is key step to making IDPs and host communities conscious on the need to protect those who vulnerable within the camp particularly women and female youth. The knowledge gain by respondents should be sustained to empower communities and build resilience through promoting socio-economic behavior change to address the root causes of gender-based violence (GBV) and improve access to formal and informal judiciary systems, as well as economic empowerment opportunities for women.

SECTION 4. CONCLUSIONS AND RECOMMENDATION

The SAFE project has worked well in creating access to alternative source of energy for beneficiaries both in the camp and the FES have been put to good use by the beneficiaries. However it is still early to access impact on income of beneficiaries as the maximum number of months the stove have been used is four months. There is great potential for FES to be used as an income generating activity. Close observation shows that improved stoves are slightly heavy. The most critical part of the production chain is the liner, the production of which require highly qualified ceramists and access to clay with the required properties as well as other materials to get a durable, and energy efficient stove. Further more, the liner is sensitive to rough handling and need to be stacked well to avoid damages during transportation
The following are recommendations to improved the scale up of the SAFE project activities to other IDPs

7. Awareness-raising activities should be targeted at a much wider audience than the direct project participants, including other IDPS and agencies working to address energy and livelihood needs of IDPs and host communities in Bama
8. Refresher training should be designed to include skills basic integrated microenterprise fundamentals, which will help the participants to expand their level of financial literacy and run the FES center as profitable business.
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10. Future activities should consider how to better capture the impact of services on women. In future surveys, it would be valuable to capture these differences in greater detail to better understand how female FES beneficiaries can better be supported and strengthened.
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12. GreenCode should work with other NGOs to market the FES construction center and help sustain FES training and create synergies. The actual demonstration of stoves and visualization of practices would make the education on other related issues more interesting and direct.

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