

Clean Cooking Solution for BIDIBIDI Refugee Settlement

BASELINE SURVEY
REPORT
2024

ACKNOWLEDGEMENTS

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Finally, we are deeply indebted to the community elders, leaders, youth, and women within Zone 4 Annex of the Bidibidi Refugee Settlement and the surrounding host villages. Their openness, active participation, and willingness to share their lived experiences regarding household energy consumption, environmental challenges, and socio-demographic realities form the vital foundation of this report. Their contributions are crucial in shaping a sustainable, gender-responsive path toward clean energy transition.

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ACRONYMS

CAO	Chief Administrative Officer
DCA	Danish Church Aid
DFO	District Forestry Officer
DCDO	District Community Development Officer
FGD	Focus Group Discussion
KII	Key Informant Interview
OPM	Office of the Prime Minister
NAWAD	National Association of Women's Action in Development
PSNs	Persons with Special Needs
RWC	Refugee Welfare Council
UNHCR	United Nations High Commissioner for Refugees

EXECUTIVE SUMMARY

This baseline report is part of the National Association of Women's Action in Development (NAWAD) 20-month project "Clean Cooking Solution for BIDIBIDI Refugee Settlement," supported by the UK Aid / Foreign, Commonwealth and Development Office (FCDO) under the Building Resilience and Effective Refugee Response (BRAER) Programme. The primary objective of the project was to develop a gender-responsive and sustainable clean energy transition through the implementation of a briquette production and skills training program. This baseline survey report aims to establish the existing socio-demographic, economic, environmental, and gender dynamics within Zone 4 Annex of the Bidibidi Refugee Settlement and its surrounding host communities in Yumbe District. The collected benchmarks sought to address the project's progress in reducing the consumption of woody biomass and scaling clean energy alternatives.

The study employed a cross-sectional design, with a mixed methods approach using Key Informant interviews, Focus group discussion for a qualitative approach, and a questionnaire for a survey as data collection methods. The study targeted 544 households.

Key Findings

The baseline survey sampled 544 households, where 70.96% refugee, and 29.04% host community, with a 100% response rate. The target population is highly youthful 56.62% aged 18–35 years, presenting a strong opportunity for long-term skills sustainability. Notably, 58.81% of refugee households were female-headed, contrasted against 73.42% male-headed households in the host community.

Over 98% of the target community depends on firewood collected from forests as their primary cooking fuel. The predominant cooking technologies are the inefficient traditional 3-stone cook stoves (59.74%) and clay stoves (28.13%). No cook stoves optimized for briquettes were found in use. Furthermore, the division of labor heavily impacts women and girls, who constitute the primary gatherers of firewood (81.43%) and water (77.94%), as well as primary household cooks (80.51%). These routines expose them to significant physical and healthcare hazards:

- **Respiratory & Vision Problems:** High exposure to indoor smoke results in widespread chest and eye complications.
- **Gender-Based Violence (GBV) and Conflict:** Firewood search in remote locations places women and girls at high risk of sexual assault (acknowledged by over 75% of respondents) and violent conflicts over natural

The target communities feature very low purchasing power; the majority of refugees earn less than UGX 20,000 monthly, while host community members average UGX 20,000–40,000. Livelihoods rely primarily on subsistence agriculture (maize, cassava,

sorghum), which ensures an abundant, low-cost pool of agricultural waste available for briquette production.

Findings show that general awareness of alternative clean cooking methods is higher among refugees (57.5%) than in the host community (28%). However, direct knowledge and usage of briquettes are critically low (less than 40% have heard of them, and fewer than 8% have used them). Despite this, there is an overwhelming willingness to adopt briquettes (>90%) and participate in production training (>90%), motivated by a communal desire to mitigate the security and health issues associated with firewood harvesting. The study identified that local interventions revealed that previous clean energy programs collapsed post-exit due to two fundamental flaws including short program timelines that restricted mindset change campaigns, and narrow market designs for example the training of only a minor group of youth to sell strictly to Persons with Special Needs via institutional vouchers. The study found out that when the implementing partner exited and institutional funding ceased, production stopped due to a lack of generalized open-market integration.

In conclusion, this baseline report provides critical insights into the clean energy transition in Bidibidi refugee settlement. Participants recommended the need to Launch robust behavioral change initiatives targeting both host and refugee community couples, leveraging local leaders to mitigate negative biases against new technologies and address rigid gender-specific divisions of labor. Additionally, there is a need to train a critical mass of community members with explicit focus on women and youth who bear the domestic cooking burden in decentralized production centers. This guarantees widespread local capacity rather than relying on a small select guild. The study participants also suggested formulation and training of community members on constructing low-cost, high-efficiency briquette stoves utilizing locally sourced materials to minimize financial barriers to proper stove acquisition to accelerate adoption and allow self-directed replacement. Finally, for sustainability, there is need to secure long-term project viability by constructing all-inclusive infrastructure frameworks that facilitate both internal domestic consumption and local open-market trade of briquettes, transitioning from external aid reliance into an autonomous value chain.

1.0 INTRODUCTION

1.1 BACKGROUND

The Government of the United Kingdom of Great Britain and Northern Ireland acting through the Foreign, Commonwealth & Development Office (“FCDO”) is implementing a 5-year Building Resilience and Effective Refugee Response (BRAER) Programme, providing support both to refugees and their host communities in Uganda. The clean cooking project which is being run as a pilot in the final year of the BRAER Programme is designed to align with global commitments such as Grand Bargain’s commitments on localization (IFRC, 2023), Global Compact on Refugees and Government of Uganda’s policy framework on environment, energy and climate change such as Uganda’s Comprehensive Refugee Response Framework (OPM, 2017), the Sustainable Energy Response Plan for Refugees and Host Communities 2021-2025 (MEMD, 2020) and the Water and Environment Sector Response Plan for Refugees and Host Communities in Uganda (MWE, 2019). The project seeks to establish the most effective way to reduce consumption of woody biomass within refugee settlements and host communities and to test an approach on working closer with local organizations.

FCDO entered into an Accountable Grant Arrangement with the National Association of Women’s Action in Development (NAWAD) to implement a one (1) year pilot project for provision of a clean cooking solution for BIDIBIDI refugee settlement. This is a report for the baseline survey that was conducted to establish the baseline conditions in the settlement. The baseline survey was conducted in Zone 4 Annex and the surrounding host community to generate essential data against which progress will be measured throughout project implementation.

The report provides data on household demographics; current cooking practices, energy consumption patterns, health outcomes associated with current cooking practices; awareness and knowledge about clean cooking solutions among household members, access to clean cooking solutions, and sustainability factors.

1.2 BASELINE SURVEY OBJECTIVES

1. To set benchmarks on the status of Outcome indicators in target communities that will be used to assess progress and impact of the project.
2. To generate recommendations on the sustainability of the innovation.
3. Document any emerging lessons and contextual issues likely to affect the project and obtain actionable recommendations from the project stakeholders.
4. Generate evidence on social-economic factors likely to influence the adoption of the technology among the target households.

2.0 METHODOLOGY

This section presents the methods that guided the study. It explains the research design, data collection methods, sampling strategies and data management and analysis.

2.1 SURVEY DESIGN

The baseline survey used a mixed methods approach, that is; quantitative and qualitative data collection methods.

2.2 STUDY POPULATION

The survey involved obtaining insights from the members of the Refugee settlement and the surrounding host community, as well as the technical experts who play a crucial role in addressing the refugee settlement issues including environmental degradation attributed to use of different cooking methods. Participants included community adults members, young men and women of different socio-economic status, community leaders, charcoal burners and Teak tree foresters, technical experts such as the Chief Administrative Officer (CAO) in charge of refugees, the District Forestry Officer (DFO), the District Community Development Officer (DCDO), the Assistant Commandant in charge of Zone 4 BIDIBIDI refugee settlement, and the Danish Church Aid (DCA) focal person on a previous similar clean energy intervention in BIDIBIDI.

2.3 DATA COLLECTION

Quantitative data was collected using an electronic questionnaire with KOBO collection software installed on a tablet. A stationed M&E officer to ensure the quality and correctness of data entry did real-time monitoring of data collection. Data segregation between refugees and host communities was key during data collection to provide room for comparison between the two communities. Qualitative data was collected using Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs).

2.4 SAMPLING

The survey was conducted in all the six (6) villages of Zone 4 Annex. Stratified random sampling was used to select participants from both the refugees and host communities in close collaboration with the Refugee Welfare Council (RWC) and local leaders in the host community to define the sampling frame and ensure inclusiveness of all the categories of people. The sample selection for Refugee households was informed by the Slovin's formula for sample size selection (Ariola, 2006) as follows;

$$n_1 = \frac{N}{(1 + Ne^2)}$$

where n is the desired sample size; N is the total number of households in Zone 4 Annex, and e is the desired level of significance (5%). Taking $N = 2,587$ (the total number of

refugees in Zone 4 Annex), a sample size of 381 was computed with a 10% adjustment to cater for non-response. The number of households to be sampled per village were proportionately computed as presented in **Table 1**. The number of households in the host community is not known, but since the project must benefit 30% of the host community members, the sample size (n_2) for host community households was calculated by proportion such that; $n_2=(381 \times 0.3)/0.7=163$, giving the total number of respondents to the survey as 544 households.

The study employed purposive sampling techniques to select participants for qualitative data collection using FGDs and KIIs. FGD participants for the Refugee Settlement were mobilized from the villages 5, 7 and 9 while participants for the host community were drawn from Igamara, Bali, and Bolomoni villages. A total of 7 FGDs comprising 8 participants each were conducted as follows: 2 FGDs for men, 2 for women and 2 for the youth mixed group of young men and women. In addition, one more FGD for charcoal burners and Teak tree foresters was done. This FGD aimed to capture this category of stakeholders' opinions on the transition from charcoal burning to the production and selling of briquettes, and the accessibility of teak tree leaves as one of the raw materials for briquette production. The FGD participants were mobilized through the RWCs and Local Council leaders. 5 KIIs were conducted. The KII participants were technical experts who are well versed with the status and depth of environmental degradation in the area, and those who participated in the implementation of similar projects in the settlement as stated in section 2.2.

Table 1: Population statistics for BIDIBIDI Refugee settlement – Zone 4 Annex and sample selection

Village	00-4 years		5-11 years		12-17 years		18-59 years		60+ years				
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Total	Households	Sample
5	187	203	439	479	364	427	715	596	65	28	3508	640	94
6	66	72	191	207	171	172	292	203	31	19	1430	307	45
7	79	75	162	148	115	122	248	188	31	19	1194	238	35
8	77	62	204	211	186	226	357	231	38	12	1612	326	48
9	146	139	384	383	332	357	586	460	68	22	2885	580	85
10	128	149	227	338	343	356	523	381	53	19	2527	496	73
Total	683	700	1607	1765	1511	1660	2721	2059	286	119	13156	2587	381

Source: (OPM, 2023)

2.5 DATA ANALYSIS

STATA software version 15 was used to analyze quantitative data as frequencies and percentages. Qualitative data analysis was grounded in thematic analysis, which is a method that helps to uncover and interpret recurrent patterns (themes) hidden within qualitative data (Braun & Clarke, 2006). This was through a rigorous and iterative process that involved a manual thematic analysis around the current cooking technologies and practices, willingness for new technology adoption, level of awareness about alternative cooking technologies and gender relations.

3.0 BASELINE SURVEY FINDINGS

This section of the report presents key findings from the baseline survey. The findings have been presented in accordance with the identified key thematic areas informed by the survey objectives.

3.1 RESPONSE RATE

A total of 544 respondents participated in the baseline survey as shown. The overall response rate of the participants was 100%, where 386(70.96%) were from the refugee settlement and 158(29.04%) from the host community – **Figure 1**. These response rates were high based on the recommended minimum of 50% by Mugenda and Mugenda (2003); therefore, the findings from this study can be generalized to the study population. In addition, this implies that the study findings represent the views and opinions of a large number of many of the targeted respondents. This inference is supported by the observations of Morton et al., (2012) that studies with higher response, say at 70% of the sample, are often more accurate than those with much lower response rates, say 50%. Krishnan and Poullose (2016) also observed that high response rates indicate larger data samples and higher statistical power, leading to a greater probability that the sample is representative of a population. This improves the acceptance and credibility of the research findings amongst key stakeholders. A higher response rate was therefore an indicator that the participants in the baseline survey were interested in the study hence providing a possibility that the findings generated are representative of their objective opinions.

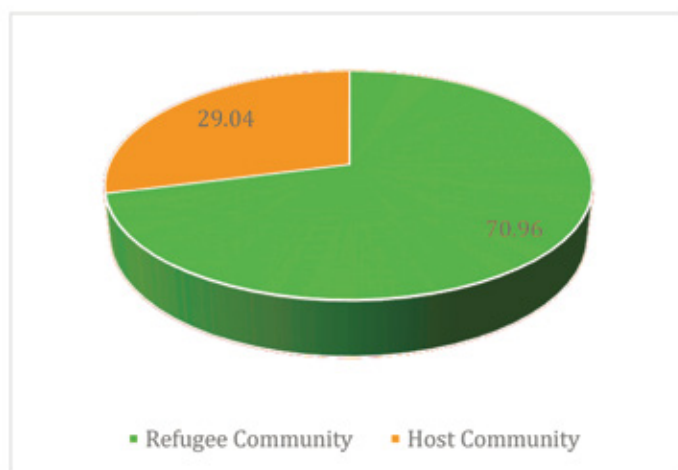


Figure 1.
Response rate of Respondents

3.2 SOCIO-DEMOGRAPHICS OF THE RESPONDENTS

The baseline survey covered varied social economic and demographic characteristics of the respondents and these included: sex, marital status, and education level.

3.2.1 SEX/GENDER

Figure 2 shows that the percentage of the females 427(78.49%) who participated in the survey were more than the males 117(21.51%) largely because most of the households have more female members than males. This is further supported by UNHCR (2022) where the total population at BIDIBIDI settlement was estimated at 246,312; 84% being women and children.

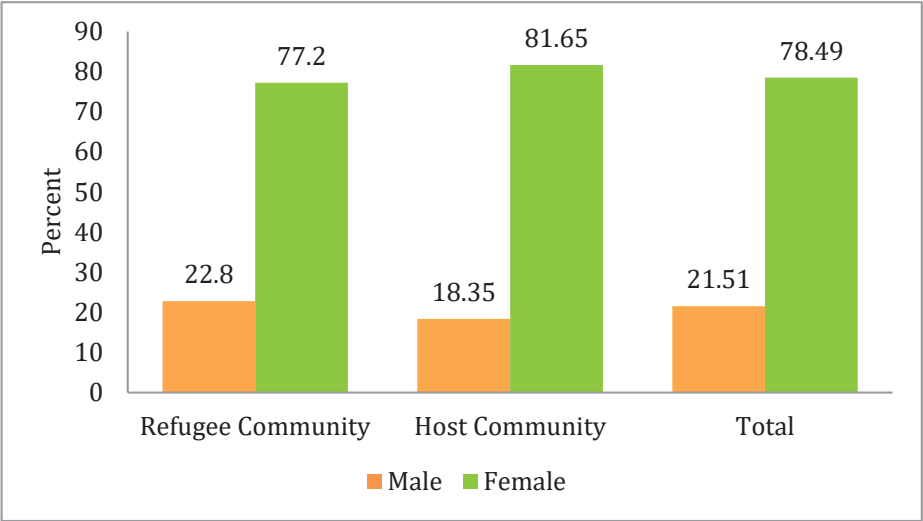


Figure 2 Number of respondents by gender

3.2.2 AGE OF THE RESPONDENTS

From the findings, the majority 308(56.62%) of the community members belonged to the age group between 18-35 years of age, followed by 177(32.54%) who belonged to 36-59 years, and the least 17(3.13%) of 11-17 years – **Figure 3**. This implies that most of the respondents are young and therefore in a productive age to continue on the briquettes technology project even after the project lifetime if well trained. Therefore, our training on briquette production and marketing will target a critical mass in these age brackets as a strategic sustainability plan.

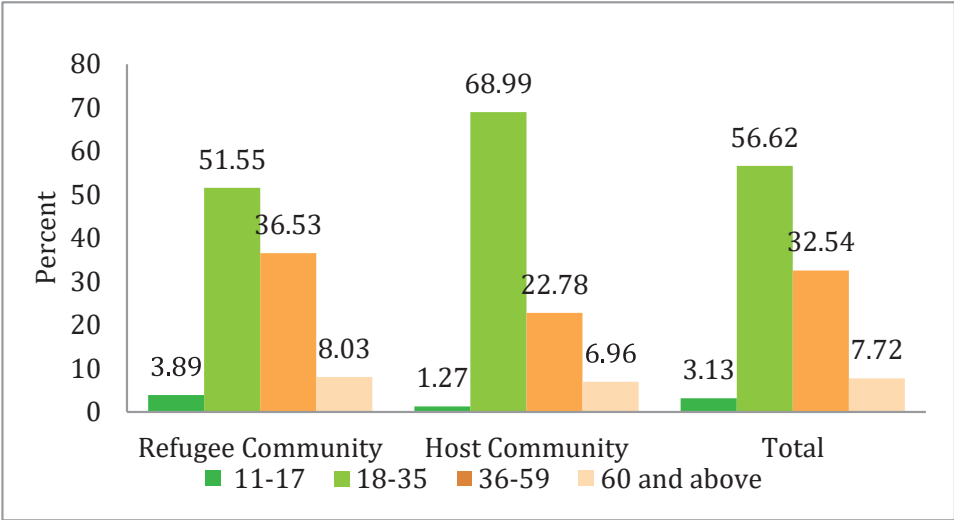


Figure 3. Age of respondents

3.2.3 MARITAL STATUS

The results in **Figure 4** indicate that the majority 367(67.46%) of the community members are married or living with a partner, 71(13.05%) were widowed followed by 52(9.56%) who were separated or divorced, and 54(9.93) were single. This is advantageous to the project during gender awareness and sensitization to influence gender relations regarding decision-making on the adoption of new technologies and mobility. This is supported by the study conducted by Muhanguzi et al. (2023), which reveals that husbands control their wives' mobility, and resources ownership, especially technologies like phones and big assets such as land, cattle and houses. Therefore, for easier behavioral change at the household level and increased chances of sustained clean energy usage, training of both men and women, especially couples would be appropriate.

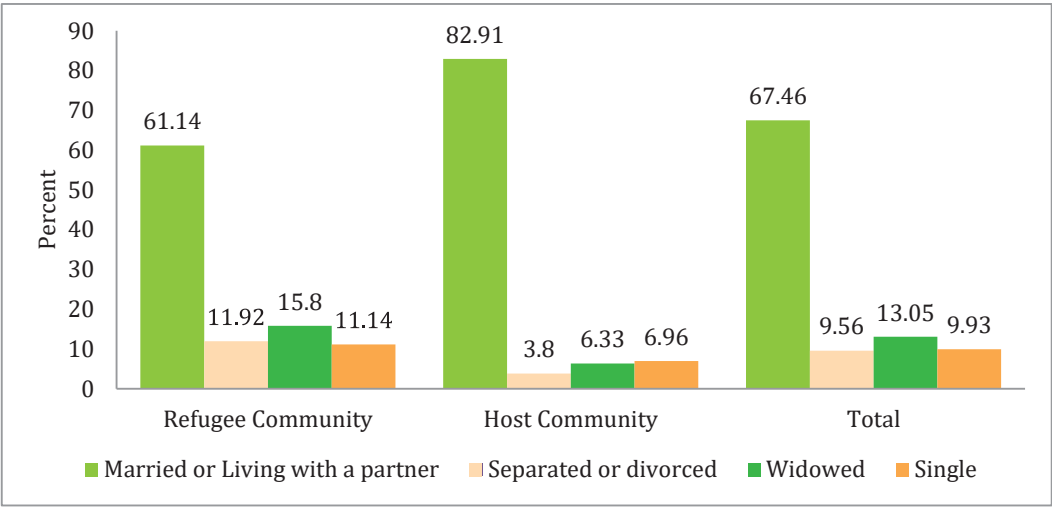


Figure 4. Marital status of the Respondents

3.2.4 EDUCATION OF THE RESPONDENTS

In terms of the highest level of education, the majority 347(63.79%) of respondents had attained primary education, followed by 119(21.88%) of respondents who had not attained any education. This was followed by 71(13.05%) who had attained secondary education – **Figure 5**. The community members' different levels of academic qualifications who participated in the baseline survey is very important. First, it eased data collection and secondly, it makes training of the beneficiaries on the different aspects easy since majority can read and write. Having most of the respondents with minimal education levels, provides a good sample from where to draw participants for the training program.

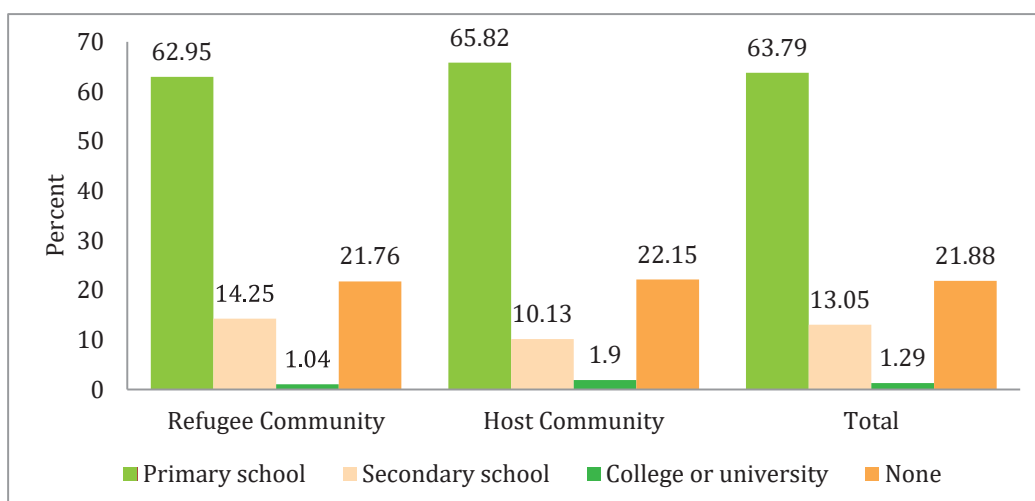


Figure 5. Education level of the Respondents

3.2.5 HOUSEHOLD DEMOGRAPHICS

The average number of people in the household in both the refugee and host communities are four (4) people – **Table 2**. A moderate family size can easily benefit from the clean cooking solution since they require less energy for their cooking needs compared to large families. The agricultural waste generated by such a household may be sufficient to produce enough briquettes for cooking.

Table 2: Number of people in a household

Household Demographics of the respondents			
	N=386	N=158	N=544
	Mean (std. Dev.)		
	Refugee Community	Host Community	Frequency
Males	3.73 (1.98)	3.69 (1.95)	386
Females	3.95 (2.08)	3.95 (2.22)	158

Findings show that the majority of the households in the refugee community are female-headed 227(58.81%) - **Figure 6**. These findings are supported by the UNHCR statistics report, which explains that female-headed households in BIDIBIDI refugee settlement are 52% (UNHCR, 2022). This calls for intentional inclusion of female heads of households in the project because of their socially constructed position that is likely to limit their access to clean energy.

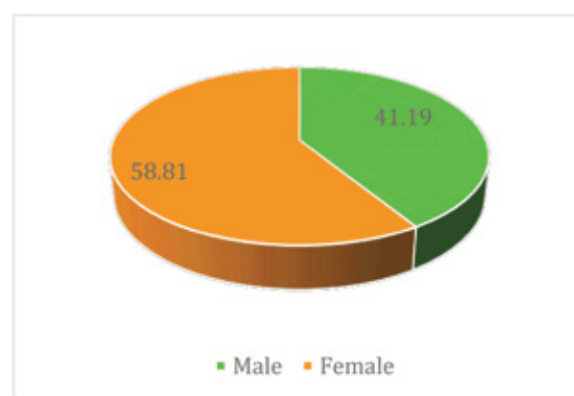


Figure 6. Heads of Refugee Households

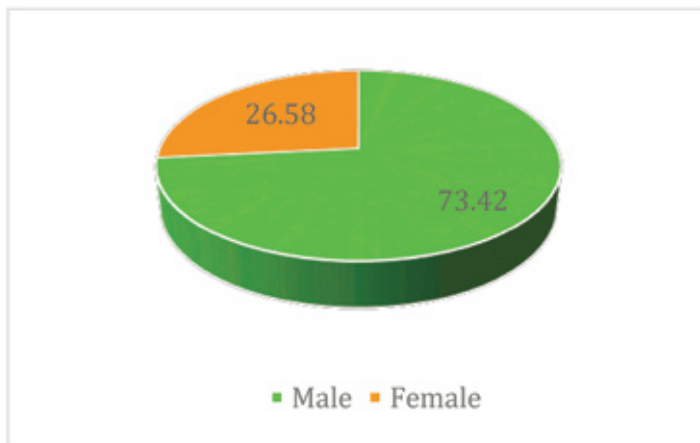


Figure 7. Heads of Host Community Households

3.3 CURRENT COOKING PRACTICES AND ENERGY CONSUMPTION PATTERNS

Over 98% of the target community use firewood for their cooking needs, whose main source is forests - **Figure 7**. Firewood is also used for lighting (24.45%) mainly in the refugee settlement, heating (35.66%), and ironing clothes (20.96%). This can be used to explain the high rate of deforestation in the area, which has a dire impact on the climate change and sustainable livelihoods. Only 3.11% of the refugees buy firewood as opposed to less than 1% of the host community. At the community level, women (81.43%) are reported to be the main collectors of firewood for both Refugees and host communities followed by girls (41.73%) - Figure 8. Similar statistics are reported at the household level, and well compared with cooking where mothers were reported as the main household cooks (80.51%).

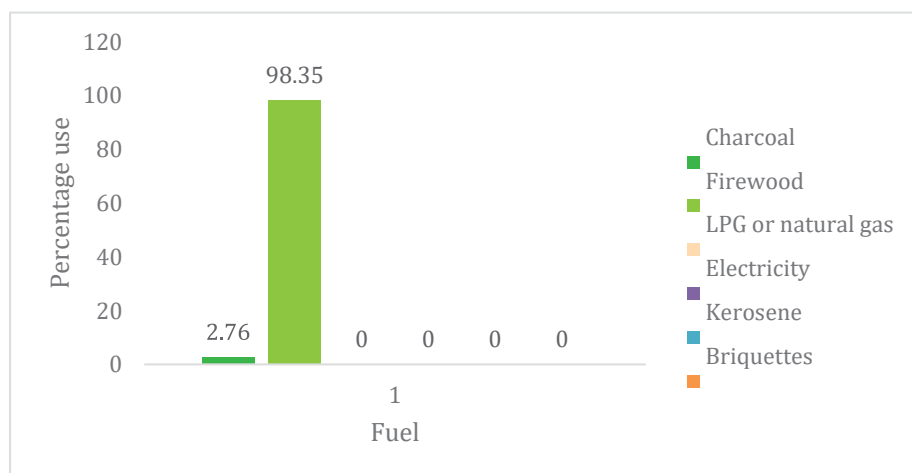


Figure 7. Main fuel used for cooking

This could be attributed to the fact that the BIDIBIDI refugee population is mainly women and girls as reported by UNHCR (2022). This project should therefore consider women in addition to the youth to constitute the main participants in the briquette value chain, requiring the technology to be deployed to be age and gender inclusive, to provide equitable opportunities across gender and age for easy adoption and sustainability of the intervention. Targeting women to champion briquette utilization both at household and community level is strategic, since they spend a lot of time fetching firewood from long distances that exposes them to a number of risks.

Qualitative findings indicated that women have taken over the household provisioning and therefore should be targeted by interventions such as clean cooking technologies. A male KII explained the current household status in Yumbe that;

....."Depending on the individual homes, these days it's the women who nearly put food on the table so this means the women will be the first people to take on this project and, in some homes, where men are the heads, the women will advise them and say this is economical let's take on this and they will go for it since they want to save money for other things" (A male KII respondent, Yumbe, 2024)

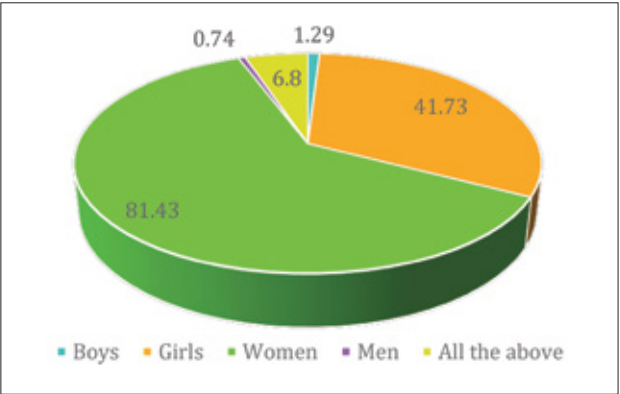


Figure 8:
%age level of involvement in
firewood collection

The 3-stone cook stove is mainly used for cooking with firewood by both the refugees (57.77%) and the host community (64.56%) followed by the traditional clay stove in almost equal proportions (28%). In addition, Rolena stoves, which are the improved cook stoves that use less firewood, are used 3 times more in the refugee settlement (41.45%) than in the host community (13.29%). Cook-stoves that support briquette utilization were not found in use. The project will therefore develop and conduct training of community members on the production of low-cost briquette stoves using locally available materials to accelerate the adoption and utilization of briquettes as replacement for firewood.

What kind of cooking facility does your house use?	Frequency(percentage)		
	Refugee Community (N=386)	Host Community (N=158)	Total (N=544)
3-stone cook stove	223(57.77)	102(64.56)	325(59.74)
Traditional Clay stove	111(28.76)	42(26.58)	153(28.13)
Lorena stove	160(41.45)	21(13.29)	181(33.27)
None	2(0.52)	3(1.9)	5(0.92)
Other	1(0.29)	11(6.96)	12(2.21)

Table 3: Cooking facility in the community

Qualitative findings are in line with the above statistics. During a discussion with a male KII respondent, he mentioned key main cooking practices by most community members that “.....they use the charcoal stoves mostly in towns and then in villages most of them built the cooking stoves but also many still use the 3-stones then very few use solar (enkoka).....” Another male KII respondent added his voice that “....mostly, we have the 3-stones, solar, charcoal stoves which are made of sigiri or are built like rolana, we also have the rolana stoves, those are some of the techniques that are being used here....”. Voices from the FGDs were not different about the cooking practices.



3.4 SOCIAL ECONOMIC STATUS

Majority of the refugees (53.11%) and host community (33.54%), earn less than UGX. 20,000 per month and between UGX. 20,000 to 40,000 respectively - Figure 9. This represents a very low purchasing power for energy, which explains why people move long distances in search of free firewood. This calls for wider coverage in training on briquette production to enable the majority of the households to produce briquettes for own use. Additionally, the project should skill a critical mass of community members on production of low-cost briquette stoves using local materials with limited financial input.

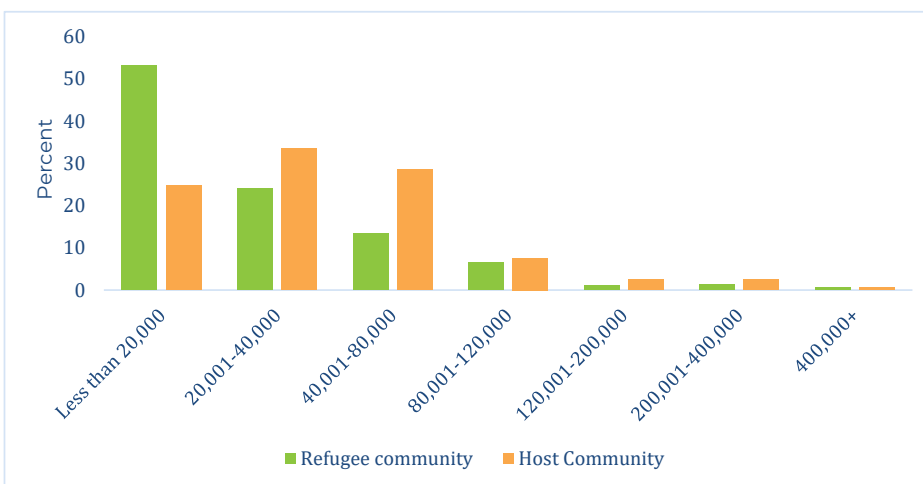


Figure 9.
Monthly income of the respondents

Over 83% of the refugees live on 30x30 meters of land and more than 100x100 meters for the host community (43.48%), which is mainly used for crop farming (98.62%); a major source of income for both communities – **Figure 10**. This shows that the majority of the community members predominantly derive their livelihoods from agriculture.

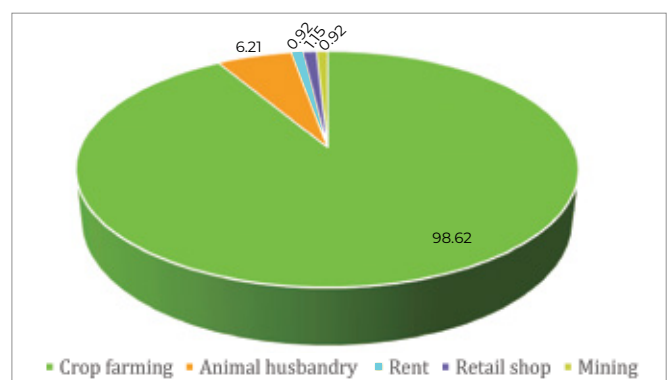


Figure 10. Land usage at BDIBIDI refugee settlement

3.4.1 WATER SOURCE

From the findings, it was reported that 436(80.15) from the two communities depend on Tap water with over 88% of the refugees and 59.5% host community. Thus, there is a need to look for a water source that can be utilised as a source of feed water for briquette production as Tap water is competitive.

Main source of water for the household	Frequency(percentages)		
	Refugee Community (N=386)	Host Community (N=158)	Total (N=544)
Borehole	93(24.1)	56(35.4)	149(27.4)
Rain	3(0.8)	3(1.9)	6(1.1)
Pond	0	1(0.6)	1(0.3)
River/stream	65(16.8)	74(46.8)	139(25.6)
Unprotected Spring	7(1.8)	0	7(1.3)
Taps	342(88.6)	94(59.5)	436(80.2)
Others	1(0.3)	0	1(0.2)

Table 4: Water Source

3.5 AVAILABILITY OF RAW MATERIALS FOR BRIQUETTE PRODUCTION

The refugees and host community largely practice agriculture where they mainly grow maize, cassava, and sorghum as the major crops. The high percentage involvement in agriculture by both communities is advantageous to the project because it provides a pool of agricultural wastes, which are target raw materials for briquette production. In fact, several voices from the KIIs and FGDs revealed that BIDIBIDI refugee settlement and the surrounding host communities are positioned to supply all the required materials for briquettes production. One of the participants explained that getting raw materials will not be a problem as he puts it;

“...These materials can be easily found because they are there and most of the refugees are now in crop production... first of all cassava is the main food here, that is what people eat so if the waste can provide raw materials then we have it, all of them are planted here actually it would also be another source of income for host community because you have the raw materials whether cheap after all you were going to waste it or throw it away and if somebody can give you some small money it will be enough...” (A male KII participant, Yumbe, 2024).

Relatedly, a KII respondent who participated in a similar previous intervention in the area is quoted saying “...the materials for briquette production are within the refugee community which was being burnt before, but after briquette production started, the burning reduced because people started seeing the economic values...”. Another KII respondent reported that the briquettes project will be successful because the community members will provide agricultural materials since they are engaged in farming as he explained “...resources, I can say we have, yes in terms of materials for briquettes, those ones can be there because most of those people are agriculturalists...” which similar reports were given by all respondents of the FGDs. From his point of view,

and the knowledge about the community, the people are heavily engaged in agriculture which resonates with the statistical survey findings above.

In addition to practicing agriculture for their livelihoods, over 93% of the refugees receive direct humanitarian support from development partners in the form of food aid. However, this aid is steadily being downsized, which has forced the refugees to seriously consider agriculture to fill the food gap.

3.6 EXISTING GENDER EQUALITY NORMS AND PRACTICES

For any socio-economic development to occur, the gender and social terrain must offer a level ground for different categories of men, women, boys and girls. This requires crucial changes in the existing gender equality norms, practices, and attitudes to foster an inclusive environment where all individuals, regardless of gender, or social class can contribute to and benefit from innovative development interventions. During the baseline survey, key gender issues explored included socially constructed gender roles, and gender and health risks associated with the collection and use of firewood. The findings from the baseline survey highlighted qualitative and quantitative areas where change is necessary, serving as a benchmark for assessing progress towards Outcome Indicator 2.1: the percentage of participants demonstrating improved knowledge, positive attitudes, and practices. Gender equality norms and practices investigated relate to access to resources, gender division of labour.

3.6.1 THE STATUS OF GENDER DIVISION OF LABOUR IN THE PROJECT SITE

a) Water fetching in the community

Over 80% of both women and men indicated that water collection was a role for women and girls in both the refugee and host community as shown on Table 5. . This shows that there is a need for gender awareness and sensitization regarding water fetching.

In this community who usually fetches water?	Sex (N=544) Frequency(percentages)		
	Male	Female	Total
Boys	1(0.85)	0	1(0.18)
Girls	20(17.09)	66(15.46)	86(15.81)
women	82(70.09)	342(80.09)	424(77.94)
Men	1(0.85)	0	1(0.18)
All the above	13(11.11)	19(4.45)	32(5.88)
Total	117(100)	427(100)	4544(100)

Table 5: Water fetching in the community

b) Firewood fetching in the community

Baseline survey findings, from majority of the women (83.3%) and men (74.4%) reveal that women are the ones who predominantly fetch firewood for their households for cooking as shown in the table 5. Furthermore, of the respondents (80.5%) agreed that also mothers do the cooking in the households. This implies that gender inequality when it comes to

distribution of roles in the refugee and host community thus a need for gender awareness and sensitization regarding firewood fetching, accessibility and cooking roles.

In this community who usually fetches Firewood?	Sex		
	Male(N=117)	Female(N=427)	Total(N=544)
Boys	0	7(1.64)	7(1.29)
Girls	50(42.74)	177(41.45)	227(41.73)
women	87(74.36)	356(83.37)	443(81.43)
Men	2(1.71)	2(0.47)	4(0.74)
All the above	14(11.97)	23(5.39)	37(6.8)
Who usually cooks meals for the household?			
Boys	5(4.27)	1(0.23)	6(1.1)
Girls	19(16.24)	67(15.69)	86(15.81)
Mother	81(69.23)	357(83.61)	438(80.51)
Father	11(9.4)	0	11(2.02)
All the above	1(0.85)	2(0.47)	3(0.55)

Table 6: Firewood fetching in the community

The qualitative findings revealed the normalcy of an unbalanced work-life especially for women and girls seems to be persistent. The men expressed their culturally supported perspectives of a woman as one supposed to cook and even if she is sick, she should look for an alternative woman relative or friend to support and continue the women's socially constructed gender roles instead of encouraging shared domestic responsibilities between men and women. Women expressed their dissatisfaction with the way society treats them as one woman reported.

...As women, we don't have any power. Even if you said you can't cook; they beat you... Hey, we don't have any power...You feel today like you want to rest... Where will you rest? You will cook...They are mad at you, even if you are to die in that fire... (A woman FGD participant).

From the above narrative, the unequal gender relations are persistent and can potentially affect men and women's involvement in any interventions in the community.

3.6.3 GENDER RELATED HEALTHCARE RISKS AND PRACTICES

The baseline findings further revealed the community awareness of gender related healthcare risks and practices in the refugee settlement and the host community related to coking practices. To capture the health and gender outcomes associated with current cooking practices, respondents were asked questions relating to;

- physical risks and injuries associated with the use of firewood for girls and women, and for boys and men
- respiratory problems experienced by men and women, boys and girls, and
- experience of sexual assault during the collection by women and girls/men and boys.

Both men and women participants acknowledged that women and girls' roles especially firewood and water collection and use expose them to health risks (**Table 7**).

Responses	Refugee Community (N=386)	Host Community (N=158)	Total (N=544)
Women and girls are exposed to physical injuries during the collection of firewood			
Strongly Disagree	3(0.78)	0	3(0.55)
Disagree	4(1.04)	2(1.27)	6(1.1)
Neutral	1(0.26)	2(1.27)	3(0.55)
Agree	219(56.74)	54(34.18)	273(50.18)
Strongly agree	159(41.19)	100(63.29)	259(47.61)
Total	386(100)	158(100)	544(100)
Men and boys are exposed to physical injuries during the collection of firewood			
Strongly Disagree	20(5.18)	12(7.59)	32(5.88)
Disagree	60(15.54)	49(31.01)	109(20.04)
Neutral	15(3.89)	25(15.82)	40(7.35)
Agree	215(55.7)	33(20.89)	248(45.59)
Strongly agree	76(19.69)	39(24.68)	115(21.14)
Total	386(100)	158(100)	544(100)
Women and girls have experienced respiratory problems associated with the use of firewood			
Strongly Disagree	4(1.04)	0	4(0.74)
Disagree	14(3.63)	0	14(2.57)
Neutral	4(1.04)	4(2.53)	8(1.47)
Agree	232(60.1)	65(41.14)	297(54.6)
Strongly agree	132(34.2)	89(56.33)	221(40.63)
Total	386(100)	158(100)	544(100)
Men and boys have experienced respiratory problems associated with the use of firewood			
Strongly Disagree	31(8.03)	10(6.33)	41(7.54)
Disagree	76(19.69)	41(25.95)	117(21.51)
Neutral	14(3.63)	30(18.99)	44(8.09)
Agree	197(51.04)	44(27.85)	241(44.3)
Strongly agree	68(17.62)	33(20.89)	101(18.57)
Total	386(100)	158(100)	544(100)
Women and girls have experienced sexual assault during the collection of firewood			
Strongly Disagree	14(3.63)	10(6.33)	24(4.41)
Disagree	63(16.32)	13(8.23)	76(13.97)
Neutral	6(1.55)	6(3.8)	12(2.21)
Agree	151(39.12)	45(28.48)	196(36.03)
Strongly agree	152(39.38)	84(53.16)	236(43.38)
Total	386(100)	158(100)	544(100)
Men and boys have experienced sexual assault during the collection of firewood			
Strongly Disagree	86(22.28)	48(30.38)	134(24.63)
Disagree	172(44.56)	84(53.16)	256(47.06)
Neutral	23(5.96)	10(6.33)	33(6.07)
Agree	85(22.02)	12(7.59)	97(17.83)
Strongly agree	20(5.18)	4(2.53)	24(4.41)
Total	386(100)	158(100)	544(100)

Women and girls have died due to injuries sustained during conflicts over firewood			
Strongly Disagree	57(14.77)	36(22.78)	93(17.1)
Disagree	107(27.72)	22(13.92)	129(23.71)
Neutral	22(5.7)	8(5.06)	30(5.51)
Agree	140(36.27)	33(20.89)	173(31.8)
Strongly agree	60(15.54)	59(37.34)	119(21.88)
Total	386(100)	158(100)	544(100)
Men and boys have died due to injuries sustained during conflicts over firewood			
Strongly Disagree	78(20.21)	43(27.22)	121(22.24)
Disagree	143(37.05)	60(37.97)	203(37.32)
Neutral	30(7.77)	38(24.05)	68(12.5)
Agree	117(30.31)	14(8.86)	131(24.08)
Strongly agree	18(4.66)	3(1.9)	21(3.86)
Total	386(100)	158(100)	544(100)

Table 7: Gender related healthcare risks and practices

During an FGD with women in the refugee settlement, women views corroborated the statistical evidence that girls and women experience sexual harassment during firewood collection errands. In the refugee settlement, 39.38% of respondents strongly agreed with the statement that women and girls have experienced sexual assault during the collection of firewood while 53.16% in the host community. A participant shared her experience that

...Okay, rape. Yeah, rape and harassment from the other side to the ladies who will fetch firewood. Okay. What are the challenges? When you go to the bush, to look for the firewood. When the host community members sometimes find you, you'll be beaten. You'll be beaten and the old tools that you'll be used can be taken. This is back home (A woman participant in the women FGD, July 2024).

3.7 AWARENESS AND KNOWLEDGE ABOUT CLEAN COOKING PRACTICES

3.7.1 CLEAN COOKING TECHNOLOGIES

Among the refugee community, 57.5% are aware of the clean cooking technologies compared to the 28% in the host community, which indicates low levels of awareness. This could be attributed to the previous interventions on clean energy access in refugee settlements and the host community by UNHCR, and other implementing partners like DCA, GIZ, and ADRA among others, that only trained some youth to produce and distributed briquettes to the vulnerable groups in the settlement.

Qualitative findings also indicate that both the refugees and host community are aware of clean cooking technologies particularly the briquettes. When asked whether they have seen the briquettes before, participants in a youth FGD unanimously responded in the affirmative. A female youth participant explained that “...I saw it made out of raw materials like charcoal and I saw how they were making it and I wasn't trained but some few youths were trained and given some of them...”. Similarly, KII respondents had

extensive knowledge about the briquettes and shared their experiences about briquette interventions by other partners. The voices below demonstrate community members' awareness about the briquettes.

"...there is a group in Odravu, they are making briquettes and you need to liaise with some of the people already doing it and have the knowledge so that you involve them..." (A male KII respondent, Yumbe, 2024)

"... selected people from zone 1, 2, and 3 like the one of Save the Children were bringing briquettes and stoves which are already made..." (A male KII respondent, Yumbe, 2024)

"...we were making both the stiff briquettes and the honey comb. But in Kiryandongo we are making the fixed honey comp stove (A male KII respondent, Yumbe, 2024)

"...Briquettes are good...like recently we were in for some training for briquettes and they have tried to work on issues of briquettes within here..... (A male KII Participant, Yumbe District)

The above selected voices indicate that the intervention of clean cooking technology is not new in Yumbe district. This means that the incoming project has to leverage the existing structures and knowledge of the different stakeholders, which is critical for success. Given the absence of women in the different spaces of influence, the project management team will require a strong inclusivity strategy to involve more women at different levels of project implementation.

3.7.2 BENEFITS OF USING CLEAN COOKING SOLUTIONS

Over 80% of the respondents from the refugees and host community agreed that the clean cooking solutions offer health benefits through reduction in the prevalence of respiratory and other health complications. This can be attributed not only to the knowledge acquired from the previous interventions from other partners on clean cooking energy, but also the negative effects on their health as a result of continuous exposure to smoke from the use of firewood.

3.7.3. KNOWLEDGE ABOUT BRIQUETTES

Only 47.4% and 16.5% of respondents from the refugee and host community respectively, have ever heard about briquettes before. This accounts for less than 40% of all respondents with knowledge about briquettes. Of these, only 7.7% and 1.3% from the refugee and host community respectively have ever used briquettes. Over 80% of both the refugee and host community agreed that the use of briquettes reduces the time spent on cooking and collection of firewood. When asked about their willingness to switch to using briquettes, over 90% expressed interest in switching to the use of briquettes as a clean cooking solution if readily available. This large percentage can be attributed to the magnitude of suffering and torture experienced by both communities through walking long distances in search for firewood, health complications associated with use of fire

wood, sexual assault, conflicts over fire wood and other challenges associated with fire wood collection and use.

Among these respondents, only 1.65% have participated in briquette production while majority have not, and if given the opportunity, over 90% of them expressed willingness to participate in the training on briquette and stove production, but also sharing of knowledge to others to ensure continuity of this clean cooking solution. This resonates with submissions by all FGD and KII participants where willingness to participate in the training programmes and sharing of knowledge on briquette production and use to other community members was overly expressed by the respondents.

Concerning knowledge about the other projects, organizations or companies already promoting clean cooking technologies, only 20.5% and 1.9% from the refugee and the host community respectively are aware of the other implementing partners promoting clean cooking technologies. This may be used to explain the low levels of awareness on clean energy alternatives. Qualitative findings validated the statistical evidence about lack of awareness on clean cooking technologies as one male KII respondent, a leader from BIDIBIDI refugee settlement reported “....majority have heard about briquettes but most of them have not seen them, just a few. Now when it comes to the host community, the majority don't know about briquettes and even refugees don't know how they are developed.....”.

Lack of awareness about an intervention is a recipe for misinformation, rejection and opposition. Different stakeholders argued that men and women always oppose new technologies that they don't know or have received misinformation about. A KII respondent explained that;

“... the biggest problem has always been the mindset and awareness. Because once people don't know about a specific product, to continue with it becomes very hard for them to adapt to it. Some might be having interest but because enough has not been done in terms of awareness question.....” (A male KII respondent, Yumbe, 2024)

The above quantitative and qualitative findings point to the need for robust awareness creation and mindset change for any new intervention to be easily adopted.

3.7.4 EFFECT OF USING FIREWOOD ON ENVIRONMENTAL DEGRADATION

Concerning the issue of deforestation and environmental degradation, over 85% of the respondents from both communities attested to the fact that the use of firewood and charcoal for cooking have severely degraded the environment. Relatedly, voices from the FGDs and KIIs demonstrate that the community is aware of the effects of using firewood not only on the environment but also on individuals' health and gender relations. During an FGD with women, they mentioned challenges of using firewood including affecting their health, time and relations especially with their spouses as a woman participant is quoted saying that; “...women and girls walk long distances, in the bushes...they may find snakes that may bite them...some people have gotten other problems, like eye problems

from the smoke, chest pains, and other things. Relatedly, men too shared their understanding of the challenges of using firewood. A male participant mentioned that “...for women, reaching 70 years, they already experience blindness.... So, we came and thought that maybe since she is always in the kitchen, and there is a lot of smoke in the kitchen, it could be the cause of that eye disease which affects their eyes....”

A KII respondent also elaborately shared his knowledge about the effects of firewood as

“...We need to come up with efficient cooking technologies that do not use much firewood ...which will be able to minimize long distance movement...the amount of firewood or charcoal to be used hence saving the water and the environment and also minimizing smoke which is also very dangerous in terms of our respiratory system...” (A male KII respondent, Yumbe, 2024).

Therefore, both communities are willing to switch to briquette use, if readily available because they are aware of the dangers of using firewood. Although the larger percentage attested to this, there is still a need for more sensitization to promote continued awareness about environmental sustainability.

3.8 SUSTAINABILITY OF THE CLEAN COOKING INTERVENTION

The FGDs and KIIs covered the area of sustainability of the intervention where participants were asked to share some of the challenges to sustainability of clean energy interventions in BIDIBIDI. According to the KIIs, sustainability is possible if a number of things are put into consideration. These include awareness creation, training community members to make the briquettes themselves, and subsidizing the price of briquettes as summarized from by one KII respondent that;

“... there is need for awareness creation ...and then if we could also subsidize the prices for the briquettes... trust me people will be able to buy them...” (A male KII respondent, Yumbe, 2024).

Similarly, the FGD participants re-echoed the KII views and suggested that if the project is presented as theirs, it will be there for long. Using their experiences with the previous interventions, the participants reported that they were not well sensitized and did not believe the briquettes were better. Other responses from KIIs suggest that sustainability requires making the briquette production process and utilization as simple as possible. One of the KII respondents requested the project team to consider simplifying the briquette making process as he explained;

“...the techniques that are used should be made a little bit easier ...so that if I'm to think of making a briquette right now I would know I need to get maybe some shrubs, maybe a lot from around the compound or if it's in the garden and all these stocks or how I put them in a combustion tube very first after some few minutes I'm already done with it and you see the briquettes are there...” (A male KII respondent, Yumbe, 2024)

The design adopted for this project has already catered for the above KII respondent's views by targeting deployment of an all-inclusive briquette infrastructure that is easy to use by every adult, and training the community on production of customized briquette stoves using local materials to ease briquette utilization. By this we expect improved adoption and sustainability.

Using their previous experience, KIIs respondents also advised that for sustainability purposes, the project team should be aware of why previous briquette production partners failed and leverage on their mistakes as a starting point. Responding to a question on why the adoption and sustainability of previous interventions on clean cooking have been challenged, a KII respondent mentioned that;

"...there has been limited time given for awareness creation, and training. Where proper awareness creation has not been made and where there is no demand for the product, sustainability is difficult. Now that you have brought this project that comes with experts, we expect it to be here for ages..." (A male KII, Yumbe, 2024).

Another KII respondent emphasized the need for project implementers' seriousness and focus on sustainability and not focusing on achieving milestones and writing reports to donors. He also drew on his experience with other interventions when he said that;

"...we usually encourage partners on sustainability because we cannot continue getting money from donors to do the same thing over and over again. We usually push for that but I would say project design defer from organization to organization..." (A male KII, Yumbe, 2024).

During an FGD with men, participants also provided views on sustainability asserting that the project would fail if there is no market for briquettes produced. This preceded a citation of an example where a similar previous intervention on briquettes only trained a small group of youth to make briquettes and the partner provided market for the briquettes to motivate the youth to continue production. At the end of the project, no more purchases were made and the group could therefore not continue with briquette production. This declaration was re-echoed by a KII respondent where an implementing partner only supported persons with special needs (PSNs) to buy briquettes from the youth group as detailed in his submission as follows;

".....and the money was passed to the beneficiaries so we can agree that from the project design 1 person is supposed to get 100 kg of briquettes for the period of 6 months so we break down that and it's put in money form, we give you a voucher card worth the 100 kgs of briquettes then payment goes to the group. Our target was only PSNs..." (A male KII respondent, Yumbe, 2024)

Briquette production stopped at the end of the project since no more vouchers were issued at the exit of the implementing partner.

From these reports, we note that the targeting approach used by the previous intervention on briquettes production and utilization was not well thought out.

Considering only the PSNs for the briquette market and training only the youth to supply the market, yet the rest of the community faces the same energy challenges was an obvious mistake that could be the main cause of lack of continuity at the exit of the implementing Partner. Training a critical mass of community members especially those that mostly fetch firewood and do cooking would push the intervention further even after exit, since this category of people are the most affected by long distance movements and torture during firewood collection.

4.0 RECOMMENDATIONS AND CONCLUSION

4.1 RECOMMENDATIONS

Based on the baseline survey findings, below are recommendations that need to be addressed in order to ease the implementation of clean cooking practices in BIDIBIDI refugee settlement and the host community in Yumbe district, and ensure gender equitable benefits. The sustainability-learning question will be part of the M&E tools to monitor the indicators including sustainability following the recommendations given in the baseline



To influence inclusive adoption of the technology among the target households, it is recommended that the project implementers should

- Conduct massive awareness creation to enable community members who have developed negative attitudes towards briquette production to appreciate the benefits of clean energy sources such as briquettes as an alternative to firewood.
- Conduct mindset change campaigns for the community to appreciate the changes in gender roles in the modern world, and the need to embrace changes that conserve the environment for sustainable livelihoods. This must involve change influencers including local leaders and experts in the field.
- Establish briquette production centers and training of a critical mass of community members to increase awareness and skills in briquette production and use.



To ensure sustainability of the project, it is recommended that the project implementers should

- Prioritize deployment of briquette infrastructure that is all inclusive and can easily be used by women and girls who are the main firewood collectors.
- Introduce a new design of the customized briquette stove that is easy to produce at household level with minimal financial input to accelerate adoption and facilitate easy replacement by self.

4.1 RECOMMENDATIONS

The baseline survey provided useful insights into the status of the target community for the clean cooking solution. These insights present key contextual issues that NAWAD intend to leverage to generate an informed implementation strategy that will greatly influence clean energy transition at BIDIBIDI refugee settlement and the surrounding host communities.



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