



Good Stove - Better Cooking



Energy Access in Refugee Settlements: Creating Evidence for Market-Based Approaches

ENERGY ACCESS BASELINE FOR REFUGEE SETTINGS IN ARUA DISTRICT (Rhino Camp & Imvepi)

Draft KEY HIGHLIGHTS

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The Energy needs and market analysis baseline assessment was carried out through household quantitative surveys, qualitative interviews and focus group discussions in the refugee and host communities of **Imvepi and Rhino camp settlements**.

The objectives of the study

- Assess the social and economic factors likely to influence access to sustainable energy by target beneficiaries.
- Undertake a survey that sheds light on knowledge, attitude and practices for cooking and lighting on with sustainable energy.
- Conduct market research to assess demand and supply dynamics that impede and/or facilitate access to sustainable energy.
- Undertake a baseline survey that would set the basis for measuring progress and impact of the project.

In this survey, the daily wood fuel (fuelwood and charcoal) consumption was quantified, by actual weighing amount of wood fuel for cooking, boiling and heating using a digital hanging scale. Considerations were also made on whether it was wet/green or dry based on a visual observation of the wood being used in households.

Sample size

- Total of 400 interviews with household members on the household energy needs (300 within the settlement and 100 within the host community)
- 30 interviews with traders on the (energy) market structures (16 within the settlement and 14 within the host community) and
- 8 Focus Group Discussions (FGDs) were undertaken in Imvepi and Rhino camp settlement as well as in two villages of the host community. Group discussions were conducted with mixed age, social groups and gender.

GENERAL DEMOPGRAPHICS

Country Origin Imvepi	
South Sudan 134/188	71%
Uganda 7/188	4%
Other nationalities 8/188	5%
Not marked 39/188	25%

Country Origin Rhino Camp	
South Sudan 118/211	56%
Uganda 26/211	12%
DRC 7/211	3%
Not marked 60/211	28%

ARUA_Rhino Camp			
Status of Respondent Interviewed	Sampled	Average Household Size	Average Household Age
Host	54	7.2	36
Refugee < 2 years	53	8.1	35
Refugees 2 to 5 years	84	9.7	37
Refugees > 5 years	20	6.4	44
Totals	211	8.3	37

ARUA _ Imvepi			
Status of Respondent Interviewed	Sampled	Average Household Size	Average Household Age
Host	10	8.2	37
Refugee < 2 years	177	7	36
Refugees 2 to 5 years	1	4	30
Totals	188	7	36

- In Rhino Camp, the refugee household; 84/211 (48%) arrived 2-5 years earlier, 20/211 (10%) arrived more than 5 years back and 53/211 (40%) are under 2 years old.
- Overall 60% have lived longer in the settlement and are more integrated into the local socio-economic life with ability to earn income through involvements in livelihoods.
- In Imvepi, only 1% arrived 2-5 years ago, and majority 177/188 (98%) arrived under 2 years back and have less options for livelihoods and are less integrated into the socio-economic life.
- Generally, the household size in both Rhino Camp and Imvepi stood 7 individuals, and 8.2 individuals for hosts.

Economic Activities

- The sales of agricultural produce accounts for the main income source (75%) of refugees of 2-5 years and above, which was especially relevant for the refugees that had cultivated crops in the last farming seasons.
- 15% traded in petty, small business like barber and haircut shops, phone charging, video and entertainment halls, and photocopying/printing, sale of cooked foods, sale of wood fuel and 10% in sell of labour.
- For the majority of new arrivals under 0-2 years sale of relief items was a source of income.

COOKING ENERGY

Fuel Wood Consumption

- The average fuelwood consumption for cooking/boiling/heating in both Imvepi and Rhino camp settlement is of **17.5 kg** of air-dried wood per refugee household, or **2.5 kg per person per day**. The purposes of the fuel was cooking and boiling water for domestic use. And very minor share is used for heating and lighting.
- In the host communities the situation is even worse with an average wood consumption of 3.5-4.5 kg per person per day.
- This average daily fuelwood consumption is considerably high compared to fuelwood consumption for cooking under controlled conditions and by use of improved cook technologies (0.7 kg – 1.5 kg per person per day (Gunning, 2014).
- The time spent for collecting firewood varied widely according to the zone or village in the settlement. Households reported spending between 3 to 6 hours per trip on average to collect a bundle/head load of firewood of about 25 to 30kg.
- In average, 3 to 4 headloads are required per household / week.
- Woody biomass has been cut by the refugees for building shelters and other household constructions.

Cooking Stove Technologies and Utilization

Most frequently used technologies		
Cooking technology	Quantity	
	Option 1	Option 2
three stone fire	68	32
clay stove (fire-wood)	43	29
clay stove(charcoal)	3	3
metal stove(charcoal)	4	1
metal stove(fire-wood)	0	1
mud stove charcoal	4	2
mud stove fire-wood	13	3
Not marked	53	117

Number of cooking technologies in use per household		
Response	Quantity	Percent
1 technology	47	25%
2 technologies	133	71%
3 technologies	7	4%
4 technologies	1	1%

Mixed use of traditional and fuel-efficient stoves

- Frequently used stoves in Rhino Camp and Imvepi are the traditional 3-stone fire, and clay fire wood.
- Households use more than one technology at the same time.
- Although a higher proportion of **households (56%) use the traditional 3-stone fire for cooking**, the survey results show that the use of fuel-efficient stoves is not new to the refugees **and 33% of refugee households use an improved mud stove and have knowledge and skills on its construction**. The host community seems to have a lower adoption of fuel-efficient stoves than refugees.

Heavy burden on women and social tensions

- The burden of fuelwood collection in both settlements (95%) is entirely on women. Women make an average of four trips in one week to collect fuelwood and experience a number of constraints. They carry heavy loads of wood.
- They frequently use wood before it is dried up.
- **Women and girls are exposed to multiple dangers as they walk long distances for fetching fuelwood** including assault by host communities as well as refugees.
- The shared use of natural resources overall has an impact on social relations, causing **tension and conflicts between host and refugee communities.**

Occasional Cooks Imvepi		
Status	Quantity	Percentage
Female	178	95%
Male	7	4%
Not marked	3	2%
Total	188	100%

Occasional Cooks Rhino Camp		
Status	Quantity	Percentage
Female	198	94%
Male	12	6%
Not marked	1	0%
Total	211	100%

Technology preference for meal preparation		
Response	Quantity	
Yes	51	
No	72	
Not marked	30	
2	58	

Cooking Habits and practices

- The average time to prepare a full meal (e.g. dry beans/peas and pasting and mingling Ugali) for a household with 6 to 8 individuals ranged from **5 to 6 hours on a traditional 3-stone fire and 2 to 3 hours on an ICS.** However, it was noted that a lot of time was lost during the preparation of a meal because of non-usage of lids, which prolongs the cooking time due to heat losses. This was observed to be partly due to cultural habits and lack of awareness.
- Food is often left on fire and attended by the kids who are responsible for pushing in the firewood while the mother is in the garden or doing other chore activities. This delays the process of preparing a meal and further increases the fuel use.

Cooking places:

- In Imvepi, the majority of households (51%) mainly cook outside mainly due to temporary nature of the housing shelters (Plastic sheets).
- Those that use 3-stone fires inside suffer from severe indoor air pollution
- In Rhino camp, inside cooking was most adopted (63%), the households adopted clean cooking technologies due to having more permanent housing structures.

Where Meals are cooked

Imvepi	Quantity	Percent
Inside	91	48%
Outside	95	51%
Not marked	2	1%

Rhino Camp	Quantity	Percent
Inside	133	63%
Outside	76	36%
Not marked	2	1%

ELECTRICITY AND LIGHTING

Households' Energy Practices for Electricity and Lighting

- Main lighting fuels: The main fuels used for lighting in households in Rhino and Imvepi are **solar and dry cells**, with disposable dry cells being the most used.
- **Household spend averagely UGX 1,000 and UGX 1,500** on their main fuel for lighting per week.
- Despite health challenges caused by the disposal of used dry cells, people still use it, because there are many selling points in various places and there are no cheaper alternatives.
- Given the high usage of electro-chemical cells (batteries) and the low usage of grid-connected electricity in the settlements, the potential for solar technologies is high.

Energy Market Structures

- There are **no defined and or structured market systems** and delivery/distribution channels for energy products. The local traders provided a variety of energy and solar products, most of which were counterfeit, either displayed on make-shift stalls or exposed to sun, rain and dust.
- The scarcity of private sector actors in the energy market might partly be due to the current system of free handouts of for energy products that are procured by implementing partners of UNHCR.
- According to traders, this system discourages potential private sector companies or middle men to engage in the energy markets in the refugee settlements.
- Furthermore, there are no hubs for energy services and products, such as energy kiosks. However, small shops that offer phone charging, photocopying and printing services as well as solar products exist and carry the potential for up scaling and improvement.

Conclusions

- **Limited purchasing power** based on the low level of disposable income of the refugees (and host community population) presents a major limitation to the range of products and services that can be introduced.
- **Depletion of vegetation cover:** In both Rhino camp and Imvepi, forest cover is depleted with the influx of refugees, the tree cover has been cleared.
- Currently with the suspension of charcoal burning in Arua district, a bag of charcoal costs UGX 40,000.
- Briquette technology is not adopted yet there is no alternative for charcoal users and this is detrimental to the vegetation cover in the arid belt
- **Cooking Technologies:** The majority of households in the two settlements use an average of 2 stoves for their cooking needs. The primary stove was found to be three-stone open fire which is used in 75% of the households. The usage of improved charcoal and wood stoves is still low in the communities.

- Improved wood stoves are used as main stoves in under 10% of the households and improved charcoal stoves are used as main stoves in 5% of the households.
- The results show that the market potential exists for both improved charcoal and wood stoves in the districts. With a proper market penetration and promotion strategy, demand for the improved cook stoves can be stimulated in the communities.
- The great number of the households (30%) construct their primary stoves, this is because the construction process basically involves appropriate local materials and technologies cheap and affordable to the households and easy to assemble.
- **Energy for other uses:** Apart from cooking and lighting, the demand for use energy for productive use such as charging, energy for entertainment (TV and Radio), and operating eating places is high, with potential to make economic sense for the households.
- The biggest challenge facing energy usage in communities is that that it is becoming too expensive to acquire energy both in terms of money and time spent on gathering the fuel especially for those who collect firewood. Shops selling kerosene are too far from the communities.