



ETP
Nigeria's Energy Transition Plan

SUPPORTED BY:



Nigeria's Energy Transition Office

Community-based Clean Cooking Engagement, Petti, Abuja.

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Inhalation from cooking
is the equivalent of smoking
two packets of cigarette

Cook Clean.
Breathe Easy.

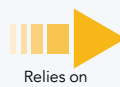
Executive Summary



Today, nearly one-third of the global population relies on rudimentary cooking methods, employing materials such as coal, firewood and animal dung as fuel sources. The regular inhalation of the hazardous fumes produced from the use of these fuel sources poses severe health risks that often unnoticed, silently contributing to millions of premature deaths annually. Women, typically bearing the brunt of domestic chores in many cultures are disproportionately affected by the use of these rudimentary cooking methods, inadvertently making them the primary victims of its adverse effects.



1/3 of the Global Population



Rudimentary Cooking Methods

Background



Nigeria, which already grapples with its position among the ten most climate-vulnerable nations, faces an added burden of being a significant contributor to greenhouse gas emissions. These emissions primarily result from widespread deforestation, vehicular emissions, industrial processes, and the rudimentary cooking methods mentioned earlier. While the Nigerian government and relevant agencies have made efforts to mitigate these emissions, the challenges remain numerous. However, a viable solution to counter the health risks associated with traditional cooking lies in a transition to cleaner energy sources, such as solar cooking stoves.





Recognizing this, the energy transition office visited the Petti community in Kwali LGA for a significant advocacy

visit. This visit sought to educate women about the dangers of their existing cooking practices, introduce them to cleaner, safer alternatives and observe their current cooking practices.

The Petti community's predominant reliance on traditional biomass-based cooking methods, especially firewood, reflects a trend common in many Nigerian communities. While a minority of the women in Petti use LPG for cooking, the overwhelming dependence on biomass has clear environmental consequences such as deforestation, reduced biodiversity, and soil erosion. Additionally, this dependence carries a human cost, posing significant health risks to the residents, particularly those engaged in cooking.

A survey by the National Bureau of Statistics (NBS) showed that a staggering 68.3% of Nigerian households still use solid biomass, such as firewood and charcoal, for their daily cooking. This widespread usage has resulted in aggressive deforestation, rendering the land barren and susceptible to other environmental issues, further jeopardizing the region's ecological balance and food security. A noteworthy point is the physical toll it takes on many women in the community. Their narratives speak of gruelling journeys to remote areas, often navigating treacherous terrains, in search of firewood.

A major highlight of the visit to Petti was an insightful breakout session, crafted specifically for women. The session aimed to shed light on the multifaceted hazards of biomass-based cooking. Some of the challenges highlighted by the women were:

	Vision impairments stemming from the constant exposure to smoke.
	Chronic respiratory issues resulting from the inhalation of smoke.
	Persistent coughing, a direct result of inhaling smoke and particulate matter.
	Environmental degradation from deforestation.

More details shared included the daily ritual of many women, who embark on laborious treks as early as 5:30 am, braving mountains and rough paths, all in pursuit of firewood. This commitment, while indicative of their resilience, consumes a vast chunk of their day and poses severe physical challenges.

Based on the feedback and first-hand observations, the visiting team proposed the introduction of solar cook stoves as an alternative cooking method. Not only are these stoves cleaner, but they also represent a sustainable cooking alternative that doesn't deplete natural resources.

In conclusion, encouraging the Petti community to embrace more environmentally friendly cooking practices is not just about environmental protection; it is essential in addressing pressing health concerns. It is also important to note that the clean cooking options/technologies to be deployed to Petti must be low-cost - address their cooking needs, while also being feasible and scalable. Implementing a triad approach that integrates technology, awareness campaigns, and active community involvement is pivotal to forge a healthier and sustainable environment for the residents of Petti. Such efforts also reinforce the energy transition plan's initiative to displace traditional cooking methods.



2.1 Objectives

- i. Determine the socio-behavioural factors of women who cook in the community
- ii. Advocate the benefit of clean cooking methods and technologies
- iii. Discuss ways to reduce hazards and drudgery
- iv. Receive feedback
- v. Determine what clean cooking technologies they are willing to adopt
- vi. Extract qualitative and quantifiable data on cooking methods from Petti

CHAPTER THREE

Community Overview



COMMUNITY

Petti

WARD

Kilankwa

LGA

Kwali LGA

STATE

FCT

MAIN SOURCE OF COOKING ENERGY

Firewood

MAJOR OCCUPATION

Farming

Petti Community, situated in Kilankwa of the Kwali Local Government Area in Abuja, Nigeria, is a rural community 76 kilometres from Central Abuja. The community relies heavily on agriculture for their livelihood, cultivating various crops such as melon, maize, yam, millet, and vegetables.

A 60 KiloWatts Solar mini-grid is in operation in the community, a collaboration between the World Bank and the Nigerian Rural Electrification Agency.

The community predominantly uses firewood as their main source of energy for cooking, with women and children primarily responsible for sourcing firewood from the mountains and forests surrounding the community. They use tools such as machetes and axes to cut down tree branches and collect fallen wood, which is bundled together and brought back to the community. This task requires a significant amount of physical effort and time. The firewood is arranged in

fire pits or traditional stoves and the pots or pans are placed directly over the fire.

The heavy reliance on firewood for cooking in Petti Community poses various challenges and concerns. The community's use of firewood contributes to deforestation and environmental degradation in the surrounding areas forcing the women and children to venture farther into the forest, placing them at risk of being kidnapped or victims of accidents.

Additionally, the use of open fires for cooking leads to indoor air pollution and health issues for the community members, especially the women who prepare meals about three times daily which further increases their exposure to the smoke. The children who also spend a significant amount of time near the cooking area run a high risk of eye and respiratory sickness. More so, the time used in sourcing for the firewood can be invested in more productive ventures and schooling for the children.

Methodology



4.1 Pre-engagement Methodology

To achieve the overarching objective of understanding the socio-behavioural factors of women in the community who cook, advocating for clean cooking and collecting qualitative and quantitative cooking data from the community, several team meetings were held to align our efforts and outline the specific needs for the event. These meetings served as a platform for discussions on various logistical aspects, such as procuring media, creating banners, t-shirts, and organizing food supplies; as well as building the agenda for the day and developing the materials necessary for our breakout sessions, including the questionnaire and forms.

Furthermore, we recognized the importance of engaging with our dedicated volunteers who play a vital role in our outreach efforts. Volunteer meetings were held to ensure their understanding of the scope

and objectives of the engagement. During these interactions, we also sought their valuable input on how to improve the materials and resources we would be using during the event, benefiting from their perspectives and ideas.

In addition to internal preparations, the team made efforts to establish strong connections within the Petti community. Several team members conducted pre-engagement visits, during which they met with the community chief and other leaders. These visits took place weeks prior to the engagement event and were aimed at securing their support in gathering a substantial crowd of women for the day. Building these relationships and seeking their endorsement was crucial in ensuring the success and inclusivity of the event.

4.2 Engagement Methodology

The engagement was carried out at the community football field. The team consisted of nine (9) members of the Energy Transition Office (ETO) and five (5) volunteers. The event commenced with opening remarks from the ETO, followed by an address from the community chief. After, a short video was screened to illustrate the impact cooking with charcoal and firewood can have on the lives of women in Nigeria. The video served as a prelude to breakout sessions designed to gather more in-depth data on critical aspects such as fuel usage patterns, availability and barriers to adoption to mention a few.

For the breakout session, the women were split into seven groups, while the men in attendance were designated into a separate group, to ensure that gender-disaggregated data is collected as women are the major stakeholder in the conversation on clean cooking. Each focus group was assigned two members of the team to deliver the questionnaire¹ and take count of the responses on the paper forms simultaneously. Some of the questions asked include:

1. How do you currently cook your meals?
2. How many meals do you cook per day?
3. Have you or your family experienced any health issues related to cooking?
4. How much do you spend on fuel for cooking each month?
5. Are there any financial, cultural, or practical reasons that make it difficult for you to switch to cleaner options?



A presentation on solar eCooking as a clean cooking alternative followed, with attendees asking questions about how the technology could benefit them, especially when cooking for large families.

Finally, several ETO members visited the homes of three residents of the community who shared insights into their daily lives, including how they procure firewood for cooking and their family sizes. They also discussed what they had learned from the sessions and expressed their willingness to adopt clean cooking solutions if affordable options or payment plans are made available.



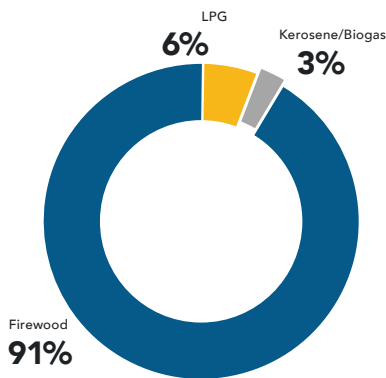
¹ The full questionnaire is linked in the ANNEX [here](#)

CHAPTER FIVE

Data Insights

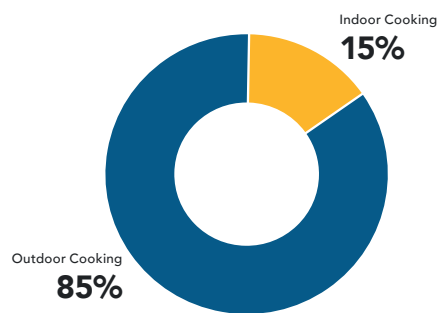
Based on the data gathered from a survey of 215 women in the Petti community, several key insights have emerged to guide the development of an intervention program targeting women who predominantly use traditional and polluting cooking fuels.

Firstly, approximately 98% of the surveyed group relies on firewood as their primary cooking fuel, with only 6% resorting to LPG due to the prohibitive costs associated with cylinder refills and the distances to filling stations. The survey also showed that women who use LPG often use firewood as a substitute as there are no refilling stations nearby. Cost also plays an important role in this substitution as it costs about N4,000 to refill a 6kg cannister, a price they cannot afford to pay regularly. This overwhelming reliance on firewood highlights a pressing need for alternative, more sustainable fuel sources.

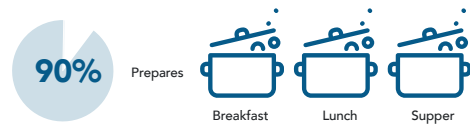


In terms of cooking locations, a significant majority constituting 85%, cook indoors, exposing themselves to indoor air pollution risks. Only 36% of respondents reported using outdoor cooking structures. Furthermore, the responsibility of cooking falls primarily on adult females, with 99% of respondents identifying themselves as the main cooks, and 30% noting the involvement of their daughters in cooking activities.

This gendered distribution of cooking responsibilities underscores the importance of considering the specific needs and preferences of women in any intervention program.



Meal frequency also emerged as a notable factor, with 90% of the group indicating that they prepare three meals a day, for families of up to 30 people; highlighting the consistent demand for cooking fuel. A small percentage, 6%, engage in cooking as a business, with most of them being farmers, suggesting potential economic opportunities in promoting cleaner cooking technologies.



In the absence of affordable alternative options, the open fire/three-stone method is the predominant cooking method, with only 3% of respondents utilizing kerosene and biogas cookstoves. The discomfort caused by smoke during cooking is a shared experience among all respondents, with eye irritation and coughing being the most reported complaints.



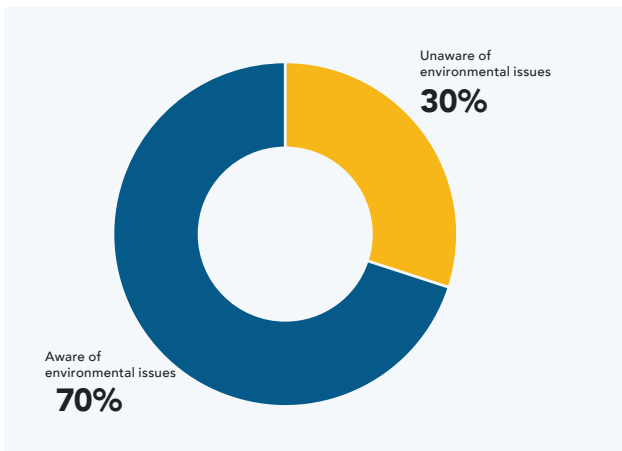
Eye Irritation



Coughing



Interestingly, over 70% of the group showed awareness of environmental issues, indicating receptivity to eco-friendly solutions. Nevertheless, a staggering 95% of respondents have experienced burns or accidents related to their cooking practices, emphasizing the urgency of addressing safety concerns.



The procurement of cooking fuel is a slightly complicated process, involving a combination of gathering free firewood and purchasing it, hence the data here is skewed.

In conclusion, the insights gained from this questionnaire underscore the pressing need for an intervention program that addresses the challenges faced by the women in the Petti community, including promoting cleaner cooking technologies, improving fuel availability, and enhancing safety measures. The strong interest expressed by the community in adopting solutions and participating in demonstrations and workshops bodes well for the successful implementation of such a program.

Conclusion

6.1 Key Takeaways

- i. 98% of women in the Petti community employ the traditional method of cooking. They cook with firewood and journey long distances to gather them from the mountains, which requires extensive time and physical effort.
- ii. A large percentage of women cook three times a day for large families (20 or 30 people)
- iii. Many of the women are already experiencing smoke related illnesses such as respiratory irritation leading to smoke-induced cough, bronchitis, musculoskeletal back pain etc.
- iv. There is a willingness to adopt clean cooking methods and technologies. They responded to messaging cues on health hazards like itchy eyes, chest pain and other ailments.
- v. They characterize the health consequences of the current cooking methods as malaria and typhoid.
- vi. The barriers to clean cooking adoption are financial.
- vii. The few women currently using LPG or electric cook stoves also switch to firewood occasionally. They use LPG and electric cook stoves for most meals and switch to traditional cooking methods for certain meals.
- viii. The clean cooking options/technologies that should be deployed to Petti must be low-cost, address their cooking needs, feasible and scalable.

6.2 Opportunities

- i. Introduce alternative, more efficient cooking methods that can significantly reduce physical and time burden in the community.
- ii. Develop cooking technologies that offer health benefits.
- iii. Develop cooking alternatives that can meet the community's needs effectively by addressing the demand to cook in large quantities.
- iv. Develop and build on effective communication and advocacy campaigns that can further promote the adoption of cleaner cooking practices.
- v. Develop Education and information dissemination materials that can help correct misconceptions and emphasize the health benefits of cleaner cooking.
- vi. Identify cost effective and practical clean cooking options that can help overcome financial barriers.
- vii. Use insights from community advocacy to shape the design product design of clean cooking technologies.

6.3 Challenges

- i. **Affordability:** The main challenge in adoption of clean cooking alternatives in Petti is affordability. Majority of the household in the community generate low income in the entire household due lack income generating activities. The households are unable to allocate a significant portion of their earnings to purchase clean cooking solutions.
- ii. **Access to clean cooking technologies:** Petti community is an isolated rural area with a poor road network leading to the community. There is no outlet for clean cooking technologies within the community therefore residents of the community have to travel long distances to purchase these products. Expenses related to transportation; high upfront cost of products creates an extra barrier preventing residents from adopting clean cooking alternatives.
- iii. **Lack of access to financing options:** Clean cooking alternatives require upfront costs which are not readily available to residents in petti community as they live on their income on a day-to-day basis. Additionally, due to the low-income levels of the general households in Petti, the residents lack access to credit and financial mechanisms required in investing in cleaner sources of energy for cooking for a longer-term period.
- iv. **Data extraction:** Questions were designed and centered around attracting data from a group in the breakout session. This potentially results in the loss of meaningful data as opposed to extracting individually.

6.4 Action Points

- i. Facilitate the adoption of clean cooking technologies among the women in Petti community and scale up this initiative to other communities. This will be achieved through comprehensive education, training and hands on demonstrations to showcase the practicability and benefits of clean cooking technologies. . Utilize the valuable insights gathered from the advocacy engagement as a foundation for developing an effective and replicable approach to encourage the adoption of clean cooking technologies across various communities.
- ii. Identify cooking solutions and deployment strategies suitable for communities in the rural areas such as Petti and design the appropriate technology for implementation. This will serve as a pilot program in Petti, paving the way for replication in other communities in initiate widespread adoption.
- iii. Use data and insights from community advocacy to shape the product design of clean cooking technologies.



CHAPTER SEVEN

Event Photographs



ANNEX

7.1 Breakout Questionnaire

Name:

Size:

A Understanding Current Cooking Practices							
1	How do you currently cook your meals?	Firewood	Charcoal	Kerosene	LPG	Electric cookstove	Other
2	Where do you cook your meals?	Indoors			Outdoors		
3	Who is responsible for the cooking?	Adult (Male)	Adult (Female)	Child (Male)	Child (Female)	Other	
4	How many meals do you cook per day?	1	2	3	4	5	
5	Do you cook as a business?	Yes			No		
6	Can you describe the equipment or stoves you use for cooking?	Open fire	Biomass stove (fire-wood, charcoal)	Biogas stove	Kerosene stove	Single/double burner (gas stove)	Electric cookstove
B Impact of Current Cooking Practices (Health, Safety and the Environment)							
7	Have you or your family members experienced any health is-sues related to cooking?	Respiratory	Coughing	Fatigue	Eye Irritation		
8	Do you notice any environmental issues like deforestation or air pollution due to cooking with these fuels?	Deforestation		Outdoor air pollution		Indoor air pollution	
9	Are there any incidents of burns or accidents during cooking?	Yes			No		
C Costs and Availability (Naira)							
10	How much do you spend on fuel for cooking each month?	0	0 - 500	500 - 1,000	1,000 - 2,000	2,000+	
11	What is your family monthly income?	0	0 - 1,000	1,000 - 2,000	3,000 - 5,000	5,000 - 10,000	10,000+
12	How do you get your cooking fuel?	Free		Purchase		Trade/Batter	



D Awareness of Clean Cooking Alternatives and Barriers to Adoption							
13	Have you heard about cleaner and more efficient cooking options, such as electric stoves, induction cookers, or clean cookstoves?	Yes			No		
14	Do you know about the health and environmental benefits of using these alternatives?	Yes			No		
15	Are there any financial, cultural, or practical reasons that make it difficult for you to switch to cleaner options?	Yes			No		
16	If you could afford to, would you switch to cleaner cooking options?	Yes			No		
E Community Needs and Preference							
17	What are your preferences when it comes to cooking methods and fuels?	Firewood	Charcoal	Kerosene	LPG	Electric cookstove	Other
18	What are some of the cooking fuel options available to you?	Firewood	Charcoal	Kerosene	LPG	Electric cookstove	Other
19	Are there any specific features or benefits you would like to see in clean cooking solutions?	Yes			No		
F Demonstration and Education							
20	Would you be interested in a demonstration of cleaner cooking technologies and their benefits?	Yes			No		
21	Would you be willing to participate in future workshops/training on cleaner cooking methods/technologies?	Yes			No		
22	How beneficial would the introduction of a clean cooking solution be for you?	Extremely Helpful	Very Helpful	Somewhat Helpful	Slightly Helpful	Not Helpful	
23	Are there any other questions or concerns you would like to share or discuss regarding cooking practices and cleaner options?	Yes			No		
G Notes and Comments							

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