Sustainable Energy Services Organization

FINAL REPORT
AC-CREST POWERHUBS EXTENSION STUDY

January 2024

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Executive Summary

The AC powerhub extension study was designed after successful completion of the pilot study which was undertaken in Dar es Salaam Region, Tanzania. The pilot intended to answer the main research question of whether the battery-supported ecooking can enable urban people connected to the grid transition to eCooking.

During this period participants who were willing to keep the powerhubs were left with the system to continue testing them for a period of one year. Participants were given freedom to decide on whether to proceed with the testing or withdraw from the extension study. Sixteen participants opted to continue with the study, while three decided to drop for various reasons, including time limitation and the notion of high-power consumption by powerhubs.

In order to achieve the main objective of this extension study of understanding the changes in the system after a long-term use and the reasons for any behavioural change, various methodologies were applied to gather information. These includes the interviews, physical visits and the workshop which was conducted at the end of the study.

These reports capture in brief the findings of the extension study which revealed that the powerhubs are very useful and capable of supporting cooking during power cuts. This report provides an insight on the way forward through recommendations resulted from participants opinions and project team observations

TaTEDO SESO recommends that there are still opportunities to learn more about the Powerhubs as has a potential to facilitate the eCooking transitioning efforts.

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1. Introduction

The pilot study was conducted at Goba ward, Ubungo District, Dar es Salaam Region in Tanzania. The pilot was designed to answer the main research question of whether the battery-supported cooking can enable urban people connected to the grid to transition to eCooking. In order to ensure the effectiveness of implementation of the study, a range of criteria to select the households' participants and the enumerators were set. The main research methods used to capture both qualitative and quantitative data were cooking diaries and the living labs. Despite of the delays in starting the project as it was planned, the initial activities involved undertakings of tests of the powerhubs with EPCs, recruiting the households and enumerators, trainings of enumerators and households on key issues related to the study, distribution and installation of the study equipment. The details of the implemented activities are described in the following sections.

The powerhub project was intended to assess and pilot AC and DC Powerhubs systems developed by the CREST with anticipation to support full day cooking in-off-grid and mitigate high power draws and blackouts during cooking in on-grid areas.

The AC pilot study was conducted at Goba ward, Ubungo District, Dar es Salaam Region in Tanzania. The pilot was designed to answer the main research question of whether the battery-supported cooking can enable urban people connected to the grid to transition to eCooking. In order to ensure the effectiveness of implementation of the study, a range of criteria to select the households' participants and the enumerators were set. The main research methods used to capture both qualitative and quantitative data were cooking diaries and the living labs. The initial activities involved undertakings of tests of the powerhubs with EPCs, recruiting the households and enumerators, trainings of enumerators and households on key issues related to study, distribute and installation of the study equipment.

After successful completion of the study, household participants who were willing to keep the powerhubs were left with the system to continue testing them for a period of one year. Participants were given freedom to decide on whether to proceed with the testing or withdraw from the extension study. Sixteen participants opted to continue with the study, while three decided to drop for various reasons, including time limitation and the notion of high-power consumption by powerhubs.

The aim

The aim of this extension study was to capture any changes in the system after long term use and the reasons for any behavioral changes of the participants enrolled to proceed with the testing for the stated period.

The Main Activities

The main activities of this study involved:

- Undertake interviews of the participating households by following the interview protocol prepared and approved. In this period, survey/interviews were carried out after every two

months. The interview protocol was the same in each survey, with some few improvements from the lessons learnt from previous survey.

- Transcription and translation of the interviews were uploaded in the MECS shared folder.
- Visiting the participating households once per month to physically check the powerhubs and the uses.
- Prepare a report after each survey, and at the end prepare the final report which will analyse all the survey reports.

2. Methodology

This extension study was divided into phases named, *'surveys'* which were conducted after every two months. Various procedures were used during implementation of the study activities in order to gather information about the system and reasons for behavioural change of the participants. These includes interviews, physical household visits and workshop.

2.1. Interviews

Four sets of interviews were conducted by the two enumerators selected among the five enumerators who were hired and trained for AC powerhub pilot activities. The conversation during the interviews were recorded using enumerator's smart phones and in some cases the participants' smart phone were used as backup recorders during the process. The recorded interviews were transcribed into English scripts which were uploaded to the shared folder together with the recordings.

2.2. Workshops

One workshop was designed and carried out at the end of the study to bring participants together, share ideas and propose the way forward after extension period. The workshop took place at the conference hall I at TaTEDO-SESO compound and was facilitated by TaTEDO –SESO team and enumerators. A brief report and photos of the events were uploaded in the MECS shared folder for further information and review.

2.3. Physical Households Visits

There were scheduled and unscheduled households visits to enable acquiring information about the system situation, also undertake service and maintenance of the powerhub and system as whole. All participants were visited regularly by the project team, technical team, and enumerators. During physical visits, participants were encouraged to call enumerators and project coordinator/team whenever they experienced any challenge. Technicians visited the participating households to service all the powerhubs, undertake troubleshooting and repair powerhubs with faults.

3. Extension Study Implementation and Results

In this extension study period, various activities were carried out in phases of two months to enable review and improvement for the next phase. These include physical household visits, troubleshooting, servicing, and maintenance of the systems as well as the interviews. One workshop was proposed and caried out at the end of the study to allow participants and project interactions and also served as a refresher training to remind precipitants on the proper use and safety issues to be adhered to.

3.1. Physical Households Visits

One of the main objectives of this extension study was to understand any changes in the system after long term use. In order to observe the systems situation and take the necessary actions, enumerators had unscheduled households visits and frequent interactions with participants through phone calls to allow participants report changes or faults they encounter on using the powerhubs and the EPCs. The TaTEDO–SESO project team had scheduled physical visits to oversee the real situation on the ground against the reported situation by enumerators and the work of technicians.

During physical visits, enumerators noted down every fault/change of the system and share a short report with the team for further actions. The reports and the photos taken during the physical visit provided basic information to the technical team to plan and prepare material for undertaking troubleshooting and maintenance of the systems. Immediate actions such as rearrangements of the systems which were poorly arranged for instance powerhubs which were placed in insufficient air circulation area were taken immediately by enumerators.

The most repeated actions by participants which needed regular interventions were:

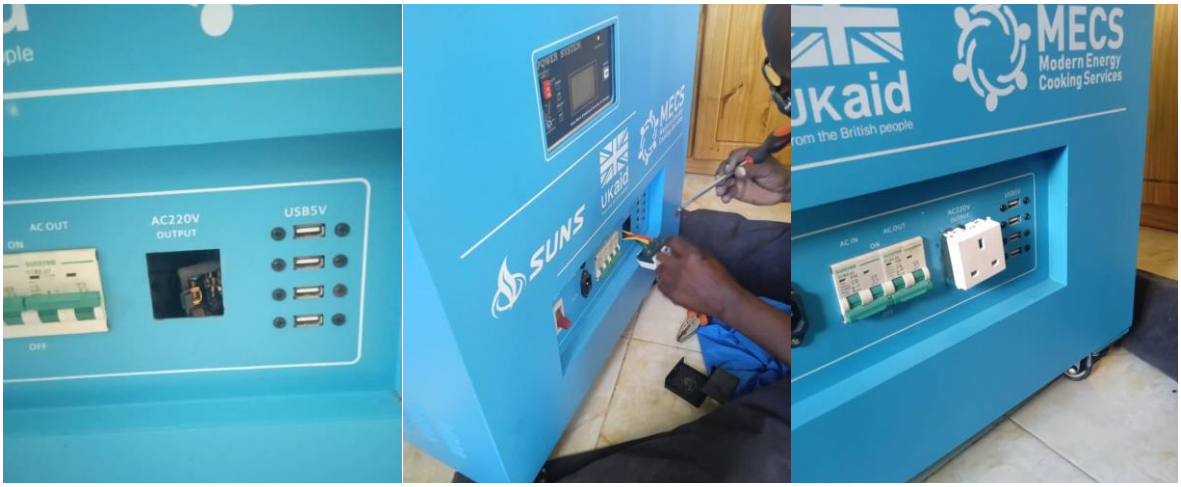
- Disconnection of the powerhubs and use of the system as an emergency and not continuously testing of the systems.
- The use of solar to charge the powerhubs as the main source of power.
- Re allocating the Powerhubs to a very low air circulation position.
- Placing objects on top of the powerhubs.
- Poor handling of the EPCs by some of the participants which resulted in frequent faults such as melting of the fuse, electric shocks, and scratched pots.

Photos of the powerhubs realocated and placed objects on top

Photos for the powerhubs properly arranged after anteversion during physical visit.

The physical visits by technical team resolved most of the faults emerged during the study. The common faults observed in this period include breakdown of the outlet Powerhubs socket whereby 50% of the sockets were replaced. Other faults include malfunction of some of the USB Ports (i.e.3) Powerhubs which led to deem lights to some houses and in others USB ports didn't function at all. One powerhub was found with fault and the decision to return it to the office was made after analysing the situation and handling of the system by the participant.

More details of the emerged faults and the actions taken were all recorded in the asset register and uploaded into the shared folder.



Photos showing the Powerhub which its outlet socket had broken, technician replacing the socket and the hub after replacement.

3.2. Interviews

Four sets of interviews were conducted with participants in each survey. Three sets of the interviews conducted in the first three surveys (Survey 1, 2 and 3) were the same, while the fourth interview conducted in survey 4 was modified to capture participants opinions about the entire implementation of the extension study and what they expect as a way forward after this extension period.

The interview protocol was designed by TaTEDO-SESO in collaboration with MECS representative. The interviews were conducted to get feedback on how they are faring with powerhub systems use, challenges, and opinions on how to improve.

The interviews covered main questions which include:

- How has it been going with the Powerhub since we last saw you?
- How much are you using it?
- How about the EPC (How much are using it?)
- What is going well with Powerhub?
- What is going well with EPC?
- What is not going well about EPC and powerhub?

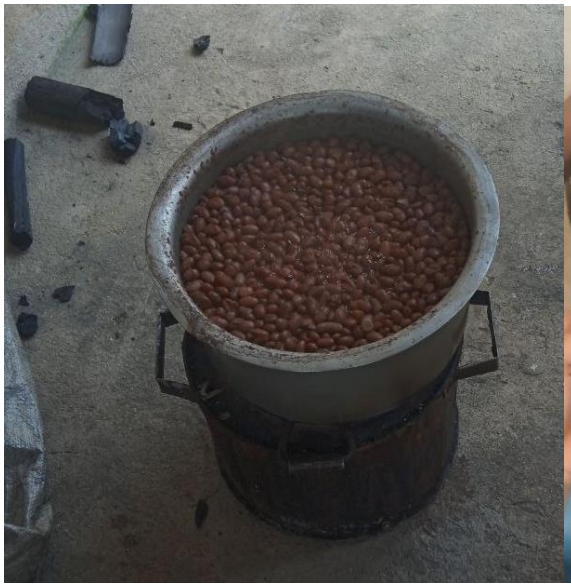
Summary of the comments on how they are faring with the use of powerhubs.

- All participants commented that powerhubs are very helpful especially when power cuts are experienced.
- Participants were proud when power cuts were experienced, neighbors admired them as they continued cooking and have lights.
- Most of the participants felt honored to get the opportunity to test the powerhub systems.

How much are you using the system (Powerhub & EPC)?

About 56% (i.e. 9 households) of the participants continued to use the systems as they were initially connected, whereby the EPCs were connected to the powerhub whenever they wanted to cook. The rest of the participants were using the powerhubs as a backup when there was power cut. This means, the EPCs were directly connected to the wall socket.

During the interviews, participants declared that the EPCs were used frequently and had become the main cooking appliance. Participants were experienced in cooking various dishes and added that they had forgotten about other cooking fuels including charcoal and LPG. However, during one of the visits, one participant was found cooking beans on charcoal. When was asked, she complained about the small size of the EPC pot, however the team identified that the EPC had fault and was not in good condition.



Participant Cooking Beans on Charcoal

The EPC Condition of the Participant

What is going well about system?

At the early months of the study, there had been little recognition of the potential of the powerhub since power supply was a bit stable. Later during survey 2, 3 and 4, there was regular scheduled and unscheduled power cuts which forced participants to frequently use the powerhubs. Every participant was grateful when asked about what went well about the powerhubs. Participants were proud to be among the few selected households to test the system. Participants acknowledged to be assured to complete cooking on EPCs because of powerhubs.

On the other hand, participants were happy about the EPCs and kept on mentioning its advantages and how it has changed their lives. The following are some of the mentioned potentials of the EPCs during the surveys:

- Saves time, especially when returning home late can still cook for family
- Simplifies cooking, convenient and can now cook varieties.
- Cooks very fast and the food cooked on pressure cooker is very delicious
- Easy to operate, everyone at home to cook because it does not require much preparation so.
- When used with powerhub, there is assurence with cooking at any time

What is not going well about EPC and powerhub?

During extension study period, participants had a number of issues mentioned as the challenges with using the powerhubs which includes:

- Difficulties to start it up when charge dries up.
- Participants still had the complaints that charging of the hubs consume much electricity.
- When full charged stays with charge for short time. Most of the participants wished that, the powerhub could stay with charge for 2 to 3 days regardless of the number of dishes prepared.

Among the challenges with EPCs mentioned include

- Small size of the EPC pot
- Frying takes long.
- Limitations to cook varieties like chapati.

The exit interview protocol was modified to include additional questions in order to capture participants feedback about the whole period of extension study and understand their thinking about the way forward. The additional questions were,

- ***How was extension study?***

All participants were very happy to get an opportunity to participate in the extension study and declared to have not made a mistake in the decision to continue using the systems. This is a response of one of the participants with code *'tatedo.14.'*

"Things have been so good not only this time, but since I received the system. When I receive visitors at any time, I can prepare them hot food. This time when there is frequent power cut, my neighbours real admire me, and ask how comes you have lights while there is no electricity? And some of them were approached to participate in the study and they declined, so now I just tell them, this is what powerhub can do, it is very useful. For sure powerhub has simplified cooking so much, I can cook anytime, I have not used LPG for so long".

How did you feel when you were visited, and the interviews conducted?

All participants took it positively, they did not feel bothered when they were visited. They appreciated the visits; they found this as part of the study to get feedback and understanding of the project devices. They considered it caring and felt like being part of TaTEDO-SESO family. Through visits they got a chance to ask about their uncertainties.

What is your opinion as a way forward after this extension period?

All participants suggested extending the testing period. They wish to continue using powerhubs as they got used to them. Powerhubs have been so helpful, especially during this time when they experience frequent power cuts. Others requested if powerhubs can be left with them completely as they have forgotten about power cuts challenges.

What were the new discoveries in using powerhub during the extension period?
During the fourth survey (exit interview) About 73% (11 hh) of the participants connected other appliances on powerhubs when power was cuts. The appliances connected to powerhubs include TVs, blenders, mixers, and irons. From their opinions they have not experienced any challenges with powerhubs as these appliances are connected.

Also, one participant revealed that, her powerhub can stay with charge for four (4) days during power cut without recharging. She explained that the powerhub is normally left on power, except when there is no one in the house. When is not in use, she normally put it on standby mode (switching off the fan) and later switch it on when she starts to cook.

3.3. End of Study Workshop

The workshop was not a part of the planned activities, however the experience gained from the surveys brought the idea to design the workshop which will gather all participants to enhance learning from each other through sharing experiences. The aim was to understand the general overview of the participants in the study, the new discoveries during implementation, expectations and way forward as well as to conclude the study.

As was explained in the exit interviews, participants were grateful for the opportunity to continue testing the appliances, and all wished to continue with the test. Participants stated that the systems have been of great help, especially during the period of experiencing regular power cuts.

During the workshop, the project team reminded the participants about their safety while using the systems and safety issues of the system. This was done after exposing participants to a comfortable situation where they could give a lot of information about the new discoveries and the new trials with other appliances. This was a more open discussion than was done during exit interviews. Participants were explained with examples of the increased number of powerhub faults and drainage which was a result of using the high power rated appliances. Participants were reminded to consult the project team whenever they want to try new appliances so as to understand the rated power of those appliances and advise accordingly.

More details of the extension study findings can be found on the survey reports, Workshop report and transcribed interviews uploaded into the shared folder.

Eng E. Sawe closing the Session and the Extension Study

4. Conclusion and Recommendations

During implementation of this extension study, it was discovered that, the powerhub is a solution to weak grids and unreliable power supply. During the pilot and at the beginning of the extension study, most of the Powerhubs were disconnected, and were only used as a backup when there was power cut. The project team had to often remind participants on the significance of prolonged testing of the powerhubs by leaving it connected all the time.

The extension study enabled long period of testing the systems, whereby in this period there was a period of intensive scheduled and unscheduled power cuts. This situation forced participants to continuously use the system without any push from enumerators or the project team. During this period of experiencing regular power cuts, was when participants got away from fear of using the Powerhubs and started to connect other appliances. This sounds positive, however the organization had to take precautions by increasing the household physical visits and design a workshop to gather participants so as to remind them about safety issues and proper use of the powerhubs for longer life span of the batteries.

TaTEDO-SESO concur with the suggestions of the participants to keep on testing the system so as to continue learning about the system stability and behaviour change from the prolonged period of using. This goes with the recommendations to improve the study through the following:

- Increasing interaction sessions by gathering participants through workshops and refresher training. This can be done in parallel with reducing the number of interviews to enhance learning from each other.
- The plan to import the powerhub spare parts which cannot be sourced locally should be incorporated in the next study.

- For future testing, recommending slight modification of the study such as reducing the number of participants testing the systems for a prolonged period to remain with those who continuously test the system without disconnecting. For the powerhubs being used as backup, a study with new participants to test the hubs to be designed.
- As participants keep on testing the systems and share the good news to their neighbours, most people, and participants themselves are interested to know how much the whole system costs. By considering the findings during the AC study period, recommendations given and the future plans of introducing and use of power hubs to accelerate e cooking, there is a need for joint collaboration for the research team both TaTEDO and MECs to establish the costs of the powerhub systems for further market development.

Annex 1: AC Powerhub Extension Activities Timeline

	TIME FRAME IN MONTHS											
Activities	**Nov-22**	**Dec-22**	**Jan-23**	**Feb-23**	**Mar-23**	**Apr-23**	**May-23**	**Jun-23**	**Jul-23**	**Aug-23**	**Sep-23**	**Oct-23**
Review the consent forms with participants and sign												
Visit hh with technician, inspect & service powerhubs												
Preparation, Interview 1 and translation												
Households Follow up physical Visits												
Interview 2 transcription and translation												
Visit hh with technician, inspect & service the powerhubs												
Interview 3 transcription and translation												
Households Follow up physical Visits												
Interview 4 transcription and translation												
Visit hh with technician, inspect & service the powerhubs												
Interview 5 transcription and translation												
Households Follow up physical Visits												
Interview 6 transcription and translation												
Evaluation and reports												

Annex 2: The End of Study Workshop Timetable

RATIBA YA WARSHA (End of Phase 1-AC Powerhub Extension Study)

Date: 15/12/2023

Muda	Tukio	Mhusika
09:45-10:00	Kuwasili na kujiandikisha	**Katarina**
10:00-10:20	Utangulizi/Lengo la warsha	**Shukuru**
10:20-11:00	Mrejesho kuhusu utafiti	**Katarina,** wote
11:00-11:30	Mapumziko Mafupi	**Leila/enumerators,** wote
11:30-12:00	Mambo muhimu ya kuzingatia / Usalama wa vifaa vya umeme (powerhub &EPC)	**Shukuru,** wote
12:00-12:30	Maoni/Nini kifanyike (way forward)	**Shuma**,Wote
12:30-12:40	Neno kutoka kwa washiriki	Mwakilishi
12:40-13:00	Neno kutoka kwa CEO/Kufunga Warsha na extension study	**CEO**

Note Rapporteur: **Joshua Lyimo** (lead enumerator)

Annex 2: Interview Protocol

Follow up interview Protocol for the AC Powerhub - Extension for 12 Months

Mwongozo wa Mahojiano ya kupata mrejesho wa AC Powerhub - Mwendelezo wa Matumizi kwa Miezi 12

Aims: To get participants' feedback on the use of the system and understanding of the condition of each system.

Kupata mrejesho wa washiriki kuhusu matumizi ya mfumo wa kupika kwa umeme na kujua hali ya mfumo

*Interviewee: *insert participant code**
*Mhojiwa: *Ingiza namba yake ya ushiriki**

*Interviewer: *insert enumerator name**

*Anayehoji: * ingiza jina la enumerator**

Date:
Tarehe:
*Recording mechanisms: *insert audio recording device code + backup recording process (e.g., cellphone or tablet) **

Folder name & location:
Interview #:
Guide to interviewer:

- ***The interview should be conducted every two months from the extension commencement.***
- ***You should read and familiarize yourself with the interview protocol beforehand.***
- *If a participant gives short answers, don't hesitate to probe more by **asking follow up questions**. Also feel free to **ask for clarification** but be careful not to insert your assumptions when you ask for clarification – try to simply repeat back what the participant says to make sure you understood correctly.*
- *When you get to a new question, if the participant has already answered (or partially answered) a question earlier in the interview, repeat back their answer to them and ask them to elaborate or ask them to confirm. For example, if the protocol says to ask, "how many times do you eat a day?" but the participant has already answered, don't simply ask the question (makes it seem like you are not listening), rather, say: "earlier you said that you eat three times a day, could you confirm that that is the case? Could you tell me more about those three times?"*
- *If the data doesn't match up between responses, ask for clarification.*
- Make sure to write down and translate the answers and the reasons, and then submit within 5 days after the interview.

Mwongozo kwa anayehoji:

- Mahojiano yafanywe kila baada ya miezi miwili tangu makubaliano ya kuendelea kutumia vifaa hivi

- Unapaswa kusoma na kuuzoea mwongozo kabla ya kufanya mahojiano .

- Ikiwa mshiriki atatoa majibu mafupi, usisite kuchunguza zaidi kwa kuuliza maswali ya kufuatilia. Pia jisikie huru kuomba ufafanuzi, lakini kuwa mwangalifu usiingize mawazo yako unapoomba ufafanuzi - jaribu kurudia tu kile ambacho mshiriki anasema ili kuhakikisha kuwa umeelewa vyema.

- Unapofikia swali jipya, ikiwa mshiriki tayari amejibu (au amejibu kwa sehemu) swali hilo katika mahojiano haya, rudia jibu lake na umwombe afafanue au athibitishe. Kwa mfano, ikiwa mwongozo unasema uulize "unakula mara ngapi kwa siku?" lakini mshiriki tayari amejibu, usiulize tu swali (inafanya uonekane kama hausikilizi. Badala yake, sema: "Awali ulisema kwamba unakula mara tatu kwa siku, je, unaweza kuthibitisha kwamba ndivyo ilivyo? Je, unaweza kuniambia zaidi kuhusu hio mara tatu?"

-Ikiwa data zinatofautiana kati ya majibu, omba ufafanuzi
-Hakikisha unaandika majibu na sababu alivyojibu mshiriki, na kuwasilisha kwa lugha ya Kiingereza ndani ya siku tano baada ya interview.

Interview Questions
Maswali ya mahojiano

1. How has it been going with the Powerhubs since we last saw you? (*ask for details/follow up questions if the participants have given short answers, and ask why to* whatever *they say to get the reason)*

   Unaendeleaje na powerhub tangu tulipoonana mara ya mwisho? (*uliza Zaidi maswali ya kufuatilia kama amejibu kwa kifupi, na kuuliza 'kwa nini' inapofaa kwa kila anachojibu ili kupata sababu*)

2. How much are you using it? (*ask why that)*

   Ni kwa kiasi gani unaitumia? (*uliza ni kwa nini hivyo*)

3. How about the EPC? How much are you using it?

   Na vipi kuhusu pressure cooker? Ni kwa kiasi gani unaitumia?

4. What's going well with it? / Highlights? (Powerhub, EPC)

   -Ni mambo gaani yameenda vizuri kwa upande wa powerhub? (mambo ya muhimu)

   -Ni mambo gani yameenda vizuri kwa upande wa preha cooker?

5. What's not going so well about it? (Powerhub, EPC)

   Ni mambo gani hayaendi sawa/vizuri kwa;

   -Powerhub?

   -Presha cooker?

Wrap up

- Is there anything that we haven't talked about yet that you think would be important for us to know? Is there anything you would like to add, clarify, or adjust?
- Do you have any questions for us?

Kumalizia

- Je, kuna jambo lolote ambalo hatujazungumza ambalo unafikiri lingekuwa muhimu kwetu kujua? Je, kuna chochote ungependa kuongeza, kufafanua au kurekebisha?
- Je, una maswali yoyote kwetu?

Before leaving

Thank you very much for participating in this interview, your answers are really valuable to the project. We'll invite you to further take part in our research through the next interview! If you have any questions in the meantime, you can always reach out to me *(assumed enumerator).* Hopefully, we can share some of the outcomes of the research with you, if you are interested.

Kabla ya Kuondoka

Asante sana kwa kushiriki katika mahojiano haya, majibu yako ni muhimu sana kwa mradi. Tutakualika ushiriki zaidi katika utafiti wetu kupitia mahojiano yanayofuata! Ikiwa una maswali yoyote kwa sasa, unaweza kuwasiliana nami kila wakati. Tunatumahi, tunaweza kushiriki nawe baadhi ya matokeo ya utafiti, ikiwa ungependa.

Annex 3: Exit Interview Protocol

Exit interview Protocol for the AC Powerhub - Extension for 12 Months

Mwongozo wa Mahojiano ya Mwisho Kupata Mrejesho wa AC Powerhub - Mwendelezo wa Matumizi kwa Miezi 12

Aim: To get participants' feedback about the first extension study period and opinions on the way forward.

Kupata mrejesho wa washiriki kuhusu kipindi chote cha mwendelezo wa matumizi kwa awamu ya kwanza, na matazamio yao.

*Interviewee: *insert participant code**
*Mhojiwa: *Ingiza namba yake ya ushiriki**

*Interviewer: *insert enumerator name**
*Anayehoji: * ingiza jina la enumerator**

Date:
Tarehe:
*Recording mechanisms: *insert audio recording device code + backup recording process (e.g., cellphone or tablet) **

Interview # 4
Guide to interviewer:

- ***You should read and familiarize yourself with the interview protocol beforehand.***

- *If a participant gives short answers, don't hesitate to probe more by **asking follow up questions**. Also feel free to **ask for clarification** but be careful not to insert your assumptions when you ask for clarification – try to simply repeat back what the participant says to make sure you understood correctly.*
- *When you get to a new question, if the participant has already answered (or partially answered) a question earlier in the interview, repeat back their answer to them and ask them to elaborate or ask them to confirm. For example, if the protocol says to ask, "how many times do you eat a day?" but the participant has already answered, don't simply ask the question (makes it seem like you are not listening), rather, say: "earlier you said that you eat three times a day, could you confirm that is the case? Could you tell me more about those three times?"*
- *If the data doesn't match up between responses, ask for clarification.*

Mwongozo kwa anayehoji:

- Unapaswa kusoma na kuuzoea mwongozo kabla ya kufanya mahojiano .

- Ikiwa mshiriki atatoa majibu mafupi, usisite kuchunguza zaidi kwa kuuliza maswali ya kufuatilia. Pia jisikie huru kuomba ufafanuzi, lakini kuwa mwangalifu usiingize mawazo yako unapoomba ufafanuzi - jaribu kurudia tu kile ambacho mshiriki anasema ili kuhakikisha kuwa umeelewa vyema.

- Unapofikia swali jipya, ikiwa mshiriki tayari amejibu (au amejibu kwa sehemu) swali hilo katika mahojiano haya, rudia jibu lake na umwombe afafanue au athibitishe. Kwa mfano, ikiwa mwongozo unasema uulize "unakula mara ngapi kwa siku?" lakini mshiriki tayari amejibu, usiulize tu swali (inafanya uonekane kama hausikilizi. Badala yake, sema: "Awali ulisema kwamba unakula mara tatu kwa siku, je, unaweza kuthibitisha kwamba ndivyo ilivyo? Je, unaweza kuniambia zaidi kuhusu hio mara tatu?"

-Ikiwa data zinatofautiana kati ya majibu, omba ufafanuzi

Interview Questions
Maswali ya mahojiano

6. How has it been going with the Powerhubs since we last saw you? (*ask for details/follow up questions if the participants have given short answers, and ask why to* whatever *they say to get the reason)*

   Unaendeleaje na powerhub tangu tulipoonana mara ya mwisho? (*uliza Zaidi maswali ya kufuatilia kama amejibu kwa kifupi, na kuuliza 'kwa nini' inapofaa kwa kila anachojibu ili kupata sababu*)

7. How about the EPC? How much are you using it?

   Na vipi kuhusu pressure cooker? Ni kwa kiasi gani unaitumia?

8. What's going well with it? / Highlights? (Powerhub, EPC)

   -Ni mambo gaani yameenda vizuri kwa upande wa powerhub? (mambo ya muhimu)

   -Ni mambo gani yameenda vizuri kwa upande wa pressure cooker?

9. What's not going so well about it? (Powerhub, EPC)
   Ni mambo gani hayaendi sawa/vizuri kwa;
   -Powerhub?
   -Pressure cooker?

10. How was the extension study. (*How things went on in this extension period of more than a year, including the physical visits, interviews, and system maintenance etc.)*

    Mambo yalikuwaje katika kipindi hiki kilichoongezwa cha zaidi ya mwaka mmoja cha kuendelea kutumia vifaa hivi (Powerhub na pressure cooker), ikiwa ni pamoja na kutembelewa mara kwa mara, mahojiano ya ana kwa ana, matengenezo n.k)

11. What were the new discoveries in using the powerhub during the extension period?

    Je, kuna mambo gani mapya yaliyojitokeza katika matumizi ya powerhub kwa kipindi hiki kilichoongezwa?