

Assignment

MECS is seeking a consultant/s to conduct an in-depth exploration of the implications of **households cooking entirely with electricity**, based on a small number of participants from the following countries: Bangladesh, Cambodia, Ethiopia, Ghana, India, Indonesia, Kenya, Morocco, Nepal, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia.

Each country should be treated as a separate submission.

Project Background

MECS is supporting the transition of low-income economies from biomass to the use of modern energy cooking services (i.e. cooking with electricity or gas). MECS recognises the need to understand the complexity and scale of both the opportunities and challenges for modern energy cooking transitions in African and Asian contexts.

The Cooking Diaries methodology was developed early in the MECS programme as a means of investigating the compatibility of electric cooking devices with local menus – in terms of what foods can be cooked, energy consumption, and cost (relative to traditional fuels). To date it has focused on each household obtaining and using a single appliance, on the assumption that the upfront cost of multiple appliances would be prohibitive. The focus has tended to be on Electric Pressure Cookers (EPCs), as they offer significant energy savings and appear well suited most menus, being able to cook a majority of everyday meals. Figure 1 from Uganda shows this in practice.

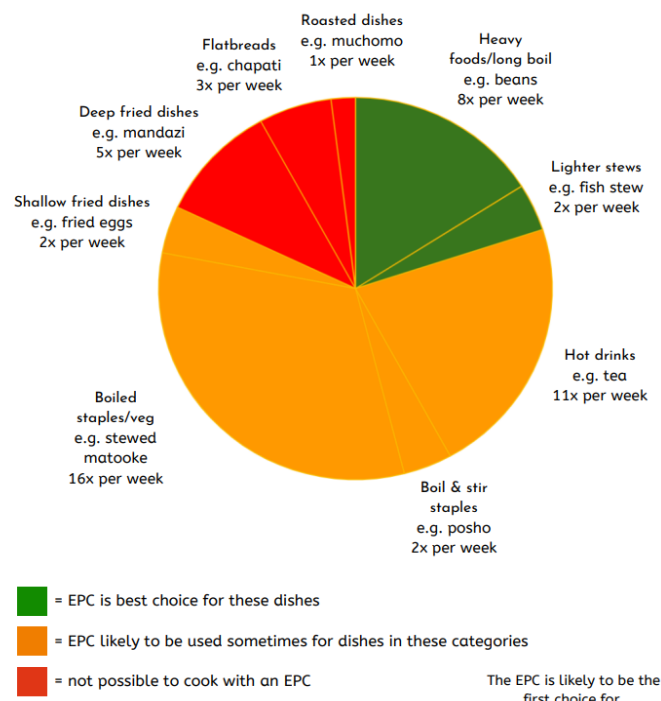


Figure 1 How much of the Ugandan menu can be cooked with an EPC (Uganda eCookbook¹)

¹ <https://mecs.org.uk/wp-content/uploads/2022/04/Uganda-eCookbook-.pdf>

The potential for EPCs playing a role in increasing access to clean cooking is now well recognised. The aim of this current assignment is to expand our research to explore the use of multiple devices in a household, particularly as mechanisms for mitigating the upfront costs are emerging (e.g. cost reduction of devices, credit facilities, utilities led financing, carbon finance, and results based financing). We seek to generate data on a wider range of devices and **how they can be used to meet all household cooking needs**.

This new data is needed for a range of purposes;

- Policy making. Several models are now available that support programme design and decision making on energy access policy.
- Device supply chain. Device manufacturers have engaged with supplying EPCs to LMIC markets; they are aware of consumer barriers to purchasing EPCs and are increasingly interested in offering a range of electric devices.
- The carbon credit market. The new MECS-supported Gold Standard for digitally connected cooking is based on calculations that require evidence on the energy use by the project devices (currently expressed as thermal efficiency, but likely to expand to allow use of data on energy use instead) . As companies start to apply this methodology it is becoming clear that the availability of data on eCooking on other energy efficient devices is required, and data on 100% eCooking is a particular gap.

Scope of Work

The aim of the research is to gain an understanding of the energy implications at the household level of **cooking entirely with electricity**.

The consultant/s are required to use the cooking diary study protocol to address all of the following research questions;

1. How much energy is required to cook entirely with electricity?
2. How much traditional energy can be saved by transitioning to cooking entirely with electricity?
3. What are the cost implications of transitioning to cooking entirely with electricity?
4. How much energy is required to cook individual dishes using a range of electric cooking devices?
5. Which dishes do people prefer to cook using different electric devices?
6. What is the user experience of cooking entirely with electricity?
7. What barriers prevent people from cooking entirely with electricity?
8. What difficulties do people encounter when cooking entirely with electricity and how do they overcome these

Cooking Diaries study protocol

International improved cookstove tests focus on the Water Boiling Test (WBT), Controlled Cooking Test (CCT) and the Kitchen Performance Test (KPT). None of these tests were designed to give insights into 'how' a cook cooks, and whether, when they transition to a different fuel or appliance, their cooking practices change. Cooking is a deeply cultural experience, as the foods people cook and the practices they use to prepare them vary widely. A cooking diaries study generates quantitative data on 'how' people cook and the energy and time used.

MECS has published two documents that describe the requirements of a cooking diaries study and the associated analysis of data. These should be read before developing a proposal to submit.

- [Cooking diaries 3.0 protocol](#)
- [Analysis framework – MECS cooking diaries](#)

Cooking diary study reports from a number of countries are also available on the MECS website.

The cooking diaries methodology is intended to be flexible, so phases can be added or amended to address specific research questions. The Protocol document describes three phases (on page 18):

1. Baseline - participants continue to cook as normal
2. Transition - participants are asked to switch to using electric appliances as much as possible
3. Endline phase - participants are given free choice of fuels/appliances, including new electric devices.

The proposal should include the design of a cooking diary study that includes only baseline and transition phases. It should also include registration and exit surveys in order to gather demographics and other quantitative data (e.g. prices paid for fuels), and to gather qualitative data on the experience (these are described in more detail in the Protocol document).

The cooking diaries study should generate data including (but not limited to):

At the dish-level:

- name of dish prepared
- whether the food is being cooked from fresh or simply reheated.
- whether any food is being saved for later, for example batch cooking of cereals by pre-boiling in bulk, storing and frying individual portions at a later date.
- which cooking processes were used
- which appliances and utensils were used by the participant.
- start and finish time
- fuel used (the Protocol gives guidance on how different fuels can be measured).

At meal-level:

- the name and gender of the cook of each event.
- the purpose of the cooking event (e.g. lunch, dinner, heating water).
- the number of people catered for
- start and finish time.

The study should include a participant consultation activity between the baseline and transition phases. The aim of the consultation is to agree which combination of electric cooking devices would best enable the participant to cook entirely with electricity. The choice should be informed by data on the menu prepared by each household, generated from the Baseline survey. Households will then be given a mix of electric cooking devices (typically 2 or 3) that should enable them to cook all of their menu.

Sampling for cooking diaries

Participants will need to be drawn from urban areas with reliable electricity networks (to minimise unavoidable use of traditional fuels during blackouts). We expect a minimum of 10 households.

They should also be selected from 2 socio-economic strata:

- Middle/ high income – We expect these users to represent the market of early adopters, they would likely be able to purchase electric devices for themselves (but may use a credit facility).
- Low income – We expect these users to represent the majority market, they are likely to need policy support to encourage adoption/purchase.

Deliverables, budget, and duration

The research is expected to commence no later than **1st October 2022**. All deliverables must be completed and delivered no later than **31st January 2023**. These dates are non-negotiable. The consultant should demonstrate in their response to these ToRs how the work can be completed within the time available.

The total budget is a maximum of £23,000 (ex VAT where applicable).

Payment is contingent on successful completion of all deliverables.

Deliverable	Payment value
Contract signing	20%
Appliance availability report and CCT data and report	20%
Draft Cooking diaries design and data collection survey form	10%
Cooking diaries datasets (raw data to be provided)	25%
Images and videos collected (with permissions)	5%
Detailed Final Cooking diaries report.	20%

Communication and Reporting

The contractual requirements will be managed by the MECS Programme Manager of Loughborough University. All meetings and appointments to discuss the overall progress of the project against the contract will be agreed and arranged in advance and at mutually convenient times. Any significant changes to the approved research plan and timelines have to be discussed and approved in advance.

Loughborough University reserves the right to request the consultant/organisation to make revisions to the deliverables if they do not meet the required quality. The consultant/organisation will be required to make these revisions at no additional costs to Loughborough University.

Responding to these ToRs

Appliance availability check

As part of the application process, it is important to demonstrate familiarity with the local market for appliances.

Please provide a rapid assessment of the electric cooking devices available from physical retail outlets that could be used in this study. It can include online marketplaces providing there are also physical shops present in country. It should not include appliances only available from overseas/through importation. The sample should include a minimum of five retailers. If five retailers are not available that should be noted as part of the response.

The assessment should include the following information (at a minimum);

For each product available (e.g. if 2 brands of rice cookers are available, present the information for both brands).

- Number of brands
- Number of different models (This often represents size and power e.g. EPCv12, EPCSupreme, EPCfamily etc).
- Prices (include the final range of prices e.g. EPCs ranging from \$80 - £120)

The results of the appliance availability check should be used to justify the combination of devices that will be given to households for the study. If suitable appliances are not available within country then appliances can be imported. The additional costs for this and the extended timeframes must be accounted for in the budget and Gantt chart.

Each submission will be evaluated based on the following combination of price and quality;

Quality	Score
Appreciation and understanding of the task.	5%
Appliance availability check leading to selection of appliances for study	10%
Quality of proposal and methodology	40%
Skills, expertise, and experience of consultant/organisation team members including evidence of similar work completed	10%
Proposed management of the activities including Gantt chart	5%
Price and costs	30%
Total	100%

The University will accept the quotation which is the best value for money i.e. a balance between cost and quality. Shortlisted organisations may be invited to an interview (online) to finalise selection.

Responses should be a maximum of 12 pages (plus up to 3 CVs, 2 pages each).

Proposals should be sent to MECS (mecs@lboro.ac.uk) with the subject 'Electric cooking'. All proposals must be received by 23:59 GMT on **23 August 2022**.

Ethical considerations

All research must be in line with the Code of Practice for research, Promoting good practice and preventing misconduct (UK Research Integrity Office, 2009).

The UK Research Integrity Office (UKRIO) is an independent charity, offering support to the public, researchers and organisations to further good practice in academic, scientific and medical research. Its confidential advice service is available to free of charge to individuals (members of the public, research participants, patients, researchers and students) and subscribing organisations. Their advice service can be [accessed here](#).

At a minimum, participants must not be subjected to physical, social, legal or psychological harm. Due consideration and ethical steps must be taken into safeguarding all participants, especially the vulnerable. A detailed Participation Information Sheet explaining the full scope of the study, what confidentiality entails, and that no participants will be forced into participating, must be provided at recruitment. Participants are to be made aware that participation is fully voluntary and there are no repercussions if they choose to no longer participate in the study at any point in time. Participants should, ideally, sign a consent form which includes consent for the use of photographs and videos.

Confidentiality must be maintained at all times. With regards to confidentiality and privacy of participation, participants must be informed that their anonymity will be maintained in any outputs and that all identifiable markers will be removed from any data sets that are published. Additionally, due consideration must be made to ensure that participants are safeguarded during the research process in line with the local government issued guidelines around COVID-19.

The consultant will be responsible for securing any research or ethical permissions needed from local authorities in each of the field work locations. There may be additional ethical, or research clearance needed for this kind of user centric design research in the chosen country.

MECS is funded by UK Aid through the Foreign Commonwealth and Development Office. It is a partnership between researchers, innovators, policy makers, and ESMAP drawing on their expertise and relevant work from around the world to co-construct new knowledge with practitioners and the private sector. It is led by Loughborough University, UK.