

## **Background to MECS**

Modern Energy Cooking Services (MECS) is an eight-year research programme funded by UK Aid (FCDO). We are a geographically diverse, multicultural and transdisciplinary team working in close partnership with NGOs, governments, private sector, academia and research institutes, policy representatives and communities in 16 countries of interest to accelerate a transition from biomass to genuinely 'clean' cooking.

In seeking to spark a new approach to clean cooking, the MECS programme researches the socio-economic realities of a transition from polluting fuels to a range of modern fuels. Whilst the research covers several clean fuels, the evidence is pointing to the viability, cost effectiveness, and user satisfaction that energy efficient electric cooking devices provide. Significant progress has been made in access to electricity in the last decade, but these gains are sometimes disconnected from the enduring problem of clean cooking. By integrating modern energy cooking services into the planning for electricity access, quality, reliability and sustainability, MECS hopes to leverage investment in renewable energies (both grid and off-grid) to address the clean cooking challenge.

## **Background to the assignment**

The Gold Standard has created methodologies for certifying non-carbon SDG impacts, so allowing higher prices to be achieved for carbon credits. Most cooking projects to date have measured these benefits rather superficially at the activity level rather than at the outcome and impact levels due to the cost and complexity of analysing these impacts in more detail and the very limited levels of information required to date by offset buyers. MECS is working to develop new techniques to evaluate the real impacts achieved by projects.

Digital technology could hold the key to unlocking the cost-effective calculation of some very important but very hard to demonstrate SDG impacts such as for health impacts. Specifically, how relatively inexpensive light scatter monitors (or equivalent technology) could generate data which can be tracked remotely and be used to calculate and validate aDALYs. Such monitoring must be comparably accurate to existing Gold Standard procedures, which currently require the use of filter-based gravimetric samplers. MECS seeks to promote the necessary research to demonstrate how the latest generation of light scatter monitors could achieve reliable measurements and then help integrate the results into methodologies used by the Standards and similar organisations.

## **Scope of Work**

This study is intended as a lab-based precursor to larger field-based studies of the performance of lower cost PM concentration measurement for cooking applications. As such the overall objectives are to make an initial assessment of the comparative accuracy of new sensors, and to identify questions and necessary conditions for larger field studies.

In responding to this call, MECS is looking for recommendations for both the types of sensors that should be tested, and appropriate test procedures, given the background above.

Initial suggestions for the study are below, but we welcome alternative suggestions.

- Test a range of state-of-the-art low-cost optical sensing techniques for monitoring PM concentrations resulting from cooking emissions
- Compare these with Gravimetric testing (or other appropriate reference methods), in terms of accuracy and cost
- Need to consider appropriate spatial and temporal scales, to represent the typical kitchen context and cooking process
- Based on the testing, identify drivers and barriers for this digital approach to PM sensing

**Deliverables, budget, and duration**

The research is expected to commence no later than **15<sup>th</sup> August 2024**.

The consultant should demonstrate in their response to these ToRs the timeline for completing the work how the work can be completed within the time available.

The deliverable will be:

- a short report of the results (circa 20 pages)
- A PowerPoint summarising the report

The total budget is a maximum of **£20,000** (ex. VAT where applicable).

Payment is contingent on successful completion of all deliverables.

**Responding to these ToRs**

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

Quality	Score
Appreciation and understanding of the task.	5%
Quality of proposal and methodology	50%
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%
<b>Total</b>	<b>100%</b>

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).

Please send all responses to [mecs@lboro.ac.uk](mailto:mecs@lboro.ac.uk) with the subject 'PARTICULATE MATTER'. All proposals must be received by **23<sup>rd</sup> July 23:55**.

### **Contract Management**

This contract will be managed by Dr Louise Medland. All deliverables should be emailed to them on or before the date required. Loughborough University reserves the right to request the consultant to make revisions to the deliverables if they do not meet the required quality. The consultant will be required to make these revisions at no additional cost to Loughborough University.

Appointments to discuss the overall progress against the contract will be agreed at mutually convenient times to the consultant and the project manager.

### **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.

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 and Commonwealth 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.*