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Terms of Reference: Study on the End-to-End Digital Value Chain of an eCooking Carbon Credit

In partnership with:



Global
Impact Fund

Background to the assignment

The clean and modern cooking sector is undergoing rapid digitisation as stakeholders respond to growing scrutiny around carbon credit integrity, transparency, and risks of over-crediting. In the context of electric cooking (eCooking), the emergence of end-to-end digital monitoring, reporting and verification (dMRV) systems enables real-time capture of device usage data through metered technologies and secure data transmission channels. These systems are increasingly linked to digital registries and market infrastructure platforms, creating the potential for a fully traceable carbon credit lifecycle - from generation and verification through issuance, transfer, trade, and retirement. However, multiple initiatives are advancing in parallel - including national registry development, Article 6 infrastructure, standards-based systems, and private digital MRV platforms - without yet forming a fully integrated and interoperable ecosystem.

Given the increasing digitisation and the growing reliance on connected devices and metered technologies, internationally recognised electrotechnical standards will play a critical role in ensuring interoperability, measurement integrity, and system security. Engagement with international standards bodies such as the International Electrotechnical Commission (IEC) will therefore be important to assess how existing standards can support digital MRV systems for electric cooking and where further standardisation may be required.

MECS and IEC are working collaboratively on this issue and through these ToRs are seeking a consultant/s or an organisation to complete the activities as described in the scope of work. The study will assess how a digitised electric cooking carbon credit is created through metering and then travels across this emerging digital value chain, identifying strengths, gaps, and alignment needs across project-level systems, standards, registries, and international infrastructure. The overall aim of the study is to develop a clear, practical, and technically robust blueprint for an end-to-end digital carbon credit ecosystem for electric cooking - ensuring environmental integrity, interoperability across registries (including Article 6 pathways), and operational reliability from device-level data capture to final credit retirement.

Scope of Work

The study will map, analyse, and assess the full generation, travel and traceability of an electric cooking carbon credit in a digital ecosystem, covering the broader ecosystem (such as standards and registries), methodologies and the project-specific digital architecture required for operationalisation. The following areas A-D form the minimum requirements of the study.

A. Mapping Initiatives and Interactions

Assess how existing and emerging initiatives - UNFCCC Article 6 infrastructure, CADT/Climate Warehouse, national registries, Gold Standard/Verra/GCC systems, and private dMRV platforms including different third



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party standards – can interact and enable (or constrain) the traceability, interoperability, and integrity of digitised electric cooking credits across their lifecycle (generation – verification - issuance → transfer → trade → retirement).

B. Standards, Methodologies, and Integrity Requirements

Identify and assess relevant international standards (e.g. IEC) supporting device performance, metering accuracy, interoperability, cybersecurity, and digital data exchange, and evaluation of their applicability to digital MRV systems, including:

- Assess gaps where additional standards or technical specifications may be required to support end-to-end digital carbon credit systems
- Consider conformity assessment and certification approaches to strengthen trust in device performance, metering reliability, and system security including safeguards
- Assess the role of national quality infrastructure (standards bodies, testing labs, certification and metrology institutions) in enabling consistent implementation and verification across markets

Review and compare digital requirements across major methodologies and tools, including:

- Digital evidence requirements for electricity or fuel-metered cooking devices
- Sampling, uncertainty, and data-quality expectations
- Compliance with national and international regulations
- Integrity guardrails required for robust digital credits (baseline determination, leakage checks, data tampering, calibration, audit trails, etc.

C. Project-Level dMRV System & Device Architecture

Review and define the specific architectures suitable for an electric-cooking dMRV system, including¹:

- Device layer: metering technologies, communication protocols (SIM/LoRa/Wi-Fi), accuracy and calibration requirements
- Data pipeline: ingestion, secure storage, tamper-evidence, audit trails, access permissions, and basic data-quality checks, including application of cybersecurity and data integrity standards (e.g. encryption, secure transmission, device authentication, and protection against data manipulation)
- Analytics: conversion of metered data + KPT/CCT evidence into emission reductions aligned with selected methodologies
- Verification workflow: dashboards, cryptographic logs, reproducible calculation files, and issuance frequency
- Operational requirements: SLAs for data availability, minimum uptime, latency tolerances, fallback procedures for connectivity gaps, device swaps, or suspected tampering
- Role of commercial and developer-specific platforms: how do platforms such as CarbonHQ, CAVEX, or project-developer systems fit into the process - support issuance, facilitate credit transfers after issuance, or enable tracking and portfolio management.

¹ While the earlier MECS work provides a comprehensive technical reference for the full device-to-data-to-credit chain, this study will go further by developing an electric-cooking-specific dMRV architecture and mapping how its digitally generated evidence links to end-to-end traceability across the value chain — from downstream project and device specific metering and data validation/verification through to upstream issuance, registry transfers, and retirement.

D. Registries and Interoperability Pathways

Analyse and map how electric cooking credits from the different project level digital platforms will interact with:

- Programme-level registries (GS/Verra)
- Host-country registries and their readiness
- The evolving UNFCCC Article 6 registry ecosystem
- Meta-registries such as CAD Trust / Climate Warehouse

Key topics include:

- Unique identifiers and credit-tracking logic
- Data reconciliation and cross-registry synchronisation
- Avoidance of double counting and double claiming
- Requirements for reporting under Article 6 (e.g., AEF formats)

Deliverables, Budget & Duration

The study should deliver:

1. A concise assessment of applicable international standards and identification of priority gaps for standardisation in digital MRV systems for electric cooking technologies and credits
2. A clear, end-to-end map of how a digitised electric cooking credit moves across the data and registry ecosystem based on different usage, transfer and trade possibilities.
3. A project-specific technical dMRV blueprint, including device standards, data architecture, analytics workflow, verification evidence package, operational safeguards.
4. An interoperability and registry-alignment plan, covering host-country and UNFCCC Article 6 alignment requirements.
5. A practical systems specification outlining what developers, verifiers, standards, and host governments shall implement for a reliable, auditable digital credit value chain.

The research is expected to commence no later than **1 July 2026**. All deliverables must be completed and delivered **31 October 2026**. 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 **GBP 46,000** (including any locally payable VAT, taxes, and charges).

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	20%
Proposed management of the activities including Gantt chart	5%
Price and costs	20%
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).

Please send all responses to mecs@lboro.ac.uk with the subject 'Study on the End-to-End Digital Value Chain of an eCooking Carbon Credit'. All proposals must be received by **21 May 2026 23:55 PM BST**. The time will be determined using the time of arrival in the MECS inbox. Any offers received after 23:55 will be rejected.

Proposals should be submitted in Word (do not submit Powerpoint/Prezi or PDF)

Contract Management

This contract will be managed by Professor Matt Leach. 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.

