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TERMS OF REFERENCE (TOR)

Title: Development of a Product Standard & Comparative Labelling for locally manufactured electric stoves (Electric Injera Mitad)

CTCN request reference number: 2015000079

Country: Ethiopia

1 BACKGROUND INFORMATION

The Climate Technology Centre and Network (CTCN) is the operational arm of the United Nations Framework Convention on Climate Change (UNFCCC) Technology Mechanism and hosted by the United Nations Environment Programme (UNEP) in collaboration with the United Nations Industrial Development Organization (UNIDO) and supported by 11 partner institutions with expertise in climate technologies. The mission of the CTCN is to promote accelerated deployment and transfer of climate technologies at the request of developing countries for energy-efficient, low-carbon and climate-resilient development.

These requests for Technical Assistance (TA) are being submitted to the CTCN by the National Designated Entity (NDE) of the respective country. The scope of services under these Terms of Reference shall be executed based on a restricted solicitation process. By mandate, only accepted Members of the CTC Network are eligible to submit proposals and execute the required services to implement the response. Should the bidder partner with another institution to deliver a minor part of the services described in these Terms of Reference, it is expected that the partner institution also joins the CTC Network.

In case you are not a CTCN network member yet, you may bid for implementation of the technical assistance, subject to the condition that you submit your completed application for CTC Network membership before the bid closure and the same is acknowledged by the CTCN. Furthermore, the contract award – should your bid be selected – is conditional to your network membership application having been successfully approved by the Director of CTCN. Should the bidder partner with another institution to deliver the services described in these Terms of Reference, it is expected that the partner institution also joins the CTC Network.

The maximum estimated budget for this contract is 115,000 \$USD and is subject to a competitive bidding.

2 CONTEXT OF THE ASSIGNMENT

The Ethiopian economy has been growing rapidly, along with it its population and energy demand. Powered almost entirely by hydroelectric energy, the country's electricity grid has to supply an increasing energy demand, while being at the same time highly vulnerable to the adverse effects of climate change on future water supply. As a consequence, the government has developed targets to reduce energy consumption by increasing energy efficiency. In this context household appliances have been identified as a low hanging fruit, and locally manufactured electric stoves as a product with great improvement



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potential, not only with regard to energy efficiency, but product design in general. Informed by experiences in other countries a standard and labelling (S&L) programme has been selected as a policy approach to achieve these energy efficiency improvements.

Consequently, the Ethiopian Energy Authority (EEA) and the National Designated Entity (NDE) of Ethiopia have approached the CTCN with a request for technical assistance to provide support with the development of a Standards & Labelling (S&L) programme for locally manufactured electric stoves. Specifically, the request addressed the lack of available knowledge about standardized testing procedures, standard setting and label design.

A 2015 project document produced by the EEA and DANAS Electrical Engineering lays out a detailed background assessment of an Energy Efficiency Standards and Labelling programme on such stoves. The expected benefits of such an intervention are significant:

- Reduced overall demand will lower the risk of power outages and the need for investments in energy supply infrastructure, saving both public funds and land
- Reduce household energy bills
- Improve competition among electric stove producers
- Encourage research and innovation
- Reduce greenhouse gas emissions and meet national climate targets
- Reduce deforestation caused by fire wood consumption
- Mitigate the burden on rural women, land degradation and pollution from clay plate production

The report also includes the results of elaborate stakeholder engagement and market assessment and has for instance identified the most common technology type (open resistor electric stove with 22 cm diameter clay plate) and its technical flaws, such as heat losses due to lack of insulation and mismatching shape and size between heat elements and cookware, lack of heat control, and open heating elements causing a risk for the user, difficult cleaning and high wear of components.

The testing laboratory under the Ministry of Water Irrigation and Electricity with minimum equipment set-up had been used to test the electric Injera Mitad proto type developed by KEA/UNIDO. This laboratory can be further used for testing of locally manufactured electric stoves. The testing procedure is the missing component to make this laboratory operational. As soon as this has been achieved, the laboratory is expected to carry out a first round of appliance tests to determine the Minimum Energy Performance Standard (MEPS) and develop the associated labels.

The full text of the request submitted to the CTCN can be found here: <https://www.ctc-n.org/technical-assistance/projects/development-product-standard-comparative-labeling-electric-injera>



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3 OBJECTIVE OF THE CONTRACT

The objective of the intervention is to develop a testing procedure and protocol for the MEPS of locally manufactured electric stoves. The assistance builds on previous work and will enable the EEA to independently carry out appliance testing in local laboratories. This closes a knowledge gap that has previously inhibited the country to progress with the implementation of the S&L programme, as subsequent activities depend on the effective adoption of a testing procedure.

To further guide the development of MEPS, this technical assistance will also provide information on international energy efficiency benchmarks in relevant product categories, advice on alignment of local product labels with international standards and a communication strategy to promote the S&L programme

Scope and activities of the proposed contracted services

Once this contract is signed, the CTCN will organize a kick-off call among all relevant parties involved in the request to introduce the Contractor to the NDE and Proponent, to present the activities, their timeline and clarify roles and responsibilities. The Contractor is expected to undertake the following activities:

Output 1: Development of implementation planning and communication documents

Activity 1: i) A detailed work plan of all activities, deliveries, outputs, deadlines and responsible persons/organizations and detailed budget to implement the Response Plan. The detailed work plan and budget must be based directly on this Response Plan;

ii) Based on the work plan, a monitoring and evaluation plan with specific, measurable, achievable, relevant, and time-bound indicators used to monitor and evaluate the timeliness and appropriateness of the implementation. The monitoring and evaluation plan should apply selected indicators from the Closure and Data Collection report template and enable the lead implementer to complete the CTCN Closure and Data collection report at the end of the assignment (please refer to item iv below and section 14 in the Response Plan);

iii) A two-page CTCN Impact Description formulated in the beginning of the technical assistance and update/revised once the technical assistance is fully delivered (a template will be provided);

iv) A Closure and Data Collection report completed at the end of the technical assistance (a template will be provided).

v) *The contractor is expected to involve a gender expert who will advise on gender mainstreaming throughout all activities and review documents accordingly. If the contractor does not have the required expertise the CTCN will withhold the respective share of the budget to sub-contract an external gender expert.*

Deliverable 1:i) Detailed work plan



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- ii) Monitoring and evaluation plan
- iii) CTCN Impact Description
- iv) Closure and Data Collection report

Output 2: A testing procedure for measuring and certifying energy performance of locally manufactured electric stoves in Ethiopia

The procedure will be developed based on existing international standards. The aim is to ensure that all appliances subject to the Standard and Labelling (S&L) programme will be tested based on the same criteria and an internationally applied and proven method for consistent comparison. This requires a review of existing testing procedures, clarification of needs and plans of the key stakeholders, assessment of existing capacities and potential needs for adjustment needs, and an overview of the required administrative framework.

Activity 2.1: Review existing international testing procedures and identify those best suited to be used for this purpose in Ethiopia

This activity is a desk study combined with comprehensive stakeholder outreach. It aims to create an overview of internationally available energy performance testing procedures to inform the establishment of such a procedure for locally manufactured electric stoves in Ethiopia. Key elements to consider are to accurately reflect the conditions under which the product is used, accurateness, reproducibility and comparability of results, performance implications of different designs of the appliance, costs, etc. The testing procedure has to verify all relevant information that will be presented on the label (e.g. energy consumption, performance, tolerance). The review of relevant international standardization procedures will inform the recommendation whether to fully adapt or modify an existing procedure, or to develop a new and unique one. This has to take into account both the benefits and challenges associated with international recognition and comparability (e.g. trade implications, costs), as well as local conditions, needs and capacities. The status of similar programmes in neighboring countries, especially those that use the same or similar appliances and have trade potential, has to be considered as well.

Activity 2.2: Assess the technical capacities of the existing testing facility with regard to the requirements to carry out the selected testing procedure

The assessment of the testing facility will clarify whether the laboratory in its current state meets the technical requirements to facilitate appliance testing in line with the testing procedure. It will review the availability and condition of the required equipment, the expertise of the technicians who will carry out the testing, and the needed administration. It furthermore has to be ensured that the tests will be carried out in a reliable and unbiased manner, thus the laboratory has to be certified by an accredited body. A checklist for operationalization of the laboratory will be prepared and, if necessary, recommendations will be made to expand the laboratory or involve other labs nationally, in neighboring countries or from the private sector.



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Activity 2.3: Organize a stakeholder meeting to discuss the results of the review of available testing procedures and the laboratory

In this meeting, different options will be discussed together with experts and representatives from authorities, manufacturers, consumers and other relevant institutions to clarify the most suitable pathway. The meeting will be set up in close collaboration with the EEA and a discussion on the benefits (effective and applicable process) and drawbacks (complexity and time needed) of wide stakeholder engagement in the selection and design of the testing procedure. The outcome of the consultations shall inform the final design of the testing procedure. Furthermore, it is anticipated to yield a list of committed contact persons representing each stakeholder or stakeholder group to provide further feedback throughout the intervention and potentially become part of a steering committee for further development and implementation of the S&L programme. The setup of a committee however will not be part of the CTCN technical assistance. The meeting is expected to take 3 days and have up to 20 participants in total from all relevant stakeholder groups (see also Activity 3.2 and 4.2).

Activity 2.4: Draft the testing procedure and administrative framework document with recommendations

Based on the previous analyses and consultations this activity will produce a document that defines the testing procedure ready for Ethiopian authorities to adapt and implement. The technical protocols will be outlined in a format that allows straightforward application by its users. In addition to the technical protocol for testing itself, its successful operationalization and sustainability depend on an effective administrative framework as well as availability of human and financial capacities. For this reason, the document that outlines the procedure will also include recommendations on a framework to administrate appliance testing. This is key to enforce compliance, avoid fraud and sustain trust in the S&L programme, in particular the labels and the accuracy of the information they represent. The administrative framework should address subjects such as the selection procedure of samples (which ones, how many), the funding source for carrying out the tests in the laboratory, an enforcement schedule of compliance monitoring and testing (aggressive random testing vs. complaint based testing), certification of results, a process for complaints from consumer associations or manufacturers the necessary forms and procedures for reporting of results, a database of test results, and certification of the testing facility itself. Furthermore, it will lay out in detail the necessary human capacities (technical and administrative) and an annual cost projection with experience based recommendations for long term financing.

Deliverable 2:

- i) The most suitable testing standard is selected and presented through a knowledge library documenting the information accumulated throughout activities 2.1 and 2.2 including sources
- ii) Meeting report and participant list from stakeholder meeting
- iii) Draft test procedure and protocol (ready for adoption by the EEA)

Output 3: Benchmark of international MEPS and label design best practice

This output will comprise a list of indicated performance levels of six to ten relevant regional and international minimum energy performance standards and associated product labels of electric stoves. The chosen examples represent success cases that caused measurable impacts and set the benchmark for



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international comparison. It will furthermore provide a checklist of key criteria to consider when defining the minimum performance level and an effective label. The purpose is to guide the EEA in defining a performance level that is achievable in the local context yet demanding innovation and to design and validate a product label that is understood and supported by key stakeholder groups and achieves its purpose.

Activity 3.1: Conduct research on experiences and best practice with MEPS target setting and label design.

This activity is recommended to be carried out in parallel with Activity 2.1 and focus on performance standard setting and label design processes. For the performance standard setting, this will include aspects such as defining efficiency ranges, as well as updating schedules to ensure current market conditions are reflected. Indicators to be considered are the variance of energy performance of current market products, technical potentials to improve efficiency, saving potentials at national level, time estimates to adapt product design, potential technical barriers, cost effectiveness of technical improvements, etc. For the labels, it will cover general appearance, definition of efficiency categories, stakeholder engagement, etc.

Activity 3.2: Presentation of research results at the stakeholder meeting of Activity 2.3

The aim is to give all key stakeholders the opportunity to discuss and share their perspectives on the MEPS and label design proposals to ensure they reflect the needs of those who deal with them on a daily basis. The inputs of the discussion will complement the study outcomes and provide a final proposal for a MEPS target and label design. Ideally it will be possible to come to an agreement among all stakeholders. The choice of the label design needs to be supported by manufacturers, retailers and consumers. For this reason, respective associations or NGOs need to participate in the meeting. Conducting a survey should be useful.

Activity 3.3: Collate all information and write report

The report collates the researched information with the stakeholder inputs collected during the meeting. The checklist component of the report will be in an applicable format that helps to produce the guideline for the design of performance levels and product labels. A calculation on the expected GHG emissions reduction as a result of the S&L standard implementation will be described in details.

Deliverable 3:

- Meeting minutes that capture stakeholder feedback related to Output 3
- Report on international best practice in MEPS design and labeling (with separate checklist)
- Final report containing also an estimate of GHG mitigation potential through this TA

Output 4: Awareness raising and public communication strategy

An awareness raising and public communication strategy tailored to Ethiopian needs will be designed based on international experience and best practice. The purpose of the strategy is to guide the EEA during the development of an effective campaign to promote the benefits of the S&L programme to all stakeholders to ensure their understanding and support for the programme



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Activity 4.1: Conduct research and draft a strategy framework

The contractor will investigate properties and criteria of successful outreach campaigns for S&L programmes in other countries in the region and internationally. The contractor will then investigate the relevant socio-economic and cultural context in Ethiopia and produce strategy recommendations accordingly. The recommendations will consider key components such as the definition of clear goals and objectives, conducting a research and needs assessment, identification of target audiences and partners, development of tangible messages and testing their reception by the audiences and the design of a communication plan. Further aspects to be included are recommendations with regard to expected timeline and budget, stakeholder inclusion and support from campaign partners and identification of market barriers. The strategy framework will guide the discussion at the stakeholder meeting. The contractor is expected to share the draft with key stakeholders in advance of the training to allow participants to prepare and provide informed inputs during the meeting.

Activity 4.2: Introduce and discuss the strategy framework at the stakeholder meeting of Activity 2.3

A meeting session dedicated to awareness-raising and communication will serve as a platform to discuss the strategy, collect stakeholder inputs and provide clarifications. The contractor is expected to record all inputs and prepare a meeting report to ensure everything will be captured and accurately reflected in the final strategy.

Activity 4.3: Finalize the strategy based on stakeholder inputs

This activity merges the results from the background research with the inputs from the stakeholder meeting to produce a final draft. This final draft is to be shared with the previously involved stakeholders for a final review.

Deliverables 4:

- Meeting report that captures stakeholder feedback related to Output 4
- Strategy framework developed
- Awareness raising and public communication strategy document

4 GENERAL TIME SCHEDULE

The activities under this contract have an expected duration of nine (9) months from the contract signature.

	Months								
	1	2	3	4	5	6	7	8	9
Output 1: Development of implementation planning and communication documents									
Output 2: A testing procedure for measuring and certifying energy performance of locally manufactured electric stoves in Ethiopia									



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Output 3: Benchmark of international MEPS and label design best practice									
Output 4: Awareness raising and public communication strategy									

All drafts and final deliverables are subject to approval by the CTCN Climate Technology Manager, before these can be considered as completed.

5 PERSONNEL IN THE FIELD (PROFESSIONAL EXPERIENCE AND QUALIFICATIONS)

The Contractor is expected to provide the services of a team that should ideally comprise the following competencies:

- Graduate degree in environmental or industrial engineering, energy technologies or similar
- A minimum of 15years relevant work experience in energy policies and management
- A minimum of 15 years relevant work experience in setting standards and norms for appliances.
- Demonstrated experience of development and implementation of project related to energy policy in Africa, particularly Ethiopia
- Demonstrated experience development of communication plans in Africa, particularly Ethiopia.
- Demonstrated experience with the development, implementation and management of projects in a climate change mitigation technology context.
- Excellent ability to interact with stakeholders, collect and evaluate data and transform the information into high quality documentation tangible to the target audience
- Excellent written and communication skills in English.

The CVs of the respective experts assigned to this assignment by the Contractor must be provided.

6 LANGUAGE REQUIREMENTS

The working language for the purposes of this assessment is English, thus an excellent command of English is required for the proposed personnel. Proficiency in relevant local languages considered an asset.

All delivered documents must be of such a quality, that no further editing shall be required.