CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

CTCN Technical Assistance
Request Submission Form

Guidelines:

- This Request Submission Form should be completed by the organisation requesting technical assistance from the Climate Technology Centre & Network (CTCN) in collaboration with the National Designated Entity (NDE) of the country in question
- The Form must be signed by the NDE. Please see updated contact list of NDEs here: http://unfccc.int/ttclear/support/national-designated-entity.html
- The Form can be submitted as a Word file containing a digital signature or as a signed and scanned PDF file in combination with an un-signed Word file
- For requests submitted by multiple countries, all the NDEs of the respective countries shall sign identical Forms before official submission to the CTCN
- NDEs have the opportunity to submit CTCN requests in collaboration with National Designated Authorities (NDAs) for the Green Climate Fund (GCF) if targeting the GCF Readiness Programme.

Requesting country or countries:	Malawi
Request title:	Leapfrogging Malawi's market to energy-efficient refrigerators and distribution transformers
NDE	Mr. Lyson Kampira National Commission for Science and Technology Chief Research Services Officer Phone: 265 1 771 550, +265 999 916 036 Emails: lkampira@ncst.mw, lkampira@yahoo.com
Request Applicant:	Mr Joseph Kalowekamo, Acting Director of the Department of Energy Affairs, Ministry of Natural resources, Energy and Mining

Climate objective:

- ☐ Adaptation to climate change
- ☒ Mitigation of climate change
- ☐ Combination of adaptation and mitigation of climate change

Geographical scope:

- ☐ Community level
- ☐ Sub-national
- ☒ National
- ☐ Multi-country

If the request is at a sub-national or multi-country level, please describe specific geographical areas (provinces, states, countries, regions, etc.).

Problem statement related to climate change (up to one page):

Malawi is one of the first countries in Southern Africa to successfully unbundle the generation, transmission and distribution of its electricity sector. EGENCO is now solely responsible for the current generation plants while the Malawian Energy Regulatory Authority (MERA) and the Ministry of Energy guide the way forward through the Integrated Resource Plan. This is likely to include renewables (wind, solar and hydro) through Independent Power Producer (IPP) bid rounds, with coal to make up the baseload. Transmission and distribution is managed by ESCOM. National Designated Entity (NDE) prioritization in light of the power sector reform, energy efficiency (and this project in particular) is not the primary priority of the NDEs. Electrification, food, water, housing and other more pressing and relevant issues understandably take priority. Thus, very little capacity remains to track or research the data required for this survey. Further to that, NDE's appear to receive very little support and feedback from the other entities within their countries (Revenue Authorities, Trade Organizations, Utilities, Stats bureau etc

Energy efficiency is not a primary policy priority in Malawi. Electrification, food, water, housing and other key issues understandably take precedence. Malawi's economy is growing, with improved living standards expected to result in increased energy demand. The state utility has made efforts at encouraging efficient lighting to replace incandescent bulbs. At the same time, significant barriers remain regarding expansion of access to electricity beyond present users and addressing a cultural shift from biomass to more modern fuels. Also, there are economic constraints in financing energy projects. Malawi has a limited number of trained personnel for large scale energy systems. In order to effect meaningful change in the adoption of energy using equipment and products, a regional strategy would likely have greater impact on product manufacturers and distributors, which in turn would eventually impact Malawian markets

Due to high levels of poverty in Southern Africa, the markets are extremely sensitive to upfront prices. Energy efficiency and lifecycle costing typically comes at a premium and any additional costs have large impacts on short term cashflows. For example, additional costs for a higher efficiency refrigerator must be secondary to filling the existing one. Africa is a small market. The entire African content consumes less than 5% of all electricity in the world. Therefore, it is understandable that manufacturers have little interest in spending time and resources to invest into, let alone track, the African market, and even less to if you look at the specific countries.

Energy Efficiency is perceived as a conflict of interest for utilities Reducing the sales of electricity by promoting energy efficiency effectively reduces some potential revenue from the utility. In contrast, the current lack of sufficient capacity results in regular power outages, so reduced consumption could be redistributed. Since the utility is state owned, this enables the state to use the utility to drive energy efficiency roll outs despite the apparent conflict.

Malawi electric charges are low compared to Europe at 0.085 USD per kWh for residential customers. These are government subsidised (therefore lower) tariffs, which result in longer payback periods for energy savings projects or energy efficient technologies than if full utility costs were charged. This will have negative impacts on the sales of higher efficiency units, compared to their cheaper but less efficient competitors. Unfortunately, the low average incomes prevent the state-owned utilities from increasing the tariffs to be fully reflective of generation costs, as many people would then not be able to afford electricity, which in turn would adversely affect both the economy and the uptake of electrification.

Like several other countries in the region, Malawi has an energy policy in draft, but this is at a very high level, does not address any technologies, does not have any regulations, and provides no enforcement mandate.

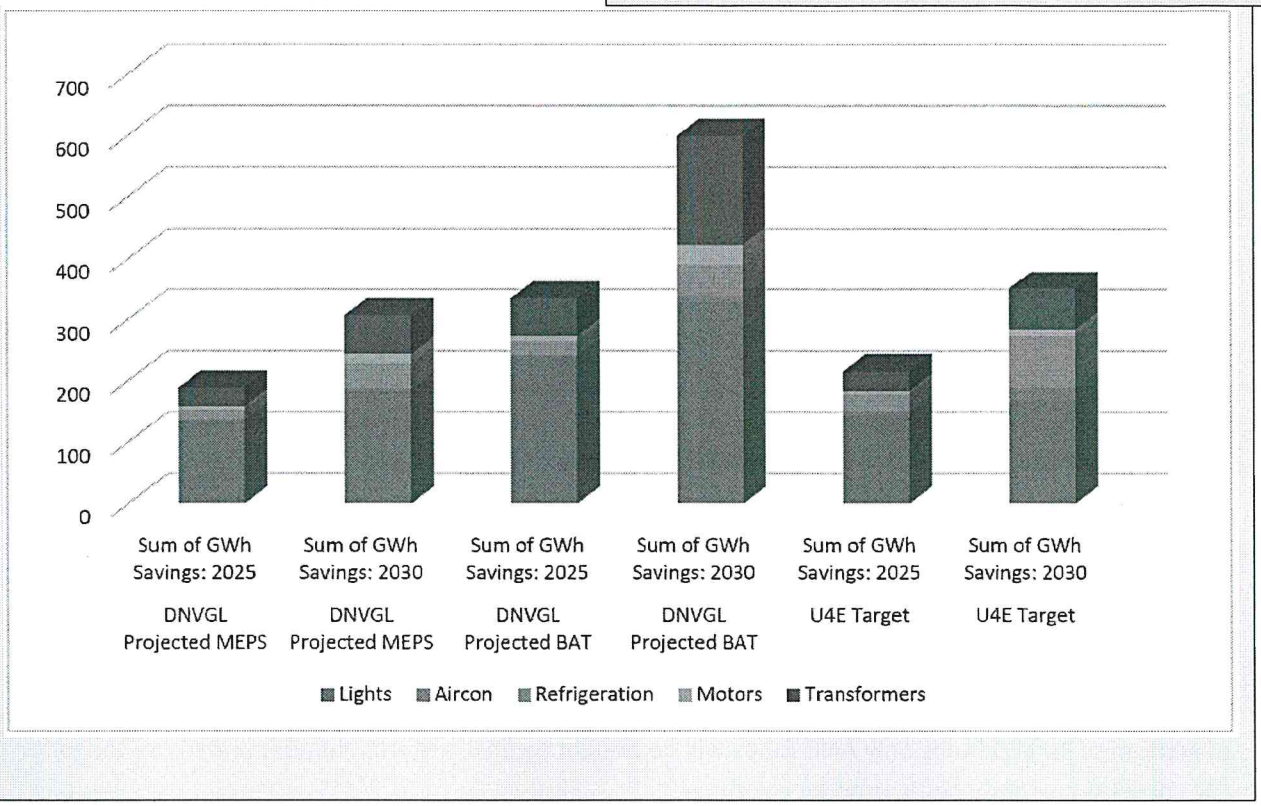
Despite the limitations noted, including low population density and low incomes, Malawi has much to gain by adopting energy efficient standards and technologies. The market research, data collection and analysis conducted by DNV GL during this study has been able to provide insight into the five product categories of primary energy-consuming appliances and equipment covered (lighting, air conditioning, refrigerators, motors and transformers).

Past and on-going efforts to address the problem (up to half a page):

The major energy efficiency and Demand-Side Management (DSM) activities in Malawi. In 2016 ESCOM rolled out an energy saving project where it has been replacing high energy consuming incandescent bulbs with very low energy consuming LED bulbs. The project, whereby ESCOM will install 1.2 million LED bulbs will see the corporation saving around 30 MW of power. Customers are also expected to benefit through reduced bills as LED bulbs last longer and consume less energy than other bulbs. The LED project is being implemented in two phases: The first phase will see ESCOM distributing the LED bulbs free of charge to high energy consuming and low-income areas in exchange for incandescent bulbs. In the second phase, ESCOM will be selling the LED bulbs at substantially subsidized price. ESCOM is now selling LED bulbs in Exchange of Compact Florescent Lamps or Incandescent Bulbs (IBs) to its customers, at K500 each. Terms & Conditions: Every Customer will be allowed to purchase a maximum of 10 LED bulbs only AND Bulbs will be bought against a Meter Number and in exchange for CFLs and IBs currently being used by customer.

Malawi is a member of the Southern African Power Pool (SAPP), which began in 1996 as the first formal international power pool in Africa with a mission to provide reliable and economical electricity supply to consumers in SAPP member countries. Malawi also joined the International Renewable Energy Agency (IRENA) - a global initiative to promote and reduce barriers to the uptake of renewable energy.

Malawi with 9 other SADC countries benefitted from CTCN Technical Assistance: Through this TA CTCN developed detailed country assessments for the five priority products (i.e. lighting, refrigerators, air conditioners, electric motors and distribution transformers). This assistance was required in order to more accurately define the current situation and the future objectives for climate-related policy actions. Each country report contains information on the status/trends of energy-efficient products, status of policies and potential savings of energy efficient products. The overall savings potentially yielded by the adoption of MEPS and BAT are as illustrated below;



Specific technology[1] barriers (up to one page):

This section should answer the questions "what are the technology barriers that hinder national efforts described above" and "how will the CTCN technical assistance complement these efforts?" Building upon the problem statement and taking into consideration the existing efforts described above, please describe the specific technology barriers encountered by the requesting applicant to identify, assess or deploy climate technology(is) in an effort to address the problem statement. The described barriers should be within the scope of the requested CTCN technical assistance (described in the section below).

The entire African continent consumes less than 5% of all electricity globally. Therefore, it is understandable that manufacturers have little interest in spending time and resources to invest into, let alone track the African market, and even less so if you look at specific countries.
markets are extremely price sensitive. Energy efficient products such as those being investigated through this TA typically come at a premium cost over standard models, and any additional costs have large impacts on short term cashflows. This TA therefore investigates technology approach that Namibia can address current lack of energy efficiency throughout the country through the assessment of the 5 products; Aircons, Lighting, Motors, refrigeration and transformers.

Sectors:

Please indicate the main sectors related to the request:

☐ Coastal zones ☐ Early Warning and Environmental ☐ Human Health ☐ Infrastructure and

[1] ***"any equipment, techniques, practical knowledge and skills** needed for reducing greenhouse gas emissions and adapting to climate change" (Special Report on Technology Transfer, IPCC, 2000)*

	Assessment		Urban planning
☐ Marine and Fisheries	☐ Water	☐ Agriculture	☐ Carbon fixation
☒ Energy Efficiency	☐ Forestry	☐ Industry	☐ Renewable energy
☐ Transport	☐ Waste management		

Please add other relevant sectors:

Cross-sectoral enablers and approaches:

Please indicate the main cross-sectoral enablers and approaches

☐ Communication and awareness	☒ Economics and financial decision-making	☒ Governance and planning	☐ Community based
☐ Disaster risk reduction	☐ Ecosystems and biodiversity	☐ Gender	

Technical assistance requested (up to one page):

In coordination with similar CTCN projects in neighbouring countries, will assess the potential for increasing the energy efficiency of products in Malawi by providing a technical market assessment of current conditions and policies. This targets five specific product categories: lighting, air conditioning, refrigerators, motors and transformers

The specific objectives of this technical assistance are to:

- Validate the data collected by the CTCN from stakeholders (e.g. manufacturers, retailers, suppliers, utilities) on the existing initiatives and use of refrigerators and distribution transformers.
- Undertake detailed market assessments and feasibility of implementation of technologies with highest efficiency.
- Develop a technology roadmap and action plan for promoting and adoption of efficient appliance in the country.
- Propose draft minimum energy performance standards (MEPS) and labelling for refrigerators (building off the United for Efficiency Model Regulations) and procurement specifications for distribution transformers.
- Assist decision makers and stakeholders to put the draft MEPS for refrigerators and procurement specifications for distribution transformers into practice.
- Gather information on financing lines and business models for financing energy-efficient refrigerators and/or distribution transformers.
- Develop proposal for financial/market-based mechanism on energy-efficient refrigerators and/or distribution transformers.

Expected timeframe:

18 months

Anticipated gender and other co-benefits from the technical assistance:

Please describe the activities with gender linkages as well as the anticipated gender and other co-benefits (e.g. biodiversity, economic, social, cultural, etc.) that are likely to be generated as a result of the technical assistance.

The gender gap in access to inheritance and property rights, finance and information can limit the capacity of women home and business owners to invest in energy-efficient appliances. Energy use in the home may also be reduced by about 20 per cent through changes in behaviour. Women and men respond differently to policies encouraging behavioural changes. The success of these policies will depend heavily on how they affect the workload and well-being of both women and men. Energy efficiency policies and investment will be designed based on a gender-differentiated understanding of opportunities and constraints to optimize their social and climate impact.

The project will provide gender and other co-benefits, such as energy-efficient and higher quality refrigerators allowing users to save funds for other economic opportunities, reducing food waste from spoiled foods and providing increased economic opportunities by increasing the ability to store food instead of frequent trips to the market. In addition, distribution transformers and other energy-efficient products will result in reduced demand on the electricity grid provide more stable electricity distribution and economic opportunities for the entire population.

For more information you can find guidelines on the CTCN's website here:
https://www.ctc-n.org/technologies/ctcn-gender-mainstreaming-tool-response-plan-development

Further reading on gender can be found on the CTCN website here:
https://www.ctc-n.org/technology-sectors/gender

Key stakeholders:

Please list the stakeholders who will be involved in the implementation of the requested CTCN technical assistance and describe their role during the implementation (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.).

Stakeholders	Role to support the implementation of the technical assistance
National Designated Entity	The NDE will support in getting the commitment and participation of the relevant stakeholders within the process and also in exchanging of best practices regionally.
Request Applicant	Mr Joseph Kalowekamo, Acting Director of the Department of Energy Affairs, Ministry of Natural resources, Energy and Mining
Please add as many stakeholders and lines as required.	
• Ministry of Natural Resources, Energy and Mining • Department of Energy Affairs (DoEA)	These are key agencies responsible for energy policies They take the lead on the project development as a Project Proponent. Particularly in developing the national strategies and

	development of minimum energy performance standards and labelling.
• The Malawi Energy Regulatory Authority (MERA)	This is the main Energy regulators in Malawi and will contribute reviewing draft regulations and specifications that could be used within their existing demand side management programs in order to incentivize the purchase of energy-efficient products. In addition, utilities are the primary owner of distribution transformers.
Electricity Supply Corporation of Malawi (ESCOM)	Main entity in the electricity market will help in formulation regulation on energy efficient products

Alignment with national priorities (up to 2000 characters including spaces):

Please describe how the technical assistance is consistent with national climate priorities such as: Nationally Determined Contribution, national development plans, poverty reduction plans, technology needs assessments, Low Emission Development Strategies, Nationally Appropriate Mitigation Actions, Technology Action Plans, National Adaptation Plans, sectorial strategies and plans, etc.

Malawi Nationally Determined Contribution to the United Nations Framework Convention on Climate Change's (UNFCCC's) Paris Agreement aims to adopt a low carbon development. The INDC intends to contribute to climate change abatement by implementing mitigation activities where energy sector is among the key target.

Malawi has developed Integrated Energy Plans the Ministry of Energy
guide the way forward through the Integrated Resource Plan (ISP17), 2014. This policy is meant to guide the energy sector towards Renewable energy and increase efficiency and reduce emissions intensity across the economy. The state utility has made efforts at encouraging efficient lighting to replace incandescent bulbs. At the same time, significant barriers remain regarding expansion of access to electricity beyond present users and addressing a cultural shift from biomass to more modern fuels.

Reference document (please include date of document)	**Extract** (please include chapter, page number, etc.).
Nationally Determined Contribution (NDC)	Though energy is amongst the three largest emitters of greenhouse gases **in** Malawi, it is projected that in future (2040) the largest sectoral increase will likely take place in the energy sector as new coal-based generation capacity by independent power producers (IPPs) comes on line to meet immediate energy deficits currently being experienced in Malawi. This calls for appropriate institutional and legal and regulatory framework to check for substandard technologies with high emissions when producing thermal electricity through burning of coal and other fossil fuels. Further, institutional, legal and regulatory framework for energy efficiency will be needed to check for industrial processes in tobacco industries, beverages, cement industries and others that are contributing a lot of emissions through the uses of biomass energy and energy inefficient electric equipment and machinery. **In** the energy sector, another source of emissions is the use of fossil

	fuels in transportation **activities.** Emission reduction efforts will concentrate in key sectors of forestry, agriculture and energy. Implementing all unconditional and conditional mitigation activities is expected to reduce the per capita emissions of Malawi from 1.4 t CO2e per capita in 2010 to around 0.7 to 0.8 t CO2e per capita in 2030 compared to expected business as usual emissions of around 1,5 t CO2e per capita in 2030 {Malawi NIDC,2015). Potential reductions from the energy sector will be additional to the expected overall per capita GHG emissions reduction. Further Malawi has its SE4AII Energy Efficiency which is to decrease the Energy intensity of economy - Btu/USD (Currently 1,655) to 897 (45.8% decrease) by 2030 (Malawi **SEforALL Action Agenda,2017).**
Technology Needs Assessment	
National Adaptation Plans	
Nationally Appropriate Mitigation Actions	
Add others here as relevant	

Development of the request (up to 2000 characters including spaces):

Please describe how the request was developed at the national level and the process used by the NDE to approve the request before submitting it (who initiated the process, who were the stakeholders involved and what were their roles?) and describe any consultations or other meetings that took place to develop and select this request, etc.

Malawi was among the SADC countries which participated in a workshop organized by CTCN, United 4 Efficiency, and the Southern Africa Power Pool on Country Profiles on Leapfrogging to Energy Efficient Lighting, Appliances and Equipment. The country assessments developed in the framework of CTCN technical assistance were discussed. Malawi and other participating countries reviewed the use, future trends and energy efficiency savings of the five leading energy consuming products (besides lighting) to engage funding agencies for the development of policy framework. A need was identified to look at the potential for increasing the energy efficiency of products in Malawi by providing a technical market assessment of current conditions and policies. Five specific product categories have been looked at: lighting, air conditioning, refrigerators, motors and transformers.

Background documents and other information relevant for the request:

1. Malawi growth and Development Strategy 9MGDS) III (2017 to 2022) chapter 6 pages 41-44.

The Malawi Growth and Development Strategy (MGDS) III recognizes that energy is the lifeblood of the economy as it serves as a crucial input to all economic and social services. The MGDS III has considered energy as its priority area number 3. MGDS III envisages that a well-developed and comprehensive energy sector can improve service delivery and increase outputs in industries such as manufacturing, trade, tourism and other services. Access to clean, reliable, reasonably-priced

and sustainable energy supply is central to maintaining and improving the living standards of people. MGDS III therefore contains strategies that encourage energy efficiency in all categories of consumers including industries.

2. National Energy Policy 2018

One of the drivers of this new National Energy Policy 2018 is the agreed international goal of greenhouse gas (GHG) emissions reduction is the driver for many energy policies world-wide. This goal is achievable through improved energy efficiency and a | higher level of renewables in national energy mixes. As such the policy has one of its principle and objectives centered on energy efficiency and conservation. The policy has identified a component of energy efficiency i.e. Demand Side Management as one of its priorities and it thus outline various strategies that shall promote energy efficiency across all electricity customers including the industries.

3. Malawi SE4All Action Agenda 2017

One of the SE4All goals is to double the global rate of improvement in energy efficiency by 2030. This Action Agenda (AA) for Malawi outlines set of actions/strategies on how Malawi will achieve the SEforALL goals by 2030, which includes a goal on energy efficiency. These strategies and targets cut across all energy consumers including industries.

4. Intended Nationally Determined Contribution-2015

The INDC document which Malawi submitted in 2015 to UNFCCC contains Malawi's commitment to reduce GHG emissions and hence combat climate change. Amongst the priotised sectors for adaptation and mitigation measures to reduce emissions and hence combat climate change include the energy sector. The document contains energy sector-based adaptation and mitigation measures for reducing GHG emissions. Energy efficiency promoted in industries will ensure that industries contribute towards reduction of GHG in Malawi as a nation.

5. National Climate Change Management Policy 2016 |

The National Climate Change Management Policy (NCCMP) seeks to guide programming of interventions for reduction of greenhouse gas emissions in the atmosphere, as well as adapting to the adverse effects of climate change and climate variability.

OPTIONAL: Linkages to Green Climate Fund Readiness and Preparatory Support

The CTCN is collaborating with the GCF in order to facilitate access to environmentally sound technologies that address climate change and its effects, including through the provision of readiness and preparatory support delivered directly to countries through their GCF NDA. These actions are in line with the guidance of the GCF Board (Decision B.14/02) and the UNFCCC, particularly paragraphs 4 and 7 of 14/CP.22 that addresses Linkages between the Technology and the Financial Mechanisms[2].

The CTCN is therefore implementing some of its technical assistance using GCF readiness funds accessed via the country's NDA. Any application for GCF support, including the amount of support provided, is subject to the terms and conditions of the GCF and should be developed in conjunction with the NDA.

Please indicate whether this request has been identified as preliminarily eligible by the NDA to be considered for readiness support from the GCF.

☒ Initial engagement: The GCF NDA of the requesting country has been engaged in the design of this request and the NDA will be involved in the further process leading to an official agreement for

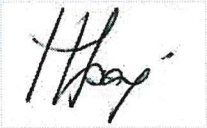
[2] Please see:
https://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cop22_i8b_tm_fm.pdf

accessing GCF readiness support.

☒ Advanced engagement (preferred): The GCF NDA of the requesting country has been directly involved in the design of this request and is a co-signer of this request, the signature indicating provisional agreement to use readiness national funds to support the implementation of the technical assistance.

NDA name: Tawonga G Luka-Mbale

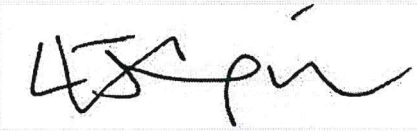
Date: 18th March 2019

Signature: 

Monitoring and impact of the assistance:

By signing this request, I affirm that processes are in place in the country to monitor and evaluate the technical assistance provided by the CTCN. I understand that these processes will be explicitly identified in the CTCN Response Plan and that they will be used in the country to monitor the implementation of the technical assistance following standard CTCN procedures.
I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:

NDE name:	Lyson John Kampira
Date:	18th March 2019
Signature:	

THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

The CTCN is available to answer all questions and provide guidance on the application process.