

Please fill in the form in the grey spaces, by following the instructions in italic.

Requesting country:	<i>Tanzania</i>
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Request title:	<i>Promoting the sustainable use of solar photovoltaic technology in Tanzania</i>
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Contact information:		
<i>{Please fill in the table below with the requested information. The request proponent is the organization that the request originates from, if different from the National Designated Entity (NDE).}</i>		
	National Designated Entity	Request Applicant
Contact person:	<i>Dr. Flora Tibazarwa</i>	<i>Eng. Matthew Matimbwi</i>
Position:	<i>Director of Life and Physical Sciences</i>	<i>Executive Secretary</i>
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Technology Needs Assessment (TNA):
<i>{Select one of the three boxes below:}</i>
<input type="checkbox"/> <i>The requesting country has conducted a TNA in Climate Change (please insert date of TNA completion)</i>
<input checked="" type="checkbox"/> <i>The requesting country is currently conducting a TNA</i>
<input type="checkbox"/> <i>The requesting country has never conducted a TNA</i>
<i>{If the requesting country has completed a TNA, please indicate what climate technology priority this request directly relates to. Please indicate reference in TNA/TAP/Project Ideas.}</i>
<i>The climate technology this request refers is Solar.</i>

CTCN Request Incubator Programme:
<i>{Please indicate if this request was developed with support from the Request Incubator Programme:}</i>
<input checked="" type="checkbox"/> <i>Yes</i>
<input type="checkbox"/> <i>No</i>

Geographical focus:
<i>{Select below the most relevant geographical level for this request:}</i>
<input type="checkbox"/> <i>Community-based</i>
<input type="checkbox"/> <i>Sub-national</i>

National

Multi-country

{If the request is related to the sub-national or multi-country level, please indicate here the areas concerned (provinces, states, countries, regions, etc.)}

Theme:

{Select below the most relevant theme(s) for this request:}

Adaptation to climate change

Mitigation to climate change

Combination of adaptation and mitigation to climate change

Sectors:

{Please indicate here the main sectors related to the request. e.g. energy, industry, transport, waste, agriculture/fisheries, forestry, water, ecosystem/biodiversity, coastal zones, health, education, infrastructure/human settlement, tourism, businesses, early warning/disaster reduction, institutional design and mandates, cross-sectorial}

The request is related to the **energy** sector.

Problem statement (up to one page):

{Please describe here the difficulties and specific gaps of the country in relation to climate change, for which the country is seeking support from the CTCN. Please only provide information directly relevant to this request, and that justifies the need for CTCN technical assistance.}

The problem this proposal wants to intervene is the unsustainable access to solar photovoltaic technology for the off-grid and sub-urban electrification.

Tanzania's population that has access to grid electricity is very low particularly in the rural settings, which hosts the larger proportion of the population. In rural Tanzania access to the grid is 6.6% of which the 4.6% electrified by the grid and 2% is electrified by the solar photovoltaic [Baseline Survey Report for Energy Access and Use in Tanzania Mainland, 2011, Tanzania Rural Energy Agency]. The population connected to the grid countrywide by the year 2012 was 20.7% [Tanzania's SE4All action agenda, 2015, Ministry of Energy and Minerals].

The United Republic of Tanzania (URT) has admitted the inability to extend the grid to cover the entire country due to a diverse number of challenges that limit access. As a result URT encourages enabling off-grid communities access sustainable electricity using off-grid renewable energy technologies such as solar photovoltaic systems. There is a wide range of solar systems available from Pico solar to institutional solar systems [National Electrification Program Prospectus 2014, Tanzania Rural Energy Agency].

Most rural and sub-urban off-grid communities generally use kerosene for lighting. The percentage of rural households that use kerosene for lighting is 88.9% [Baseline survey report for energy access and use in Tanzania mainland, 2011, Tanzania Rural Energy Agency]. Kerosene as used for lighting contributes to climate change through emission of green house gases and black carbon particulates emitted from the lanterns. In addition the emitted green house gases and black carbon particulates cause problems of acute respiratory diseases, cancer and heart disease.

Solar photovoltaic technology has been promoted on Tanzania Mainland since the early 2000's. The acceptance of the technology by rural and sub-urban off-grid communities has been high as reflected in

the trend of sales of solar photovoltaic components that grew from 100kW/year in the year 2005 to 4MW/year in the year 2014. Households are the main segment of the population that has adopted solar photovoltaic technology followed by institutions [Sida/MEM Solar PV Project 2010 and TAREA Market Trend 2015].

The growth of the market has resulted in high inflow of solar photovoltaic products in Tanzania. Lack of a robust framework to oversee the solar value chain has created loopholes that allow for sub-standard products to be sold. Tanzania Renewable Energy Association (TAREA) conducted a study in January 2015 on the quality of solar photovoltaic products in the Tanzanian market and found that most of the products are of sub-standard quality. Such products generally show characteristics of having paper cells, colour paint imitating the solar cells and non-water proof housing. Most of the panels do not generate electricity indicated on the data plate have short life spans. In September 2015 Tanzania Bureau of Standards announced that among 17 shops that underwent market surveillance, all were found selling substandard solar products. Substandard products have negative impacts on the economy and health of the affected communities. Furthermore, solar installations that were visited were found to be of the poor workmanship resulting poor system performance.

Complement to the lack of a robust oversight system for the solar value chain, Tanzania does not have guidance for electronic waste management. And thus as acceptance of solar photovoltaic technology increases, the environmental management is critical due to the increase in electronic waste in the form of batteries. It is estimated that in the next five years, most of the companies will decommission batteries that can contribute significantly to pollution of the environment if not addressed timely.

The request proposes to intervene the challenges mentioned above through;

Awareness of end users: The demand side will be informed on the potential of the solar photovoltaic technology applications are households and institutions that are off-grid in rural and sub-urban areas. These end users will be informed on how to recognize and avoid the substandard solar photovoltaic products.

Training of solar photovoltaic technicians: Solar installers will receive knowledge and skills to recognise substandard solar photovoltaic products and how to plan and install solar photovoltaic systems.

Training of solar retailers: Most of the solar retailers are not aware of the quality of the products that they sell. Retailers from the selected areas of most affected areas will be trained on how to provide quality service.

Training of district officers on Renewable Energy management: Selected district council officers will be trained on the renewable energy management. The knowledge will enable district councils to mainstream solar photovoltaic technology and other renewable energy technologies in their development plans and provide oversight support and assessment of the technology.

Establishment of reference service: A reference call centre with information on solar photovoltaic products would provide quality assurance for clients. Information such as retailers and suppliers that supply quality products recommended by Tanzania Bureau of Standards and Global Lighting Program would be available at the reference centre, as well as information on closest supply points.

Advocacy of solar regulations enforcement: It is proposed to reinforce advocacy to the regulators that solar photovoltaic regulations are effectively enforced to protect sector and end users against substandard products.

Advocacy for the development and enforcement of the electronic waste regulations: Support for regulatory agencies such as the National Environment Management Commission to develop and enforce national regulations on the handling and recycling of the electronic wastes, especially from the renewable energy sector.

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

{Please describe here past and on-going processes, projects and initiatives implemented in the country to tackle the difficulties and gaps explained above. Explain why CTCN technical assistance is needed to complement these efforts, and how the assistance can link or build on this previous work.}

Processes that had been and are being implemented in the country to tackle the difficulties and gaps explained above are detailed below.

Sida/MEM Solar PV Project (2005-2011)

This was a project implemented by the Tanzania Ministry of Energy and Minerals (MEM) with support from the Swedish Development Agency (Sida) to promote marketing of solar photovoltaic technology in 14 regions of Tanzania Mainland. The project activities consisted of awareness raising, solar installers training and recruitment of the retailers.

UNDP Mwanza Solar Project (2004-2009)

This project was implemented by MEM with support from the United Nations Development Program (UNDP). The project aimed at promoting solar photovoltaic technology market in the region of Tanzania Lake Victoria region.

Lighting Rural Tanzania (2014-2016)

Tanzania Rural Energy Agency (REA) is running the program 'Lighting Rural Tanzania' to promote rural off-grid access to the electricity. REA has provided grants to 20 projects to develop renewable energy mini grids.

Solar products quality control

Tanzania Renewable Energy Association (TAREA) is already working on a small scale to advocate for the quality distribution of solar photovoltaic products.

Study on the electronic waste (2012)

Tanzania Communication Regulatory Authority (TCRA) conducted study on the electronic waste in the country. The study focused on the computer electronic waste and minimal reference was made to electronic wastes associated to renewable energy technologies.

Assistance requested (up to one page):

{Please describe here the scope and nature of the technical assistance requested from the CTCN and how this could help address the problem stated above and add value vis-à-vis the past and on-going efforts. Please note that the CTCN facilitates technical assistance and is not a project financing mechanism.}

The technical assistance requested from CTCN is to develop intervention strategies and facilitate their implementation. The assistance will go to scaling up on-going initiatives and develop new ones for the areas that are currently not dealt with as detailed below.

End user awareness raising

Technical assistance will support the development and implementation of the end user awareness raising that will be implemented through radio and television talks, printed materials (magazine, leaflets, newspaper articles) and other methodologies as proposed by the experts.

Training of solar installers

The assistance will support development and implementation of the training of solar installers ensuring the capacity to control products quality and carry out standard workmanship.

Training of solar retailers

The technical assistance will support the development and implementation of the training program for the retailers ensuring distribution of the quality products.

Training of the district officers on the renewable energy management

Technical assistance will support the development and realization of the training of the district officers on the renewable energy technologies.

Establishment of reference service

Technical assistance will support innovation of the establishment of reference service for the end users who want to procure solar photovoltaic products.

Advocacy of the solar regulations enforcement

Technical assistance will support the development and implementation of the initiatives of scaling up the current advocacy to the regulators strengthening regulations enforcement.

Advocacy for development and enforcement of the electronic waste management

The technical expert will support the work of developing and implementation of advocacy to the environmental regulator to develop regulations on the management of electronic wastes resulting from the use of renewable energy systems.

Expected benefits (up to half a page):

{Please outline here the medium and long-term impacts that will result from the CTCN technical assistance, including how the assistance will contribute to mitigate and/or adapt to climate change.}

Medium impacts

- 1.0 Increased awareness of the presence of substandard products in Tanzania market
- 2.0 Increased knowledge of solar installers on the identification of substandard solar photovoltaic products
- 3.0 Increased knowledge of the solar photovoltaic retailers on the quality products
- 4.0 Availability of district council officers with knowledge in renewable energy management
- 5.0 Availability of solar customer procurement reference point
- 6.0 Scaled up reinforcement of solar photovoltaic regulations
- 7.0 Implemented advocacy on the development and enforcement of the electronic waste management

Long term impacts

- 1.0 Increased adaptation of solar photovoltaic technologies and reduced emission of green house gases and black carbon.
- 2.0 Increased life span of the installed solar photovoltaic systems for the public centres
- 3.0 Protected end users from economic loss, environmental and health negative effects
- 4.0 Increased fair solar photovoltaic trading
- 5.0 Protected environment from electronic wastes resulting from the use of solar photovoltaic technologies

Post-technical assistance plans (up to half a page):

{Please describe here how the results of the CTCN technical assistance will be concretely used by the applicant and national stakeholders, to pursue their efforts of resolving the problems stated above after the completion of the CTCN intervention (list specific follow-up actions that will be undertaken).}

The applicant and national stakeholders will use the results of the CTCN technical assistance to promote sustainable use of solar photovoltaic technologies for electrification of rural and sub-urban off-grid communities in Tanzania.

The applicant and stakeholders will continue with the monitoring of the long-term impacts of the technical assistance through short-term studies and collection of the market information.

Key stakeholders:

{Please list in the table below the main stakeholders who will be involved in the implementation of the requested CTCN technical assistance, and what their role will be in supporting the assistance (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.). Please indicate what organization(s) will be the main/lead counterpart(s) of CTCN experts at national level, in addition to the NDE.}

Stakeholder	Role to support the implementation of the assistance
Tanzania Commission for Science and Technology	NDE
Tanzania Renewable Energy Association (TAREA)	Lead counterpart
Vocational Educational and Training Authority	Support training
Tanzania Bureau of Standards	Standards
Local Government Authorities	Awareness raising and system development
Ministry of Energy and Minerals	Energy policy development
National Environment Management Commission	Environment regulation
Ministry of Education of Vocational Training	Education and training authority, and public technology user
Ministry of Health	Health authority and public technology user
Ministry of Communication, Science and Technology	Technology and innovation development
Ministry of Home Affairs	Technology users and law enforcement
NGOs	Technology use promoters
Retailers	Technology distributors
Solar installers	System planning and installation
Colleges	Technology training

Alignment with national priorities (up to half a page):

{Please demonstrate here that the technical assistance requested is consistent with documented national priorities (examples of relevant national priorities include: national development plans, poverty reduction plans, technology needs assessments (TNAs), LEDS, NAMAs, TAPs, NAPs, sectorial strategies and plans, etc.). For each document mentioned, please indicate where the priorities specifically relevant to this request can be found (chapter, page number, etc.).}

Tanzania National Energy Policy, 2003

The technical assistance will contribute to the realization of the Tanzania National Energy Policy Statements 35, 36 and 38 on renewable energy technologies [Chapter 3.2.4, page 35].

National Strategy for Growth and Reduction of Poverty II, July 2010

The technical assistance from CTCN will contribute to the goals on the use of renewable energy technologies [Chapter 4, paragraph (ix), page 41]

National Electrification Program Prospectus, 2014

The technical assistance will contribute to the realization of the electrification of the off-grid development centers using hybrid solar photovoltaic-diesel generators [Chapter 4.2, page 53]

Tanzania's SE4All Action Agenda

The technical assistance will contribute to the realization of the Tanzania SE4All targets by 2030 [Chapter 4.2, page 22].

Tanzania Ministry of Energy and Minerals Strategic Plan 2012/13-2015/16

The technical assistance will contribute to the realization of the strategies of the Ministry of Energy and Minerals [Chapter 5.1, page 19]

Development of the request (up to half a page):

{Please explain here 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.)}

The request was identified and developed through National Workshop on TNA held from 29th to 30th September, 2015.

The process for request generation was initiated by the NDE. The following process was followed from idea stage to approval of the request by NDE before submitting to the CTCN:

1. Vice presidents office initiated the TNA process through which most venerable sectors on climate change were identified
2. Both TNA and CTCN NDEs prepared a joint workshop of the key sectors Identified at the national level (in which about 20 public and private institutions were represented by their experts in the areas of discussions during the workshop).
3. Major sectors Identified as most venerable to climate change were; Energy, Water and Forests Sector
4. Three groups of experts in each of those areas were formed and tasked to come up with at least three key Ideas/project which can be used to generate requests, and those ideas/projects went through voting process and ended up with only three main ideas/projects for requests generations, two from energy sector and one from water sector.
5. Two of the participants of the workshop took the proposed projects and wrote the requests through stakeholders consultation under the guidance of NDE
6. Applicants submitted the requests to the NDE, which screened the request through a developed excel tool to see that the requests meet the following basic criteria:

- That it supports national policies and strategic plans
- That it meets the national strategic objectives
- It is either mitigation or/and adaptation
- It meets the innovation value chain: whether it is idea demand, basic research, technology deployment or technology diffusion and so on

Key stakeholders were consulted (Renewable energy regulators, policy makers, private enterprises, non-governmental organizations, ministerial departments and agencies and local government authorities)

Expected timeframe:

{Please propose here a duration period for the assistance requested.}

The period of assistance requested is expected to be 36 months

Background documents:

{Please list here relevant documents that will help the CTCN understand the context of the request and national priorities. For each document, provide weblinks if available, to attach to the submission form while submitting the request. Please note that all documents listed/provided should be mentioned in this request in the relevant question(s), and that their linkages with the request should be clearly indicated.}

- -Baseline Survey Report for Energy Access and Use in Tanzania Mainland, 2011, Tanzania Rural Energy Agency
<https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx0YXJlYXR6ZlZlbnRzfGd4OjQ5NWE3YzFiodJmZjZDQ>
- -Tanzania's SE4All action agenda, 2015, Ministry of Energy and Minerals
<https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx0YXJlYXR6ZlZlbnRzfGd4OjYyNzNkYTlmMjJhNDA2OGU>
- Sida/MEM Solar PV Project
<https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx0YXJlYXR6ZlZlbnRzfGd4OjYyNzNkYTlmMjJhNDA2OGU>
- Tanzania National Energy Policy, 2003 http://www.mem.go.tz/wp-content/uploads/2014/02/0001_17022013_National_Energy_Policy_2003.pdf
- National Strategy for Growth and Reduction of Poverty II, July 2010
<http://www.mof.go.tz/mofdocs/DPE/MKUKUTA%20II%20English.pdf>
- National Electrification Program Prospectus, 2014 <http://www.ied-sa.fr/index.php/en/documents-and-links/publications/category/3-reports.html>
- Tanzania Ministry of Energy and Minerals Strategic Plan 2012/13-2015/16
<https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnx0YXJlYXR6ZlZlbnRzfGd4OjQ5NWE3YzFiodJmZjZDQ>

Monitoring and impact of the assistance:

{Read carefully and tick the boxes below.}

By signing this request, I affirm that processes are in place in the country to monitor and evaluate the assistance provided by the CTCN. I understand that these processes will be explicitly identified in

the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor the implementation of the CTCN assistance.

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: Flora Ismail Tibazarwa

Date: 24th November 2015

Signature:



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

Need help? The CTCN team is available to answer questions and guide you through the process of submitting a request. The CTCN team welcomes suggestions to improve this form.

>>> Contact the CTCN team at ctcn@unep.org