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:	Zambia
Request title:	Development of a Framework and Roadmap for a National Innovation System to foster low-carbon and climate resilient economic development in Zambia
NDE	Ministry of Technology and Science, Department of Science and Technology Ben Njamba Makayi makayinjamba2004@gmail.com; ben.makayi@mohe.gov.zm
Request Applicant:	Ministry of Technology and Science, Department of Science and Technology Mrs. Jane M. Chinkusu jane.chinkusu@mohe.gov.zm

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):

This section should answer the question "what is the problem?" Please summarise the problem related to climate change and/or the negative impacts of climate change in the country that the request aims to address.

Climate variability and change has become a major threat to sustainable development in Zambia. The country is already experiencing climate induced hazards which include drought and dry spells, seasonal and flash floods and extreme temperatures. Some of these hazards, especially the droughts and floods have increased in frequency and intensity over the past few decades and have adversely impacted food and water security, water quality, energy and livelihoods of the people, especially in rural communities. The aggregated estimated total GDP loss by sector is in the range of USD 4,330-5,440 million.

Innovation is seen as a relevant tool with a double benefit, to respond to the adverse impacts of climate change, and to generate economic growth. As a structured approach to fostering innovation is required, the concept of national innovation systems (NIS) has been introduced and widely adopted. The concept is defined as a "network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies"[1]. At the core of the concept is the understanding that innovation, technical and economic progress are the result of a complex set of relationships among actors producing, distributing and applying various kinds of knowledge.

Zambia has communicated clear ambitions of fostering innovation and aspires to become a prosperous low carbon and climate resilient middle income country by 2030 as enshrined in its Vision 2030. However, to date, most initiatives to increase its innovative capacities were uncoordinated and with limited success. Zambia requires a structured national innovation system to effectively foster innovation for a low-carbon and climate resilient economic development. This technical assistance aims to develop a framework and roadmap for the introduction of a national innovation system by including key stakeholders in the development process and creating platforms for continuous engagement.

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

This section should answer the question "what has been done or is currently being done to address the problem?" Please describe past and on-going processes, projects or initiatives implemented in the country or region to tackle the climate problem as described above.

In order to enhance the importance innovation plays in the social and economic development, Zambia in 2020 developed the National Science, Technology and Innovation Policy repealing the 1996 National Policy on Science and Technology that did not adequately cover the innovation component. The country has been implementing the Science, Technology Innovation Youth Fund (STIYF) since 2009. However, increased funding has been a challenge that has made the STIYF not to absorb the increased number of innovators trying to access the fund. Innovation has been termed as the mother of all inventions. This is perhaps because of the role that innovation plays in shaping the lives of people. Innovation transforms and customizes technologies into user friendly applications. Innovation translates science into a language that is easily understood by ordinary citizens thereby making the lives of the people better. The Science, Technology and Innovation (ST&I) sector in Zambia has faced a

[1] https://www.oecd.org/science/inno/2101733.pdf

multitude of challenges in breaking ground of acceptance. While the science and technology components have made strides in being adopted, the innovation component has not been as fortunate. However, for the country to record any meaningful socio-economic development, the three components have to be equally adopted and harnessed into the development agenda of the country. Of the three components, the innovation component is the one that is equally represented by both the formal and informal sector. Therefore, the development of the National Innovation System will help to define the road map that will guide the enhancement of the innovation space in the country.

Specific technology[2] 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(ies) 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).

Countries in sub-Sahara Africa including Zambia are increasingly becoming aware of the role of Science, Technology and Innovation (STI) in lifting the region from the stagnations of poverty and deprivation. This is necessary as the region aims to add value to its raw material in order to remain competitive in the global market and at the same time diversify the structure of its economies. Zambia in 2020 established the Science, Technology and Innovation Policy in a bid to enhance the effectiveness of the innovation system in the country. The National System of Innovation is one platform that would integrate the innovation resources, which are present in enterprises, universities and Research and Development (R&D) institutions, government agencies as well as the platform guides the concentration of factors of innovation in enterprises. It is a supporting program that mainly promotes application-oriented innovation of a sector nationwide. The innovation system is a system for generating and diffusing new technologies; every country has such a system, even if it is weak or low in capacity but the system needs the infrastructure or the platform to succeed. The following are some of the technology barriers that hinders effective implementation of National System of Innovation:

Orientation-related barriers:

1. University research is weak and leaning more towards theoretic teaching or undertaking basic-science research which has a weaker link to private enterprises;
2. Lower sense of urgency of university researchers compared to industry researchers;
3. Lower sense of urgency of R&D researchers compared to University researchers;
4. Mutual lack of understanding about expectations and working practices.

Transaction-related barriers:

1. Industrial liaison offices tend to oversell research or have unrealistic expectations.
2. Potential conflicts with university regarding royalty payments from patents or other intellectual property rights and concerns about confidentiality.
3. Rules and regulations imposed by universities or government funding agencies thereby disadvantaging the researchers

[2] *"**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)*

4. Absence or low profile of industrial liaison offices in the university.

Relationship drivers:

1. Duplication of research work due to working in silos. This leads to little understanding of common interest by different stakeholders (e.g. universities, businesses, individuals, students, industry and R&D institutions).
2. Weak collaboration of Universities, Industry, R&D institutions and government

Business drivers:

1. Low interest to turn the scientific knowledge generated from universities, R&D institutions into business enterprises. This is because there is a lack of a technology transfer office in most universities, R&D institutions.
2. Low industrial attachment of university students leading into graduates not being fully exposed to the technologies being used in the industry. This leads into costs to industries in terms of retraining of graduates once employed. Further, this also leads into a mismatch of required experience and graduates being channelled out by the Universities.

Limited Technology Incubation Facilities

1. The country has very limited technology incubation centres leading into challenges for upcoming innovators to access incubation facilities, thereby limiting there potential to be independent
2. Over dependence on the Central Government for the establishment and funding of incubation facilities

Limited State of the Art Scientific and Innovation Infrastructure Barriers;

1. Low advanced or cutting edge R&D products being produced by R&D institutions

Over dependence of R&D funds for infrastructure on central government

Sectors:

Please indicate the main sectors related to the request:

☐ Coastal zones	☐ Early Warning and Environmental Assessment	☐ Human Health	☐ Infrastructure and Urban planning
☐ Marine and Fisheries	☐ Water	☐ Agriculture	☐ Carbon fixation
☐ Energy Efficiency	☐ Forestry	☐ Industry	☐ Renewable energy
☐ Transport	☐ Waste management		

Please add other relevant sectors:

Cross-cutting

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):

Founded on the problem statement, past/on-going efforts and technology barriers, please describe the requested technical assistance. The technical assistance should clearly contribute to mitigation or adaptation to climate change as described in the problem statement and contribute to overcome the specific technology barriers.

Within a clearly defined scope, the description of technical assistance should be structured into the following:

- Overall objective
- Anticipated groups of activities to be performed by the technical assistance
- Anticipated products to be delivered by the technical assistance.

Please note that the CTCN facilitates technical assistance and is not a project financing mechanism.

The overall objective of this technical assistance is to develop a framework and roadmap for a National Innovation System (NIS) in Zambia to foster innovation across institutions and industries for low-carbon and climate resilient economic development.

Activity 1: Analysis of the science, technology and innovation environment in Zambia

- Mapping and analysis of policies and regulations related to science, technology and innovation, with direct and indirect impacts on climate change and sustainable development
- Identification, classification and mapping of organizations and initiatives in science, technology and innovation, as well as their interactions with specific focus on climate change.
- Evaluation of the economic and STI performance of Zambia, including key industries, companies (national or foreign), exports/imports, funding (science, corporate R&D, venture capital, etc.), scientific articles, patents, number of new SMEs/start-ups, gender and youth aspects, competitiveness index, innovation index, etc.
- Comparison of national activities / performance with those of countries at a similar level of maturity
- Identification of strengths, weaknesses, opportunities and challenges for innovation in Zambia, with a linkage to climate innovation and technology, as well as gender and youth

Activity 2: Development of a framework and roadmap for the establishment of a National Innovation System

- Formulation of a NIS Working Group
- Identification of expectations and requirements towards an NIS in Zambia (2-day workshop)
- Development of a NIS framework, including the definition of objectives, targets and activities of the NIS, as well as the design of the NIS on a macro (innovation policy), meso (institutional innovation support) and micro (innovation capacity) level. The NIS framework should in

particular be focused on climate innovation and technology, whilst integrating aspects of gender and youth
- Development of a NIS roadmap including planned policies, activities, stakeholders involved, and performance/impact indicators

Activity 3: Introduction of STI platforms for continuous engagement and exchange specifically focusing on climate change
- Introduction and delivery of a bi-annual STI forum to create ongoing exchange and foster partnerships
- Development of a web-based platform on STI in Zambia for information dissemination and capacity building

Activity 4: Development of schemes for incentivising and promoting innovations through incubators and accelerators
- Formulation of schemes targeting 3 focus areas having climate impacts through participatory approach
- Identification of financing for these incubators and development of concept notes for access of funds
- Discussion and finalization in workshop

Anticipated products to be delivered:
1. STI Environment Report
2. NIS Framework and Roadmap
3. Organization of STI Forum
4. Development of web-based STI information platform
5. Schemes and for incentivising and promoting innovations through incubators and accelerators and concept notes to access funding.

Expected timeframe:

Please indicate the expected duration period for the requested technical assistance. Please note CTCN technical assistance is limited to a maximum duration of 12 months.

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.

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

Throughout the implementation of the CTCN technical assistance, gender and youth aspects will be integrated across all activities. Activity 1 will include a specific consideration of gender and youth within the analysis of the status quo of innovative capacities in Zambia, identifying opportunities, weaknesses and barriers for women and youth in participating in innovative activities. Activity 2 will specifically

consider gender and youth in the objectives, targets and activities of the NIS framework to ensure that the future national innovation system will foster gender and youth participation in innovation. Furthermore, a fair gender balance will be expected for stakeholder consultations under Activity 1 and within the NIS Working Group under Activity 2.

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	Project coordination
Ministry of Technology and Science	Project coordination, chair of the NIS Working Group, facilitation of data collection and stakeholder meetings
Ministry of Water Development, Sanitation and Environmental Management	Participation in NIS Working Group, provision of information on innovation related to climate
Other ministries • Agriculture • Livestock • Commerce, Trade and Industry • Finance and National Development Planning • Gender • Ministry of Green Economy and Environment • Lands and Natural Resources • Education	Participation in NIS Working Group, provision of sectoral information related to STI
Zambia Environmental Management Agency (ZEMA)	Participation in NIS Working Group, provision of information on innovation related to climate
Universities	Participation in NIS Working Group, provision of information related to STI
Industry Organizations	Participation in NIS Working Group, provision of information related to industry STI
Private sector (incl. SMEs and start-ups)	Participation in NIS Working Group, provision of information related to corporate STI
Innovation support institutions (incl. innovation hubs and centres)	Participation in NIS Working Group, provision of information related to STI support
Financial institutions (incl. banks, venture capital, business	Participation in NIS Working Group, provision of financial

angels, etc.)	information related to STI
Civil society	Participation in NIS Working Group

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.

Reference document (please include date of document)	**Extract** (please include chapter, page number, etc.).
Nationally Determined Contribution (NDC)	Direct alignment and contribution to NDC implementation is required for all CTCN technical assistances. Please include a direct reference to the INDC/NDC document (chapter, page number, etc.). This technical assistance request aims to foster innovation for low-carbon and climate resilient economic development, thus contributing to the overall progress towards NDCs across all prioritized sectors and technologies. Innovation is seen as a key driver for the Zambia to achieve the intended contribution (Updated NDC, p.13).
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.

This technical assistance request was initiated and developed by the Department of Science and Technology, Ministry of Technology and Science, in close coordination with key stakeholders mentioned above.

Background documents and other information relevant for the request:

- Please list all relevant documents that will help the CTCN analyse the context of the request and national priorities. Please note that all documents listed/provided should be mentioned in this request in the relevant section(s), and that their linkages with the request should be clearly indicated. For each document, please provide web-links (if available) or attach to the submission form. Please add any other relevant information as required.

- Please indicate if this request has been developed with the support of the CTCN Request Incubator.

INDC, 2016:
https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Zambia%20First/FINAL+ZAMBIA%27S+INDC_1.pdf

Updated NDC, 2021:
https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Zambia%20First/Final%20Zambia_Revised%20and%20Updated_NDC_2021_.pdf

OECD, National Innovation Systems, 1997: https://www.oecd.org/science/inno/2101733.pdf

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[3].

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 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: Mr. Francis Mpampi

Date:

Signature:

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

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:	Ben Makayi
Date:	24th December, 2021
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.