CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Technical Assistance Response Plan – Terms of Reference

Country	Zambia
Request ID#	**2022000001**
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@mots.gov.zm
Proponent	Ministry of Technology and Science, Department of Science and Technology Mrs. Jane M. Chinkusu jane.chinkusu@mots.gov.zm

Summary of the CTCN technical assistance

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. At the same time, Zambia has committed to a low-carbon pathway of reducing emissions by 25% to 47% (reduction of 20,000 - 38,000 Gg CO2 eq.) by 2030 with its Nationally Determined Contribution (NDC) updated in 2021.

Innovation is seen as a relevant tool with a double benefit, to respond to and to mitigate 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.

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. Challenges to the implementation of an effective National Innovation System in Zambia are mainly related to an asymmetry of information, lack of collaboration and missing regulations and incentives.

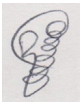
This technical assistance aims to introduce an effective National Innovation System that fosters low-carbon and climate resilient economic development in Zambia through endogenous innovation. The main outputs include the development of a framework and roadmap for the introduction of a national innovation system, the creation of platforms for continuous engagement as well as the introduction of schemes for innovation support. The outcome of this technical assistance is an enhanced endogenous capacity for innovation through effective innovation policies, institutional innovation support and an enhancement of the innovation capacities across relevant stakeholders.

Agreement:

(If possible, please use electronic signatures in Microsoft Word file format)

National Designated Entity to the UNFCCC Technology Mechanism
Name: Ben Njamba Makayi
Title: Senior Science and Technology Officer

Date: 18th May, 2022

Signature: 

Proponent (signature of the Proponent is optional)
Name: Mrs. Jane M. Chinkusu
Title: Director, Department of Science and Technology
Date:
Signature:

UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rose Mwebaza
Title: CTCN Director
Date:
Signature:

1. Background and context

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.

At the same time, Zambia has committed to a low-carbon pathway of reducing emissions by 25% to 47% (reduction of 20,000 - 38,000 Gg CO2 eq.) by 2030 with its Nationally Determined Contribution (NDC) updated in 2021. Key mitigation sectors include energy, Agriculture, Forestry and Other Land Use (AFOLU) and waste.

Innovation is seen as a relevant tool with a double benefit, to respond to and to mitigate 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. This includes:[2]

a) a variety of links requiring service offerers, producers and providers;
b) a propensity to cooperation and collaboration;
c) a large number of actors diffusing the information and knowledge needed to produce goods and services;
d) a propensity to encourage private initiatives by public demand;
e) strong local-global formal and/or informal networking.

Importantly, an effective NIS is not only measured by the creation of new products and services, but also by its capacity to use and adapt existing technologies to competitive levels of costs and quality in the national context.

Zambia has communicated clear ambitions of fostering innovation and aspires to

[1] https://www.oecd.org/science/inno/2101733.pdf
[2] https://www.cairn.info/revue-journal-of-innovation-economics-2017-2-page-137.htm

become a prosperous low carbon and climate resilient middle income country by 2030 as enshrined in its Vision 2030. Zambia in 2020 established the Science, Technology and Innovation (STI) Policy in a bid to enhance the effectiveness of the innovation system in the country. The National System of Innovation is a 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.

However, to date, most initiatives to increase its innovative capacities were uncoordinated and with limited success. The STI Policy Review[3] published by United Nations Conference on Trade and Development (UNCTAD) in 2022 at the request of the Ministry of Higher Education (MoHE) has shown that the key challenge for successful STI in Zambia is securing budgetary support and effective implementation under conditions of limited capacities. Furthermore, the study suggests that STI actors struggle in particular to translate science and technology into tangible innovation and its related deployment. This is particularly due to a strong lack of collaboration and alignment.[4] Therefore, STI policy perspectives will need to move from a linear science-push paradigm, to one that takes the perspective of the national system of innovation and seeks to stimulate demand for STI. Stronger linkages between academia and industry need to tap the national knowledge base and prepare Zambia's youth to respond to the needs of a more diversified and innovative economy. Key recommendations of the STI Policy review were to conduct comprehensive innovation policy and technology assessments, to move STI, and more particularly innovation to the centre of the government as a cross-ministerial priority, to incentivize stakeholder collaboration, and to introduce a Zambia Innovation Agency as a support institution for all forms of innovative projects emerging from start-ups or established firms, and from rural communities to universities.

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 the required framework and roadmap for the introduction of a national innovation system and to create schemes for innovation support and innovation capacity building.

2. Problem statement

Challenges to the implementation of an effective National Innovation System in Zambia

[3] https://unctad.org/system/files/official-document/dtlstict2022d2_en.pdf

[4] https://www.zicta.zm/storage/posts/attachments/WYXonZzjMUGCj2RKUmX8g9hdq4jgcqPIxcl1DqBv.pdf

are mainly related to an asymmetry of information, lack of collaboration and private sector engagement, as well as an ineffective institutional system. Key barriers are further detailed below:

- **Lack of institutional system:** The institutional system in which the 2020 STI Policy needs to function has barely changed over the last decades and is characterized by relatively modest and scattered resources and dispersion of policy efforts and responsibilities. The lack of coordination between different STI-related agencies results in only marginal impact given the modest resources at their disposal. Furthermore, particularly the innovation element of the science-technology-innovation triad lacks in policy coordination and political visibility.
- **Lack of collaboration**: Collaboration between universities, industry, R&D institutions and government is still weak resulting in a number of challenges. There is a mutual misunderstanding and misalignment between research and industry, with university and R&D research being too theoretic for industry relevance, and the industry having not enough support and too low interest to turn scientific knowledge into business opportunities. Much of this misalignment could be overcome with enhanced coordination and support mechanisms in place. Furthermore, work is being duplicated due to working in silos.
- **Lack of information**: To date, there is no centralized platform for consolidated information sharing between the innovation-related actors, leading to lack of clarity and knowledge on opportunities, service offerings, best practices, and events.
- **Lack of funding and support system**: Currently, there is an over-dependence on the central government for the funding and support facilities despite limited and siloed finances. A stronger collaboration with the private sector is needed. Furthermore, funding mechanisms need to better match the realities, interests, capacities and aspirations of firms and entrepreneurs. In particular the funding and support after the initial stages of company creation are missing. This is also due to a lack of engagement with international funding opportunities.
- **Lack of private sector engagement:** The private sector, including firms and entrepreneurs, but also private sector funding and support initiatives, need to be involved much more in the establishment of a functioning innovation system as they are the core generators of innovation, employment and economic value.

3. Logical Framework for the CTCN Technical Assistance:

(Guidance: Please note that multiple activities lead to one Output, and multiple Outputs lead to one Outcome. There can be several Outputs, but only one Outcome description capturing the CTCN technical assistance. Deliverables are the products or services to be delivered to the NDE/Proponent/CTCN based on the Activities and the Outputs.)

	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
***Objective**: To introduce an effective National Innovation System that fosters low-carbon and climate resilient economic development in Zambia through endogenous innovati*																		
Outcome: *The outcome of this technical assistance is an enhanced endogenous capacity for innovation through effective innovation policies, institutional innovation support and an enhancement of the innovation capacities across relevant stakeholders. Over time, this should lead to an improvement of key innovation performance indicators as defined under Activity 2.1.*																		
Output 1: Development of implementation planning and communication documents																		
Activity 1: *All implementers must undertake the following activities at the beginning and at the end of the CTCN technical assistance.* i) A detailed work plan of all activities, deliveries, outputs, deadlines and responsible persons/organisations 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).																		
Deliverable 1: i) Detailed work plan ii) Monitoring and evaluation plan iii) CTCN Impact Description v) Closure and Data Collection report	X X X																	X X

Output 2: Evaluation of the national innovation environment for climate action	
Activity 2.1: Analysis of the national innovation environment for climate action As a first step, this activity will map and analyze policies and regulations related to STI, and more precisely innovation, (innovation policies, intellectual property, taxations, subsidies, fiscal, etc.), as well as those with a direct link to climate change and sustainable development. Special attention would be paid to the regulatory environment governing the operation of SMEs and start-ups and supporting structures, such as incubators and accelerators. Beyond STI-related regulations, national climate action priorities, strategies, and policies, including NDCs, TNAs / TAPs, NAPs, etc. will be mapped. As a second step, innovation-related organizations and initiatives as well as their activities and interactions will be identified, classified, and mapped. Key stakeholders include, inter alia: (1) National government / ministries, (2) local government / municipalities, (3) private sector / firms / start-ups, (4) universities and research (R&D) institutions, (5) innovation support institutions (such as incubators and accelerators), (6) financing institutions / banks, and (7) industry associations. International organizations with relevancy for STI in Zambia should be included as well. As a third step, an innovation and technology assessment will be conducted, identifying high-impact innovation and technologies that are available immediately or in the near future and which may be of importance for Zambia. This assessment should be guided along main economic sectors (agriculture, mining, etc.) and high-potential sectors (tourism, energy, digitalization, etc.) Finally, qualitative, and quantitative innovation performance indicators will be identified and measured. These will generally be differentiated between input indicators and output indicators. Input indicators include funding (private and public sector R&D, venture capital, etc.) and human resources (professional education, higher education graduates, PhD, etc.). Output indicators include knowledge products (publications, patents, royalties, etc.), economic performance factors (per main economic sector, GDP growth, exports/imports of (high-technology) products), number of new SMEs/start-ups, innovation performance and performance with respect to "quality of life" indicators. Where available, these indicators should be set into perspective with countries at a similar stage of development.	

Activity 2.2: Assessment of strengths, weaknesses, opportunities and barriers An analysis of the strengths, weaknesses, opportunities, and barriers related to the national innovation system will be conducted. Strengths and weaknesses are considered factors internal to Zambia and its innovation system over which the country has some control. Whereas opportunities and barriers are external factors over which the Zambia has less control, but which can be harnessed or overcome. Strengths, weaknesses, opportunities and barriers should be classified including, inter alia, the following categories: • Policies, regulations, NDCs, TNAs etc. • Governance and leadership • Physical and digital infrastructure • Research and development (corporate and academic) • Entrepreneurship • Financing and investments • Innovation support environment • Human capital, education and skills • Gender and youth																		
Deliverable 2: Deliverable 2: Innovation environment analysis, including assessment of strengths, weaknesses, opportunities and barriers				X														
Output 3: Development of a framework and roadmap for the establishment of a National Innovation System																		
Activity 3.1: Formulation of the NIS Working Group and inception workshop A NIS Working Group (NIS-WG) will be formed to accompany the development of the NIS framework and roadmap (Output 3), the introduction of STI platforms (Output 4) and the development of schemes for incentivizing and promoting innovations (Output 4). The NIS-WG will be chaired by the Department of Science and Technology and will include strategic stakeholders identified under Activity 2.1. The NIS-WG will consist of a maximum of 20 individuals. A fair representation of gender and youth should be ensured. A 2-day inception workshop will be held with the NIS-WG to present the results of output 2 and to identify demand, expectations and requirements towards an NIS in Zambia. The inception workshop will be held in-																		

person, depending on the national regulations for in-person meetings at that moment. For in-person meetings, DSA and travel costs (estimation of 60 USD) will be paid for participants.																		
Activity 3.2: Quarterly NIS Working Group meetings Quarterly meetings of the NIS-WG will be held in the months 7,10, 13 and 15 to provide progress updates and validate the deliverables of outputs 3, 4 and 5. A maximum of two of the quarterly meetings will be held in person, depending on the national regulations for in-person meetings at that moment. The in-person meetings will likely be in month 10 to finalize the NIS Policy Framework and in month 15 to approve institutional innovation support schemes (output 4) and provide final input to institutional innovation capacity schemes (output 5). For in-person meetings, DSA and travel costs (estimation of 60 USD) will be paid for participants. For virtual meetings, no DSA will be paid.																		
Activity 3.3: Development of the NIS Policy Framework Under this activity, the NIS Policy Framework will be developed. The Framework will include a definition of high-level objectives and role on a short-, medium- and long-term, innovation and R&D priorities, success 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. Linkages to existing policies (STI Policy 2020) and development plans (NDP8) should be drawn and relations to agendas of main economic sectors and related fields such as education should be created. The NIS framework should, in particular, be focused on climate innovation and technology, whilst integrating aspects of gender and youth. A draft NIS Policy Framework will be presented at the quarterly NIS Working Group meeting in month 7, and a final draft will be submitted and validated at the quarterly meeting in month 10.																		
Activity 3.4: Development of the NIS Implementation Roadmap As support for an effective operationalization of the NIS Policy Framework, an Implementation Roadmap will be developed. This roadmap will include the planned policies, support mechanisms and capacity development programmes on a timeline, as well as define the involved stakeholders, budget and the performance/impact indicators.																		

Deliverables 3: Deliverable 3.1: NIS-WG member list, inception workshop material and attendance list with participants disaggregated by institution and gender Deliverable 3.2: Quarterly Meeting Minutes, including meeting materials and attendance list with participants disaggregated by institution and gender Deliverable 3.3: NIS Policy Framework Deliverable 3.4: NIS Implementation Roadmap				X			X			X X			X X			X		
Output 4: Introduction of institutional innovation support schemes																		
Activity 4.1: Concept development of an innovation support agency In line with the NIS Policy Framework and prioritized actions for institutional innovation support, an agency for innovation support will be developed in detail under this activity. The objective of this agency will be to support innovative projects emerging from start-ups to established firms, and reaching from rural communities to universities throughout Zambia. Support will be provided in terms of funding, knowledge, networking, and exposure to national and international markets. Areas of support will be based on the awareness of current gaps of support for innovation in Zambia. A specific attention will be given to gender mainstreaming and youth engagement throughout the provided innovation support. A business model for this institution will be identified, with options including institutional and private capital, revenue streams and cooperative models. The scheme will detail the objectives and activities, types of support, institutional governance and business model of the agency.																		
Activity 4.2: Identification of funding and cooperation opportunities The previously identified business model will be further supported under this activity by identifying concrete funding and cooperation opportunities. Depending on the chosen business and financing model, the result of this activity will be a developed funding proposal for a specific source, a Public-Private-Partnership (PPP) proposal, a draft cooperation or co-financing agreement, etc.																		
Deliverables 4: Deliverable 4.1: Innovation support agency concept													X					

Deliverable 4.2: Funding or cooperation proposal																X		
Output 5: Introduction of schemes to enhance innovation capacity																		
Activity 5.1: Development of an innovation communication and capacity building strategy and plan In support of the NIS Policy Framework and Implementation Plan, a communication and capacity building strategy will be developed. This multi-stakeholder communication and capacity building strategy will target the dissemination of information and knowledge on the value and benefits of innovation for climate action, communicate best practices, and inform on the objectives of the framework. The communication strategy will include objectives, activities, target audiences, performance measures and a timeline. Knowledge material should be developed such as flyers, brochures, posters to promote innovation activities and collaboration across all stakeholder categories mentioned under Activity 2.1. Within this communication and capacity building strategy, a concept will be included for the introduction of a bi-annual innovation forum that has the objective to ensure ongoing exchange between innovation-related stakeholders in Zambia and foster collaboration and partnerships. The concept will lay out specific short-, medium- and long-term objectives and activities of the forum, as well as host institutions and costs.																	
Activity 5.2: Development of a web-based platform on innovation This activity will target the design and development of a web-based collaborative and connecting platform on innovation in Zambia. The objective of this web-based platform will be to continuously disseminate information and provide capacity building on innovation in Zambia, and bring together all the actors of the innovation ecosystem to foster information and resource flows among them. In line with the communication strategy, this may include information on opportunities for innovation funding and support, case studies and events. Initial content should be developed together with stakeholders of the NIS-WG. Inspiration should be drawn from existing platforms that foster innovation at a national and international level, such as the global innovation platform 4 Years from Now (4YFN) or the recently established platform Digital Africa for African entrepreneurs. The web-based platform will be hosted and managed by the Department of Science and Technology, Ministry of Higher Education.																	
Deliverables 5:																		

Deliverable 5.1: Communication and capacity building strategy and plan																x		
Deliverable 5.2: Concept and design of web-based platform; web-based platform accessible online																		X

4. **Resources required and itemized budget:**

Please provide an *<u>indicative overview</u>* *of the resources required and itemized budget required to implement the CTCN technical assistance, including for M&E-related activities, using the table below. Important to note that minimum 1% of the budget should explicitly target gender specific activities related to the technical assistance (please see section 10 for further information on gender). Once the Response Plan is completed, a Response Implementation partner(s) will be selected by the Climate Technology Centre (CTC). A detailed activity-based budget for the CTCN assistance will be finalized by the CTCN and selected Implementer.*

Activities and Outputs	**Input: Human Resources** *(Title, role, estimated number of days)*	**Input: Travel** *(Purpose, national vs. international, number of days)*	**Inputs: Meetings/events** *(Meeting title, number of participants, number of days)*	**Input: Equipment/Material** *(Item, purpose, buy/rent, quantity)*	**Estimated cost** *Please accumulate the costing at Activity and Output level and provide an estimated costing range for each activity and the total Response Plan*	
					Minimum	**Maximum**
Output 1: Development of implementation planning and communication documents	***IE1: 5 days*** ***NE1: 5 days***				***3,500 USD***	***3,850 USD***
Activity 1.1: Formulation of i) Detailed work plan, ii) Monitoring and evaluation plan, iii) CTCN Impact	*IE1: 5 days* *NE1: 5 days*				*3,500 USD*	*3,850 USD*

Description, iv) Closure and Data Collection report.						
Output 2: Evaluation of the national innovation environment for climate action	***IE1: 25 days*** ***IE2: 25 days*** ***NE1: 35 days*** ***NE3: 6 days***				***34,800 USD***	***38,280 USD***
Activity 2.1: Analysis of the national innovation environment for climate action	*IE1: 20 days* *IE2: 20 days* *NE1: 25 days* *NE3: 5 days*	*Local travel of 5 days for NE1 and NE3*			*27,600 USD*	*30,360 USD*
Activity 2.2: Assessment of strengths, weaknesses, opportunities and barriers	*IE1: 5 days* *IE2: 5 days* *NE1: 10 days* *NE3: 1 days*				*7,200 USD*	*7,920 USD*
Output 3: Development of a framework and roadmap for the establishment of a National Innovation System	***IE1: 50 days*** ***IE2: 45 days*** ***IE3: 17 days*** ***IE4: 6 days*** ***NE1:53 days*** ***NE2: 13 days*** ***NE3: 13 days***				***110,390 USD***	***121,429 USD***
Activity 3.1: Formulation of the NIS Working Group and inception workshop	*IE1: 10 days* *IE2: 5 days* *IE3: 4 days* *NE1: 10 days* *NE2: 2 days* *NE3: 2 days*	*Local travel for NE1, NE2, NE3 and 20 NIS Working Group members* *International travel for IE1, IE2 and IE3*	*In-person 2-day NIS Working Group Inception workshop*		*27,310 USD*	*30,041 USD*

Activity 3.2: Quarterly NIS Working Group meetings	*IE1: 10 days* *IE2: 10 days* *IE3: 6 days* *IE4: 6 days* *NE1: 8 days* *NE2: 4 days* *NE3: 4 days*	*Local travel for NE1, NE2, NE3 and 20 NIS Working Group members* *International travel for IE1, IE2, IE3 and IE4*	*2 In-person NIS Working Group meetings* *2 virtual NIS Working Group meetings*		*43,780 USD*	*48,158 USD*
Activity 3.3: Development of the NIS Policy Framework	*IE1: 20 days* *IE2: 25 days* *IE3: 5 days* *NE1:25 days* *NE2: 5 days* *NE3: 5 days*				*32,000 USD*	*35,200 USD*
Activity 3.4: Development of the NIS Implementation Roadmap	*IE1: 10 days* *IE2: 5 days* *IE3: 2 days* *NE1:10 days* *NE2: 2 days* *NE3: 2 days*				*11,300 USD*	*12,430 USD*
Output 4: Introduction of institutional innovation support schemes	***IE1: 20 days*** ***IE2: 5 days*** ***IE3: 2 days*** ***NE1:20 days*** ***NE2: 2 days*** ***NE3: 2 days***				***18,300 USD***	***20,130 USD***
Activity 4.1: Concept development of an innovation support agency	*IE1: 15 days* *IE2: 5 days* *IE3: 2 days* *NE1:15 days* *NE2: 2 days*				*14,800 USD*	*16,280 USD*

	NE3: 2 days					
Activity 4.2: Identification of funding and cooperation opportunities	*IE1: 5 days* *NE1: 5 days*				*3,500 USD*	*3,850 USD*
Output 5: Introduction of schemes to enhance innovation capacity	***IE1: 10 days*** ***IE2: 15 days*** ***IE3: 10 days*** ***IE4: 35 days*** ***NE1:10 days*** ***NE2: 20 days*** ***NE3: 3 days***				***40,100 USD***	***44,110 USD***
Activity 5.1: Development of an innovation communication and capacity building strategy and plan	*IE1: 5 days* *IE2: 5 days* *IE3: 10 days* *NE1:5 days* *NE2: 10 days* *NE3: 2 days*				*13,400 USD*	*14,740 USD*
Activity 5.2: Development of a web-based platform on innovation	*IE1: 5 days* *IE3: 10 days* *IE4: 35 days* *NE1:5 days* *NE2: 10 days* *NE3: 1 days*				*28,200 USD*	*31,020 USD*
Estimated range of costing for the entire Response Plan					***212,590 USD***	***233,849 USD***

5. Profile and experience of experts

Based on the required Human Resources identified in section 4 (Resources required and itemized budget) please provide a description of the required profile of all involved experts for the implementation of the CTCN Response Plan.

Experts required	Brief description of required profile
International consultants	
Climate innovation expert (IE1)	• Master's degree or higher in public policy, environmental policy, environmental engineering, economics, or a related field • At least 10 years of experience in a lead role in implementing national and international development projects related to climate change adaptation and mitigation projects, as well as climate innovation and policy • Experience with coordinating and liaising with multiple national and international stakeholders • Experience with developing policy frameworks linked to climate innovation • Experience with setting up innovation support schemes (i.e. incubators, accelerators) • Prior experience in Southern Africa highly desirable
Innovation policy expert (IE2)	• Master's degree or higher in public policy, environmental policy, economics, or a related field • At least 10 years of experience in developing innovation policy frameworks and roadmaps, and more specifically for national innovation systems • Experience with analyzing National Innovation Systems and STI-related performance indicators • Prior experience in Southern Africa highly desirable
Communication and capacity building expert (IE3)	• Master's degree or higher in public policy, communication, or a related field • At least 10 years of experience in developing communication strategies and plans related to innovation and climate change mitigation and adaptation • Experience with capacity building activities, ideally in the area of innovation and/or climate change mitigation and adaptation • Prior experience in Southern Africa highly desirable

Web designer and developer (IE4)	• Master's degree or higher in computer science, data science, web design or a related field • At least 10 years of experience in designing and developing native web-based platforms and using website builders • Experience with setting up an easy-to-maintain website infrastructure • Prior experience with working for public sector clients and related priorities (security, maintenance, etc.) highly desirable
National consultants	
Innovation policy expert (NE1)	• Bachelor's degree or higher in public policy, environmental policy, economics, or a related field • At least 7 years of experience in developing policies related innovation and climate change mitigation and adaptation • Experience with analyzing STI-related performance indicators • Strong familiarity with the National Innovation System, including policies, strategies, stakeholders, and activities in Zambia • Based in Zambia
Communication and capacity building expert (NE2)	• Bachelor's degree or higher in public policy, communication, social science, or a related field • At least 7 years of experience in developing communication strategies and plans related to innovation and climate change mitigation and adaptation, targeting multiple stakeholders • Experience with capacity building activities, ideally in the area of innovation and/or climate change mitigation and adaptation • Strong familiarity with the innovation and climate change mitigation and adaptation context in Zambia • Based in Zambia
Gender expert (NE3)	• Bachelor's degree or higher in public policy, gender studies, social science, or a related field • At least 7 years of experience in integrating gender considerations in policy development, ideally in the area of innovation and/or climate change mitigation and adaptation • Experience with mainstreaming gender aspects throughout project implementation, including in market assessments, decision making processes, policy development, and capacity building

	• Strong familiarity with gender aspects in Zambia • Based in Zambia

6. Intended contribution to impact over time

Following the implementation of this technical assistance, the NIS Policy Framework, Roadmap and Communication Strategy will be executed and the web-based platform and innovation support agency will be operationalized. The contribution over time will be an enhanced capacity for endogenous innovation for climate change mitigation and adaptation which will eventually contribute to the low-carbon and climate resilient economic development of Zambia. This contribution will be continuously monitored through the performance indicators (including GHG emissions, GDP contribution, people impacted, etc.) defined within the NIS Policy Framework.

7. Relevance to NDCs and other national priorities

Updated Nationally Determined Contribution (NDC), 2021
This technical assistance 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).

Vision 2030, 2006
The Vision 2030 has put a strong emphasis on science, technology and innovations that will be driving forces in national development and global competitiveness. The aim communicated in the vision is that Zambia "should have an economy which is competitive, self-sustaining, dynamic and resilient to any external shocks, supports stability and protection of biological and physical systems and is free from donor dependence". Some of the key objectives in terms of STI are:

- Acquire and upgrade infrastructure required for training in science and technology and R&D academic institutions by 2030;
- Build and sustain human resource capacities and capabilities by 2030;
- Promote development of enterprise using outputs from science and technology and R & D activities by 2030;
- Strengthen linkages between productive sectors and research institutions in the economy by 2030; and
- Establish and strengthen practical application of science and technology in all areas.

STI Policy, 2020
The objectives of the 2020 National STI Policy are the following:

- To strengthen the policy, legal, institutional and operational framework of the STI system
- To strengthen and build the human resource capacity in STI
- To strengthen the commercialization, transfer and diffusion of technologies
- To exploit the Indigenous Knowledge System for national development
- To improve investment and funding in STI
- To ensure quality assurance in STI
- To promote and popularize of STI

8. Linkages to relevant parallel on-going activities:

The CTCN technical assistance will build on the Science, Technology and Innovation (STI) Policy Review that was prepared by UNCTAD at the request of the MoHE of Zambia. The UNCTAD STI Policy Review outlines the NIS in Zambia, including current public support institutions and programmes. It makes recommendations on how to frame the implementation of the 2020 STI

Policy to better respond to specific national challenges.

Furthermore, the technical assistance will build on the Tech Entrepreneurship Ecosystem in Zambia analysis conducted by International Trade Centre (ITC) which has analysed the entrepreneurial ecosystem in Zambia and provided recommendations for enhanced innovation efforts.

The technical assistance will also build on the ICT Policy that was introduced in 2020 after the Science and Technology Act of 1997.

Lastly, a diversity of stakeholders involved in science, technology and innovation is present in Zambia and alignment with their initiatives, projects and programmes will be ensured through a comprehensive innovation environment analysis under output 2.

9. Anticipated follow up activities after this technical assistance is completed:

The technical assistance will set a basis in terms of innovation policy, institutional innovation support and innovation capacity enhancement. In order to operationalize the elements of this technical assistance and continuously foster innovation for sustainable and low-carbon development in Zambia, national stakeholders will deliver the following activities after completion of the CTCN technical assistance:

- Adoption of the NIS Policy Framework by following the NIS Implementation Roadmap
- Continuous performance measurement of key innovation success indicators as defined per NIS Policy Framework and Implementation Roadmap
- Operationalization of the Innovation Support Agency to support endogenous innovation through financing and expertise; and ongoing identification of cooperation and (co-)financing opportunities
- Maintenance and continuous development and updating of the web-based platform on innovation
- Introduction of a bi-annual innovation forum to incentivize communication and collaboration between stakeholders
- Delivery of the multi-stakeholder communication strategy in order to create awareness about opportunities, support and event, and reduce asymmetric information

10. Gender and co-benefits:

Imbedded in design of the activities:	The technical assistance will integrate gender mainstreaming transversally in the project implementation. This will include the following actions: • Conduct innovation environment analysis with a particular focus barriers and opportunities related to gender • Support gender sensitive policy planning across all activities, ensuring that it adequately incorporates gender considerations • Ensure equal gender representation in key decisions • Advocate for equity in all policy development and implementation • Support interventions aimed at increased participation of vulnerable groups in the delivery of capacity building activities • Develop and implement methods to monitor the increase of

	opportunities for innovation and employment for women A national gender expert will be included in the delivery team to ensure a gender sensitive implementation of activities.
Gender and co-benefits intended as result of the activities:	Based on the above interventions to prioritize gender and co-benefits, the following results are expected from the technical assistance: • Gender sensitive NIS Policy Framework that increases opportunities for women involvement and employment • Enhanced skills and inclusion of women in the area of innovation through capacity building and networking

11. Main in-country stakeholders in implementation of the technical assistance activities:

Using the table below, please list and describe the role of in-country stakeholders, participants and beneficiaries who will be involved in or directly consulted during implementation of the assistance.

In country stakeholder	Role in implementation of the technical assistance
Ministry of Technology and Science (MTS), including National Designated Entity	Technical assistance coordination, chair of the NIS Working Group, facilitation of data collection and stakeholder meetings, policy shaping and development, hosting of web-based platform, hosting of Innovation Support Agency
Ministry of Water, Development, Sanitation and Environmental Management	Participation in NIS Working Group, provision of information on innovation related to climate, policy shaping and development
Zambia Environmental Management Agency (ZEMA)	Participation in NIS Working Group, provision of information on innovation related to climate, policy shaping and development
Further ministries • *Ministry of Education (MoE)* • *Ministry of Commerce, Trade and Industry (MCTI)* • *Ministry of Mines and Minerals Development (MMMD)* • *Ministry of Agriculture (MOA)* • *Ministry of Fisheries and Livestock* • *Ministry of Health (MOH)* • *Ministry of Youth, Sport and Child Development (MYSCD)* • *Ministry of Green Economy and Environment (MOGEE)* • *Ministry of Finance and National Planning (MOFNP)* • *Ministry of Gender*	Partial participation in NIS Working Group, provision of sectoral information on STI and innovation related to climate, policy shaping and development
Further governmental bodies related to	Partial participation in NIS Working Group,

STI: • *National Technology Business Centre (NTBC)* • *National Science and Technology Council* • *Zambia Development Agency (ZDA)* • *Zambia Chamber of Commerce and Industry (ZACCI)* • *Zambia Information and Communications Technology Authority (ZICTA)*	provision of sectoral information on STI and innovation related to climate, policy shaping and development
Research institutes • *National Institute for Scientific and Industrial Research (NISIR)* • *Zambian Agricultural Research Institute ((ZARI)* • *Zambia Academy of Sciences (ZaAs)*	Partial participation in NIS Working Group, provision of information related to STI, policy shaping and development
Universities • *University of Zambia* • *The Copperbelt University* • *University of Lusaka* • *Information and Communication University* • *Etc.*	Partial participation in NIS Working Group, provision of information related to STI
Financing institutions and mechanisms • *Technology Business Development Fund (TBDF)* • *Kukula Seeds* • *Amano Capital* • *Citizens Economic Empowerment Commission (CEEC)* • *African Business Angel Network (ABAN)* • *Etc.*	Partial participation in NIS Working Group, provision of financial information related to STI, engagement as potential financing partners for follow-up activities and Innovation Support Agency
Innovation support institutions • *FinTech4U Accelerator Programme* • *BongoHive* • *Agribusiness Incubation Trust* • *WeCreate* • *Impact Hub* • *Zanaco Innovation Lab* • *Private Enterprise Programme*	Partial participation in NIS Working Group, provision of information related to STI support

(PEP) • *She Entrepreneur* • *Asikana Network* • *Jacaranda Hub* • *Etc.*	
Entrepreneurs, startups and SMEs	Partial participation in NIS Working Group, provision of information related to corporate STI activities
Industry organizations	Partial participation in NIS Working Group, provision of information related to industrial STI activities

12. SDG Contributions:

*Instructions: Please complete the grey section below for **a maximum of three SDGs** that will be advanced through this TA. A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/.*

Goal	Sustainable Development Goal	Direct contribution from CTCN TA (1 sentence for top 1-3 SDGs)
1	End poverty in all its forms everywhere	
2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	This technical assistance aims to build an effective National Innovation System that promotes inclusive and equitable education.
5	Achieve gender equality and empower all women and girls	
6	Ensure availability and sustainable management of water and sanitation for all	
7	Ensure access to affordable, reliable, sustainable, and modern energy for all (consider adding targets for 7)	
	7.1 - By 2030, ensure universal access to affordable, reliable and modern energy services	
	7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix	
	7.3 - By 2030, double the global rate of improvement in energy efficiency	
	7.a - By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology	
	7.b - By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	This technical assistance aims to promote a National Innovation System that fosters endogenous innovation for a low-carbon and climate resilient economic development in Zambia. This enables sustainable economic growth and productive employment.
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
10	Reduce inequality within and among countries	
11	Make cities and human settlements inclusive, safe, resilient and sustainable	
12	Ensure sustainable consumption and production patterns	
13	Take urgent action to combat climate change and its impacts	*All TAs should indicate relevance to Goal 13 and at least one target below (13.1 to 13.b).*
	13.1 - Strengthen resilience and adaptive capacity to climate-	

	related hazards and natural disasters in all countries	
	13.2 - Integrate climate change measures into national policies, strategies and planning	This technical assistance aims not only to enhance the National Innovation System of Zambia but also to mainstream climate innovation within this NIS Policy Framework.
	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	
	13.a - Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible	
	13.b - Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	

13. Classification of technical assistance:

Please indicate primary type of technical assistance. Optional: If desired, indicate secondary type of technical assistance.

Please tick off the relevant boxes below	*Primary*	*Secondary*
☐ 1. Decision-making tools and/or information provision	☐	x
☐ 2. Sectoral roadmaps and strategies	☐	☐
☐ 3. Recommendations for law, policy and regulations	x	☐
☐ 4. Financing facilitation	☐	☐
☐ 5. Private sector engagement and market creation	☐	x
☐ 6. Research and development of technologies	☐	☐
☐ 7. Feasibility of technology options	☐	☐
☐ 8. Piloting and deployment of technologies in local conditions	☐	☐
☐ 9. Technology identification and prioritisation	☐	☐

Please note that all CTCN technical assistance contributes to strengthening the capacity of in country actors.

14. Monitoring and Evaluation process

Upon contracting of the implementing partners to implement this Response Plan, the lead implementer will produce a monitoring and evaluation plan for the technical assistance. The monitoring and evaluation plan must include specific, measurable, achievable, relevant, and time-bound indicators that will be used to monitor and evaluate the timeliness and appropriateness of the implementation. The CTCN Technology Manager responsible for the technical assistance will monitor the timeliness and appropriateness of the Response Plan implementation. Upon completion of all activities and outputs, evaluation forms will be completed by the (i) NDE about overall satisfaction level with the technical assistance service provided; (ii) the Lead Implementer about the knowledge

and learning gained through delivery of technical assistance; and (iii) the CTCN Director about timeliness and appropriateness of the delivery of the activities and outputs.

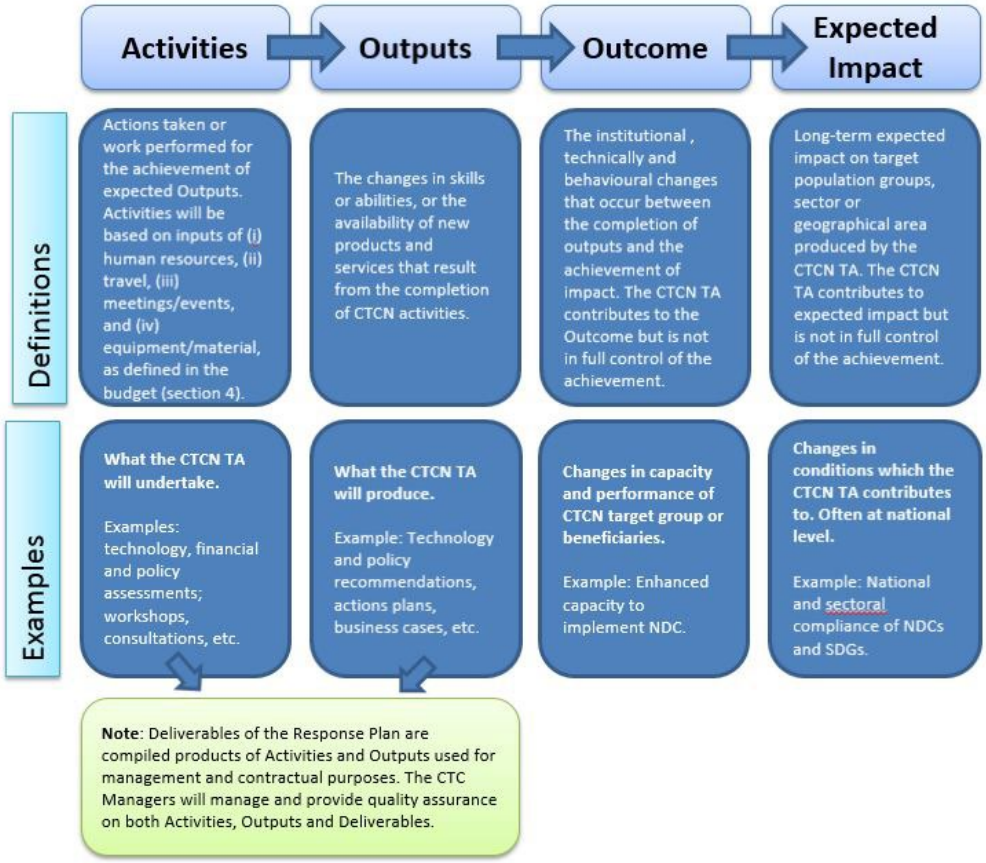
Annex 1: Guidance note for designing a Response Plan (to be deleted when submitting the Response Plan)

1. Objective of the Response Plan

The Response Plan is developed by CTCN specialists in response to a country request for technical assistance. It constitutes the Terms of Reference of the CTCN technical assistance that will be provided to the country and it provides the formulation of and subsequent basis for the monitoring and evaluation of the Response Plan implementation, as well as its expected outcomes and anticipated impacts.

2. Results chain and Logical Framework Approach to be defined in the CTCN Response Plan

The result chain is the causal sequence that stipulates the necessary flow of actions and processes to achieve desired objectives and results – beginning with inputs, moving through activities and outputs, and culminating in individual outcomes. The outcome will contribute to the desired impact in the society. The Logical Framework Approach is an analytical process used to support objectives-oriented project planning and management. It provides a set of pre-defined concepts which are used as part of an iterative process to aid structured and systematic analysis and management of the CTCN technical assistance.



3. Role of the Response Planning Design Team

The Response Planning Design Team is selected by the Climate Technology Centre (CTC). The composition of the team depends on each particular request but may include the National Designated Entity (NDE), the request Proponent, Climate Technology Manager of the CTCN, experts from the CTCN Consortium, UNIDO and UNEP experts from regional offices and other experts as needed.

The role of CTCN Consortium experts is to lead the design of the Response Plan. The NDE will provide overall guidance on national context and priorities whereas the request Proponent will provide more detailed information on the sector, barriers and requested assistance. The Climate Technology Manager of the CTCN will provide quality assurance of timeliness and appropriateness of the Response Plan.

The Response Planning Design Team will draft all sections of the Response Plan template building on the information contained in the CTCN Request, based on expertise on the given topic and potentially further data collection, as required. This will be done by the CTCN Consortium Experts in consultation with the NDE, request Proponent and relevant stakeholders. The Response Plan has to be agreed to and approved by the NDE and the CTCN Director. This Response Plan will serve as the basis to identify, select and engage an expert institution from the Climate Technology Network or Consortium to lead the implementation of the CTCN Response Plan in the requesting country.

To the extent possible, staff from UNEP and UNIDO Regional, Sub-Regional and/or National Offices should be involve in all stages of formulation of the Response Plan to maximize synergies and avoid overlap with ongoing initiatives, as well as ensure relevance to regional and national context.

4. Process for designing the Response Plan

The Response Planning process should be completed over a period of up to 60 working days (12 weeks). Indicative steps and related timelines are laid out below:

5. Design Considerations

CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Annex 1. Guidance Note for the Response Plan template

In order to maximize the impact of the technical assistance provided by the CTCN and provide an effective M&E process, the Response Plan should integrate as much as possible the considerations below:

Climate Technology focus: The Response Plan should have a clear focus on climate technologies, and identify activities that enable the identification, development, deployment or diffusion of one or several specific technologies (including equipment, techniques, knowledge and skills).

Barrier removal / Problem solving: The activities should contribute to address the specific problem statement identified in the Request. The barriers identified should be those hampering the identification, development, deployment or diffusion of one or several climate technologies or climate actions. Therefore, it may be necessary to limit the CTCN Response Plan to a set of activities for technical assistance commonly agreed with the NDE (and Proponent when needed) compared to the original request submitted. The CTCN will liaise with NDEs and Proponent in case the scope of the technical assistance deviates from the original request.

Use of the CTCN assistance by stakeholders: The Response Plan should identify clearly how the products of the CTCN assistance will be used in the short term once support is delivered, by who and when, to ensure it will lead to specific impacts in the country. The activities should engage the stakeholders that will use the concrete results of the assistance to deploy the technologies, including from the private sector, the public sector, research institutions, etc.

Within the scope of CTCN resources: The cost of the technical assistance provided by the CTCN cannot exceed USD 250,000 per Response Plan. Therefore, it may be necessary to prioritize activities and limit the CTCN Response Plan to a set of priority activities commonly agreed with the Proponent and the NDE to remain under this value. Under section 4 of the Response Plan template, an indicative activity based budget should be presented. The proposed budget is indicative and should present an estimated costing range per activity, output as well as a total costing range for the delivery of the Response Plan. Once the Response Plan is finalised and published for tendering, interested parties will provide competitive offer against the indicative budget.

CTCN activities and outputs should be linkable to monitoring and evaluation indicators: All proposed activities and outputs must be linkable to monitoring and evaluation indicators that are specific, measurable, achievable, relevant, and time-bound. The monitoring and evaluation process and corresponding indicators will be developed by the Lead Implementer as part of the work plan and will allow the CTCN technology Manager to monitor the timeliness and appropriateness of the implementation.

Synergies with existing efforts: The Response Plan should focus on activities that are not already being fully supported or that are in the process of being fully supported by another national, regional or international organization. Synergies and complementarity also require that the CTCN assistance is not duplicating past activities. It is possible in the Response Plan to indicate co-financing from the government, the Proponent or another stakeholder, that will maximize the effectiveness of the CTCN assistance.

Gender mainstreaming: The CTCN mission is to build or strengthen developing countries' capacities to identify technology needs, to facilitate the preparation and implementation of technology projects and strategies taking into account gender considerations. The Response Plan must therefore describe how gender considerations will be included and monitored within the proposed activities, and any gender co-benefits that will be gained as a result of implementing the CTCN technical assistance.