CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Technical Assistance Response Plan – Terms of Reference

Country	**Kingdom of Cambodia**
Request ID#	**2020000019**
Title	Application of the gravity-driven membrane (GDM) technology for supplying sustainable drinking water to rural communities in Cambodia
NDE	Dr. Hak Mao Director of the Department of Climate Change The General Secretariat of the National Council for Sustainable Development, Ministry of Environment Email: maohakccd.se@gmail.com Address: Morodok Techo Building (Lot 503) Tonle Bassac, Chamkarmorn, Phnom Penh, Cambodia
Proponent	Dr. Hak Mao Director of the Department of Climate Change The General Secretariat of the National Council for Sustainable Development, Ministry of Environment Email: maohakccd.se@gmail.com Address: Morodok Techo Building (Lot 503) Tonle Bassac, Chamkarmorn, Phnom Penh, Cambodia

Summary of the CTCN technical assistance

The summary should provide a brief description of the problem (barrier to climate technology deployment) and how the technical assistance will address it (brief summary of outputs and activities). Please also briefly indicate national actors involved and the anticipated timeline. Please note this summary will be used for public communication purposes so it is important that it is well written. (maximum 1250 characters including spaces)

Safe drinking water access is inadequate in rural Cambodia. Only 58% of rural residents have access to improved drinking water[1]. Contamination and mishandling of drinking water source are not regularly monitored and are beyond the capacity of communities and health department. Therefore, strengthening sustainable, safe, cost-effective and decentralised drinking water supply in rural Cambodia is crucial. The technical assistance (TA) will provide sustainable and safe drinking water to climate change vulnerable communities in rural Cambodia by using gravity-driven membrane (GDM)-based water treatment system. The outputs from this TA will include 1) selection of the appropriate GDM system installation areas through stakeholder consultations and water quality assessment, 2) installation, monitoring and assessment of the GDM system at selected areas and 3) capacity building of rural communities at selected areas for sustainable management of the GDM system. Through this TA, the capacity of rural Cambodians at selected areas to reduce safe drinking water scarcity and associated human health effect caused by climate change is expected to be enhanced.

[1] National Institute of Statistics, Ministry of Planning (2018) Cambodia Socio-Economic Survey 2017

CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

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Agreement:

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

National Designated Entity to the UNFCCC Technology Mechanism
Name: Dr. Hak Mao
Title: Director, Department of Climate Change, The General Secretariat of the National Council for Sustainable Development, Ministry of Environment
Date: 13/11/2020
Signature:

Proponent (signature of the Proponent is optional)
Name: Dr. Hak Mao
Title: Director, Department of Climate Change, The General Secretariat of the National Council for Sustainable Development, Ministry of Environment
Date: 13/11/2020
Signature:

National Designated Entity to the UNFCCC Technology Mechanism (providing pro bono support)
Name: Ms. Jinhee Park
Title: Director, Ministry of Science and ICT (MSIT) of the Republic of Korea
Date: 18/11/2020
Signature

UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rose Mwebaza
Title: CTCN Director
Date: 02/11/2020
Signature:

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CLIMATE TECHNOLOGY CENTRE & NETWORK

Technical Assistance Response Plan – Terms of Reference

1. Background and context

Please provide a brief description of the background and context for the CTCN Response Plan. Please include national and sectoral information using recognized and publicly available sources. (maximum 2500 characters including spaces).

Cambodia is one of the fastest-growing economies in the world; however, the country, in particular the rural area, confronts issues related to water supply, irrigation and climate change. Water resources in Cambodia are threatened by climate stressors such as extended periods of droughts, changes in rainfall patterns and storms. Due to rising temperature and climate variations, their impacts are projected to increase, reducing surface water availability in rural Cambodia. The reduced availability of surface water has led to further groundwater extraction which makes approximately 2 million people potentially exposed to the high level of arsenic present in the groundwater[2].

In terms of access to water supply and sanitation, disparities remain especially between urban and rural populations. Cambodia is a predominantly rural country with 79.8% of the population residing in rural areas[3]. However, it was reported that only 50% and 54% of rural people have access to safe water and sanitation, respectively in 2015, which is much lower than urban residents (88% and 89%, respectively)[4]. The Royal Government of Cambodia (RGC) has shown a commitment, improving the institutional framework and laws with the aim of promoting effective and sustainable water supply and sanitation as well as wastewater management. The National Strategic Development Plan (NSDP) 2019-23 has a target in which 90% of the rural and urban populations will access improved drinking water and piped water supply by 2023, respectively.

The NSDP for Rural Water Supply, Sanitation and Hygiene (RWSSH) has been operationalised into a National Action Plan (NAP) 2014-2018, and the second NAP for RWSSH 2019-2023 (NAP II) seeks to enable the rural population to have increased access to and use of equitable, sustainable and safe drinking water, sanitation and hygiene facilities[5]. However, limitations to communities in rural Cambodia are related to both inadequate capital and operational resources. In addition, robust and adequate systems, resources and human capacities are lacking as for the required technical and managerial support to sustain rural water scheme operation[6]. Due to these reasons, the General Secretariat of the National Council for Sustainable Development, the Ministry of Environment has requested a technical assistance (TA) to deploy an appropriate adaptation measure for safe drinking water supply, enhancing the capacity of rural households and communities for climate resilience in Cambodia.

2. Problem statement

Founded on the national and sectoral context as detailed in the section above, please include a brief problem statement clarifying the main problems and barriers for climate change mitigation and/or adaptation in terms of climate technologies that the CTCN Response Plan will address and overcome. (maximum 1250 characters including spaces).

[2] USAID (2017) Climate Risk in Cambodia: Country Risk Profile
[3] Pink, R. M. (2016) Water Rights in Southeast Asia and India
[4] Royal Government of Cambodia (2019) National Strategic Development Plan 2019-2023
[5] Ministry of Rural Development (2019) NAP RWSSH 2019-2023
[6] World Bank (2015) Water Supply and Sanitation in Cambodia Turning Finance into Services for the Future

Cambodia has abundant fresh water in the wet season. However, the overabundance of the freshwater, mainly due to the effect of climate change, causes floods, leading to an adverse impact on the livelihoods of rural Cambodians. With this, the country is affected by severe droughts and water scarcity in the dry season. Their frequency increases and their impacts are getting serious because of climate change. Although the RGC has embarked on many measures to address those challenges, climate change affects agricultural production and groundwater recharge as well as surface water quality and availability in rural Cambodia.

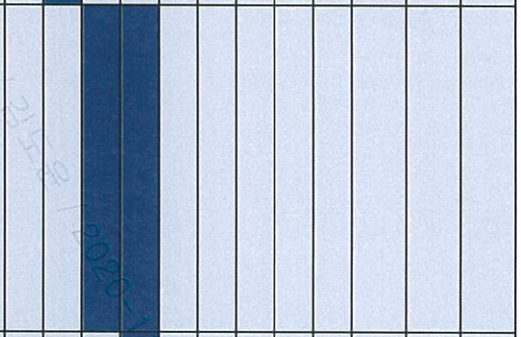
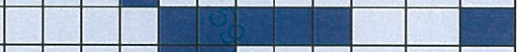
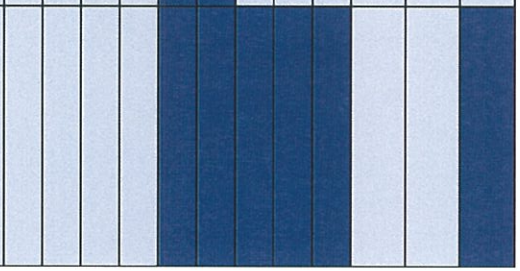
In the prolonged drought situation caused by climate change, some rural Cambodians need to travel to access water sources for households and irrigation which could have very poor quality. In order to address the risk of water shortage, rainwater harvesting from rooftops was prioritised and used as an adaptation measure[7]; however, harvested water needs to be treated before providing it to rural residents. A sustainable measure for safe drinking water supply is required to strengthen climate resilience in water and human health sectors and the quality of life of rural communities in Cambodia.

[7] Ministry of Environment (2013) Technology Needs Assessment and Technology Action Plans for Climate Change Adaptation

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
Objective: Supply of sustainable and safe drinking water to climate change vulnerable communities in rural Cambodia by using GDM-based water treatment system												
Outcome: Capacity enhancement of rural Cambodians to reduce safe drinking water scarcity and associated human health effect caused by climate change												
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 developed. The detailed work plan and budget must be based directly on this Response Plan; ii) Based on the work plan, a monitoring and evaluation (M&E) plan with specific, measurable, achievable, relevant and time-bound indicators provided and used to monitor and evaluate the timeliness and appropriateness of the implementation (a template will be provided). The M&E plan should apply selected indicators from the technical assistance closure report template and enable the lead implementer to complete the technical assistance closure report at the end of the assignment (please refer to item iv below and section 14 in the Response Plan); iii) Impact statement formulated at the beginning of the technical assistance and updated/revised once the technical assistance is fully delivered (a template will be provided); and iv) A technical assistance closure report completed at the end of the technical assistance (a template will be provided).												
Deliverable 1: i) Detailed work plan ii) Monitoring & evaluation (M&E) plan and impact statement iii) Technical assistance closure report												
Output 2: Selection of the appropriate GDM system installation areas through stakeholder consultations and water quality assessment												
Activity 2.1: A kick-off meeting and stakeholder consultations A kick-off meeting and consultations with stakeholders from national and local governments as well as non-government sectors will be carried out (in-person and/or online). Through this activity, the lead implementer will understand current water consumption patterns and ongoing issues with drinking water supply to rural												

communities in Cambodia. Moreover, key stakeholders and their capabilities to collaborate with during the implementation of the technical assistance (TA) will be identified.	
Activity 2.2: Quality assessment of drinking water source and site selection for the GDM system installation Quality of drinking water source in rural Cambodia will be assessed. The sites for assessing quality of drinking water source will be determined in consultation with the NDE and relevant government officials of Cambodia. Both local drinking water standards in Cambodia and World Health Organization (WHO)'s drinking water guidelines will be used for the assessment[8]. Potential sites for the deployment of the GDM system, including 30 households and 1 school, will be selected based on results of the assessment and consultation with the NDE and relevant government officials of Cambodia. The sites will be located in rural communities where safe drinking water supply is limited during flood and drought period, and water borne diseases are expected to be prevalent.	
Deliverable 2: i) Report on kick-off meeting and stakeholder consultations ii) Report on quality assessment of drinking water source and site selection for the GDM system installation	
Output 3: Installation, monitoring and assessment of the GDM system at selected areas	
Activity 3.1: Customisation of the GDM system and its installation at selected sites GDM filtration unit will be customised in consideration with the quality of drinking water source at selected sites. Once GDM filtration unit is customised, the GDM system will be installed at selected sites.	
Activity 3.2: Monitoring of drinking water treated from the GDM system, provision of related health survey and the cost-benefit analysis (CBA) of the GDM system Quality of treated drinking water provided from the GDM system will be monitored during the first 3 months after its installation and at the end of the TA[9] by the lead implementer and local experts. Moreover, health survey, including drinking water consumption patterns, related to drinking water quality will be also conducted. Residents at selected sites will be asked to respond questionnaires once a month before and after the installation of the GDM system over the period of 4 months (once before and thrice after the installation), and their results	

[8] If the border lockdown is continued due to the COVID-19 pandemic, the lead implementer will take into account employment of local experts for the quality assessment of drinking water source in rural Cambodia.

[9] Water quality monitoring equipment, chemicals and spare parts for the GDM system will be purchased (within the budget of the TA) and provided to ensure sustainable operation and maintenance (O&M) of the GDM system.

will be compared. A cost-benefit from replacing the current way of drinking water supply with the GDM system will be examined. Under the assumption of implementing the GDM system (10-year lifespan) in rural Cambodia, the CBA will be carried out, and Cost-Benefit Ratio (CBR), Net Present Value (NPV) and Internal Rate of Return (IRR) will be estimated based on Business as Usual (BAU) scenario. Results from the CBA will be used to assess the economic feasibility of the GDM system in rural Cambodia.	
Deliverable 3: i) Installation of the GDM system at selected sites. ii) Report on monitoring of drinking water quality treated from the GDM system iii) Report on health survey iv) Report on the CBA of the GDM system for drinking water supply to rural communities in Cambodia	
Output 4: Capacity building of rural communities at selected areas for sustainable management of the GDM system	
Activity 4.1: Development of a protocol for the GDM system management and the treated drinking water monitoring A monitoring and evaluation process for the O&M of the GDM system and the treated drinking water will be documented and shared with rural communities at selected sites.	
Activity 4.2: Training workshop on the O&M of the GDM system The lead implementer will organise a training workshop for rural communities as well as water technicians and experts in Cambodia. Technologies for drinking water supply (including the GDM system), drinking water quality analysis and management, and the O&M of the GDM system will be introduced to participants in the training workshop.	
Deliverable 4: i) Protocol for the GDM system management and the treated drinking water monitoring ii) A set of materials used in the training workshop iii) Report on the training workshop	

4. Resources required and itemized budget:

Please provide an indicative overview 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					***5,000***	***7,500***
Activity 1: i) Detailed work plan, ii) M&E plan and impact statement, iii) Technical assistance closure report	*Researcher, local government officers, consultants and gender specialist, 30 days each at the beginning and at the end of the TA*				*5,000*	*7,500*
Output 2: Selection of the appropriate GDM system installation areas through stakeholder consultations and water quality assessment					***17,500***	***20,000***
Activity 2.1: A kick-off meeting and stakeholder	*Researcher, local government officers and consultants, 30*	*International*	*The kick-off meeting and consultation will be held for 2 days (the*	*Meeting venue, meeting agenda*	*4,500*	*5,000*

consultations	*days*		*number of participants to be determined).*			
Activity 2.2: Quality assessment of drinking water source and site selection for the GDM system installation	*Researchers, local government officers and consultants, 60 days*	*International*		*Bacterial enumeration device, benchtop photometer and multimeter, chemicals*	*13,000*	*15,000*
Output 3: Installation, monitoring and assessment of the GDM system at selected areas					***67,000***	***76,500***
Activity 3.1: Customisation of the GDM system and its installation at selected sites	*Researchers, local government officers and consultants, 60 days*	*International*		*GDMs, water tanks, centrifugal pump, tubing and fittings*	*27,000*	*28,500*
Activity 3.2: Monitoring of drinking water treated from the GDM system, provision of related health survey and the CBA of the GDM system	*Researchers, local government officers and consultants, 180 days*	*International*		*Bacterial enumeration device, benchtop photometer and multimeter, chemicals*	*40,000*	*48,000*
Output 4: Capacity building of rural communities at selected areas for sustainable					***8,200***	***11,000***

management of the GDM system						
Activity 4.1: Development of a protocol for the GDM system management and the treated drinking water monitoring	*Researchers, 30 days*			*Protocol for the GDM system management and the treated drinking water monitoring*	*700*	*1,000*
Activity 4.2: Training workshop on the O&M of the GDM system	*Researchers, local government officers, consultants and gender specialist, 30 days*	*International*	*The workshop will be held for 2 days (the title of the workshop and the number of participants to be determined).*	*Workshop venue, workshop programme (agenda), GDM, tubing and fittings, bacterial enumeration device, benchtop photometer and multimeter, chemicals*	*7,500*	*10,000*
Estimated range of costing for the entire Response Plan					***97,700***	***115,000***

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
Team leader	**At least a Master's degree (or equivalent experience) in a relevant discipline;** Expertise area: climate change, climate technology, water and wastewater treatment, technology cooperation; Minimum 10 years of relevant experience
Project Administrator	**At least a Master's degree (or equivalent experience) in a relevant discipline;** Expertise area: climate change, climate technology; Minimum 5 years of relevant experience
Environmental engineer	**At least a Bachelor's degree** in a relevant discipline; Expertise area: water and wastewater treatment; Minimum 3 years of relevant experience

Economic expert	At least a Master's degree (or equivalent experience) in a relevant discipline; Expertise area: CBA in the field of climate change and climate technology; Minimum 5 years of relevant experience
Local researchers/consultants	At least a Bachelor's degree in a relevant discipline; Expertise area: CBA, climate change, climate technology, water and wastewater treatment, public health; Minimum 3 years of relevant experience
Gender specialist	At least a Bachelor's degree in a relevant discipline; Expertise area: social sciences, international development, political science or a related field; Minimum 5 years of relevant experience in gender mainstreaming in the projects

6. Intended contribution to impact over time

Please provide a brief description of the intended contribution to impact over time of the outcome and outputs provided by this technical assistance on resilience to climate change and/or carbon abatement. To the extent possible, please quantify the intended impact contribution, for example by indicated estimated number of people potentially impacted over time, GDP contribution of the focus sector, carbon emissions by the focus sector, etc. This intended contribution to impact is what will happen if the objective (as articulated in section 3) is met. Please ensure relevant complementarity with text in sections 7 to 12. (maximum 1250 characters including spaces)

The GDM system does not require external energy consumption and employs gravity to purify intake water. It effectively reduces water-borne diseases such as bacterial dysentery, typhoid, paratyphoid and cholera. The installation and O&M of the GDM system are straightforward and less costly compared to other conventional membrane-based water purification technologies. The GDM system could complement the disadvantages of existing small-scale water treatment technologies, for example, through its long lifespan (8-10 years) of the membrane module. It is expected that approximately 450 rural residents[10] would directly benefit and have access to safe drinking water from the GDM system. Moreover, the GDM system could potentially contribute to reducing CO_2 emission in rural Cambodia. In particular, if it replaces the current practice of boiling water for potable purpose, it could decrease a large amount of greenhouse gas (GHG) emissions. Application of this low-cost, small-scale, decentralised, energy-efficient water treatment technology could be an appropriate measure to supply safe drinking water to communities in rural Cambodia where drinking water scarcity is getting serious due to climate variations and drought.

7. Relevance to NDCs and other national priorities

Please identify relevance and contribution from the technical assistance to the Nationally Intended Contributions (NDC) and other relevant national prioritized efforts (TNAs, TAPs, NAPs, NAMAs, etc.). (maximum 2500 characters including spaces)

Cambodia's INDC was submitted to the UNFCCC in 2015, setting out action plans to reduce GHG emissions as well as to adapt to climate change. Cambodia is highly vulnerable to the impact of climate change, in particular, from floods, droughts, windstorms and seawater intrusion. Due to this reason, Cambodia has selected a number of priority actions for climate change adaptation of which "Promoting and improving the adaptive capacity of communities, especially through community-based adaptation actions, and restoring the natural ecology system to respond to climate change" and "Up-scaling of national programmes to address the risk of acute respiratory infection, diarrhoeal disease and cholera in disaster-prone areas. Including conducting surveillance and research on water-borne and food-borne diseases associated with climate change" are aligned with this TA. It is expected that this TA would contribute to the successful implementation of the above-mentioned actions in rural Cambodia.

In 2006, the Ministry of Environment (MoE) established the National Adaptation Programme of Action to Climate Change (NAPA), selecting projects for climate resilience in Cambodia. 'Safer

[10] The number of beneficiaries is estimated based on the number of GDM system to be installed through the TA: 30 household scaled GDM systems at households (5 people per 1 household) & 1 community scaled GDM system at school (300 people per 1 community (school))

water supply for rural communities' was a prioritised project to construct wells/ponds and provide locally made water filters to rural Cambodians. Moreover, through the Technology Needs Assessment (TNA) funded by the Global Environment Facility (GEF), the Government identified the top 5 adaptation technologies in water sector in 2013 of which 4 technologies (rainwater harvesting from rooftops, small reservoirs, small dams and micro-catchments, wells for domestic water supply, and household water treatment and safe storage) were related to clean and safe (drinking) water supply at community and household levels in rural Cambodia.

8. Linkages to relevant parallel on-going activities:

Please identify relevant previous and ongoing public and private sector initiatives, projects or programmes that the CTCN assistance will specifically build on and contribute to. To the extent possible, please add practical and operational details on the linkages between existing activities and the CTCN assistance. (maximum 2500 characters including spaces)

The national development strategies in Cambodia focus on regional and human resource development to combat lack of safe drinking water, unhealthy behaviour and illness as well as lack of education and gender inequality. However, the regional development approach has taken only for a short and one-sided problem-solving and one-to-one model, so many limitations in solving inter-connected problems have been realised. Therefore, a model that presents a multilevel, multifactorial solution to the complex problems is required. As a sustainable regional development model, wage increase through the increment of the agricultural productivity and agricultural business, the supply and management of safe drinking water and the establishment of healthy living areas (schools and local communities) are required to prevent disease and promote health, thereby contributing to improving the quality of life of the residents.

Korea-United Nations Development Programme (K-UNDP) Phase 2 project has been initiated in 2017 with the aim to promote sustainable community development through innovative integration of science and technology. Through the project, the research, development and demonstration of the GDM system have been conducted, providing safe drinking water to a school and transferring knowledge on potable water treatment technologies to local government officials, researchers and teachers. Furthermore, the project has raised awareness of the health-related issues at schools to build healthy schools that can contribute to disease prevention and health promotion for all members of the schools. To date, one community scaled GDM system, supplying enough drinking water for 290 students at Tu Rey Secondary School in Srei Santhor District, has been installed, and a technical workshop and science camp have been delivered to local government and school officers. Two community scaled GDM systems are to be deployed at two schools in the District by the end of 2020, followed by technical and capacity building workshops, water quality monitoring and health surveys. This project will provide the information on the costs and timelines for implementation and maintenance of the GDM system. It is expected that this regional and school-oriented project will create synergetic effects with this TA and contribute to improving the quality of life for the selected rural communities.

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

Please describe the expected future use of the outputs and deliveries produced by this technical assistance, after the CTCN implementation is completed, towards contributing to the anticipated impacts over time articulated in section 6. For example, what organizations or stakeholders will use the outputs of the technical assistance after it is completed, for what purpose, at what scale and

scope the outputs and deliveries will be applied, when and what will be the next steps undertaken, etc. (maximum 2500 characters including spaces) For the effective O&M of the GDM system after the completion of this TA, monitoring and evaluation of the installed GDM system will be provided through the network (stakeholder) built during the implementation of this TA, in consultation with the NDE. The status of the GDM system and its quality will be regularly monitored, and repair or replacement of the membrane will be conducted if necessary. Findings from this TA will be able to contribute to expanding installation of the GDM system to other rural areas domestically and neighbouring countries. Technology transfer will also benefit stakeholders at local government units for building human capacity on water management and the O&M of the novel drinking water treatment technology proposed in this TA. Moreover, this TA will also contribute to strengthening a partnership between stakeholders and a technology provider in the process of reviewing the logistics of this TA, water quality monitoring, deployment of the technology, and preparing future cooperative climate technology projects. Establishment of the GDM manufacturing facilities in Cambodia for the upscaling of the GDM system will be able to be in consideration. Once this TA is proven effective, the plan will be likely to be executed in the near future, which will provide employment opportunities for the rural populations.

10. Gender and co-benefits:

Imbedded in design of the activities:	*A gender mainstreaming analysis is mandatory to include for all technical assistances. A gender expert will be assigned to carry out an assessment and evaluation regarding gender mainstreaming during the implementation of the TA.* *In addition, please describe all support to gender aspects, women's equality and other co-benefits embedded into the Response Plan (please include a reference to the actual activities and outputs as described in section 3).* During the implementation of this TA, gender-related circumstances will be reflected, and a gender specialist will be allocated to assess gender aspects.
Gender and co-benefits intended as result of the activities:	*Please describe all gender aspects, women's equality and other co-benefits expected as a result of the CTCN technical assistance.* Lack of access to proper drinking water to maintain basic health and hygiene negatively affects the health and wellbeing of the selected rural populations, especially women and children who are more vulnerable to climate change and extreme climate events than men due to limited access to information, education and health and financial assets. Villages located far from the main pipes cannot afford to invest in the connection. As a result, villagers rely on the pumping water from streams or tube wells, many children are ill due to

	drinking unsafe water and women engage in fetching water from a long distance[11]. In the TA activities, such as stakeholder consultations, water quality assessment, the installation and O&M of the GDM system and training workshop, the gender balance will be taken into account for the empowerment of women's technical and leadership capacity.

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
National Designated Entity (NDE) *The General Secretariat of the National Council for Sustainable Development, Ministry of Environment (MoE)*	Support for coordination of the TA and communication with stakeholders; Provision of overall feedback to the CTCN and the lead implementer during the implementation of the TA
Ministry of Environment (MoE)	Consultation about the adaptation measures for sustainable drinking water supply in rural Cambodia and site selection of the GDM system installation
Ministry of Health (MoH)	Consultation about the quality of drinking water sources in rural Cambodia and site selection of the GDM system installation
Ministry of Water Resources and Meteorology (MoWRAM)	Consultation about water sources and rainfall situations in rural Cambodia and site selection of the GDM system installation
Department of Rural Water Supply (DRWS), Ministry of Rural Development (MRD)	Consultation about the drinking water supply in rural Cambodia and site selection of the GDM system installation
Provincial Department of Rural Development (PDRD)	Consultation about the drinking water supply in rural Cambodia (after site selection of the GDM system installation)
Commune Councils (CC)	Consultation about the drinking water supply in rural Cambodia (after site selection of the GDM system installation)

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	
5	Achieve gender equality and empower all women and girls	

[11] Plan International (2018) Gender Mainstreaming into Community-Based Climate Change Adaptation in Cambodia

6	Ensure availability and sustainable management of water and sanitation for all	This TA will contribute to providing safe drinking water and thereby reducing water-borne disease in rural communities.
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	
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	
	13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	This TA will strengthen the climate resilience of households and communities in rural Cambodia with limited access to safe drinking water, especially during extreme climate events.
	13.2 - Integrate climate change measures into national policies, strategies and planning	
	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	This TA will provide rural communities with a protocol for the GDM system management and the treated drinking water monitoring. Moreover, training workshop will be organised for relevant stakeholders to enhance their capacity regarding understanding of technologies for drinking water supply, drinking water quality analysis and management, and the O&M of the GDM system.
	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	☐	☐
☐ 2. Sectoral roadmaps and strategies	☐	☐
☐ 3. Recommendations for law, policy and regulations	☐	☐
☐ 4. Financing facilitation	☐	☐
☐ 5. Private sector engagement and market creation	☐	☐
☐ 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.

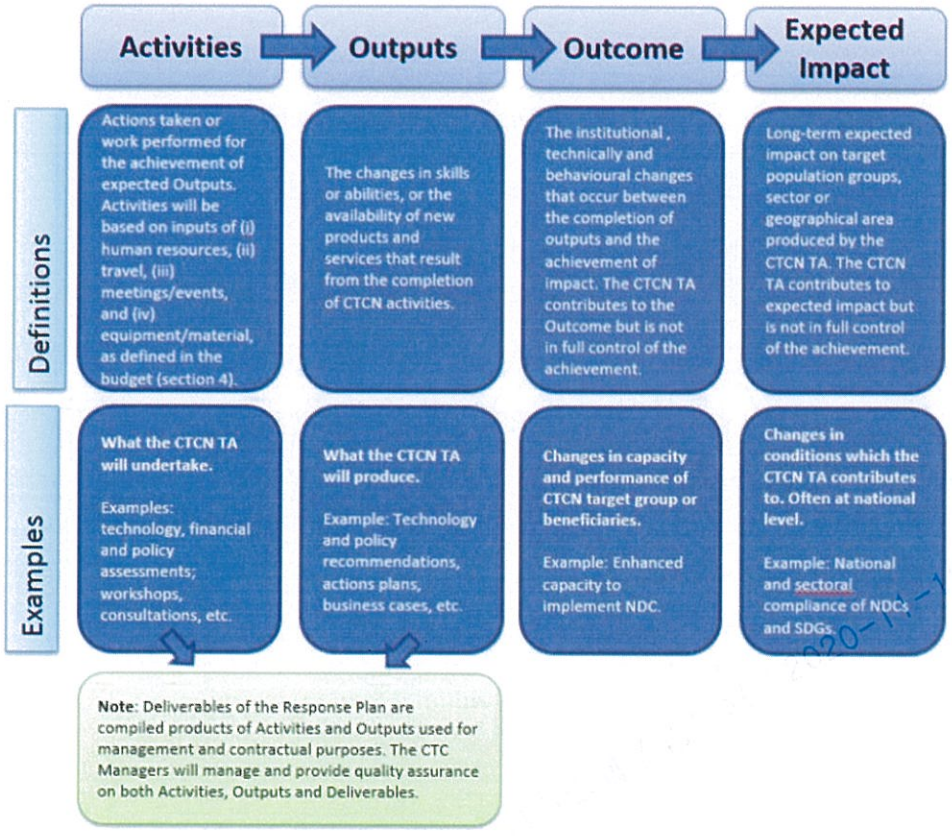
Annex 1: Guidance note for designing a Response Plan (to be deleted when submitting the Response Plan)

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.

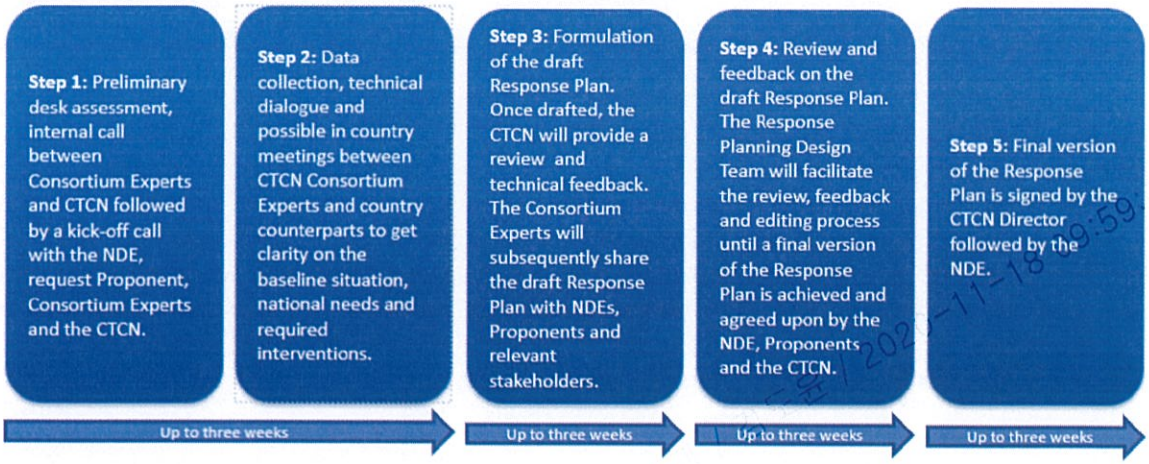
The role of CTCN Consortium experts is to lead the design of the Response Plan. The NDE will provide overall guidance on national context and priorities whereas the request Proponent will provide more detailed information on the sector, barriers and requested assistance. The Climate Technology Manager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

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.