

Country	Bangladesh
Request ID#	2016000071
Title	Technical assistance for saline water purification technology at household level and low-cost durable housing technology for coastal areas of Bangladesh
NDE	Mr. Sultan Ahmed Director General Department of Environment dg@doe.gov.bd, sulbul2002@yahoo.com Poribesh Bhaban, Room# 407, E-16. Agargaon, Dhaka-1207, Bangladesh
Proponent	Fazle Rabbi Sadeque Ahmed, PhD Director (environment and climate change) Palli Karma-Sahayak Foundation (PKSF) Frsa1962@yahoo.co.uk Agargaon Administrative Area, E-4/B E-4/B, Dhaka 1207, Bangladesh

Summary of the CTCN technical assistance

Bangladesh is a low-lying coastal country with a population of approximately 160 million. With climate change, the country is exposed to aggravated climate risks such as floods, cyclones, storm surges and salinity intrusion. This affects the livelihood of the local people and hinders the economic and social development of Bangladesh.

In the country's coastal areas, the problem of salinity level in the water and soil has been exacerbated by the extreme weather events and the rise of sea level. The inhabitants in these areas, approximately 38 million (27 per cent of the national population), are facing challenges due to the **inadequate housing to cope with climate change disaster** as well as **water scarcity caused by salinization of ground water and other water sources**.

To tackle these challenges, the Government of Bangladesh (NDE) and Palli Karma-Sahayak Foundation (PKSF) made request to the CTCN to support the climate vulnerable coastal areas of Bangladesh with the identification and introduction of household level desalination technique(s) as well as low-cost climate-resilient housing option(s) in coastal areas of Bangladesh.

The CTCN technical assistance aims to: i) identifying and prioritizing technology solutions considering local condition and cost, ii) increasing capacity of relevant stakeholders and technicians for sustainable project design, and iii) seeking financing opportunities to scale up the deployment of technologies.

By providing purification of the saline water and improving living conditions of the people in the coastal areas, this assistance will have a direct impact on the vulnerable people including the women and children living in these areas. The capacity of the local government and technicians will be strengthened. Through upscale and replication of the project, the livelihoods of 38 million people living in the coastal area will be improved and the climate resilience of these areas will be enhanced in the long term.

Agreement:

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

**National Designated Entity to the UNFCCC
Technology Mechanism**

Name: Mr. Sultan Ahmed

Title: Director General

Date: 12/06/18

Signature:



Proponent (signature of the Proponent is optional)

Name:

Title:

Date:

Signature:

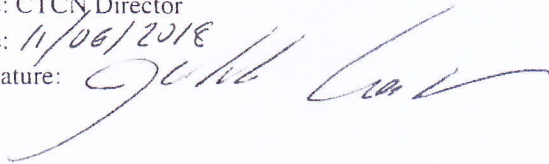
UNFCCC Climate Technology Centre and Network (CTCN)

Name: Jukka Uosukainen

Title: CTCN Director

Date: 11/06/2018

Signature:



1. Background and context

Bangladesh is a low-lying coastal country with a population of approximately 160 million. Nearly 28 per cent of Bangladesh's inhabitants live in coastal districts.¹ As a result, they are highly vulnerable to climate change including extreme weather events and flooding that are expected to increase in frequency and intensity in coming years due to climate variability.

In the country's coastal areas, climate resilience is therefore of growing concerns. These challenges are exacerbated for the poor population due to inadequate housing in coastal zones that are often not built for climate resilience due to lack of knowledge or funding. Due to the high level of poverty, many houses are made of low-quality local wood, and bricks, made from a mixture of local sand and saline water, are not able to withstand disasters, such as cyclones or storm surges. During the wet season, the materials are prone to soak humidity up and de-moisturize during the dry season, making the structures fragile. Introducing low-cost salinity proof structures for poor coastal communities would have a huge impact on building their climate resilience.

In addition, saline water intrusion in the coastal areas has increased significantly due to sea-level rise, while freshwater flow from upper riparian tributaries is gradually decreasing. In saline areas, this has led to an increased burden on people, in particular women and children of poor households to collect freshwater. The salinity of water is also causing major health hazards including high blood pressure. Communities are equipped with community desalination plants, but they are not working properly due to either technical difficulty on the operational part.

The Palli Karma-Sahayak Foundation (PKSF) is a not for profit organization established by the Government of Bangladesh. A part of PKSF's mandate is to enhance the capacities of the poor regarding the adverse impacts of climate change. However, a lack of technical knowledge hinders the identification and introduction of affordable climate-resilient housing and desalination technologies.

Therefore, the government of Bangladesh, together with PKSF, has requested technical assistance from the CTCN to identify and support the use of appropriate technologies in these coastal communities.

2. Problem statement

Bangladesh is a low-lying land country comprising mainly the delta of the Ganges and Brahmaputra rivers. Floodplains occupy 80 per cent of the country, and the elevation of two-thirds of the nation is less than 5 meters above sea level, meaning nearly 28 per cent of Bangladesh's inhabitants live in coastal zones. Even with unique geographical characteristic, climate change makes the country more exposed to climate risks such as floods, cyclones, and soil salinization. As a result, Bangladesh is highly vulnerable to climate impacts, affected by various different types of natural disasters and environmental issues, and unfortunately many of the issues hinder the development of Bangladesh.

In Bangladesh, the increasing salinity of soil and water in the coastal areas emerged as a serious problem, and it is exacerbated by climate change and the rise of sea level. The poor population is facing challenges due to the **inadequate housing** to cope with climate change disaster as well as

¹ Population & housing census 2011, Bangladesh Bureau of Statistics

water scarcity caused by salinization of ground water and other water sources. Houses in coastal zones are often not built for climate resilience due to lack of knowledge or funding.

[Water-related challenges] Salinity intrusion in the coastal areas increased significantly, while freshwater flow from upper riparian tributaries is gradually decreasing. As a consequence, land is becoming saturated with saline water and potable water is becoming scarcer, leading to shortages of drinking and irrigation water which can bring a change in aquatic ecosystems. Salinity in water has a severe impact on vulnerable groups including women and children of poor households and also cause for major health hazards including high blood pressure. To tackle this problem, installation of desalination plants and community ponds were sought and carried out. It had, however, limited impacts especially in the areas with low population density and in the time of disaster due to lack of technical capacity for the operation of the plant and 3-4 kilometers of long distance walking to fetch the water. In addition, these plants are expensive, hence up-scaling and installing on a large scale is not an option.

[Climate vulnerable housing] Low-cost climate-resilient housing is another important issue. Due to the high level of poverty, many houses are made of low-quality local wood, and bricks made from a mixture of local sand and saline water, unable to withstand disasters such as cyclones or storm surges. In case of endogenous wooden buildings, the floor is elevated from the ground to accommodate the flooding seasons. The roof is steeply pitched to direct water away from the bearing structure and to resist cyclones. During monsoon season however, there are various problems with the traditional structures, such as collapsing walls and leaking water from the roof. The building structures can also be fragile. Therefore, efforts should be made to support and improve these endogenous building technologies to become more resilient to increasing weather events induced by climate change. No initiatives have been taken to address this issue. Therefore, the CTCN technical assistance will i) identify and prioritize technology solutions considering local condition and cost, ii) raise the capacity of relevant stakeholders and technicians for sustainable project design, and iii) find financing opportunities to scale up the deployment of technologies.

Technical Assistance Response Plan – Terms of Reference

<p>This activity will visit selected districts and intervention areas to understand the local settings of coastal Bangladesh, the cultural and economic setup, and severity of the problem. This activity aims to meet the different relevant public, governmental and non-governmental stakeholders. Along with this, this activity attempts to get more relevant experiences and practices.</p>																																																																																																																																																	
<p>Activity 3.3: Description of technology options This activity will identify major water-related challenges of the target community and study socio-economic and cultural set-up of the community. Then, the activity will review possible technology options for purification of saline water at the household level according to level of salt concentration and cross-check on the availability of cheaper options from freshwater harvesting.</p>																																																																																																																																																	
<p>Activity 3.4: Technology prioritization This activity will review different technologies and compare them considering the local context. Then, the activity will file the best experiences and findings on the technologies, for purification of saline water at household level, implemented nationally and internationally, including a list of relevant stakeholders being involved, information on the local requirements, context for purification of saline water at household level, and prioritization criteria for technologies of purification of saline water at household level.</p>																																																																																																																																																	
<p>Activity 3.5: Detailed information and instructions For each of these prioritized solutions, this activity will provide greater depth of information, including detailed cost estimation and detailed step by step instructions in English and Bengali and images for applying them in the field, which can be adapted into learning materials that local actors and PKSF could utilize to conduct the training of household level local community members.</p>																																																																																																																																																	

**Technical Assistance Response Plan –
Terms of Reference**

<p>be held in Dhaka for 2 days, in cooperation with PKSF and DoE for 40 to 50 relevant stakeholders (including government officials, researchers, experts, technicians, and etc.) to ensure that the technology is transferred to the appropriate target beneficiaries using the right training technique.</p>				
<p>Activity 4.2: Pilot site identification This activity will identify appropriate sites for piloting of the proposed solutions, in cooperation with PKSF and DoE.</p>				
<p>Deliverables output 4:</p> <ul style="list-style-type: none"> ● Set of training materials used during the training ● Training report describing the topics covered, participants, outputs, challenges, and successes ● List of potential sites for piloting of the proposed solutions 				
<p>Output 5: Support to identifying financing opportunities to upscale the deployment of technologies identified</p>				
<p>Activity 5.1: Development of private sector engagement strategy This activity will develop a strategy for mobilizing sustainable funding for the identified technologies, based on the findings and products produced through activities 1 to 5. Especially, the activity will create a connection with possible interested private sector actors for the deployment of these technologies.</p>				
<p>Activity 5.2: Development of rationale for GCF involvement Since participation of GCF is crucial in attracting private investors, this activity will develop a rationale for GCF involvement.</p>				
<p>Activity 5.3: Development of general concept document to present to development aid agencies and private investors In order to introduce the project to different stakeholders, this activity will prepare a project concept document. Then, consultation and presentation will be conducted based on the document.</p>				
<p>Activity 5.4: Development of GCF concept note Considering the circumstances where private investment is difficult to mobilize, an approach for developing a public project will be suggested. A GCF concept note will be developed as follows:</p> <ul style="list-style-type: none"> ● Consult with relevant stakeholders including Ministry of Finance (the National Designated Authority of the GCF), the NDE, PKSF, and etc. on the project scope, objectives, beneficiaries, involved stakeholders and preferable Accredited Entity (AE) ● Design a large scale project concept under the guidance of the relevant stakeholders and develop a GCF concept note in accordance with the guidance and template provided by the GCF ● Approach to the preferable AE to consult on the project concept and develop a private engagement strategy to create connection 				

**Technical Assistance Response Plan -
Terms of Reference**

<p>Activity 5.5: Stakeholder consultation workshop This activity will be to hold a workshop for presenting the final outcome of the TA and the project concept to the relevant authorities and partners. This will also be the occasion to receive feedback on the project concept from the relevant stakeholders for further revision.</p>												
<p>Deliverables output 6: <ul style="list-style-type: none"> General project concept document (GCF format or other format based on the discussion with stakeholders) </p>												
<p>Output 6: Final Report</p>												
<p>Activity 6: Final Closure Report This activity will capture all the activities conducted by the partners at the end of the assignment and summarize the progress, outcomes, challenges, and lessons learned from this TA as a Final Closure Report. The Final Closure Report will include: 1) basic information of the TA, 2) summary of all the activities, outputs, products that contribute to the expected impact of the technical assistance, 3) lessons learnt, 4) illustration of the TA and relevant photos, and 5) information for TA impact description.</p>												
<p>Deliverables output 6: <ul style="list-style-type: none"> Final Closure Report </p>												

**Technical Assistance Response Plan –
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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.

The budget for this assistance is 166,940USD.

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
Output 1: CTCN Response Plan					26,643
Output 2: Engagement of national level and district level stakeholders					27,000
Output 3: Identification and prioritization on the most promising and low-cost domestic climate resilient housing technology solutions for the local conditions					19,783
Output 4: Identification and prioritization of the most promising and low-cost technologies for purification of saline water at household level					19,783
Output 5: Capacity building of communities on proposed technology solutions and identification possible sites for future pilot project					39,561
Output 6: Support to identifying financing opportunities to upscale the deployment of technologies identified					17,085
Output 7: Final Report					17,085
Estimated range of costing for the entire Response Plan					166,940

5. Profile and experience of experts

Experts required	Brief description of required profile
Team Leader	At least a Master's degree (or equivalent experience) in a relevant discipline; Expertise areas: climate change, climate finance, technology cooperation; Minimum 10-years relevant experience
Project Administrator	At least a Master's degree (or equivalent experience) in a relevant discipline; Broad knowledge of the sector of climate change and preferably climate change technologies; Minimum 7-years relevant experience
Desalination Specialist	At least a Master's degree (or equivalent experience) in a relevant discipline; Expertise areas: water treatment, desalination; Minimum 5-years relevant experience
Geography and Environmental Specialist	At least a Master's degree (or equivalent experience) in a relevant discipline; Expertise areas: climate change, health, agriculture, climate change adaptation; Minimum 5-years relevant experience
Construction Specialist	At least a Master's degree (or equivalent experience) in a relevant discipline; Expertise areas: performance standards, construction materials, building design; Minimum 5-years relevant experience
Local Specialist	At least a Master's degree (or equivalent experience) in a relevant discipline; Broad knowledge of the sector of climate change, local geography, local environment and social conditions; Minimum 3-years relevant experience
Communication Manager	At least a Master's degree (or equivalent experience) in a relevant discipline; Broad knowledge of the sector of climate change, local environment and conditions, communication skills; Minimum 3-years relevant experience

6. Intended contribution to impact over time

The TA will bring short-term benefits at the potential pilot location as relatively small scale and long-term benefits at a national scale and potentially regional scale at coastal areas having a similar problem.

The direct beneficiaries of the TA will be the vulnerable people living in the 2 districts of the coastal area (Satkhira district, Bagerhat district) with severe problems due to salination of water and fragile housing vulnerable to climate change risk. Around 3.5 million people in the 2 districts affected by the exacerbated climate events, will benefit from this project. Over 61 per cent of the direct beneficiaries will be women and children (age 9-14).

[Population in the target districts(Population Census 2011)]

District	Male Population	Female Population	Total Population
Satkhira	982,777	1,003,182	1,985,959
Bagerhat	740,138	735,952	1,476,090

In terms of the number of households, 323,505 households in Bagerhat district and 468,769 households in Satkhira will be potential beneficiaries. Once proven effective, the application of the technology options for improved housing and desalination of water could spread out to other 17 districts of the coastal zone which will affect 38.1 million people in the region.

The training program on water purification technologies and climate resilience housing solutions will be held to build capacity of 40-50 local government officials and technicians of the Bagerhat and Satkhira districts.

This project could potentially have CO₂ mitigation impact. In rural areas, water is boiled in the traditional cooking stove using biomass fuels. If the new technology option replaces current practices (boiling of water with fuel wood prior to drinking), this will reduce greenhouse gas (GHG) emissions. In average, 55,198 tCO₂ per annum is expected to be reduced.

This TA will promote access to financing for the deployment of prioritized technologies and it will lead to widespread replication of the project model to solve salination problems in water and housing sector throughout the country. In the long term, therefore, this TA will have an indirect impact on the livelihoods of 38 million people living in the coastal area by providing measurable purification of the saline water and improving living conditions of those people.

7. Relevance to NDCs and other national priorities

The Government of Bangladesh is interested in climate change adaptation because of the country's high vulnerability to climate change. Through several strategies and policies, such as National Determined Contribution (NDC), National Adaptation Program of Action (NAPA), Seventh Five Year Plan, Bangladesh Climate Change Strategy and Action Plan (BCCSAP), Coastal Zone Policy, and National Plan for Disaster Management (NPDm), the Government has demonstrated its awareness for natural disaster risk management and climate change adaptation. According to these strategies and policies, the main role of the Government is to ensure that risk reduction and comprehensive disaster management is a focus of national policies and programs.

The NDC of Bangladesh submitted in 2015 has set a national target for 15% reduction in GHG emissions from BAU levels by 2030 with the aim of protecting the population and also enhancing

adaptive capacity and livelihood options. In order to achieve the target, There are several adaption priorities such as climate-resilient housing, adaptation on local-level perspective, adaptation to climate change impacts on health, and capacity building at an individual and institutional level to plan and implement adaptation programs and projects in the country.

The country also submitted the NAPA in 2005 and conducted the Technology Needs Assessment (TNA) with the establishment of the Technology Action Plan (TAP) in 2012. In order to accelerate the on-going domestic initiatives to adapt to climate change and secure lives and livelihoods of people, the Government has allocated nearly US\$ 400 million to Bangladesh Climate Change Trust Fund (BCCTF). The fund, established in 2010, is the first national climate fund established by Least Developed Country. As of June 2015, 60% of the fund was provided to over 236 projects and of which 41 have already been implemented

8. Linkages to relevant parallel on-going activities:

PKSF has carried out the Bangladesh Community Climate Change Project (CCCP) from 2012 to 2016. The objective of this project was to enhance the capacity of selected communities to increase their resilience to the impacts of climate change. The project was funded by the Bangladesh Climate Change Resilience Fund (BCCRF) through the World Bank. Detailed activities include (1) the establishment of the Community Climate Change Fund (CCCF) of 10.40 million US\$ to finance community-based climate change adaptation projects which were implemented with the assistance of NGOs, (2) support for knowledge management, capacity building and monitoring and evaluation system, (3) establishment of PMU (Project Management Unit). Through this project, the need for identifying more appropriate and low-cost desalination and durable housing technologies was which led to a request for current technical assistance to the CTCN.

There are other previous or on-going activities regarding climate change adaptation in coastal areas of Bangladesh. From 2011 to 2013, an NGO, Practical Action carried out the “Community-based adaptation in vulnerable coastal areas of Bangladesh” project with support from Asian Development Bank (ADB). This project aimed to mainstream climate change adaptation and disaster risk reduction in community-level planning and programming. By improving community understanding and capacity on climate change, and by enhancing adaptive and risk reduction capacity of the vulnerable communities, this project strengthened the capacity of the communities in four villages in the coastal areas. The activities supported through this project ranged from agriculture, aquaculture, biogas, plantation, improved kitchen, and low-cost service for safe drinking water to solar systems while the target area was limited to 4 villages of the 2 coastal areas. While learning from the outcome of this project, the CTCN assistance will narrow its focus on desalination and durable housing technologies to provide appropriate solutions for the most vulnerable people in the coastal area. TA will also set out the financing strategies to upscale and deploy these solutions to other coastal regions affected by climate impact.

The ADB is currently carrying out “Coastal Towns Environmental Infrastructure Project” in 8 secondary towns in the coastal area. This project provides climate-resilient municipal infrastructure in water supply, sanitation, cyclone shelters and others, coupled with technical assistance in strengthening institutional capacity, local governance, and public awareness. US\$ 52 million will be provided as a loan from 2014 to 2020 to carry out this project. While this project concentrates on large infrastructure for the urban areas, the CTCN assistance will be down to house level or cluster of houses of the rural areas. Therefore, the projects will complement each other in the long term.

GCF also has approved a number of projects regarding water salinity in Bangladesh coastal area. “Climate-Resilient Infrastructure Mainstreaming in Bangladesh” project approved on November 2015 provides cyclone shelters and safeguarding critical road access to protect lives in the rural

coastal region of Bangladesh. 45 new cyclone shelters will be established and 20 existing shelter will be renovated. A national center of excellence will be established to gather, develop, and share climate resilience infrastructure knowledge. Pilot climate-resilient urban infrastructure project will also be undertaken in the city of Satkhira. This GCF project mostly focus on the infrastructure development, while the CTCN TA will focus on the house level improvement. These two project could compensate each other.

The recently approved GCF project on “enhancing adaptive capacities of coastal communities, especially women, to cope with climate change induced salinity” could be closely linked with current CTCN TA. This project focuses on strengthening the adaptive capacities of coastal communities, especially women, to cope with impacts of climate change-induced salinity on their livelihoods and water security. The target areas of the CTCN TA (Satkhira, Bagerhat) are included in the project target Districts. The GCF project could benefit from the CTCN TA when customizing and designing climate resilient drinking water technologies. The reports on the technology option review from the CTCN TA could provide insights and points for improvement in the designing of portfolio of climate resilient drinking water technologies. Potential linkages could be further discussed with executing entity of the GCF project during the TA implementation.

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

This CTCN assistance will provide a number of deliverables that could be further utilized through follow-up activities in deploying water desalination technologies and durable housing technologies around the coastal area.

Report containing the conceptual and operational design information along with features and minimum specifications for purification technology solutions of saline water at household level and for low-cost housing technology solutions applicable for coastal Bangladesh could be used as tools and methods available to the actors from public, private, and civil society in the coastal area to deploy the technologies by themselves.

These tools could be utilized as supporting documents when developing technical guidance for the decision making process for the local governments in adopting policies on housing and water sector of the coastal areas.

Also, additional training workshop could be organized by the local governments or local NGOs. Workshop for government officers, training the trainer workshop, public awareness raising events especially for the women, could be held to disseminate the results and deliverables of the TA.

Based on the suggested technology solutions and the list of potential pilot sites, NDE and PKSF will seek for available funding to implement the pilot project. This will allow evaluating the feasibility, time, cost, and adverse events of the project and improve its design for the scaling up. The result of the pilot could be utilized by the NDE and PKSF to revise the project concept by incorporating lessons learned, and eventually to scale up the project.

Additional activities will be carried out to seek for potential financing to implement the pilot project. In consultation with PKSF, the size and number of the pilot project will be decided. In parallel, consultation with funding organizations will be organized to seek for funding opportunities for the pilot.

The NDE and the proponent of this project, PKSF, will use the general project concept document

and GCF concept note to scale up the deployment of the technologies by leveraging large-scale support from international funding agencies and bilateral donors. A roundtable event could be organized where international and bilateral donors stationed in Bangladesh will be invited. The project concept will be presented at this occasion. This will allow to avoid overlapping of similar projects in the same target area. Interested donors could participate in the project as co-financer.

10. Gender and co-benefits:

Imbedded in design of the activities:	A gender expert will be consulted throughout the implementation of the TA to mainstream gender in the TA activities.
Gender and co-benefits intended as result of the activities:	Improved drinking water system will affect positively the health and wellbeing of the local people especially women and children. Climate-resilient houses will ensure the livelihood of the people in the coastal area during extreme climate events.

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
<i>Ministry of Environment</i>	<i>Line ministry overseeing the implementation of the TA activities</i>
<i>Ministry of Finance(Economic relations division)</i>	<i>National Designated Authority (NDA) for GCF. Important stakeholder in scaling up the TA by supporting the submission of the GCF concept note.</i>
<i>Department of Environment</i>	<i>National Designated Entity(NDE), main direct beneficiary of the TA and main counterpart in the implementation of the TA</i>
<i>Palli Karma-Sahayak Foundation(PKSF)</i>	<i>Proponent and main direct beneficiary of the TA. Important role in scaling up the TA through financial support.</i>
<i>Department of Public Health Engineering(DPHE)</i>	<i>Responsible for water supply and sanitation in small towns and rural areas.</i>
<i>Local Government Engineering Department(LGED)</i>	<i>Responsible for planning and implementation of local level rural, urban and small-scale water resources infrastructure.</i>
<i>Bangladesh University of Engineering and Technology(BUET)</i>	<i>Possessing expertise in civil engineering, BUET could provide advice on appropriate local housing techniques.</i>
<i>Bangladesh Rural Advancement Committee (BRAC)</i>	<i>Being the largest NGO in the world, BRAC could provide advice on experience in conducting a similar project in the coastal area.</i>
<i>House Building Research Institute(HBRI)</i>	<i>A research institute on housing problems, innovation in construction materials, technology, and planning, able to provide advice on appropriate local housing techniques.</i>
<i>Nowabnki Gonomukhi Foundation(NGF)</i>	<i>A non-profit management organization accelerating</i>

finance for rural community poor people and supporting government agencies with experience in implementing desalination projects.

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	With this TA, the poor and vulnerable can access to clean water and be provided safe and climate resilience house, reducing health problem caused by contaminated water and promoting the well-being of life.
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	The TA will include gender consideration to increase resilience of women and girls in the coastal areas, contributing SDG 5.
6	Ensure availability and sustainable management of water and sanitation for all	The TA can contribute to SDG 6 in the aspect of providing clean drinking water by the deployment of saline water purification technologies.
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 programs 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	This TA will enhance the livelihood of the people of the coastal area who are the most affected and vulnerable to the climate impact.
11	Make cities and human settlements inclusive, safe, resilient and sustainable	This TA will provide climate-resilient housing solutions for sustainable and safe living condition.
12	Ensure sustainable consumption and production patterns	
	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	The TA will strength climate resilience of households near the coastal areas with climate resilience housing solutions
	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	

	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.

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

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.

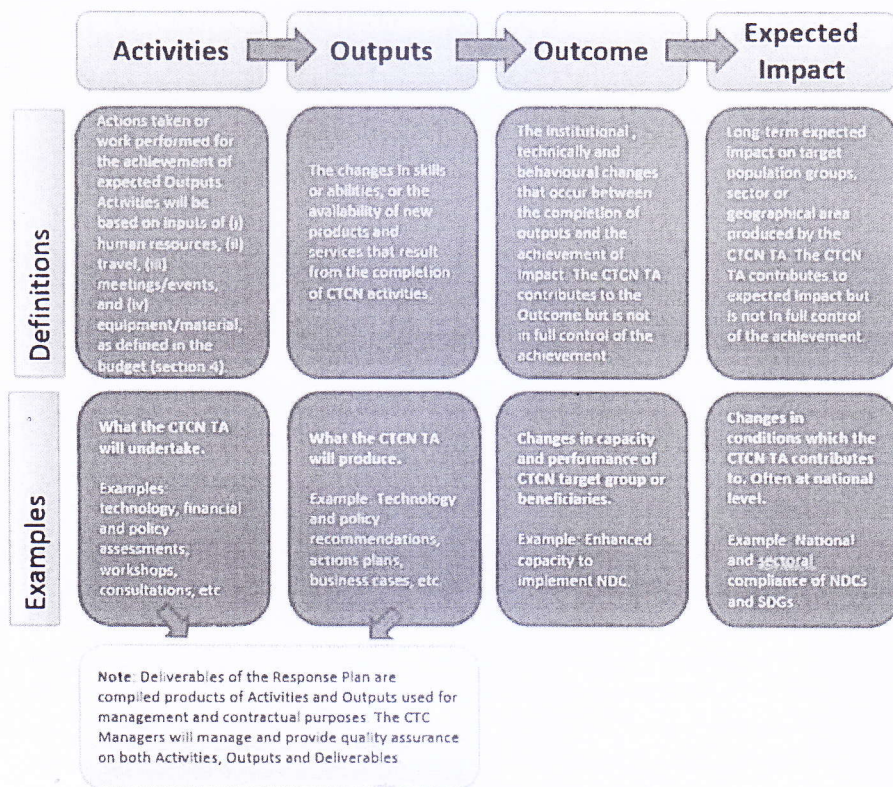
Annex 1: Guidance note for designing a Response Plan (to be deleted when submitting the Response Plan)

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.

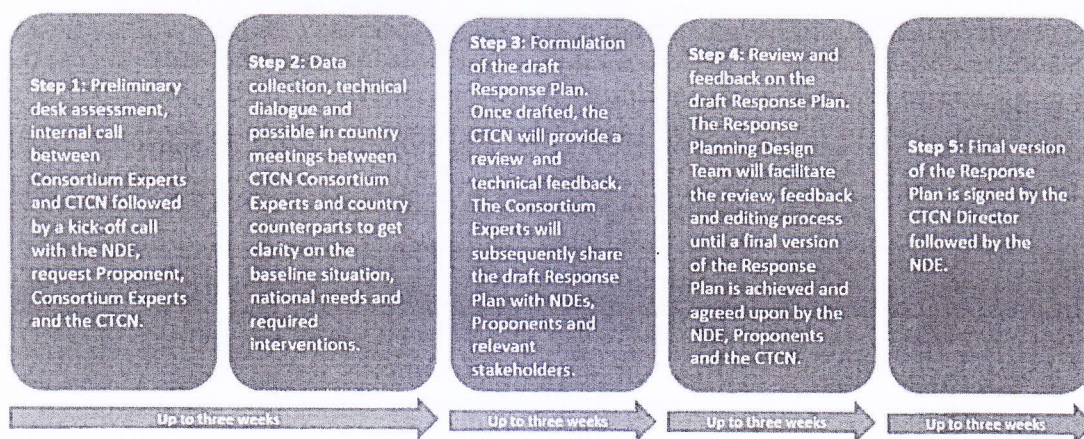
The role of CTCN Consortium experts is to lead the design of the Response Plan. The NDE will provide overall guidance on national context and priorities whereas the request Proponent will provide more detailed information on the sector, barriers and requested assistance. The Climate Technology Manager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