CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Instructions to lead Implementers for drafting the Technical Assistance Closure and Data Collection Report

Objective of the technical assistance (TA) Closure Report and Data Collection Report:

- To communicate publicly in one synthesis document a summary of progress made and lessons learned under the technical assistance (TA) towards the anticipated impact (main template).
- Compile TA-specific information required for internal use in donor and UN reporting (annex 1).

Steps for completing the TA Closure report:

1. The lead TA implementer drafts the report at the end of the assignment as a final deliverable /product. The TA Closure report will capture all activities conducted under the TA hence it is expected that duplication of information will occur from earlier documents. Please copy and summarise relevant material from previous TA outputs/deliverables and the Response Plan, as relevant.
2. A CTCN Manager will review and revise the report before final approval by the CTCN Director.

Important note on public and internal use of the closure report:
Once approved by the CTCN Director, the TA Closure and Data Collection Report will be a public document available on the CTCN website. Annex 1 is for internal use only and will not be publicly available.

Closure and Data Collection Report for CTCN Technical Assistance

1. Basic information

Title of response plan	Technical assistance for saline water purification technology at household level and low-cost durable housing technology for coastal areas of Bangladesh
Technical assistance reference number	2016000071
Country / countries	Bangladesh
NDE focal point and organisation	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 focal point and organisation	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
Sector(s) addressed	Infrastructure and Urban planning, Coastal Zones, Water
Technologies supported	- Infrastructure and Urban planning - Building design and material– Elevated buildings - Coastal Zones – accommodation - Water – Water pollution – Point of use water treatment

Implementation period and total duration	2018. 12. 13 – 2019. 4. 30
Total budget for implementation	166,940 USD
Designer of the response plan	- Green Technology Center(GTC) - Korea Institute of Civil engineering and building Technology(KICT) - Glory & Tech.
Implementer of response plan	- Green Technology Center(GTC) - Korea Institute of Civil engineering and building Technology(KICT) - Glory & Tech.

2. Summary of all activities, outputs and products that contribute to the expected impact of the technical assistance.

Description of delivered outputs and products as well as the activities undertaken to achieve them. In doing so, review the log frame of the original response plan and refer to it as appropriate	The objective of this TA was to support the climate-vulnerable coastal areas of Bangladesh and the Palli Karma-Sahayak Foundation (PKSF) with the identification and introduction of household-level desalination techniques(s) as well as low-cost salinity proofed housing options in the coastal area of Bangladesh. The main outcomes of the TA are i) identification and prioritization of technologies of climate-resilient housing and low-cost purification of saline water, ii) increased capacity of relevant stakeholders in technology transfer and operation, and iii) development of project concept designed to scale-up and attract investment for deployment of technologies. **Output 1. Engagement of national level and district level stakeholders** To kick start the TA, a national level and district level inception workshop was organized. The main objectives of the workshop were to 1) create a common understanding and support of the project - its vision, goals, objectives and implementation plans, 2) exchange knowledge and experiences on saline-water purification, climate resilience housing technology, and local context, 3) develop shared vision of the broader opportunities and benefits emerging from the project implementation and outreach, and 4) receive suggestions for a successful implementation of the project. For the national level inception workshop, 42 participants were present and for the district level kick-off meeting 14 participants were present. Following reports were delivered as outputs: - Project inception report - Stakeholder engagement report **Output 2. Identification and prioritization on the most promising and low-cost domestic climate-resilient housing technology solutions for the local conditions** The housing expert team conducted the following activities: 1) literature review on existing low-cost domestic climate-resilient housing technology solutions and analyzed their suitability and applicability in the context of coastal regions of Bangladesh, 2) field study and surveys on the local residential environment, the status of materials, production infrastructure and building system, 3) review of the technology options considering the local environment, and 4) recommendations of the technology options.

<table>
<tr>
<td></td>
<td>
Detailed information on the solutions were presented through the workshop, reports, and meetings.

As a result of these activities, the following deliverables were produced :
- A fact-finding report
- Stakeholder consultation report
- Recommendation for technology solutions

Output 3. Identification and prioritization of the most promising and low-cost technologies for purification of saline water at the household level

The water expert team conducted the following activities: 1) literature review on existing low-cost technology solutions for purification of saline water at the household level, 2) a field study to understand the local settings of the coastal Bangladesh area and surveys with detailed questionnaires, 3) review of the technology options considering the local environment, and 4) recommendations of the technology options. Detailed information on the solutions were presented through the workshop, reports, and meetings.

As a result of these activities, the following deliverables were produced :
- A fact-finding report
- Stakeholder consultation report
- Recommendation for technology solutions

Output 4. Capacity building of communities on proposed technology solutions and identification of possible sites for future pilot project

Based on the identified technology solutions, a training workshop was held in Dhaka involving 60 relevant stakeholders including government officials, researchers, experts, technicians, etc.

As a result of these activities, the following deliverables were produced :
- Set of training materials used during the training
- Training report
- List of potential sites for piloting

Output 5. Support to identifying financing opportunities to upscale the deployment of technologies identified

In the course of discussion with the proponent, it was agreed to develop a project concept specifically targeting GCF. Therefore, a GCF project concept was developed.
- A draft concept note
</td>
</tr>
<tr>
<td>Partners organisations</td>
<td>
<table>
<tr><td>NDE</td><td>Department of Environment</td></tr>
<tr><td>Project Proponent</td><td>Palli Karma-Sohayak Foundation (PKSF)</td></tr>
<tr><td rowspan="3">Implementers</td><td>Green Technology Center (GTC)</td></tr>
<tr><td>Korea Institute of Civil engineering and building Technology (KICT)</td></tr>
<tr><td>Glory & Tech.</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td rowspan="14">Partner organizations</td><td>Ministry of Environment, Forest and Climate Change</td></tr>
<tr><td>Department of Public Health Engineering (DPHE)</td></tr>
<tr><td>Bangladesh Climate Change Trust(BCCT)</td></tr>
<tr><td>International Center for Climate Change and Development (ICCCAD)</td></tr>
<tr><td>Center for Natural Resource Studies(CNRS)</td></tr>
<tr><td>Bangladesh University of Engineering and Technology(BUET)</td></tr>
<tr><td>Housing and Building Research Institute(HBRI)</td></tr>
<tr><td>Jagannath University</td></tr>
<tr><td>Center for Environmental and Geographic Information Services(CEGIS)</td></tr>
<tr><td>UNDP</td></tr>
<tr><td>Nowabenki Gonomukhi Foundation (NGF)</td></tr>
<tr><td>Action Aid</td></tr>
<tr><td>Bangladesh Rural Advancement Committee(BRAC)</td></tr>
<tr><td>Bangladesh Unnayan Parishad(BUP)</td></tr>
<tr><td>Friendship NGO</td></tr>
</table>
</td></tr>
<tr><td>Beneficiaries</td><td>The direct beneficiaries of this TA are the PKSF and its partner NGOs who will be implementing the GCF project based on the GCF concept note developed through this TA.

The beneficiaries who will benefit from the eventual project that will be implemented will be the vulnerable people living in the 2 districts of the coastal area (Satkhira district and Bagerhat district) with severe problems due to salinity 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% of the direct beneficiaries will be women and children (age 9-14).
[Population in the target districts(Population Census 2011)]
<table>
<tr><td>District</td><td>Male Population</td><td>Female Population</td><td>Total Population</td></tr>
<tr><td>Satkhira</td><td>982,777</td><td>1,003,182</td><td>1,985,959</td></tr>
<tr><td>Bagerhat</td><td>740,138</td><td>735,952</td><td>1,476,090</td></tr>
</table>
</td></tr>
<tr><td>Methodologies applied to produce outputs and products</td><td>- Literature review
- Stakeholder consultation workshops and meetings
- Training workshop
- Interviews with the stakeholders
- Survey with detailed questionnaires</td></tr>
<tr><td>Deviations</td><td>N/A</td></tr>
<tr><td>Achieved or anticipated gender benefits from the TA</td><td>Over 61 percent of 3.5 million people in the target districts (Satkhira, Bagerhat), are women and children from age 9-14. Considering the fact that the responsibility to get clean water falls on women in the coastal area, the water purification technology will contribute to a better livelihood for the women.</td></tr>
<tr><td>Achieved or anticipated co-benefits from the TA</td><td>The 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.</td></tr>
</table>

Anticipated follow up activities and next steps	The project proponent, PKSF, will engage GCF with the project concept and move on to next step to tap into project preparation fund such as Project Preparatory Facility(PPF) of GCF.

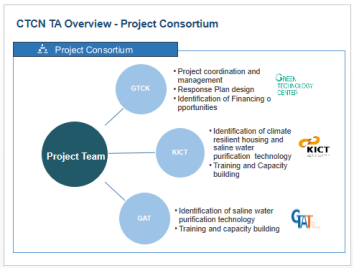
3. Lessons learnt

	Lessons learnt	Recommendations
Lessons learnt for this TA. Describe essential factors contributing to successful implementation, as well as specific challenges. Recommendations include considerations on what would need to be in place for increasing success of similar efforts (i.e. regulatory, legal, stakeholders, communication, etc.)	The proponent, other institutions and local stakeholders engaged in similar previous activities and people living in the target area already had valuable ground-level experience on the issues concerned. There were a limited time, access, or logistic issue to gain all the information available.	Support from the NDE, the proponent or other stakeholders involved is essential from the outset of the TA. The existing knowledge, information and the experience would allow avoiding duplication of work, time and effort. An inception workshop with a wide range of stakeholders is important.
	Already there are many housing and water purification technologies that are in practice at the community level. These technologies need to be carefully checked whether they could be applied at a household level and if they are sustainable.	As well as the availability of the local materials, acceptability, and affordability of the local people, the sustainability of technology is also an important factor to consider.
	Technology solutions may vary from region to region. Most probably, the viable housing and water technologies of Khulna, Satkhira, and Bagerhat might be different from those of Chittagong and Cox's Bazar just because of variation in geomorphology.	The solutions identified during this TA need to be applied and demonstrated for the dissemination. In the case of the scale-up to other areas, the variation of the geomorphology or climate should be considered.
	In the rural areas of the coastal zone, many NGOs are active in installing water treatment facilities. When selecting the project sites for potential piloting, the ongoing and existing projects need to be considered to avoid duplication or collision.	Thorough research and investigation and close engagement with the local stakeholders are necessary.
	Many stakeholders have different interests in the project and dynamics that implementer could not understand in a short time frame.	The coordinating role of the NDE is essential to avoid any collision or misunderstanding among different stakeholders.
Lessons learnt related to climate technology transfer Describe opportunities, challenges and barriers for the use and deployment of the technology or	The problem of water quality in the coastal zone is not limited to its salinity but also related to iron, arsenic, and other impurities. Though some of these problems are not directly related to the climate change issue, these issues amplify the overall health problem caused by water.	By tackling the climate change issue, the proposed solutions could provide co-benefits directly affecting important aspects of livelihood, such as health. Cooperation with other agencies, entities working in other development sector, therefore, will be beneficial to deploy the technology.

technologies supported by the TA. The objective is to identify specific success factors for technology transfer	The past and on-going projects faced various obstacles during the implementation: the absence of the source of financing to cover the operating and maintenance (O&M) cost; capacity and experience to conduct the O&M; risk of low social acceptance to new technology; and low public awareness on the water quality.	It is important to design the project in a way that it could be sustainable after the implementation period of the TA. Capacity building and raising awareness is key. The local stakeholders(such as NGOs) are better positioned to provide the capacity building in the long-term and carry out campaigns to raise awareness of the people.
Lessons learnt related the CTCN process for TA	Various stakeholders are involved in the TA and their expectations are all different.	The coordination by the CTCN is important in managing the expectations of all the stakeholders involved.

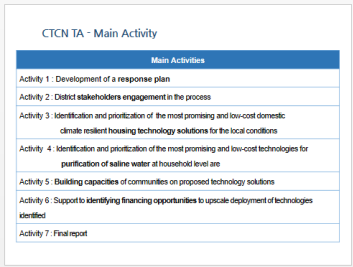
4. Illustration of the TA and photos

1

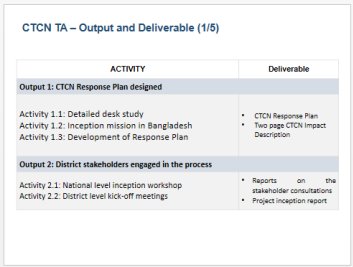


2

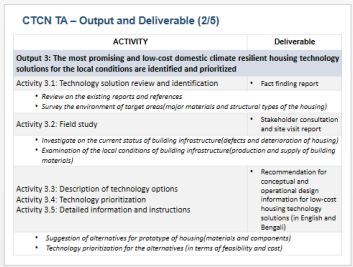
3



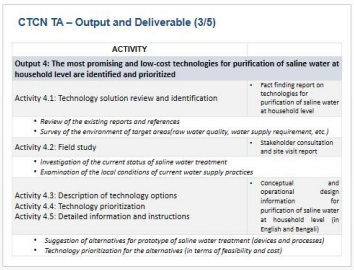
4



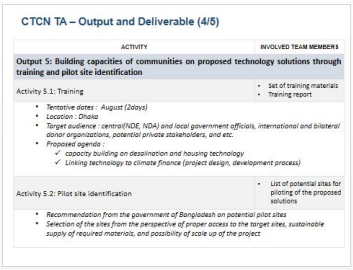
5



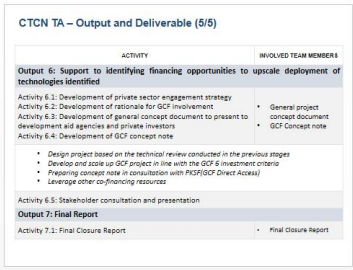
6



7



8



9

10

11

12

5. Information for TA Impact Description

The information in the table below will be used to produce the CTCN TA Impact Description. The TA Impact description is a 2-page summary document for communication purposes.

Challenge: Approx. 500 characters with spaces	Being a low-lying coastal country, Bangladesh is threatened by aggravated climate risks such as floods, cyclones, and water and soil salinization. The poor population in the coastal area is especially exposed to these risks due to an inadequate housing to cope with climate change disaster as well as water scarcity caused by salinization of groundwater and other water resources. This affects their livelihood and hinders the country's economic and social development.
CTCN Assistance: 2 to 4 bullet points. Approximately 450 characters with spaces	• Review and analyze existing affordable climate-resilient housing technology solutions and desalinization technologies at the household level to identify the most promising technologies adapted to local conditions • Recommend technology solutions for climate-resilient housing and desalinization at the household level applicable to coastal Bangladesh • Train communities and relevant stakeholders to increase their capacity to use the proposed technology solutions • Identify possible sites for a future pilot project for the deployment and up-scaling of the proposed technologies • Develop a project concept to scale-up the deployment of identified technologies
Anticipated impact: 2 to 4 bullet points to summarise anticipated impact. Approximately 250 characters with spaces. As a minimum, please include the impacts described in annex 1B as well as other relevant qualitative and quantitative impacts anticipated after completion of CTCN technical assistance.	• Enhanced knowledge of the local government and communities on the selected technologies • Improved livelihood of approximately 38 million living in the rural area of the coastal zone of Bangladesh in the long-term • Increased access to safe water for coastal communities • Increased resilience and safety of communities and improved living conditions along the coastal area
Linkages and contribution to NDC: 2 to 4 bullet points. Approximately 350 characters with spaces	This Assistance supports Bangladesh's Nationally Determined Contribution to - Introduce climate-resilient housing - Reflect local-level perspectives in adaptation actions - Relieve climate change impacts on health through desalination of water - Enhance capacity at an individual and institutional level to plan and implement adaptation programs and projects in the country
The narrative story: Approximately 1200 characters with spaces	27% of the population of Bangladesh are living in the coastal area of the country, and are exposed to climate risks due to an inadequate housing to cope with climate change disaster as well as water scarcity caused by salinization of groundwater and other water sources. To tackle these challenges, the Government of Bangladesh and the Palli Karma-Sahayak Foundation (PKSF) requested support from the CTCN for identifying and introducing household level desalination technologies as

	well as low-cost climate-resilient housing options in the coastal areas of Bangladesh. The Green Technology Center, the Korea Institute of Civil Engineering and Building Technology (KICT), and Glory & Tech (GAT), together with PKSF reviewed existing technologies, analyzed local requirements and context, and recommended applicable technology solutions for low-cost climate-resilient housing and water desalination. A training workshop was carried out to enhance the expertise of the local stakeholders on proposed solutions. Based on these outcomes, a project concept note was prepared to enable scaling up and deployment of the technologies nation-wide. By providing the purification technology of the saline water and housing technology, this CTCN assistance will contribute to enhancing the health and safety of vulnerable people living in the coastal area. Strengthening the capacity of the local government officials and technicians will also ensure the sustainability of the project. Through the upscale and replication of the assistance, the livelihoods of 38 million people living in the coastal area are expected to be improved in the long term.
Contribution to SDGs: Always include contribution to SDG 13, and to the extent possible, please include contribution to 2 other SDGs, describing the contribution with a few sentences for each SDG concerned. A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/	SDG 3: With this TA, the poor and vulnerable can access clean water and be provided a safe and climate resilience house, reducing health problems caused by contaminated water and promoting the well-being of life. SDG 5: By increasing and facilitating the access to clean water, this TA will contribute to enhancing the use of enabling technology to promote the empowerment of women. SDG 6: This TA contributes to achieving universal and equitable access to safe and affordable drinking water for all. SDG 10: This TA contributes to empowering and promoting the social and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status. SDG 11: This TA will provide climate-resilient housing solutions for the sustainable and safe living conditions. SDG 13: The TA will strength the climate resilience of households near the coastal areas with climate resilience housing solutions.

Note: Please see examples of TA Impact Description in adaptation and mitigation at the following link:
https://www.ctc-n.org/sites/www.ctc-n.org/files/learning-reports/18106-ctcnimpactdescriptionv02.pdf
https://www.ctc-n.org/sites/www.ctc-n.org/files/learning-reports/ta_impact_description_2014000002_gcai.doc