Technical Assistance Response Plan – Terms of Reference

Country	**Pakistan**
Request ID#	**2021000016**
Title	Development of the locally led technology transfer action plan and a blueprint for action for the uptake of rainwater harvesting system at the local level in Pakistan
NDE	*Please add name, position, organization, email and address* Dr. Saima Shafique, Director, Ministry of Climate Change 4th Floor, Local Government Complex, G-5/2, Islamabad, 44000, Pakistan saimashafique76@hotmail.com
Proponent	*Please add name, position, organization, email and address* Mr. Faizan Ul Hasan Project Manager - Water Recharge Pakistan Council of Research in Water Resources (PCRWR) faizan_ul_hasan@hotmail.com

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)

Freshwater resources in Pakistan are snow, glacier melt and monsoon rainfall, which are highly affected by climate change. The current water resources in the country are under substantial stress due to growing population, urbanization and unplanned land use. Water scarcity is expected to result in a wide range of socio-economic and environmental effects in Pakistan, especially impacting vulnerable communities including women and children. While the application of rainwater harvesting system is important for sustainable water supply to local communities, there are barriers and limited capacity in identifying, deploying and operating suitable technologies for the system at the local level. The objective of the technical assistance (TA) is to develop a blueprint for action at the local level for the uptake of the best rainwater harvesting technologies, centered around a water-filled barrier, and management model by identifying the most appropriate rainwater harvesting system and developing a locally led technology transfer action plan for deployment of the rainwater harvesting system in a selected area in Pakistan. It is expected that climate resilience in water sector at the local level in Pakistan would be enhanced through the deployment of the rainwater harvesting system planned through the TA as well as through capacity building of local government bodies and communities in

Agreement:

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

National Designated Entity to the UNFCCC Technology Mechanism

Name: Dr. Saima Shafique,
Title: Director, Ministry of Climate Change
Date: 06-01-2023
Signature:

Proponent (signature of the Proponent is optional)

Name: Faizan Ul Hasan
Title: Project Manager - Water Recharge
Date:
Signature:

UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rose Mwebaza
Title: CTCN Director
Date
Signature:

06 Jan 2023
As OIC for Rose Mwebaza

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).

Water crisis is one of the most eminent issues in Pakistan. According to the World Research Institute, Pakistan is one of the 17 countries facing extremely high water stress[1]. In 2015, the International Monetary Fund (IMF) reported that water availability in Pakistan has dropped to 1,017 m^3 $capita^{-1}$ $year^{-1}$ [2] (1,000 m^3 $capita^{-1}$ $year^{-1}$ recognized as the threshold for water scarcity [3]). The IMF also analyzed that water demand is projected to reach 274 million acre-feet (MAF) by 2025, while water supply in the country is expected to be stagnant at 191 MAF.

Freshwater resources in Pakistan are snow, glacier melt and monsoon rainfall, which are highly affected by climate change. The current water resources in the country are under substantial stress due to growing population, urbanization and unplanned land use. Pakistan is one of the world's highest- ranking countries with regards to the rate of water usage while water intensity rate of the country[4] is the highest in the world[5]. In 2018, the Pakistan Council of Research in Water Resources (PCRWR) identified that there will be very little or no clean water available in the country by 2025[6]. Water scarcity will result in a wide range of socio-economic and environmental effects in Pakistan, especially impacting vulnerable communities including women and children.

Most precipitation is lost to the atmosphere through evapotranspiration or runs into rivers before it can be used[7] . If it is collected using appropriate infrastructure (rainwater harvesting system), it can contribute greatly to the volume of freshwater available for human consumption. This is particularly relevant in arid and semi-arid regions, where the little rainfall received is usually very intense and often seasonal, and which can be affected by climate change[8].

Pakistan has the world's largest indigenous rainwater harvesting system commonly called as the spate irrigation system. The system irrigates around 0.3 million hectare (Mha) of cultivated land in the country while the potential area to bring under this system is estimated to be around 6.935 Mha[9]. In some areas of Pakistan, where the spate irrigation system is technically advanced, the high flow of floodwater is controlled by transferring it to water storage tanks through well-established system of canal networks. However, most of the community owned rainwater harvesting systems suffer from poor design and water contamination from the ambient environment as well as rainfall variations caused by climate change.

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1 https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress
2 https://www.imf.org/external/pubs/ft/sdn/2015/sdn1511tn.pdf
3 Damkjaer, S. and Taylor, R. (2017) The measurement of water scarcity: Defining a meaningful indicator. Ambio, 46 (5), pp. 513-531.
4 The amount of water used per unit of GDP
5 https://www.futuredirections.org.au/publication/water-resources-in-pakistan-scarce-polluted-and-poorly-governed/
6 https://www.valuewalk.com/2018/05/pakistan-water-crisis-clean-water-2025/
7 Elliot, M., Armstrong, A., Lobuglio, J. and Bartram, J (2011) Technologies for climate change adaptation—The water sector. UNEP Risoe Centre
8 Elliot, M., Armstrong, A., Lobuglio, J. and Bartram, J (2011) Technologies for climate change adaptation—The water sector. UNEP Risoe Centre
9 Ahmed, S. and Steenbergen, F. V. (2010) The potential for the development of spate irrigation systems in Pakistan. Practical Notes Spate Irrigation #1. Spate Irrigation Network.

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).

Considering that water scarcity is a pressing issue in Pakistan, application of rainwater harvesting is important for sustainable water supply to local communities, requiring support from both central and local governments to develop and manage it. However, there is limited capacity of individuals and organizations to ensure the implementation of optimized rainwater harvesting at the local level. Although some organizations have technical knowledge and have worked to deploy rainwater harvesting at the national level, they have limited capacity to assist local communities in identifying suitable technologies and sites for deploying rainwater harvesting. Moreover, there are limited opportunities for local communities to engage in deployment and operation of rainwater harvesting as action plans requesting their participation and their know-how have not yet been developed and/or used at the local level.

The CTCN support is needed to help develop a blueprint for action at the local level for the uptake of the best rainwater harvesting technologies and management model by identifying the most appropriate rainwater harvesting system and developing a locally led technology transfer action plan for deployment of the rainwater harvesting system for surface runoff storage and for groundwater recharge in a target local area. The blueprint developed can then be used by other communities in identifying and deploying the most appropriate rainwater harvesting technologies, enhancing climate resilience in water sector at the local level in Pakistan.

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											
Objective: Identification of the most appropriate rainwater harvesting system and development of the locally led technology transfer action plan for deployment of the rainwater harvesting system in the selected area in Pakistan												
Outcome: Climate resilience in water sector at the local level in Pakistan would be enhanced through the deployment of rainwater harvesting system planned through the TA as well as through capacity building of local government bodies and communities in the selected area.												
	1	2	3	4	5	6	7	8	9	10	11	12
Output 1: Development of implementation planning and communication documents												
Activity 1: The lead implementer must undertake the following activities at the beginning and at the end of the CTCN technical assistance (TA). i) A detailed work plan of all activities, deliveries, outputs, deadlines and responsible persons/organizations 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 TA and updated/revised once the TA is fully delivered (a template will be provided); and iv) A technical assistance closure report completed at the end of the TA (a template will be provided).											
Deliverables 1: i) Detailed work plan												

ii) Monitoring & evaluation (M&E) plan and impact statement iii) Technical assistance closure report												
Output 2: Selection of the target local area and identification of major stakeholders												
Activity 2.1: Stakeholder consultations and selection of the most appropriate local area to develop a locally led technology transfer action plan for rainwater harvesting system A kick-off meeting and consultations with government and non-government stakeholders (e.g., NGOs, universities, research institutes, etc.) will be carried out (in-person or online[10]). Through this activity, the lead implementer will understand current situation and climate change-related issues as to water scarcity and water resource management in Pakistan. Moreover, a local area to be targeted in the TA to develop a locally led technology transfer action plan for deployment of rainwater harvesting will be selected during the consultations with the NDE of Pakistan, the proponent (Pakistan Council of Research in Water Resources, PCRWR) and stakeholders[11].												
Activity 2.2: Review of the climate change impacts on water resources and the application of rainwater harvesting system in Pakistan The lead implementer will carry out literature review regarding the impacts of climate change on water resources including groundwater in Pakistan as well as regarding use of the rainwater harvesting technologies and practices at the local level in the country. Moreover, previous and on-going efforts that national and local governments have conducted so far based on national plans, policies and work undertaken for rainwater harvesting piloting (e.g., technology action plan (TAP) established in 2017) will be reviewed to identify and understand barriers to the uptake of rainwater harvesting at the local level in the country.												

[10] If the border lockdown is continued due to the COVID-19 pandemic, the lead implementer will take into account conducting the kick-off meeting and stakeholder consultations on an online basis with support from the national expert of the TA and the proponent.

[11] Based on initial discussion with the NDE of Pakistan and the proponent, the following areas have been identified as potential target areas for proceeding with activities of the TA: southern Khyber Pakhtunkhwa (KP), deserts and Potohar region (rainwater harvesting for surface runoff storage), and Balochistan, Islamabad Capital Territory (ICT), Potohar region and urban areas of Punjab (rainwater harvesting for groundwater recharge).

Activity 2.3: Organization of the key stakeholders in the selected area Based on findings from Activities 2.1 and 2.2, a restrictive group of key stakeholders (up to 10 persons) will be created, in consultation with the NDE of Pakistan and the proponent. The key stakeholders shall maintain a gender balance and an adequate representation of vulnerable groups. They will provide an overview and a guidance during activities in Output 3 and 4. For this purpose, the members of the key stakeholders should have the capacity to take key decisions with regards to development and application of the locally led technology transfer action plan for deploying rainwater harvesting in the selected area.												
Deliverables 2: i) Report on the kick-off meeting and stakeholder consultations ii) Report on review of the climate change impacts on water resources and the application of rainwater harvesting system in Pakistan iii) Detailed description of the key stakeholder group, with name and contact details of the members, respective institutions, gender, etc.												
Output 3: Identification of the best practices and associated technologies for rainwater harvesting system in the selected area												
Activity 3.1: Site visit and key stakeholder consultations The lead implementer, with support from the proponent, will visit the selected area for field survey and interviews with local communities to identify current water consumption patterns for agriculture (e.g., irrigation and livestock farming) and households in the selected area. With this, an inception meeting with the key stakeholders will be organized to introduce the objective and expected outcomes of the TA as well as explain/agree on respective roles during the implementation of the TA. Feedback from the key stakeholders will be considered in carrying out Activities 3.2 and 3.3.												
Activity 3.2: Enumeration of the best practices and associated technologies for rainwater harvesting system. At the heart of the rainwater harvesting system is a water-filled barrier that can be used to (i) prevent flooding and (ii) harness flood-/rainwater through storage in the barrier and redirecting waterflows to a larger storage structure.												

The lead implementer will investigate different cases and references on the best practices and associated water-filled barrier technology (especially the review of earlier rainwater harvesting technologies that are being implemented by the proponent or any other public entity) that could be adopted for deploying rainwater harvesting in the selected area for surface runoff storage (to be used for irrigation, livestock farming and/or households) (type 1) and for groundwater recharge (type 2). In consideration with the results of field survey and feedback from the key stakeholders (Activity 3.1), the best practices and associated water-filled barrier technology in each type will be evaluated, and their impacts on water resource management in the selected area will be estimated. A list of the appropriate best practices and associated water-filled barrier technology in each type will be identified in consultation with the NDE of Pakistan and the proponent.												
Activity 3.3: Selection of the most appropriate best practices and associated water-filled barrier technology for rainwater harvesting system in the selected area The lead implementer will undertake multi-criteria analysis (MCA) of the best practices identified in Activity 3.2 to select 1 – 2 most appropriate practices and associated water-filled barrier technology for deploying rainwater harvesting in the selected area for surface runoff storage (type 1) and for groundwater recharge (type 2). The results of the MCA in each type will be consulted further with the NDE of Pakistan and the proponent before organizing a key stakeholder meeting.												
Activity 3.4: Organization of the meeting with the key stakeholders The results of Activities 3.2 and 3.3 will be shared with the key stakeholders in a virtual meeting. The lead implementer will not only present the methodology and associated criteria used for the MCA but also introduce the selected best practices and associated technologies to the key stakeholders. In this activity, an orientation and sensitization session will be also conducted for the key stakeholders to enhance their capacities of understanding various options on rainwater harvesting using the water-filled barrier technology.												
Deliverables 3: i) Report on the site visit and the key stakeholder consultations ii) Report on the enumeration of the best practices and associated water-filled barrier technology for rainwater harvesting system												

iii) Report on the selection of the most appropriate best practices and associated water-filled barrier technology for rainwater harvesting system in the selected area iv) Minutes of the key stakeholder meeting with a list of participants disaggregated by gender, materials used, and summary of the discussions held												
Output 4: Development of the locally led technology transfer action plan for rainwater harvesting system in the selected area and a blueprint for action												
Activity 4.1: Development of a draft version of the locally led technology transfer action plan for rainwater harvesting system centered around the water-filled barrier in the selected area The lead implementer will develop, in close collaboration with key stakeholders, a draft version of the locally led technology transfer action plan for deploying rainwater harvesting for surface runoff storage (type 1) and for groundwater recharge (type 2) selected in Activity 3.3. At least (but not limited to) the following matters should be considered in developing the draft action plan: • Engagement of local communities in particular climate vulnerable groups such as women • Policy and regulations needed to be established in advance for technology deployment in the selected area • Protection of ecosystems and biodiversity • M&E system, including a community level monitoring plan. • Public-private partnership models for upgrading and scaling up rainwater harvesting for surface runoff storage, which could be managed by local communities in the selected area • Estimated budget and potential financing mechanisms or instruments that could be used to finance technology deployment in the selected area The draft action plan and associated strategies will be discussed with the NDE of Pakistan and the proponent before organizing the key stakeholder meeting.												
Activity 4.2: Organization of the meeting with the key stakeholders The draft version of the locally led technology transfer action plan and associated supplementary will be shared												

with the key stakeholders in a virtual meeting. The lead implementer will introduce the draft action plan and request the key stakeholders to provide practical/technical feedback which will be used in revising the draft document.												
Activity 4.3: Incorporation of input from consultations into a final version of the locally led technology transfer action plan for rainwater harvesting system in the selected area The lead implementer will amend the draft version of the locally led technology transfer action plan in line with the feedback received from the key stakeholders in Activity 4.2. The final version of the action plan will be made in consultation with the NDE of Pakistan and the proponent.												
Activity 4.4: Development of a blueprint for action at the local level to adopt the best rainwater harvesting system and management model The lead implementer will develop a blueprint for action at the local level for the uptake of the best rainwater harvesting technologies centered around the water-filled barrier and management model, based on the experience in developing the locally led technology transfer action plan in the selected area. Once developed, the blueprint will be used by communities in other areas in identifying and deploying the most appropriate rainwater harvesting technologies and management model, which will enhance climate resilience in water sector at the local level in Pakistan.												
Activity 4.5: Development of a draft concept note for funding from financing mechanisms The lead implementer, in close consultation with the NDE and relevant national focal points, will develop a draft concept note (or funding proposal) to support the country in accessing climate financing, from mechanisms such as the Green Climate Fund (GCF) or the Global Environment Facility (GEF), to support the country in scaling up the outcomes of TA. The final version of the locally led technology transfer action plan developed in Activity 4.3 and the blueprint for action at the local level developed in Activity 4.4 will be largely forming the input to the draft concept note. The guidelines to prepare the concept note/funding proposal are to be considered throughout all the activities of this TA for better alignment of the deliverables and data/information generated by this TA with the requirements of the selected financial mechanism to be												

considered for the development of the concept note. The lead implementer will consult with the NDE of Pakistan, the national focal point of Pakistan to the GCF or the GEF and the proponent regarding the scope, objectives (e.g., rolling out selected technologies for rainwater harvesting in the selected area) and beneficiaries of the draft concept note, as well as a preferable implementing partner of the concept note. After completion of the TA implementation, the draft concept note can be further refined to seek the funding support from the selected climate financing mechanism, under the leadership of the NDE of Pakistan. Any gaps identified to fill the concept note template that do not fall under the purview of this Response Plan will be the responsibility of the PP/NDE/NDA (relevant authority) of Pakistan.												
Deliverables 4: i) Draft & final version of the locally led technology transfer action plan for rainwater harvesting system in the selected area ii) Minute of the key stakeholder meeting with a list of participants disaggregated by gender, materials used, and summary of the discussions held iii) Blueprint for action at the local level to adopt the best rainwater harvesting system and management model iv) Draft concept note or financing proposal (to the GCF or GEF)													
Output 5: Capacity building and awareness-raising for sustainable water use in response to climate change													
Activity 5.1: Capacity needs assessment and development of a capacity building and stakeholder engagement plan in the selected area The lead implementer will consult with different groups of stakeholders in the selected area (conducting a stakeholder survey if required) to assess their capacity needs related to the development and adoption of the locally led technology transfer action plan for raising engagement of local communities in climate resilient management of their water resources, including community level monitoring. Afterwards, the lead implementer will propose a capacity building and stakeholder engagement plan to ensure active engagement of those stakeholders in the implementation of the action plan and water resource management in the selected area.												
Activity 5.2: Development of communications materials for sustainable water use in response to climate													

change The lead implementer, responding to the needs identified in Activity 5.1 with support from the proponent and building on existing resources, will develop and publish communications materials (e.g., leaflets, handouts, flyers, brochures, etc.) which will be shared with local communities in the selected area. The materials will include information on climate change impacts on environment, society and economy at local/national levels as well as information on increase in the frequency and duration of water scarcity, flooding and drought, caused by climate change. The lead implementer will be requested to design the materials to make local communities understand importance of sustainable water use in response to climate change. Key findings from this activity will be also used in developing presentation materials for a workshop (Activity 5.3).												
Activity 5.3: Organization of a 1-day workshop for capacity building of local government bodies and local communities in the selected area The lead implementer will organize and facilitate a 1-day workshop for local government officials as well as local communities in the selected area. The locally led technology transfer action plan for deploying rainwater harvesting for surface runoff storage and for groundwater recharge, developed through the TA, will be introduced to participants in the workshop. Moreover, climate change impacts on the frequency and duration of water scarcity, flooding and drought will be also explained so that participants will enhance their understanding of interlink between climate change and natural disaster facing in the selected area. After the workshop, a satisfaction survey from participants will be conducted to identify the level of their understanding regarding the action plan and climate change impacts on the selected area.												
Deliverables 5: i) Report on the capacity needs assessment and the capacity building and stakeholder engagement plan in the selected area ii) Communications materials (e.g., leaflets, handouts, flyers, brochures, etc.) for sustainable water use in response to climate change iii) Materials for the workshop (e.g., presentations, satisfaction survey template, etc.) iv) Report on the 1-day workshop for capacity building of local government bodies and local communities in												

the selected area												

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					***4,100***	***7,100***
Activity 1: i) Detailed work plan, ii) M&E plan and impact statement, iii) Technical assistance closure report	*I1: 3 days* *I2: 3 days* *I3: 3 days* *N1: 2 days* *N2: 3 days*				*4,100*	*7,100*
Output 2:					***23,200***	***32,200***

Selection of the target local area and identification of major stakeholders						
Activity 2.1: Stakeholder consultations and selection of the most appropriate local area to develop a locally led technology transfer action plan for rainwater harvesting system	*I1: 6 days* *I2: 6 days* *I3: 8 days* *N1: 4 days* *N2: 6 days*	*[International travel] 3 international experts for the duration of 4 days each for the kick-off meeting and the stakeholder consultations*	*Kick-off meeting, 10 participants (including women's representative), 1 day* *Stakeholder consultations, 15 participants (including women's representative), 1 day*		*16,000*	*19,000*
Activity 2.2: Review of the climate change impacts on water resources and the application of rainwater harvesting system in Pakistan	*I1: 5 days* *I2: 3 days* *I3: 5 days* *N1: 2 days* *N2: 3 days*				*6,100*	*9,100*
Activity 2.3: Organization of the key stakeholders in the selected area	*I1: 1 day* *I2: 1 day* *I3: 2 days* *N1: 1 day* *N2: 2 days*				*1,100*	*4,100*
Output 3: Identification of the best practices and associated					***33,800***	***45,800***

technologies for rainwater harvesting system in the selected area						
Activity 3.1: Site visit and key stakeholder consultations	*I1: 7 days* *I2: 9 days* *I3: 9 days* *N1: 5 days* *N2: 9 days*	*[International travel]* *3 international experts for the duration of 5 days each for the site visit and the key stakeholder meeting* *[Domestic travel]* *3 international experts and 2 national experts for the duration of 4 days each for the site visit and the key stakeholder meeting*	*Key stakeholder meeting, 10 participants (including women's representative), 1 day*		*19,800*	*22,800*
Activity 3.2: Enumeration of the best practices and associated technologies for rainwater harvesting system	*I1: 3 days* *I2: 8 days* *I3: 5 days* *N1: 1 days* *N2: 2 days*				*6,000*	*9,000*
Activity 3.3: Selection of the most appropriate best practices and associated	*I1: 3 days* *I2: 3 days* *I3: 5 days* *N1: 1 days* *N2: 2 days*				*4,200*	*7,200*

technologies for rainwater harvesting system in the selected area						
Activity 3.4: Organization of the meeting with the key stakeholders	*I1: 3 days* *I2: 3 days* *I3: 2 days* *N1: 2 days* *N2: 3 days*		*Key stakeholder meeting (online), 10 participants (including women's representative), 1 day*		*3,800*	*6,800*
Output 4: Development of the locally led technology transfer action plan for rainwater harvesting system in the selected area and the blueprint for action					***54,900***	***69,900***
Activity 4.1: Development of a draft version of the locally led technology transfer action plan for rainwater harvesting system in the selected area	*I1: 5 days* *I2: 5 days* *I3: 20 days* *N1: 3 days* *N2: 5 days*				*13,200*	*16,200*
Activity 4.2: Organization of the meeting with the key stakeholders	*I1: 3 days* *I2: 2 days* *I3: 3 days* *N1: 2 days*		*Key stakeholder meeting (online), 10 participants (including women's*		*3,800*	*6,800*

	N2: 3 days		*representative), 1 day*			
Activity 4.3: Incorporation of input from consultations into a final version of the locally led technology transfer action plan for rainwater harvesting system in the selected area	*I1: 5 days* *I2: 3 days* *I3: 10 days* *N1: 2 days* *N2: 5 days*				*8,500*	*11,500*
Activity 4.4: Development of a blueprint for action at the local level to adopt the best rainwater harvesting system and management model	*I1: 3 days* *I2: 5 days* *I3: 10 days* *N1: 2 days* *N2: 5 days*				*8,000*	*11,000*
Activity 4.5: Development of a draft concept note for funding from financing mechanisms	*I1: 8 days* *I2: 15 days* *I3: 15 days* *N1: 8 days* *N2: 15 days*				*21,400*	*24,400*
Output 5: Capacity building and awareness-raising for sustainable water use in response to climate change					***33,200***	***42,200***

Activity 5.1: Capacity needs assessment and development of a capacity building and stakeholder engagement plan in the selected area	*I1: 5 days* *I2: 3 days* *I3: 10 days* *N1: 3 days* *N2: 5 days*	*[Domestic travel]* *1 national expert for the duration of 2 days for the stakeholder survey (if required)*			*8,800*	*11,800*
Activity 5.2: Development of communications materials for sustainable water use in response to climate change	*I1: 5 days* *I2: 2 days* *I3: 7 days* *N1: 2 days* *N2: 5 days*				*7,100*	*10,100*
Activity 5.3: Organization of a 1-day workshop for capacity building of local government bodies and local communities in the selected area	*I1: 6 days* *I2: 8 days* *I3: 8 days* *N1: 4 days* *N2: 8 days*	*[International travel]* *3 international experts for the duration of 4 days each for the 1-day workshop* *[Domestic travel]* *3 international experts and 2 national experts for the duration of 3 days each for the 1-day workshop*	*Workshop, 25 participants (including women's representative), 1 day*		*17,300*	*20,300*
Estimated range of costing for the entire Response Plan					***149,200***	***197,200***

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
Please use the same titles for all experts as applied in section 4.	*Please provide a short description of expertise and experience needed (education, sectors of expertise, years of experience, country experience, language requirements, etc.).*
Project Manager (I1) (International expert)	The project manager shall have the following expertise and experience: • Master's degree or above (or equivalent experience) in water engineering, technology and/or management, climate technology, climate change response, environmental planning and/or management, or an affiliated major • Experience in leading and managing a project and a team of experts from different cultural background and fields of expertise • At least 10 years of experience in developing plans and associated strategies and programmes/projects for climate technology development, transfer and deployment in adaptation sector • Experience with community engagement and participatory planning • Experience in developing climate-related action plans in developing countries • Experience in developing GCF/GEF concept notes • Experience in developing capacity building programmes and in organizing workshops and/or capacity building trainings • Previous experience in Pakistan will be valued. • Excellent written and communication skills in English are required.
Expert in rainwater harvesting system (I2) (International expert)	The expert in rainwater harvesting system shall have the following expertise and experience: • Master's degree or above (or equivalent experience) in water engineering and/or technology or an affiliated major • At least 8 years of experience in designing, developing and deploying rainwater harvesting systems • At least 5 references demonstrating experience in the design, development and/or deployment of rainwater harvesting systems in developing countries • Experience in developing GCF/GEF concept notes • Experience in organizing workshops and/or capacity building trainings • Previous experience in Pakistan will be valued.

	• Excellent written and communication skills in English are required.
Expert in water technology development, transfer and planning (I3) (International expert)	The expert in water technology development, transfer and planning shall have the following expertise and experience: • Master's degree or above (or equivalent experience) in water engineering, technology and/or management or an affiliated major • At least 8 years of experience in developing plans and associated strategies and programmes/projects for water technology development, transfer and deployment and for capacity building of stakeholders • At least 5 references demonstrating experience in the development of action plans for water technology implementation and diffusion at the local level in developing countries • Experience in developing GCF/GEF concept notes • Experience in organizing workshops and/or capacity building trainings • Previous experience in Pakistan will be valued. • Excellent written and communication skills in English are required.
Gender expert (N1) (National expert)	The gender expert shall have the following expertise and experience: • Bachelor's degree or above (or equivalent experience) in social science or an affiliated major • At least 8 years of experience in gender studies and/or management of equality policies • At least 2 references demonstrating experience in gender studies in water sector in developing countries • Experience in community engagement processes • Excellent written and communication skills in Pakistan's language (Urdu) and English are required. • It is expected that the gender expert will be based in Pakistan or with the availability to travel frequently and for long periods of time in Pakistan.
Water expert (N2) (National expert)	The water expert shall have the following expertise and experience: • Master's degree or above (or equivalent experience) in water engineering, technology and/or management or an affiliated major • At least 8 years of experience in water management in Pakistan • Excellent written and communication skills in Pakistan's language (Urdu) and English are required. • It is expected that the water expert will be based in Pakistan or with the availability to travel frequently and for long periods of time in Pakistan.

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)

Water scarcity is a critical issue in Pakistan. Back in 2009, water availability in Pakistan was about 1,500 m^3; however, the quantity is expected to decrease up to about 860 m^3 in 2025. The growing population, inefficient agricultural system and unregulated use of water in industrial sector are considered as major reasons for decrease in water availability in the country. In particular, agriculture is the largest water user and is therefore understood as the major cause of water scarcity in the country.

Adoption of the rainwater harvesting system could be one of the most appropriate approaches for sustainable water supply to local communities in Pakistan. As to deployment of the rainwater harvesting in the country, the NDE of Pakistan and the proponent (PCRWR) have identified technical, institutional, social and economic barriers and also recognized the necessity of active engagement of local stakeholders. Findings from the TA, in particular regarding the development of the locally led technology transfer action plan, will contribute to facilitating the uptake of the rainwater harvesting technologies for surface runoff storage and for groundwater recharge, enhancing climate resilience in water sector in the selected area in Pakistan.

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)

The TA is in line with national strategies and plans of Pakistan for climate change response.

- **Nationally Determined Contribution (2016):** 2. Response to climate change issues - 2.2 Adaptation - Table 2: National adaptation priorities - Medium to long-term actions (up to 2030) (page 15)
  - Development and optimization of water resource allocation, implementation of strict water management regulations and utilization of unconventional water resources such as recycling of used water and harvesting rainwater and flood water

- **Technology Needs Assessment for Climate Change Adaptation (2016) [12] :** Chapter 3 Technology prioritization for water sector - 3.4 Criteria and process of technology prioritization for water sector - 3.4.2 Multi criteria decision analysis process - 3.4.2.2. Result of technology prioritization (page 31 – 32)
  - Surface rainwater harvesting
  - Groundwater recharge
  - Urban stormwater management

[12] A TAP for agriculture and water sectors was later published in 2017.

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 proponent (PCRWR) is making efforts to disseminate technologies and practices for the rainwater harvesting system in Pakistan and has developed a publication on guidelines and training module for the development and implementation of rainwater harvesting systems[13]. PCRWR has conducted projects/initiatives for piloting rainwater harvesting systems in deserts, developing/demonstrating desertification control technologies in Cholistan and Thar deserts through rainwater harvesting system, developing 24 rainwater harvesting systems in D. I. Khan and introducing low cost-effective techniques for groundwater recharge in Balochistan and in urban areas of Pakistan.

PCRWR has been acquiring information on appropriate technologies and practices for rainwater harvesting systems in Pakistan and have been identifying barriers to facilitation of deploying rainwater harvesting in the country. Findings from the TA could be used to support activities that PCRWR is conducting in the country.

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)

Once the TA is completed, the local government in the selected area with support from the NDE of Pakistan and the proponent (PCRWR) could adopt the blueprint for the development of locally led technology transfer action plan to deploy rainwater harvesting for surface runoff storage and/or for groundwater recharge. The draft concept note to be developed during the implementation of the TA, could be further updated/revised into a full concept note ready for submission at a later stage under the leadership of the NDE of Pakistan. Moreover, various activities/programs could be initiated as defined and costed in the action plan, including activities to increase capacity of stakeholders in the selected area for their participation in the locally led technology transfer action plan based on implementation of the capacity building and stakeholder engagement plan, which would be developed through the TA.

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*

[13] Hasan, F., Ashraf, M. and Farooque, M. (2015) Guidelines and Training Module for the Development and Implementation of Rainwater Harvesting Systems. Pakistan Council of Research in Water Resources (PCRWR).

	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).* Most activities of the TA are designed with an imbedded intention of gender mainstreaming and providing other co-benefits to vulnerable groups. The lead implementer will be requested to assign a gender expert to conduct the monitoring and evaluation of gender mainstreaming during the implementation of the TA.
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.* Women in local communities suffer from climate change and face higher risks and greater burdens within their society, in particular the burden of (drinking) water collection. In some rural areas, there is gender inequality with regards to travelling for water access in dry season. Installation and operation of rainwater harvesting system based on the locally led technology transfer action plan to be developed through the TA will not only fulfil water needs for irrigation and domestic usage but also reduce household labour of women.

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

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

In country stakeholder	Role in implementation of the technical assistance
Ministry of Climate Change *(National Designated Entity)*	- Support for coordination of the TA and facilitation of stakeholder engagement - Provision of overall feedback to the CTCN and the lead implementer during the implementation of the TA
Pakistan Council of Research in Water Resources (PCRWR) *(TA Proponent)*	- Support for coordination of the TA and facilitation of stakeholder engagement - Provision of feedback (practical and technical components) to the CTCN and the lead implementer during the implementation of the TA - Consultation about the barriers to the application of rainwater harvesting system at the local level
Global Change Impact Study Centre	- Consultation about selection of the target local area - Consultation about climate change impacts on water scarcity in the selected area
National Disaster Management Authority (NDMA)	- Consultation about selection of the target local area - Consultation about climate change impacts on water scarcity in the selected area
Local government (selected area)	- Consultation about climate change impacts on water

	scarcity in the selected area - Consultation about key stakeholders in the selected area - Consultation about the best practices and associated technologies for rainwater harvesting system in the selected area - Consultation about the locally led technology transfer action plan for rainwater harvesting system in the selected area - Provision of climate information and data to be used during the implementation of the TA

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	
6	Ensure availability and sustainable management of water and sanitation for all	This TA will identify (1) the most appropriate best practices and associated technologies for rainwater harvesting in the selected area and (2) develop the locally led technology transfer action plan for deploying rainwater harvesting in the selected area, which will contribute to enhancing sustainable water supply to the selected area in Pakistan.
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 contribute to enhancing climate-resilient water supply to the selected area in Pakistan by identifying the most appropriate best practices and

		associated technologies for rainwater harvesting in the selected area and by developing the locally led technology transfer action plan for deploying rainwater harvesting in the selected area.
	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 (1) develop the capacity building and stakeholder engagement plan, (2) provide communications materials for sustainable water use in response to climate change and (3) organize the 1-day workshop for local government officials and communities in the selected area, supporting them to increase their knowledge on climate change impacts on water scarcity and their understanding of the locally led technology transfer action plan for deploying rainwater harvesting in the selected area.
	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