CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Technical Assistance Response Plan – Terms of Reference

Country	**Mozambique**
Request ID#	
Title	Development of action plan for rainwater harvesting system and financing proposals for Mozambique
NDE	Mr. Antonio Jorge Raul Uaissone, Head Department of Technology and Innovation Ministry of Science, Technology and High Education Tel: +258-84-309-7592 Fax: +258-21-352-860/80 Email: tonyraul13@hotmail.com, antonio.uaissone@mctes.gov.mz Address: Av. Patrice Lumumba No. 770, Maputo, Mozambique
Proponent	Mr. Delfim Vilissa, Director General National Institute of Irrigation Tel: +258-87-429-7100, +258-84-429-7100 Email: delfjvilissa@gmail.com Address: Maxaquene District "C" Street No. 3253, POBox 134, Maputo, Mozambique

Summary of the CTCN technical assistance

Mozambique is one of the most vulnerable countries and most exposed countries to climate change. It undergoes agricultural failure, food security, floods, soil erosion, etc. every year from climate extremes such as heavy storms and severe drought, and consequently it threatens the national economic system. For example, after the significant drought in 2016, the GDP growth decreased by approximately 50% compared to the previous fiscal year. To better adapt to climate change, especially water-related extremes, Mozambican government has recently released 'Water sector action plan' in 2018. This plan, developed on the Intended Nationally Determined Contribution (INDC) and the national adaptation strategy, mainly aims to increase the water storage capacity by 30%. Subsequently in 2018, the comprehensive national program called PRAVIDA, 'water for life' in Portuguese, was initiated, and achieved a remarkable enhancement of water storage as well as water accessibility until it ended its first phase in 2020. However, technical and financial assistance is still required to achieve the national goal, extension of the water storage capacity.

The National Institute of Irrigation, also known as INIR, is the main proponent for this CTCN Technical Assistance (TA) which is for the application of the rainwater harvesting system. Since only 3% of farmland is irrigation-equipped, INIR has tried to enhance farmland by increasing its water accessibility, and it has achieved the installation of several irrigation infrastructures throughout the country whereas the southern Mozambique is the biggest beneficiary. Hence, MINAG (2010) points out that 60 percent of irrigation infrastructures are located in the South. However, the plan for the water resource security for the irrigation and the financing strategy for further implementation are still needed to be improved.

The TA will mainly explore possible rainwater harvesting systems and support technical document indicating the most suitable system especially for agricultural use. Precisely, it will assess the techniques in terms of applicability, effectivity, and cost-benefit. The output will also include a concept paper for submitting a proposal to International Financial Institutions (IFI).

Agreement:

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

National Designated Entity to the UNFCCC Technology Mechanism
Name: Mr. Antonio Jorge Raul Uaissone
Title: Head Department of Technology and Innovation
Date: 27/09/2021
Signature:

Proponent (signature of the Proponent is optional)
Name: Mr. Delfim Vilissa
Title: Director General of National Institute of Irrigation
Date: 24/09/2021
Signature:

National Designated Entity to the UNFCCC Technology Mechanism (providing *pro bono* support)

Name: Mr. Woojin Han
Title: Director of Climate Change R&D Team, Ministry of Science and ICT (MSIT)
Date: 1/OCT/2021
Signature:

UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rose Mwebaza
Title: CTCN Director
Date: 01/10/2021
Signature:

1. Background and context

Mozambique, located along the southeast coast of Africa continent, is one of the most vulnerable countries in the world to climate change. A number of cities and districts have undergone climate extremes every year such as drought, storms, cyclones, floods, etc., and it has severely affected the national economic system, particularly agriculture. To be specific, the drought in 2016 and 2018 disabled approximately 18% of the total arable land to yield[1], and it resulted in 'Humanitarian emergency (IPC Phase 4)[2]' crisis over the southern Mozambique. While the south region is prone to drought, the central and north regions are mostly vulnerable to floods and cyclones.

Although the annual rainfall of Mozambique, accounting for about 800-1200 mm[3], is quantitively enough to support the national water demands, water shortage problem occurs every year across the country since the most of precipitation is concentrated in a short rainy season, from November to March. This kind of precipitation pattern increases the amount of rainwater runoff to rivers and to sea rather than percolating into underground aquifer; hence it finally results in water shortage problems in dry season, particularly in the southern and/or inland provinces such as Maputo, Gaza, Inhambane, Manica and Tete. The scarcity of water is exacerbated due to a lack of storage capacity in the rural communities. Furthermore, since the country is geographically located in downstream areas of nine international rivers, which flow from neighboring countries such as Zimbabwe, Zambia, Malawi, etc., the water availability in Mozambique is closely related to the water resource governances of the upstream countries.

In order to better manage the sustainable development under climate change, especially water resources, Mozambique government has planned and released its National Climate Change Adaptation and Mitigation Strategy (NCCAMS) in 2012, Intended National Determined Contribution (INDC) in 2015, and Implementation of the Sustainable Development Goals in 2018[4] with climate change resilient strategies. Especially, in Water Sector Action Plan for Implementation of the Sustainable Development Goals they highlighted several sub-plans including securing water resources, increasing accessibility to water, capacity building for coping with climate change and water management, and strengthening the resiliency of agriculture industry. In the action plan, they mentioned that an appropriate rainwater harvesting technology would assist to offset water deficit in dry season.

In this Technical Assistance, precipitation patterns, geographical features and survey of water resource gains and losses will be analyzed to find the most effective areas to apply rainwater harvesting systems. Also, conventional rainwater harvesting technologies will be compared to suggests the most appropriate system with a list of applicable areas.

[1] OCHA. (2016). Mozambique: Strategic Drought Response Plan 2016.
[2] Integrated Food Security Phase Classification. Mozambique: Acute Food Insecurity Situation September – December 2018 and Projection January – March 2019. Retrieved from http://www.ipcinfo.org/ipc-country-analysis/details-map/en/c/1151806/
[3] World Bank. Historical Climate Data.
[4] Imprensa nacional de Moçambique, E. P. (2018). Plano de Acção do Sector de Águas Para Implementação dos Objectivos de Desenvolvimento Sustentável 2015-2030

2. Problem statement

The major distinguished problems caused by climate change in Mozambique are floods, cyclones and drought with severe dry spells. Since these extremes devastate the agricultural lands where the Mozambique's main industry is situated, these extremes do not only affect the local livelihood but also the national economy. In fact, after the great drought in 2016, the GDP growth decreased by about 50% compared to that in the previous year.[5] It implies that the water-related climate extremes are able to affect the national economy and appropriate water management is necessary to minimize the impact.

There are two main factors in Mozambique which are relevant to water resource management, the inequal precipitation pattern and the geographical situation. As explained in the previous chapter, the number of the annual amount of rainfall in Mozambique is not a problem, but it varies according to regions. For example, the northern Mozambique bordering Tanzania and Zambia has plenty amount of rain over a year, while inland regions and southern Mozambique have a limited amount of annual rainfall. The most problematic feature in those areas is inequality of precipitation. Precisely, most of annual precipitation in the southern Mozambique is concentrated in wet season, starting from November, and ending by March, and the precipitation in dry season are considerably few. In fact, according to the World Bank's statistics, over 80% of annual precipitation is concentrated during wet season. Secondly, the water management in Mozambique is considered extremely difficult due to its locational features: located over the downstream areas of nine international rivers. For example, when heavy storm hits the southeast of Africa, the neighboring countries discharge more water to Mozambique than usual, and then the domestic floods situation can be easily and considerably exacerbated. On contrary in dry season when water resource becomes more valuable, upriver countries may exploit water resource in upstream, and it reduces the amount of water flowing down to Mozambique's land. Therefore, in Mozambique, the water resource management is easily influenced by the water use in upstream countries.

Apart from the international debatable issue, water resource management in regional level can be made by suggesting technical solutions which are able to hold water. In other words, proper rainwater management can alleviate the impact of drought by storing rainwater runoff and provide water in dry season as Mozambique government plans in NCCAMS and INDC.

To apply rainwater harvesting system (RHS) in Mozambique effectively, several actions have to be conducted through: (1) Engagement of national and relevant institutional stakeholders, (2) Identification of the most vulnerable areas (river basin) to water shortage problem by conducting hydrologic survey, (3) Determination of an appropriate rainwater harvesting system for the selected region, and (4) Establishment of action plan for initiating RHS and development of general concept document. In this Technical Assistance, mainly these four steps would be implemented and consequently a proper technical strategy would be suggested to the National Designated Entity of Mozambique.

[5] https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=MZ

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					
	6	7	8	9	10	11
***Objective:** Please provide a one sentence description of the Objective of the technical assistance. The objective of the CTCN technical assistance reflects what the assistance aims to produce and impact.* The objective of the TA is to support Mozambique's drought prone areas to secure a capacity of climate change resilience by providing technical advice in regard to the rainwater harvesting system (RHS) and to devise a suitable financing instrument to acquire fund for the realization of the RHS.						
Outcome: The main outcomes of the TA will be including i) Engagement of national and relevant institutional stakeholders; ii) Implementation of nation-wide water budget survey (river basin wise); iii) Rainfall-runoff analysis in the most vulnerable area; iv) Pre-feasibility study of RHS; v) Mapping of RHS-applicable area; vi) Establishment of action plan and; vii) Development of general concept document						
Output 1: Development of implementation planning and communication documents						
Activity 1: Development of implementation planning and communication documents i) A detailed work plan of all activities, deliveries, outputs, deadlines and responsible persons/organisations and detailed budget to implement the Response Plan. The detailed work plan and budget must be based directly on this Response Plan; ii) Based on the work plan, a monitoring and evaluation plan with specific, measurable, achievable, relevant, and time-bound indicators used to monitor and evaluate the timeliness and appropriateness of the implementation. The monitoring and evaluation plan should apply selected indicators from the Closure and Data Collection report template and enable the lead implementer to complete the CTCN Closure and Data collection report at the end of the assignment (please refer to item iv below and section 14 in the Response Plan); iii) A two-page CTCN Impact Description formulated in the beginning of the technical assistance and update/revised once the technical assistance is fully delivered (a template will be provided); iv) A Closure and Data Collection report completed at the end of the technical assistance (a template will be provided).	■	■	■			
Deliverable 1: i) Detailed work plan ii) Monitoring and evaluation plan iii) CTCN Impact Description iv) Closure and Data Collection report			■			

Output 2: Engagement of national and relevant institutional stakeholders	
Activity 2.1: Inception workshop with national level water management stakeholders This activity will launch an inception workshop with national level water management stakeholders to ensure a mutual understanding of proposed activities, method for implementation and expected outputs from the TA. The main objectives of the workshop are to i) create a common understanding and support of the project along with its vision, goals, objectives and implementation plans; ii) exchange knowledge and experiences on climate project in terms of financial strategy and local context; iii) develop a shared vision of the broader opportunities and benefits emerging from the project implementation and outreach, and; iv) receive suggestions from participants for a successful implementation of the project.	
Deliverable 2: i) A report on the stakeholders' consultation and engagement (including major key points discussed during the inception workshop)	
Output 3: Technical Assessment of the Rainwater Harvesting System	
Activity 3.1: Hydrological survey on the project site This activity consists of site survey in a hydrological way in order to understand the regional hydro context for example, the degree of water deficit, the characteristic of rainwater runoff, the geological features, etc. This stage, the prerequisite stage for the technical assessment of the rainwater harvesting systems, will provide the information to better assess the candidate RHS in terms of applicability, effectivity, etc. This activity can be implemented through exploring the previously developed reports, literatures, and computer modeling.	
Activity 3.2: Development of technical assessment report of RHS This activity will provide technical information explaining technical requirements and suitable RHS for the selected project site. In the aspect of engineering, possible options of RHS will be compared to each other in regards with the amount of rainwater-storing capacity and geological/geographical applicability. For economical analysis, expected monetary benefits for each option will be estimated based on a criterion that widely used in cost-benefit analyses.	
Deliverable 3: i) A hydrological report of the project region ii) A technical assessment report of RHS including an impact evaluation sheet	
Output 4: Establishment of action plan	
Activity 4.1: Mapping the RHS-applicable area This activity will provide a geographical map showing RHS-applicable and RHS-effective locations. The RHS mapping will be acquired through various geographical analysis.	

Activity 4.2: Establishment of action plan for initiating RHS This activity will develop an action plan for initiating rainwater harvesting system program with a draft for pilot projects in a cooperation with NDE. This action plan aims to spread RHS to vulnerable areas in the country, and importantly, the pilot projects will be designed for the region chosen in the Activity 3 for its availability of relevant information.	
Deliverables 4: i) Action plan for initiating RHS	
Output 5: Development of concept document	
Activity 5.1: Organize a consultation workshop with key stakeholders	
Activity 5.2: Finalize the draft project concept document/note	
Deliverables 5: i) Draft a concept note for international climate funds and other ODA funds	

4. Resources required and itemized budget:

The budget for the TA is 141,775USD.

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: Development of implementation planning and communication documents Activity 1.1: Development of implementation planning and communication documents					*16,344*
Output 2: Engagement of national and relevant institutional stakeholders Activity 2.1: Inception workshop with national level water management stakeholders					*8,172*
Output 3: Technical Assessment of the Rainwater Harvesting System Activity 3.1: Hydrological survey on the project site Activity 3.2: Development of technical assessment report of RHS					*65,377*
Output 4: Establishment of action plan Activity 4.1: Mapping the RHS-applicable area Activity 4.2: Establishment of action plan for initiating RHS					*40,861*
Output 5: Development of concept document Activity 5.1: Organize a consultation workshop with key stakeholders Activity 5.2: Finalize the draft project concept document/note					*32,688*
Estimated range of costing for the entire Response Plan					***163,442***

5. Profile and experience of experts

Experts required	Brief description of required profile
Team Leader	Minimum 7-years post MSc (or equivalent experience) in a relevant discipline; Expertise in climate change, climate finance, high-level negotiations, civil engineering; Excellent command of oral and written English
Project Administrator	Minimum 5-years post BSc (or equivalent experience) in a relevant discipline; Broad knowledge of climate change, project management, climate finance; Excellent command of oral and written English
Financing Specialist	Minimum 5-years post BSc (or equivalent experience) in a relevant discipline; Expertise in climate finance, public private partnership (PPP) structuring, financial analysis, development economy; Excellent command of oral and written English
Water Resource Specialist	Minimum 5-years post BSc (or equivalent experience) in a relevant discipline; Expertise in Water Resource Management, Cost Benefit Analysis and Water Modeling Excellent command of oral and written English
Local specialist	Minimum 5-years post BSc (or equivalent experience) in a relevant discipline; Broad knowledge of climate change, local environment and conditions, local geography; Excellent command of oral and written English

6. Intended contribution to impact over time

The TA will contribute to the implementation of the climate change adaptation strategies of Mozambique. Especially in regard with water resource, it will help drought-prone areas secure water resource for human activities such as agriculture by providing the technical assistance for the most appropriate rainwater harvesting system and its action plan. Since agriculture is the major industry of Mozambique in which over 75% of population work[6], the impact of the TA offering a climate-adapted agriculture technique will be significant to local economy and to national economy.

The direct/indirect beneficiary of the TA will be vulnerable population living in southern and inland area of Mozambique where suffer from severe water shortage problem every year, and it can be roughly estimated at 1.8 million people who suffered from the humanitarian emergency crises in 2016[7]. Every dry season, they have been undergone water resource crisis due to limited amount of rainfall, low discharge of rivers and unavailability of groundwater for its geological attribution. Particularly in south where a lot of commercial farmlands located in, the water availability always becomes critical to cultivation, and hence affects the food security. The TA possibly alleviates the impact of water shortage by providing a technical strategy for rainwater harvesting, and subsequently and consequently the TA contributes the stability of the food production as well as the national economy.

According to the previously implemented investigation on water resource, the annual hydro deficit in drought-prone area in Mozambique is reportedly around 37,000 tons and 44,000 tons in Buzi river basin area and in Pungue river basin area, respectively[8]. The TA project has the potential for climate change adaptation, especially it would enable human life in extreme arid area as well as climate-adapted agriculture. For example, the mid-scale rainwater harvesting system is able to catch and store the amount of over 8 tons of water under the condition of only 2 mm of rainfall with 400 squared meter of catchment area. In a year-scale, it could support a community with more than 1.5 million liters of water under the semi-arid dry area[9]. Consequently, the TA of rainwater harvesting system is enabled to provide the technical assistance in order to supply enough amount of water resource in a severe arid area.

[6] USAID. (2018). Fact sheet: Climate risk profile MOZAMBIQUE. Retrieved from https://reliefweb.int/sites/reliefweb.int/files/resources/2018_USAID-ATLAS-Project_Climate-Risk-Profile-Mozambique.pdf

[7] OCHA. (2017). Mozambique: Humanitarian Dashboard. UN Office for the Coordination of Humanitarian Affairs.

[8] Lee, M., Kim, D., Hong, J., and Joo, Y. (2017). Development of Master Plan for Water Resources Management in Mozambique. Yooshin Technical Journal.

[9] Cleve, Central Eyre Peninsula, South Australia. Retrieved from https://www.climatekelpie.com.au/index.php/farmer-mark-andrea-hannemann/

7. Relevance to NDCs and other national priorities

For the last decade, Mozambique has been distinguished as one of the most vulnerable countries to climate change. Every year, Mozambique suffers from floods and extreme dry spells across the country, and it resulted in agricultural failure, and therefore severe economic deficit and even humanitarian emergency. In order to alleviate the impact as well as have resilient infrastructure and systems to climate change, especially to water-related crises, Mozambique government has released 'Water sector action plan for implementation of Sustainable Development 2015 – 2030' in 2018. The main objectives of the plan contain the increase of the amount of domestic water stock and the supply of enough amount of water to agriculture industry. In fact, the national capacity of water storage is reportedly only 0.5% of the annual precipitation, and it is mostly saved in reservoirs. Therefore, in regard with the first objective, Mozambique government is planning to establish additional 14 large-scale dams and 100 reservoirs, and thereby secure 30% more capacity. Precisely in its plan, 13 middle-scale and one large-scale dams that are capable of 17 million cubic meters are scheduled during 2020-2029 and 145 reservoirs are planned in 35 different areas as well. Securing water supply for the agriculture industry, the second main objective, is originated from the inequality issue of water accessibility. Compared to urban water supply such as in Maputo, Beira, supply of good quality water in rural area has been problematic due to the lack of hydro infrastructure and the lack of the financial resources. Furthermore, since water supply in rural area is closely related to the national major industry, agriculture, low water accessibility problem is not only a water security problem but also a holistic problem affecting local economy as well as the national economy. Therefore, in the plan, the development of water storage system and enhancement of relevant policies and regulations have been boldly described.

The Intended Nationally Determined Contribution of Mozambique, released in 2015, was developed in a frame of resilience building to climate change in a consideration of the INDC being a mean to communicate climate vulnerability and the governmental countermeasures. The INDC defined that drought and floods are the most threatening events to the populations, and indicated how the country should cope with it under the mission "reduce climate change vulnerability and improve the wellbeing of Mozambicans through the implementation of concrete measures for adaptation and climate risk reduction, promoting mitigation and low-carbon development, aiming at sustainable development, with the active participation of all stakeholders in the social, environmental and economic sectors". The INDC inherits the strategic plans of the previously released national plans, NCCAMS (National Climate Change Adaptation and Mitigation Strategy) and NAP (National Adaptation Plan). It also focuses mainly on water resource management as an effective measure to climate change disclosing its strategies such as strengthening of the capacity to prepare and respond to climate risks, improving the capacity for integrated water resources management, increasing the resilience of agriculture, livestock and fisheries guaranteeing the adequate levels of food security and nutrition, increasing the adaptive capacity of the most vulnerable groups, promoting the transfer and adoption of clean and climate change resilient technologies, etc., and these have been planned to be implemented in three cascading period: short term (2015-2019), medium term (2020-2025) and long term (2026-2030).

The NCCAMS, a corner stone of the INDC, specifies the problems and its strategies more in detail. It pointed out the three main exposures to climate risk as its 2,700 km long coastline which is an active region for tropical cyclones, nine international rivers, and its sharp slope from the inland to the coast which gives high runoff velocity as well as loss of huge quantity. Particularly, the strategy indicates that the most critical problem is water resource loss through run-off, therefore, as a countermeasure it highlighted developing water storage systems and management systems such as

dams, dikes, canals, rainwater harvest and distribution system, etc. Also, upon the strategy of increasing water stock capacity, it emphasizes the integration with water accessibility and the distribution for example aquifer replenishment, improving rainwater drainage and sanitation systems, building easy-to-maintain agro-hydraulic system including micro dams to irrigate. Agricultural aspect is discussed as well. It said that due to its less amount of precipitation, agricultural industry in southern area is greatly vulnerable to drought, therefore, securing resiliency of agriculture to erratic precipitation is necessary, and its action plan could include agricultural measures as well as hydro technical measures such as diversifying crop cultivars, employing available climate technologies, etc.

As described above, the water-related climate extremes are the major risks to Mozambique, and appropriate hydro-technologies must be considered to alleviate the risks as well as its impact.
In line with the idea, Mozambican government has decided to introduce rainwater harvesting system as a new scheme of expanding capacity of water stock especially for agricultural use. It is expected to enhance the capacity of rainwater collection even for extremely small amount of precipitation and also increase the resiliency of agriculture and the community to drought. With the implementation of the TA, one of the INDC goals, securing water resource storage in agricultural area as well as drought-prone area, will be partially achieved by providing the action plan for the application of rainwater harvesting system and the technical assessment of suitable rainwater harvesting systems.

8. Linkages to relevant parallel on-going activities:

Recent Mozambique's water resource projects have been planned and implemented in correspondence with its master plan developed in 2017. In the master plan, water shortage problem was strongly highlighted with water budget assessment. Based on the master plan, a number of water resource projects have been conducted and are on-going. Most of the projects, of course, target to increase the capacity of national water stock and to enhance the accessibility of reliable water source.

The comprehensive national program, the PRAVIDA (Water for life), was initiated in 2018 to accelerate the implementation of national mid-term plan 2015-2019 in the water sector by enhancing and extending a capacity of water supply facilities for 1.2 million cubic meters more of water and for one million people. Precisely, its purposes were to (i) build 40 dams and 10 reservoirs, (ii) build one wastewater treatment system and one rainwater drainage system, (iii) establish and rehabilitate 62 water supply systems, (iv) develop 80 boreholes, and (v) establish 10,000 home connection. Since 2018, it has financed various projects over 21 AIAS (Water Infrastructure and Sanitation Administration) towns with more than 80 million USD, and this program resulted in increase of water supply coverage from 62 to 80 percent in rural area.

One example of the PRAVIDA program is the rehabilitation program for the Motongomane dam in Magude district, Maputo province. The restoration project, completed in Sep. 2020, increased the water supply capacity by 4.7 million cubic meters which can supply 1,600 people and irrigation of 473 ha. The drinking water station project in Macossa, Manica province, another example of the PRAVIDA, was completed in Nov. 2020. It enables approximately 7,000 people to access safe water with supplying 31,300 cubic meters of water.

The PRAVIDA program was successfully finished with a result of considerable increase of water accessibility, and recently decided to be continued until 2024. The program is the main national program in a relation with water security and agricultural irrigation which the TA pursues.

The TA project, targeting to secure more water in rural area and in agriculture, will follow the success of the PRAVIDA program by suggesting the best solution of rainwater harvesting system particularly for Mozambican context. Furthermore, the developing a International Financial Institutions (IFI) concept note, as a part of the TA, possibly resolve the underlying problem, securing funds, and thereby, it is able to accelerate the national plan of adaptation to climate change.

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

The TA will provide five main deliverables through follow-up activities that are critical to application of rainwater harvesting system. In particular, the TA will produce the followings:

- A report on the technical assessment will contain the hydrological site survey and technical suitability assessment of rainwater harvesting system. It will describe how the system can be applied for the Mozambique drought-prone areas and allow to evaluate the feasibility, cost, and adverse events of the identified project for future implementation. Also, the environmental/social and gender screening for the rainwater harvesting systems will be discussed as a part of the assessment.
- Establishment of action plan for the application of rainwater system including a plan for pilot project. To realize the technical support, the TA will develop an action plan for the rainwater harvesting system in a consideration of relevant national project and program. It can include a geographical information showing the applicable areas for the system and a pilot project plan.
- Preparation of project concept documents for International Financial Institutions (IFI) including GCF will be carried out for further implementation process. The scale and the number of the projects will be determined by the discussion with the NDE of Mozambique. In parallel, consultation with funding organizations will be organized to seek funding opportunities for the related pilot project.
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The last part of the TA components might require further follow-up activities in regards with the concept note completion. Due to the short time period of the TA, the entire course of the concept note development may expect a temporal extension depending on a global climate organization, and the main implementer of the TA would follow up the entailed process.

10. Gender and co-benefits:

Imbedded in design of the activities:	This TA project will be designed in a way that is able to empower the social activities of women. The potential adaptation impact in terms of gender will be considered in activity 5.2 in output 5 as part of the Environmental and Social Risk Screening.
Gender and co-benefits intended as result of the activities:	One of the intended results of the TA in terms of gender benefit can be achieved by increasing agricultural yield. Increased and reliable income from agricultural practice enables community people to afford education even for women. Since, in particular, women are the major working force for agriculture in several areas in southern Mozambique, the climate-resilient technology is expected to help women in various way.

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

In country stakeholder	Role in implementation of the technical assistance
Ministry of Science and Technology	NDE, main direct beneficiary of the TA and main counterpart in the implementation of the TA.
National Institute of Irrigation	Proponent of the TA as well as the main beneficiaries of the technical assistance. Provision of relevant necessary information and data.
Ministry of Public Works, Housing and Water Resources	Stakeholder who supervises all the project relevant to water resource.
Ministry of Economy and Finance	National Designated Authority (NDA) of Green Climate Fund (GCF) in Mozambique

12. SDG Contributions:

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 2.4 – By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	The TA will support to increase the climate adaptation capacity in agriculture by providing rainwater collection techniques for irrigation. It would help enhance agricultural yield especially under dry spells.
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 6.a - By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	The TA will directly contribute to national capacity building for water harvesting. It would improve water availability as well as accessibility.
7	Ensure access to affordable, reliable, sustainable, and modern energy for all (consider adding targets for 7)	
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 11.5 - By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	Since rainwater harvesting system mainly focuses on supplying water resource to agriculture, it possibly stabilizes the annual agricultural yields, and hence minimizes income fluctuation of rural population.
12	Ensure sustainable consumption and production patterns 12.2 - By 2030, achieve the sustainable management and efficient use of natural resources	The rainwater harvesting technology enables to find a novel natural source of water and a way of sustainable use.

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 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	In a consideration of drought-prone aspect of Mozambique, the rainwater harvesting system which the TA support will absolutely enhance the awareness of and the resiliency to climate change as it is able to supply reliable water under drought. Also, the TA can be implemented being closely linked with the national water programme called PRAVIDA.
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 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	☐	☐

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.