ADAPTATION FUND

UN environment programme | CTCN CLIMATE TECHNOLOGY CENTRE & NETWORK

Adaptation Fund Climate Innovation Accelerator

Project Concept Note - Technical Assistance Response Plan

Country	**Suriname**
Request ID#	**AF-2021000199/2023000037**
Title	*Enhance the resilience of Suriname´s water supply system by modelling drought risks and developing a roadmap of prioritized alternatives for aquifer recharge.*
NDE	**Ministry of Spatial Planning and Environment of the Republic of Suriname** **Mr. Ritesh Sardjoe** **Director, Directorate for the Environment of the Ministry of Spatial Planning and Environment** **ritesh.sardjoe@gov.sr** **Prins Hendrikstraat 22** **Paramaribo, Suriname** **National Institute for Environment & Development (NIMOS)** **Mr. Cedric Nelom** **Acting Director** **cnelom@nimos.org**
Proponent	**Ministry of Spatial Planning and Environment of the Republic of Suriname** **Mr. Ritesh Sardjoe** **Director, Directorate for the Environment of the Ministry of Spatial Planning and Environment** **ritesh.sardjoe@gov.sr** **Prins Hendrikstraat 22** **Paramaribo, Suriname**

Summary of the CTCN technical assistance

Suriname is already experiencing some of the effects of climate variability and change through damages from an increase in average atmospheric temperature, reduced average annual rainfall, and the potential for an increase in the intensity of tropical storms. Suriname benefits from abundant water resources, and the supply of drinking water depends mainly on groundwater resources. The water is retrieved via three water resource types namely, surface water, ground water, and direct rainfall. Demand for water is expected to increase as the economy of Suriname expands, particularly in the tourism and agriculture sectors where water requirements could double in the next ten years.

The objective of this technical assistance will be to:

- Assess drought risk and water resources in Suriname.
- Issue risk maps through Geographical Information Systems (GIS) software to identify the area's most at risk of droughts,
- Mapping aquifers suitable for recharge
- Design a fully integrated system that will enable Suriname to recharge its aquifer in time of drought in a sustainable, clean, and safe manner.
- Train national officers in the use of the drought prevention model, and in the designed system to manage the water resources in the aquifer in time of drought.

Agreement:

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

National Designated Entity to the UNFCCC Technology Mechanism
Name: Ritesh Sardjoe
Title: Permenant Secretary
Date: 20.11.23
Signature: Sardjoe

Proponent (signature of the Proponent is optional)
Name:

Title:

Date:
Signature:

UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rajiv Garg
Title: a.i CTCN Director
Date:
Signature:

1. **Background and context:**

The water supply in Greater Paramaribo, the most populated area in Suriname, relies almost entirely on groundwater extraction, which represents about 85% of the overall groundwater exploitation in the country. The most important and most exploited freshwater aquifers are the A Sand aquifer, the Coesewijne aquifer, and the Zanderij aquifer. Several other aquifers are deemed not to be suitable for exploitation because of their size, their depth of the water table and the potential high levels of salinity. Therefore, one of the major difficulties in providing an appropriate and sustainable supply of potable water from groundwater resources is the uncertainty with respect to the safe yield of suitable aquifers for water supply.

Considering the extent of saline intrusion in surface waters along the coast, water supply for the coastal areas will continue to be met in its majority by groundwater. To protect and guarantee a reliable and affordable provision of potable water from groundwater resources, and to support the planning of future water supply development and improvement projects, the Government of Suriname requested to conduct a comprehensive drought assessment and a detailed analysis of aquifer recharge solutions.

2. **Problem statement:**

The water supply in Greater Paramaribo, the most populated area in Suriname, relies almost entirely on groundwater extraction, which represents about 85% of the overall groundwater exploitation in the country. The most important and most exploited freshwater aquifers are the A Sand aquifer, the Coesewijne aquifer, and the Zanderij aquifer. Several other aquifers are deemed not to be suitable for exploitation because of their size, their depth of the water table and the potential high levels of salinity. Therefore, one of the major difficulties in providing an appropriate and sustainable supply of potable water from groundwater resources is the uncertainty with respect to the safe yield of suitable aquifers for water supply.

The 2011 Suriname Water Supply Master Plan, financed through ATN/SF-11374-SU, identified clear signs of saline intrusion in the northern stations of the Grater Paramaribo area (A Sand and Coesewijne). The assessment revealed that the available groundwater yield in the Greater Paramaribo Area is conservatively estimated at 12,500m 3 /h for the next 15 years. However, after that length of time, this yield will have to be drastically reduced because of a salinity increase due to heavily exploitation of the A-Sand and Coesewijne aquifers, which are not recharged with new and fresh water as they are confined aquifers. In the long term, increases in the level of salinity intrusion will limit the yield of several fields.

Considering the extent of saline intrusion in surface waters along the coast, water supply for the coastal areas will continue to be met in its majority by groundwater. In order to protect and guarantee a reliable and affordable provision of potable water from groundwater resources, and to support the planning of future water supply development and improvement projects, the Government of Suriname requested to conduct a comprehensive dedicated hydrogeological study to evaluate the real groundwater level of the most vulnerable aquifers to evaluate their potential for supplying the total yield that would be required passed the period of 15 years.

The objective of this Technical Assistance (TA) is to contribute to the provision of sustainable water services to the population of Suriname, through: (i) the assessment of the potential and groundwater level of the Costal aquifer in Suriname; and (ii) the identification of suitable aquifer recharge solutions.

3. Logical Framework for the CTCN Technical Assistance:

	Months														
Activities	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Objective: Identify the area's most at risk of droughts and consequently, water variability and shortages, by drought risk assessment and mapping; and using this data for managing aquifers recharge (MAR) to increase water supply during periods of dry spells and drought conditions by intentionally recharge aquifers in areas with the highest risk of droughts															
Outcome: Drought risk assessment and modelling as a planning tool to mitigate impacts Increase the water supply system resilience by managing aquifers recharge (MAR)															
Mandatory output: All implementers must undertake the following activities at the beginning and at the end of the CTCN technical assistance.															
Activity i: A detailed implementation plan for all activities, deliverables, outputs, deadlines, and responsible persons/organizations, including a gender study and an itemized budget for implementing the Response Plan. The detailed implementation plan and budget must be based directly on this Response Plan.															
Activity ii: Based on the work plan, a monitoring and evaluation plan with specific, measurable, achievable, relevant, and time-bound indicators should be developed to evaluate the timeliness and appropriateness of implementation (a template will be provided). The indicators selected in the monitoring and evaluation plan should be aligned with the technical assistance closure report template. This will enable the implementer to complete the technical assistance closure report at the end of the CTCN technical assistance (please refer to Activity iv and Section 14 of the Response Plan).															
Activity iii: Impact statement of the CTCN technical assistance prepared at the start of the CTCN technical assistance and updated at the end of the CTCN technical assistance (a template will be provided).															
Activity iv: a Result Tracker from the Adaptation Fund that will be fill in at the start of the project (baseline), at mid-term and at closure.															
Activity v: a gender assessment that will include at least the following components:															

i) Gender Disparities Analysis (evaluate the status of gender disparities in the project's context, including socio-economic, cultural, and institutional factors. Identify areas where inequalities exist etc) ii) Data Collection (collect and analyse gender-disaggregated data to understand the specific needs and preferences of different genders). iii) Gender-Responsive Design (assess the project's design to ensure that it considers the different roles, responsibilities, and interests of various genders. Consider how the project can empower marginalized genders and promote gender equality.) iv) Gender and Innovation ecosystem (assess how the technology could foster women as entrepreneurs) iv) Gender Budgeting (budget allocation to target gender mainstreaming activities. Also ensure that gender-specific needs are adequately funded). v) Capacity Building vi)Monitoring and Evaluation (shall include regular gender-sensitive assessments to track progress and adjust as necessary. **Activity vi**: A technical assistance closure report completed at the end of the CTCN technical assistance (a template will be provided).															
Mandatory Deliverables:															
i) Implementation plan	X														
ii) Monitoring and evaluation plan	X														
iii) Impact statement (initial and final version)	X											X			
iv) Adaptation Fund Result Tracker at start, midterm, and closure												X			
v) Gender assessment															X
vi) Technical assistance closure report															X
Output 1: Map Stakeholders and establish a stakeholder working group.															
Activity 1.1 Map Stakeholders The activity will identify relevant stakeholders among government institutions at national and community levels, professionals in the agriculture and tourism sectors, experts in water management and use, in climatology, meteorology, early warning services, representatives of farmers, as well as women and youth.															

The identification of main stakeholders will be supported by the NDE and NDA. The final groups of relevant stakeholders will be presented in a report in which each actor will be linked to its sector of expertise, person of contact and contact details.															
Activity 1.2 Establish a stakeholder working group. Of the stakeholders identified in Activity 1.1, a restrictive working group (up to 10 persons) will be created. The stakeholder working group shall maintain a gender balance and an adequate representation of vulnerable groups. It will provide a technical overview and high-level guidance at each stage of technical assistance development. The members of the restrictive working group should have the capacity to make sound decisions on some key aspects of the technical assistance. The composition of the stakeholder working group will be summarized in a report, disaggregated by gender.															
Activity 1.3 Conduct an inception meeting. Once the stakeholder working group is created, an inception meeting will be held in presence of the stakeholder working group and of the team leader. It is expected that this meeting will be held in person in Suriname. The objective of this inception meeting is to introduce the team of experts, the goals, milestones, anticipated deliverables, and the role of the stakeholder working group. Results of the inception meeting will be fed into the implementation plan elaborated under Activity i of the Mandatory Output.															
Deliverables:															
1.1 Report on stakeholder mapping	X														
1.2 Detailed description of the stakeholder working group, with name and contact details of the members, respective institutions, gender, etc.	X														
1.3 Minute of the inception meeting including a list of participants disaggregated by gender, the material used for the presentation	X														
Output 2: Assess drought risk and water resources in Suriname															
Activity 2.1 Assess drought risk in Suriname and generate GIS risks maps. In times of drought, groundwater recharge rates decrease, affecting available water resources. The frequency of drought is not well documented. It is recommended that water harvesting, and storage be monitored. There is no telemetry system or technology for remote collection and monitoring to support data management. Access to data is a challenge due to lack of resources and equipment. Drought events are one of the most frequent types of disasters in Suriname.															

Well-conducted drought risk and hazard assessments can provide valuable support for a range of decisions, such as overall land use planning, infrastructure design, and emergency response preparedness. Proper risk estimation is challenging and requires careful consideration of several factors, including water table properties such as size, topography and land use, the types, and characteristics of drought events the region, and the number, location and types of buildings and other assets that could be damaged.
This drought risk assessment will provide clarification on, among other things:
Risk Identification

- Type of drought: meteorological – precipitation below average or hydrological drought with low river flows for example, environmental drought (combination of above).
- Categorization of the drought by their probability and intensity
- Definition of hazard levels (1 to 5 for example) with different ranges of drought: change in land use, change in land cover, water demand and use.
- Demographics data of the Suriname

Risk analysis

- Production of Drought Hazard Maps through satellite-based imagery
- Classification of the zones by land use codes, categories (crop field, forest, wasteland for example) and definition of land use data (grassland, buildings, road and else).
- Definition of drought vulnerability and development of indexes to define vulnerability.
- Exposure analysis of economic assets and activities endangered by the drought.
- Adaptative capacity of Suriname (is there any systems in place such as disaster prevention, early warning system, spatial planning for example?) and sensibility (ratio of population of young children below 15 of older people over 65, poverty level, female to male ratio etc) to drought.
- Define levels of future potential exposure and sensibility to drought.
- Generate climate risks maps with possible future exposure and sensibility to drought.

Risk Evaluation

- Estimation of drought risk level by region
- Identification of hot spots in Suriname (high exposure, high sensibility, low adaptative capacity).
- Selection of up to 5 sites in which the mapping of water resources including groundwater through 3D aquifer mapping based on resistivity and high density induced polarization by use of mobile equipment could be done.

Organise a meeting with the Stakeholder working group to discuss the 5 sites and prioritize them. Organize a meeting with the selected area to inform the relevant stakeholders of the initiative and receive their approval.	
Activity 2.2 Map the total water resources including groundwater through 3D aquifer mapping based on resistivity and high density induced polarization by use of mobile equipment in 1 location of Suriname. In this activity, the implementer will be requested to map water resources of Suriname, including the groundwater. It is expected that these results will be achieved based on resistivity and high density induced polarization mapping, by use of mobile equipment which provide 3D maps of aquifers. This mapping will assist the government in estimating the quantity and quality of ground water and assess the sustainable level of ground extraction. This activity will be done in one location selected under the activity 2.1, in the presence of the international relevant team of experts. The results of the 3D aquifer mapping will be explained in a detailed report including the process that was used to generate the 3D aquifer mapping, the presentation of the maps with their key explanations, as well as some conclusions that could be taken based on these results.	
Activity 2.3 Estimate the water balance in Suriname. The implementer will access data available related to water consumption in the country, all sectors included, and will calculate, based on the results of the previous activity, the current water balance. The results of this activity will be described in a clear, concise, and visual report.	
Activity 2.4 Identify water conservation measures and recommend technologies to save water in the high consuming water sectors. Based on the consumption data analysed in the activity 2.3, the implementer will provide some recommendations on water conservation measures and technologies that could be used to save water in the high consuming sectors. These measures will be presented in action/technology fact sheets, that will include the sector of activity concerned, title of the measure, short description of the measures, as well as its implementation/ operation and maintenance costs within the context of Suriname and possible sources of financing. Each action sheet should also provide information about the impact that each action could have on the vulnerability identified in Activity 2.1, as well as an entity responsible for its implementation, if it is a mitigation / adaptation or mix action, some monitoring and evaluation indicators, the time horizon for the implementation of the action, and more component if relevant.	
Activity 2.5: Organize a meeting with the stakeholder working group to summarize the results of outcome 2.	

A half day meeting will be organized to present the results of the outcome 2 to the stakeholder working group. The meeting will be held virtually.															
Deliverables:															
2.1 Suriname drought assessment, selection of the pilot area, minute of the meeting with the stakeholder working group and representative of the selected commune.		X													
2.2 Detailed report on the 3D mapping of aquifers in Suriname				X											
2.3 Report on the water balance in Suriname					X										
2.4 Report on water conservation measures and technologies recommended to save water in the high consuming water sectors.						X									
2.5 Minute of the SWG meeting with a list of participants disaggregated by gender, material used, and summary of the discussions held.						X									
Output 3: Design a fully integrated system that will enable Suriname to recharge its aquifer in time of drought in a sustainable, clean, and safe manner.															
Activity 3.1 Select **best technology to manage aquifers and recharge of groundwater in the context of Suriname.** The implementer will • Map the aquifers suitable for recharge. • Identify and prioritize applicable methods of recharge in Suriname. • Identify and select the most suitable water sources for recharge. • Identify applicable methods to reduce the costs of transporting and storing water, as well as losses associated with evaporation during the recharge process. • Evaluate and select water pre-treatment technologies before recharge. The results of this analysis will be summarized in technology fact sheets, that will present the name of the technology (percolation tank, ditch, overirrigation,), the kind of technology (direct or indirect technology) the type of recharge which is analysed (surface, sub-surface of a combination of both). For each identified technology, the implementer will analyse its feasibility and applicability in Suriname. The results of this step will be presented in a matrix or in a table where applicable technology and not-applicable technologies will be clearly identified. The implementer will then propose criteria for the prioritization of the applicable technologies.															

These criteria will be clearly detailed in the report and the results of the application of these criteria will provide a preliminary list of suitable technologies. From this list, the implementer will identify the most suitable technologies (minimum 1 and up to 3) that could be deployed in Suriname to manage its ground water and recharge its aquifers in time of droughts. The results of this selection will be clearly explained in the report.															
Activity 3.2 Evaluate and select the pre-treatment technologies to be used before the recharge. Based on the technologies identified as suitable during the activity 3.1, the implementer will analyse the technologies that should be used to treat the water before it is recharged into the aquifer. The process will be including a benchmark of existing pre-treatment technology compatible with the technology selected to recharge the aquifers Activity 3.1), an analysis of the applicability of these technologies in the context of Suriname, a preliminary prioritization of the most suitable pre-treatment technology for the context of Suriname and compatible with technologies of aquifer recharge selected in 3.1. The results of this benchmarking and prioritization process will be described in a report.															
Activity 3.3 Organize a meeting with the SWG to select and validate the technologies. A half day meeting will be organized with the SWG to select the technologies that should be used for the design of the system that will support Suriname in managing its water resources through the recharge of its aquifers in time of drought. At the end of the meeting, one technology for the recharge of the aquifer and one technology for the pre-treatment of the water that will be recharged to the ground water will be selected in a consensual manner.															
Activity 3.4: Design the full system that will enable Suriname to manage the water resources in a sustainable way. Based on the results of the previous activity, the implementer will design the full system that would enable Suriname to better manage its resources of water and recharge its aquifer in a safe and sustainable manner during time of drought. The design of this system should be exhaustive.															
Activity 3.5: Establish a costs analysis of the implementation, operation, and maintenance of such system for Suriname. Based on the design made in Activity 3.3, the implementer will analyse the cost of the development, implementation, operation, and maintenance of such a system should it be implemented at the scale of Suriname.															
Activity 3.6: Benchmark financing sources that could be used to leverage the project and implement a pilot.															

The implementer will analyse the possible source of financing that could be used to implement a pilot project and scale-up the project. These sources of financing will include the financial mechanisms (GEF, GCF, Adaptation Fund) but as well multilateral funds, and national resources.															
Activity 3.7 Organize a two-days' workshop with the stakeholder working group and stakeholders mapped in Activity 2.1 A full day on-site workshop in Suriname will be organized for the SWG and another full day workshop will be organized for the stakeholders mapped during activity 2.1. During the first day, the implementer will describe and explain the results achieved during the outcome 3. During the second day, the implementer will present the architecture of the Aquifer Recharge System designed under outcome 3.															
Deliverables:															
3.1 Benchmarking of technologies for groundwater recharge, identification of the suitable technologies in the context of Suriname, including the prioritization and selection of the suitable technology(ies).								X							
3.2 Report on the existing pre-treatment technologies to be used before the water is being recharged to the groundwater, identification of the suitable technologies in the context of Suriname, including the prioritization of the suitable technologies.									X						
3.3 Minute of the meeting and selection of the technologies to be designed									X						
3.4 Design of the full system for that will enable Suriname to recharge its aquifer in time of drought in a sustainable, clean, and safe manner.										X					
3.5 Cost analysis of the full system											X				
3.6 Benchmark of the financial sources that could finance a pilot and scale up of the architecture of Aquifer recharge												X			
3.7 Minute of the full day meeting including a list of participants disaggregated by gender, materials used for the session, photos.													X		

4. Resources required and itemized budget:

The maximum budget for this Technical Assistance will be between 180,000 to 200,000 USD.

Activities and Products	Human Resources	Travels	Meetings and events	Equipment and materials	Estimated costs	
					Minimum	Maximum
Mandatory Output: Develop communication documents and implementation work plan	I1: 14 I2: 2 N2: 1	*None*	*None*	*None*	*6,000*	*8,000*
Output 1: Map stakeholders and establish a stakeholder working group	I1:12 I2: 1 N1: 5 N2: 1	*1 international trip for the leader of the team of consultants.* *Members of the limited work group traveling nationally to attend activity 1.3*	*Activity 1.3: Kick-off meeting*	*None*	*14,000*	*15,000*
Output 2: Assess drought risk and water resources in Suriname	I1: 45 I2: 41 N1: 16 N2: 21	*Activity 2.5: Team leader travelling for the meeting*	*Activity 2.5: Organize a meeting with the stakeholder working group to summarize the results of outcome 2*	*None*	*80,000*	*87,000*
Output 3: Design a fully integrated system that will enable Suriname to recharge its aquifer in time of drought in a sustainable, clean, and safe manner.	I1: 30 I2: 7 N1: 10 N2: 5	*1 international trip for the leader of the team of consultants.* *Members of the limited work group traveling nationally to attend activity 3.7*	*Activity 3.7 Organize a two-days' workshop with the stakeholder working group and stakeholders mapped in Activity 2.1*	*None*	*80,000*	*90,000*

Rango de costo estimado para la totalidad del plan de respuesta	***180,000***	***200,000***

5. Profile and experience of experts:

Experts required	Brief description of required profile
Expert in Water management (International expert 1).	The project manager shall have the following expertise and experience: • Master's degree or above (or equivalent experience) in water management, climatologist, meteorologist, water engineer, 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 the definition and development of drought prevention system, management of water resources, management of aquifers. • At least 5 references demonstrating experience in either the implementation of drought prediction systems, implementation of technologies to recharge aquifers, or affiliate. • Experience in organising workshops and/or capacity building trainings. • Previous experience in LAC or in islands will be valued. • Excellent written and communication skills in English are required.
Water Climate Technologies (International expert 2)	The expert agriculture design shall have the following expertise and experience: • Master's degree or engineering degree in water management, climate smart water management, or affiliate. • At least 8 years of experience in identifying, evaluating, designing deploying climate technologies for the water sector. • At least 3 references demonstrating experience in the analysis, design, testing and implementation of climate smart technologies for management of water resources in developing countries. • Experience in organising workshops and/or capacity building trainings. • Previous experience in LAC or in developing islands will be valued. • Excellent written and communication skills in English are required.
Gender expert (National expert 1)	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 agriculture sector in developing countries. • Excellent written and communication skills in English are required. • It is expected that the gender expert will be based in Suriname or with the availability to travel frequently and for long periods of time in Suriname.
Water engineer	The agriculture engineer shall have the following expertise and experience:

(National expert 2)	• Master's degree or above (or equivalent experience) in water engineering, water management technology and/or management or an affiliated major • At least 8 years of experience in the field of water management and climate technologies in LAC or in islands • Excellent written and communication skills in English are required. • It is expected that this expert will be based in Suriname or with the availability to travel frequently and for long periods of time in Suriname.

6. Intended contribution to impact over time:

This project will enable Suriname to map drought risks, and to build the architecture of a safe, reliable, and sustainable aquifer recharge system. This TA will also support the design of a customized system for the water management of the county along with a benchmarking of possible source of financing to implement a pilot and scale up the project.

7. Relevance to NDCs and other national priorities:

In its NDC, Suriname underlines unconditional contributions in relation to improvements in water resources management. In addition, one priority sector identified for technology transfer is water modelling, water resource mapping, and water storage and harvesting.

8. Linkages to relevant parallel on-going activities:

The latest study available is dated from 2014 and did a hydrogeological assessment of the costal aquifer but did not contemplate water recharge solutions.

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

Thanks to the financial benchmarking, financial resources will be mobilized, and a pilot will be implemented.

10. Gender and co-benefits:

Imbedded into the design of the activities:	• Better access to water: Improved water supply systems benefits households, especially of the most vulnerable, to apply water saving measures. • Sustainable water delivery to the communities: With more informed planning, water cuts will be avoided, and a more better-informed supply structure will be put in place, paying special attention to the needs of women and youth and those in vulnerable situation.
Gender and co-benefits of the activities:	The access to water in time of drought affect all the activities, and species, but the most affected are the female and youth population.

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

National Stakeholder	Function in the implementation of the technical assistance
National Designated Entity (Directorate General of Climate Change, Ministry of Environment and Forestry)	Member of the stakeholder working group, supervise the implementation of the TA, ensure quality checks of the deliverables and implementation of the mission.
NDA	Member of the stakeholder working group, Member of the stakeholder working group, supervise the implementation of the TA, ensure quality checks of the deliverables and implementation of the mission.

Hydraulic Research Division	Stakeholder
Ministry of Natural Resources and Department for Water Supply (DWV/NH)	Member of the stakeholder working group as main owner of data.
DA	Stakeholder
The Suriname Water Supply Company	Member of the stakeholder working group as main owner of data.
The Meteorological Service	Stakeholders
Ministry of Agriculture, Animal Husbandry and Fisheries	Stakeholders
Ministry of Physical Planning, Lands and Forest Management	Stakeholders
Ministry of Regional Development	Stakeholders
N.V. Surinaamsche Waterleiding Maatschapij (SWM, Suriname Water Company	Key stakeholder, part of the Stakeholder Working Group
Ministry of Health	in charge of monitoring environmental health
Ministry of Agriculture	In charge of irrigation
Ministry of Regional Development,	in charge of drainage systems

12. SDG Contributions:

Goal:	Sustainable Development Goal	Direct contribution from CTCN TA
1	End poverty in all its forms everywhere	The Technical Assistance will map drought risks through GIS and design an aquifer mapping architecture that will therefore support food security and increase the income of rural communities.
2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	The TA will assess the vulnerability of the country define the water balance and identify the most suitable technologies to manage the water resources and recharge the groundwater in times of drought.
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote lifelong 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	
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	The system will consist of various aspects that will be useful for planning and conservation of water resources in a small island of the pacific.
	13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	This climate technology will help Suriname to become more resilient to the effects of climate change.
	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	The project includes numerous workshops, meetings and 46months of testing of the drought prediction model.
	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	The drought prediction system is a planning tool.
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 the relevant boxes below	Primary	Secondary
☐ 1. Decision-making tools and/or information provision	X	
☐ 2. Sectoral road maps and strategies		
☐ 3. Recommendations for legal reforms, policies, and regulations		
☐ 4. Financing facilitation		X
☐ 5. Private sector engagement and market creation		
☐ 6. Research and development of new technologies		
☐ 7. Feasibility of technology options	X	
☐ 8. Piloting and deployment of technologies in local conditions		
☐ 9. Technology identification and prioritization	X	

Please note that all CTCN technical assistance contributes to strengthening the capacity of in-country actors.

14. Monitoring and evaluation process:

Upon contracting the implementing partners to implement this Response Plan, the lead implementer will produce a monitoring and evaluation plan for the technical assistance. This 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) THE COUNTRY on overall satisfaction level with the technical assistance service provided; (ii) the Lead Implementer on the experience and knowledge gained through the technical assistance; and (iii) the CTCN Director on the timeliness and appropriateness of the activities and outputs.