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## TERMS OF REFERENCE (TOR)

### APPLICATION OF ENVIRONMENTAL FLOWS AND RIVER BASIN MANAGEMENT FRAMEWORK FOR THE TEBICUARY RIVER PRIORITY BASIN AS INPUTS FOR THE IMPLEMENTATION OF THE NATIONAL STRATEGY FOR ADAPTATION TO CLIMATE CHANGE - PARAGUAY

CTCN REFERENCE NUMBER: 2017000001

#### 1 BACKGROUND INFORMATION

The Climate Technology Centre and Network (CTCN) is the operational arm of the United Nations Framework Convention on Climate Change (UNFCCC) Technology Mechanism and hosted by the United Nations Environment Programme (UNEP) in collaboration with the United Nations Industrial Development Organization (UNIDO) and supported by 11 partner institutions with expertise in climate technologies. The mission of the CTCN is to promote accelerated deployment and transfer of climate technologies at the request of developing countries for energy-efficient, low-carbon and climate-resilient development.

These requests for Technical Assistance (TA) are being submitted to the CTCN by the National Designated Entity (NDE) of the respective country. The scope of services under these Terms of Reference shall be executed based on a restricted solicitation process. By mandate, only accepted Members of the CTC Network are eligible to submit proposals and execute the required services to implement the response. Should the bidder partner with another institution to deliver a minor part of the services described in these Terms of Reference, it is expected that the partner institution also joins the CTC Network.

**In case you are not a CTCN network member yet, you may bid for implementation of the technical assistance, subject to the condition that you submit your completed application for CTC Network membership before the bid closure and the same is acknowledged by the CTCN. Furthermore, the contract award – should your bid be selected – is conditional to your network membership application having been successfully approved by the Director of CTCN. Should the bidder partner with another institution to deliver the services described in these Terms of Reference, it is expected that the partner institution also joins the CTC Network.**

The maximum budget for this contract is **USD 180,000**.

**Important note: The bidders must quote for Output 1 and for rest of the outputs separately. However, the total value of the bid would be considered while awarding the contract.**

#### 2 PROJECT CONTEXT

Paraguay has expressed its interest in reducing the adverse effects of climate change. As a landlocked country whose economy is predominantly based on agriculture, Paraguay is highly vulnerable to climate change impacts. Adaptation is an essential part of reducing these negative impacts. However, due to the lack of information and strategies to enhance resilience against climate risk, this country has faced environmental, social, health and economic problems.



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Paraguay intends to monitor the behaviour of the hydrological cycle and delivers control measures for climate change response at river basin levels, using a valid framework for an Integrated Water Resource Management (IWRM). A suitable process based on the framework will make it possible to collect hydrological and ecological data and identify adaptive measures to protect aquatic system from climate change. To provide a right decision for enhancing sustainable and climate-resilient IWRM, environmental flow (EF) at river basin levels needs to be defined and provided to decision makers. Understanding environmental characteristics and associated water drainage through applying EF tools is required to determine monitoring process and control measures for managing the quality and quantity of water and enhancing resilience against climate risk.

The application of an EF tool which is designed in consideration with data availability in river basins of Paraguay represents the first phase of the TA. This tool will assist the authorities to develop IWRM plans with identification of relevant adaptive measures. The Tebicuary River Basin is proposed as an on-the-job training where associated data are used to train stakeholders to understand the EF tool. This river basin is one of the country's largest basins and faces water management problems caused by all economic sectors and both rural and urban human settlements.

The second phase of the TA is to develop a framework for the formulation of an IWRM plan at river basin levels. The framework will underpin the development of IWRM plan providing the identification and implementation of control measures to adapt to climate change in river basins of Paraguay.

The national impact of the TA is expected to be highly relevant, allowing significant progress to be made in establishing the process of the IWRM at river basin levels, in particular emphasizing climate resilience that is compatible with the protection and conservation of water resources. The outcomes from the TA will provide valuable information which can be used for developing the national policy of climate change response in water sector that is currently in progress.

### **3 AIM OF THE CONTRACT**

The aim of this TA is to enhance IWRM at river basin levels of Paraguay in response to climate change. In the long term, expectations are: 1) Greater and better potential to establish the national policy for climate change adaptation based on the implementation of IWRM in Paraguay, 2) Maintenance of water-dependent development activities in a way of more efficient IWRM by the Secretaria del Ambiente (SEAM) and 3) Greater opportunity to achieve funding to be used for implementing the activities of adaptation to climate change, as a consequence of strengthening technical capacities for the formulation of the proposals.

The two main components of this TA include:

1. The application of a river basin-scaled EF tool in river basins of Paraguay
2. The development of a framework for establishing an IWRM plan at river basin levels



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4 SCOPE AND ACTIVITIES OF THE PROPOSED CONTRACTED SERVICES

To get a better understanding of the objectives of the request, it is recommended that the Contractor refers to the complete Request by clicking on the following link: <https://www.ctc-n.org/technical-assistance/projects/design-methodology-determining-and-evaluating-environmental-flows-and>.

Particular attention should be paid to the following sections:

- Linkages to relevant parallel ongoing activities,
- Main in-country partners,
- Gender and co-benefits,
- Anticipated follow-up activities.

Once the Contractor is contracted, the CTCN will organize a kick-off implementation call between all parties involved to introduce the Contractor to the Paraguay NDE, present the activities and timeline and clarify the roles and responsibilities.

In general, to ensure a successful implementation and proper interaction with national counterparts and stakeholders, it is recommended that enough days are allocated on site for the most relevant activities.

It is mandatory for the Contractor(s) to allocate at least 1% of the budget to integrate a gender-approach to the activities. Please refer to the CTCN Gender Mainstreaming Tool for Response Plan Development for guidance at <https://www.ctc-n.org/technologies/ctcn-gender-mainstreaming-tool-response-plan-development>

<b>Output 1: Development of a response plan</b>
<u>Activity 1.1: In-country planning mission:</u> to clarify activities with the NDE and project proponent, initiating the drafting of the response plan.
<u>Activity 1.2: Development of a response plan:</u> The CTCN Response Plan development must derive from the activity 2 to 5 outlined below, and be informed by consultations with key stakeholders in Paraguay and the NDE notably, as well as done in close coordination with the CTCN. Please find the CTCN Response Plan template by clicking on the following link: <a href="https://www.ctc-n.org/technical-assistance/introduction">https://www.ctc-n.org/technical-assistance/introduction</a> . Preparation of a response plan and all sections and documents are required therein, in accordance with the requirements set out by the CTCN, including : <ul style="list-style-type: none"><li>• Data and information gathering and reviewing</li><li>• Stakeholder consultations and integration of their recommendations in the response plan design</li><li>• Ongoing projects/ programs active in the recipient country in order to get a clear picture of the current baseline</li><li>• Proposed activities/ interventions needed to address identified problems</li><li>• Project baseline including information on policies, plans and programmes that are active in the country, highlighting opportunities for synergies and coordination.</li><li>• Logical framework to summarise the project components and activities including the budget and timeline</li></ul>



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**Deliverable output 1:**

*Detailed CTCN Response Plan*

**Output 2: Knowledge development of integrated water resource management (IWRM) at river basin levels**

The objective of this activity is to review similar experiences, previously carried out in different parts of the world, in relation to the following areas:

- Environmental flow (EF) designed and implemented at river basin levels
- IWRM plans at river basin levels in consideration with climate change impacts and risks
- Control measures for climate change adaptation at river basin levels

A number of approaches and tools used for the above areas will be assessed not only to know their outcomes but also to identify data needed for the implementation of this TA. It is mandatory that the Contractor(s) investigate previous studies in Latin America and the Caribbean (LAC) and associated data collection methods which have been applied at river basin levels. Based on the literature review, the existing gap of integration of climate change intervention in developing IWRM at river basin levels will be identified. In addition to this, recommendations for IWRM in river basins of Paraguay in response to climate change will be also provided. The output will be a document of literature review and recommendations based on the findings.

**Deliverables output 2:**

- *Document on a literature review and recommendations*

**Output 3: Application of a tool for defining EF at river basin levels**

Activity 3.1 Analysis of data availability

The Contractor(s) will analyze the data availability in the country and identify the missing data for defining EF at river basin level. For the missing data, the Contractor(s) will present best practices in data collection. The Contractor(s) will have a consultation with NDE of Paraguay and stakeholders to identify data availability.

So far, it has been identified that the following data are available to define EF in the Tebicuary River Basin.

- Data on flows in the upper basin (Yuty Station)
- Precipitation data
- Water use of the basin
- Shape file of the basin for protected wild areas
- Shape file of the basin's automatic stations of hydrology
- Height of the river (automatically monitored from 2013 (monthly) and to date)
- Quality and quantity of the upper basin of the Tebicuary river (report from 2016)

The output will be a report listing the available data and recommendation for collection of missing data.

Activity 3.2: Determination of a river basin-scaled tool to define EF in Paraguay

In this activity, the most relevant tool to define EF at river basin levels in Paraguay will be identified. This tool should be able to assess water flow in river basins and aquatic ecosystem. A list of river basin-scaled



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EF tools reviewed in the Activity 2 will be evaluated in consideration with data availability in Paraguay. One of the EF tools using level of data that exist in Paraguay will be then selected and adjusted, taking into account national plans and strategies for water management and climate change response. It is recommended that the Contractor(s) investigate the tools and associated data collection methods which have been applied at river basin levels in Latin America and the Caribbean (LAC). The adjusted tool should be discussed and evaluated through workshop (forum) with key stakeholders and experts in the field of water management and aquatic ecology. The output will be a report of the evaluation of the existing river basin-scaled EF tools and the determination of the EF tool to be used in river basins of Paraguay.

### Activity 3.3: Application of the tool to define EF in the Tebicuary River Basin

The tool will be applied to define EF in the Tebicuary River Basin as part of an on-the-job training activity. This on-the-job training will be provided to associated stakeholders with the aim of developing their technical capacity and competencies. This training will comprise the understanding of EF at river basin levels, the operation of the EF tool and the process of data collection using the Tebicuary River Basin as a case study.

In this activity, if the necessary data for the application of the tool is not available (availability identified activity 3.1), reference data from other cases will be used as a supplementary data.

Findings from this activity can be taken into account when developing plans and strategies for the IWRM and climate change response in the Tebicuary River Basin. The output will be a report on the results of the training programme with associated course materials.

### **Deliverables output 3:**

- Data availability report and recommendations for data collection (if necessary)
- Report on the evaluation of the existing river basin-scaled EF tools and determination of the tool to define EF in river basins of Paraguay
- Report on the results of the training programme with associated course materials for the Tebicuary River Basin

### **Output 4: Development of a framework for an IWRM plan**

A framework for the IWRM plan in response to climate change in Paraguay will be developed. This framework will be applied to strengthen climate resilience as well as improve the quality of IWRM in Paraguay.

The Contractor(s) need to introduce the methodology to define the following suggested sections (not exhaustive list) of the framework:

- Assessment of environmental characteristics (including understanding of EF in river basins)
- Monitoring process
- Identification of adaptive measures for IWRM at river basin levels in response to climate change
- Development of a methodology for prioritising adaptive measures to enhance climate resilience
- Process of monitoring and evaluation of the IWRM plan



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The framework will be discussed and evaluated through workshop with key stakeholders and experts in the field of IWRM. The output will be a document presenting the framework for the IWRM plan in Paraguay.

### Deliverables output 4:

- *Report on the framework for the IWRM plan in Paraguay*

### Output 5: Monitoring and evaluation

#### Deliverables output 5:

- *One page description of intended outcomes and impacts from this TA, drafted at initiation of implementation and revised at closure, using the CTCN template located at: <https://www.ctc-n.org/technical-assistance/introduction> . (in English)*
- *A TA 'Closure and Internal Information Report' using the CTCN template available at: <https://www.ctc-n.org/technical-assistance/introduction> (in English)*
- *A monitoring and evaluation plan using the CTCN template available at: <https://www.ctc-n.org/technical-assistance/introduction> (in English)*

## 5 GENERAL TIME SCHEDULE

The activities under this Contract should be completed within a period of 8 weeks from the date of signature of the Contract for the development of the Response Plan (output 1) and within a period of 10 months for the remaining outputs (outputs 2 to 5).

## 6 PERSONNEL IN THE FIELD (PROFESSIONAL EXPERIENCE AND QUALIFICATIONS)

The Contractor is expected to provide the services of a team that should ideally comprise the following competencies:

- Proven expertise in the design and calculation of EF at river basin levels
- Proven expertise in applying climate change scenario in IWRM plans
- Demonstrated experience in supporting governments in the development of IWRM plans with relation to Climate Change
- Demonstrated experience in the use of EF tools in developing countries
- Demonstrated experience in climate change project in South America, preferably in Paraguay
- Proven experience in designing and delivering the training for associated technicians to use the EF tool in Spanish
- Excellent written and communication skills in both English and Spanish

The CVs of the respective experts assigned to this project by the Contractor must be provided.



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**7 LANGUAGE REQUIREMENTS**

The working language for the purposes of this project is Spanish, thus an excellent command of Spanish is required of the proposed personnel. The deliverables must be submitted in the language(s) specified above.

All delivered documents must be of such a quality that no further editing shall be required.

**8 DELIVERABLES AND SCHEDULE**

The table below details the indicative schedule for this assistance. This schedule can be revised in the Contractors' proposal.

Activities and Deliveries	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
Output 1 and activities:	x	x										
Output 2 and activities:			x	x	x							
Output 3 and activities:						x	X	x	x			
Output 4 and activities:										x	x	
Output 5 and activities:			x								x	x

Activities	Delivery date (after contract start date)
<b>Output 1: Development of a response plan</b>	
Activity 1.1: In-country planning mission	Week 3
Activity 1.2: Development of a response plan	Week 8
<b>Output 2: Knowledge development of integrated water resource management (IWRM) at river basin levels</b>	Week 20
<b>Output 3: Application of a tool for defining EF at river basin levels</b>	
Activity 3.1: Analysis of data availability	Week 24
Activity 3.2: Determination of a river basin-scaled tool to define EF in Paraguay	Week 28
Activity 3.3: Application of the tool to define EF in the Tebicuary River Basin	Week 34
<b>Output 4: Development of a framework for an IWRM plan</b>	Week 46
<b>Output 5: Monitoring and evaluation</b>	
One page description of intended outcomes and impacts	Week 9 and Week 50
A monitoring and evaluation plan	Week 9
A technical assistance 'Closure and Internal Information Report'	Week 50