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TERMS OF REFERENCE (TOR)

Piloting a sustainable system to collect and distribute agro-meteorological information in Benin

CTCN Request Reference 2015-056/BEN-02

**(Restricted Competition to accepted Members of the CTCN Network ONLY)**

**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 co-hosted by the United Nations Environmental 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 development 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. Eligible requests are processed by a group of selected experts who develop a Response Plan. The Response Plan, signed by the government of Benin and the CTCN) is attached to the Terms of Reference and provides important additional information on the scope of services to be implemented.

**The scope of services under these Terms of Reference shall be executed based on a restricted solicitation process where only accepted Members of the CTCN Network, are eligible to submit proposals. 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 CTCN Network.**

**2 PROJECT CONTEXT**

Benin's Strategic Orientations for Development (MDGs) 2006-2011 and Growth and Poverty Reduction Strategy (GPRS III) 2010-2015 view the agricultural sector as a lever to combat poverty, supporting the concept of the "green revolution" which will enable Benin to become a country with a competitive agricultural economy over the coming years. A need has become apparent to implement a third-generation Growth and Poverty Reduction Strategy (GPRS III) for the period 2010-2015 and a specific plan for revival of the agricultural sector. The main goal of the Strategic Plan for Agricultural Sector Revival is to improve the performance of agriculture in Benin, so that it becomes capable of achieving sustainable food and nutritional self-sufficiency and of contributing to the economic and social development of Benin.

Among the obstacles restricting agricultural development, are the poor capacity to adapt to climate variability and extreme weather phenomena. For about two decades, the recommended agricultural

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calendars in the various agro ecological zones have been disrupted in Benin due to late rainfalls. Moreover, the variability in the rainfall observed between 1951 and 2010 reveals that nationwide, short periods of shortfall alternate with short periods of excessive rain. While an analysis of the current climate on an annual scale does not reveal any significant trends in the variation of precipitation, a seasonal analysis highlights significant differences since 1971. This uncertainty surrounding the scale of climate disturbances prevents the technical authorities from proposing new calendars for producers.

While many efforts have been made to address this issue (detailed in the response plan), there is currently no multiple-risk early warning systems or capacity to produce and disseminate meteorological or climatic information in Benin. Data collection agents are not trained, the data collected are not communicated on time and there is no processing or analysis of data or feedback on the data communicated. Therefore, the government of Benin requested technical assistance to the CTCN.

### 3 AIM OF THE CONTRACT

**The overall objective of the technical assistance is to strengthen early warning in Benin for extreme events (drought, floods, etc.), and to increase national capacities to collect, disseminate and use agro-meteorological information.** The assistance will cover the installation and piloting of software (GeoWRSI - Water Requirements Satisfaction Index) which enables national actors to analyze agro-meteorological information and calculate an index, improving forecasts and water balance analysis in relation to the producers' farming calendar and crop monitoring. The system will be tested at the national and local level with agricultural extension workers for a pilot area (Parakou and surrounding areas), so that the full information chain can be applied. In addition, there is the potential for long-term projects or programmes based on the software and on in-depth analysis of the institutional context and the mechanisms for disseminating data and publicizing information. Progress made in the pilot region would enable large-scale expansion of the approach used for this CTCN assistance to other regions of Benin.

The specific objectives for this assistance are as follows:

- Improve the quality of data available to producers for crop monitoring
- Improve mechanisms for communication of data and information relevant to crop monitoring.
- Provide farmers in the pilot region with capacity building in adaptation to climate change
- Strengthen food security for communities in the pilot region which are vulnerable to climate change
- Improve the income of farmers (small-scale producers)
- Strengthen early warning systems in relation to extreme events (drought, floods, etc.)
- Capitalise on progress and on lessons learned in the pilot region, in relation to the analysis and dissemination of agro-meteorological data, for the benefit of other agro-meteorological areas of the country



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The expected outcomes from this assistance are as follows:

1. An analysis of the institutional framework, information transfer mechanisms and existing materials/methods for data collection and dissemination is completed and the results (report) are disseminated to partner institutions at the national and local (pilot area) level.
2. A sustainable system for analysing agro-meteorological information in relation to crop monitoring (WRSI) is tested and the data analysed for a pilot area (Parakou and surrounding areas).
3. A mechanism is developed for the communication of baseline data and information to producers.
4. Capacity building is provided to national actors in analysing and disseminating agro-meteorological data in relation to rainfall (WRSI) for a specific crop.
5. Capacity building is provided to decentralised entities (CARDER workers) in data collection and in disseminating and publicising information needed by producers.
6. Information relevant to the farming calendar in the pilot area (Parakou and surrounding areas) is available and usable and is disseminated via agro-meteorological bulletins (in conjunction with Benin Meteorological Agency bulletins) and rural radio stations in local languages.
7. A concept note is prepared for future resource mobilization and potential funding sources are identified.

#### **4 SCOPE AND ACTIVITIES OF THE PROPOSED CONTRACTED SERVICES**

To get a better understanding of the objectives of the request for technical assistance, it is recommended that the bidder refer to the complete Response Plan and the request submitted by Benin (available in English and French).

The activities identified to achieve this aim are based on five main stages:

- i. Situational review
- ii. Capacity building for national actors
- iii. Capacity building for regional actors
- iv. Implementation of the system
- v. Making the system sustainable

#### **Activity 1 - Situational review**

For the region selected by the applicant body (Parakou and surrounding areas), the review will assess the local context and exact location of the pilot sites and will include the collection of agro-meteorological data relating to crops and context (soil types, yields, rates of evaporation and transpiration, crop coefficient, water retention capacity, etc.). The review will also include an analysis of the institutional context and mechanisms for communication of data to the national level.

#### **Activity 1.1**



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Review existing sites (agro-meteorological and rainfall stations) in the pilot area (Parakou and surroundings areas) and identify data collection sites.

### **Activity 1.2**

Examine the local context in relation to crops, as well as the institutional context (communes, CARDER, etc.), actors involved, activities, capacity and existing constraints in the pilot area (Parakou and surrounding areas) for data collection by agricultural extension workers and meteorological observers.

### **Activity 1.3**

Conduct a review of agro-meteorological data communication mechanisms and of capacity and existing materials for the collection, publication and communication of the required data.

### **Activity 1.4**

Propose a mechanism for the communication of baseline data from the national to the local level, taking into account the findings from the review.

### **Activity 1.5**

Prepare and disseminate the report, covering the sites identified, actors, activities, capacity, constraints and existing communication mechanisms, as well as the mechanism proposed for the communication of baseline data and information to producers.

### **Activity 1 – Deliverable**

<b>Deliverables</b>
<i>Report covering sites identified, actors, activities, capacity, constraints and existing communication mechanisms, and proposal of a mechanism for the communication of baseline data and information to producers.</i>

### **Activity 2 - Capacity building for national actors**

Develop the technical expertise of national actors (Ministry of Agriculture / directorate of agricultural extension and operational training (DICAF) / national agricultural research institute of Benin (INRAB); Ministries responsible for the environment and for university laboratories; Meteorological Office, etc.) in using the system for analysis of agro-meteorological information.



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### Activity 2.1

Make data available on use of the software (GeoWRSI - Water Requirements Satisfaction Index) in the agreed pilot area (Parakou and surrounding areas).

### Activity 2.2

Hold training sessions for relevant actors in use of the software system (GeoWRSI) to enable analysis of agro-meteorological information and calculation of an index, improving production forecasts and water balance analysis in relation to the producers' farming calendar. Introduce, discuss and make adjustments to the data communication mechanism.

### Activity 2 – Deliverables

<b>Deliverables</b>
<i>Terms of reference for training</i>
<i>Data needed to use the software made available</i>
<i>Report on training for actors in use of the software (25 people receive two sets of two-day training)</i>

### Activity 3 - Capacity building for regional actors

Provide awareness-raising for actors in the selected communes in the Parakou region, and capacity building for decentralised actors in these eight communes (40 agricultural extension workers and 16 meteorological observers).

### Activity 3.1

Hold training sessions for trainers (agricultural extension workers, etc.; technicians specialising in agricultural crops (TSPVs), statistics, monitoring and evaluation (TSSSEs), livestock (TSPAs), fisheries (TSPHs) and rural management and development (TSAERs); rural development officers (RDRs); DICAF; Benin Meteorological Office) in data collection and communication and in dissemination of agro-meteorological information (60 people).

### Activity 3.2

Hold awareness-raising workshops for municipal and other local actors in the Parakou region (producers, NGOs, town councils, farmers' associations, local radio stations, etc.) on the nature and benefits of the information provided by the system (around 50 people per commune).

### Activity 3.3

Sign contracts with local radio stations to ensure the information is regularly broadcast to producers.



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**Activity 3 – Deliverables**

<b>Deliverables</b>
<i>Terms of reference for training</i>
<i>Report on training for trainers (40 agricultural extension workers and 20 meteorological observers)</i>
<i>Report on awareness-raising workshops for municipal and other actors</i>
<i>Contracts with local radio stations</i>

**Activity 4 - Implementation of the system**

The software and system for data collection and for dissemination of information to producers will be implemented at the start of the rainy season (March/April) by DICAF staff, with support from the national consultant.

**Activity 4.1**

Daily use of the software by DICAF and Benin Meteorological Office Regular data analysis and processing by DICAF staff and Benin Meteorological Office.

**Activity 4.2**

Communication of data by DICAF staff using the established mechanism.

**Activity 4.3**

Regular issue and broadcasting of agro-meteorological bulletins by DICAF in conjunction with the Benin Meteorological Office.

**Activity 4.4**

Broadcasting of agro-meteorological information by extension workers and community radio stations in local languages.

**Activity 4.5**

Coordination and monitoring of activities and any necessary adjustments by the national consultant (close monitoring) and by the Ministry of the Environment (NDE).

**Activity 4 – Deliverables**

<b>Deliverables</b>
<i>Communication of agro-meteorological information via radio</i>
<i>Agro-meteorological bulletins</i>



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### Activity 5 - Making the system sustainable

Facilitate the next steps and sustainability of the system and mechanisms introduced, and contribute to scaling-up of the activities.

#### **Activity 5.1**

Preparation of final report by national consultant (in collaboration with expert 1), summarizing all activities and outcomes under the CTCN assistance and presenting the main conclusions and recommendations, including links with other initiatives and the future initiatives needed to capitalize on the outcomes of the CTCN assistance.

#### **Activity 5.2**

The report is printed and distributed to the relevant actors (national consultant and DICA).

#### **Activity 5.3**

Preparation of a concept note (national consultant and expert 1) for continuation of the activities, which will facilitate access to potential future funding and enable the work supported by the CTCN assistance to be scaled up, in close collaboration with stakeholders.

#### **Activity 5.4**

Additional technical, financial and capacity needs assessment, to enable the national team to submit applications to funders and secure funding after the CTCN assistance ends. Based on the recommendations in the report and the concept note, various types of funding are identified by the expert. National (public and private), bilateral, regional and/or international funding sources are identified, a list of potential future funding is drawn up and contact with potential funders is facilitated by the expert.

### Activity 5 – Deliverables

<b>Deliverables</b>
<i>Project concept note</i>
<i>List of potential funding sources and recommendation on future funding</i>
<i>Final report on activities and outcomes obtained and recommendations</i>
<i>Printing and distribution of 100 copies of the report</i>

<b>Performance indicators of CTCN Assistance</b>				
<b>Response output</b>	<b>How output will be used to ensure creation of result</b>	<b>Expected result</b>	<b>Expected outcome of result</b>	<b>Anticipated impact that outcome will produce</b>



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Analysis of national and local context, institutional framework, existing information transfer mechanisms and equipment and methods for data collection and dissemination	Realities of the current context are known, communicated to stakeholders and taken into account in development of the new system	Improved awareness of current realities	Local and national context and existing challenges taken into account in introduction of the new crop monitoring system	New system is tailored to needs, capacity and gaps in relation to the existing national and local context
A sustainable system for analysing agro-meteorological information in relation to crop monitoring is introduced and the data analysed for a pilot area	Training for workers; software installation; regular data processing and analysis	Software installation and analysis of data relating to crop monitoring	Availability of high quality data, enabling regular dissemination of accurate information relating to crop monitoring in the pilot area	New software enabling better production forecasts, in conjunction with the producers' farming calendar, is rolled out
A mechanism is developed for the communication of baseline data and information to producers	Development and dissemination of the mechanism, based on the national and local context	Mechanism introduced for dissemination of data from national to local level	High quality data are available at national level and are disseminated to producers every two weeks to assist crop monitoring	Producers have the necessary information for crop monitoring
Capacity building is provided to national actors in analysing and disseminating agro-meteorological data in relation to rainfall (WRSI) for a specific crop.	Training for national actors; collection, processing and dissemination of agro-meteorological data	National actors are trained and have the necessary knowledge for use of the software and dissemination of the data	High quality data are available and are disseminated to producers to assist crop monitoring	Producers have the necessary information for crop monitoring





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Decentralised bodies are provided with capacity building in data collection and in disseminating and publicising information needed by producers	Train trainers and Raise awareness among small-scale farmers and other local actors	Trainers are trained and producers and other local actors have raised awareness	Trainers have command of awareness-raising tools and have informed local actors	Improved capacity of farmers for adaptation to climate change, strengthening of early warning in relation to extreme events (drought, floods, etc.) and improvement to food security
Information relevant to the farming calendar in the pilot area is available and usable and is disseminated via agro-meteorological bulletins and rural radio stations in local languages	Training for extension workers; awareness-raising for decentralised actors; contracts with local radio stations	High quality data are available and are regularly disseminated to producers Information regularly disseminated	Producers have the necessary information for crop monitoring	Improved capacity of farmers for adaptation to climate change, strengthening of early warning in relation to extreme events (drought, floods, etc.) and improvement to food security
A concept note is available for future resource mobilization and potential future funding sources are identified	Capitalise on experience in terms of analysis and dissemination of agro-meteorological data in the pilot area and share widely	A concept note is available	Access to new initiatives to ensure scaling-up of the system	The system for analysis and dissemination of agro-meteorological data and information is used widely in Benin

The activities, progress and outcomes will be closely monitored by the National Designated Entity (NDE) of the CTCN in the country, and the requesting agency.

The estimated budget for this contract is up to 140,000USD.

## 5 GENERAL TIME SCHEDULE

The activities under this contract should be completed within a period of **twelve months** from the date of signature of the Contract.



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### 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 experience and in depth expertise in agro-meteorological and crop monitoring information systems, their development and use at community, regional and national levels
- Proven experience and expertise on adaptation to agriculture in regards to climate change impacts, especially droughts and floods
- Proven experience and expertise in conducting capacity building activities, including trainings and trainings of trainers.
- Proven experience in developing funding proposals for international financiers and donors, especially related to agriculture and adaptation to climate change
- Proven experience in project coordination and facilitation in developing countries, preferably in Africa
- The staff assigned to the project must have previous experience and qualification of supporting climate projects, preferably in Africa and In Benin
- The staff assigned must have previous experience providing technical assistance to governments of developing countries exceeding 8 years, preferably in Africa
- Capacity to work closely with the national counterparts
- Very good conceptual and writing skills
- Very good networking and facilitation skills

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

### 7 LANGUAGE REQUIREMENTS

The working language for the purposes of this project is French, thus an excellent command of French is required of the proposed personnel. The final deliverables must be submitted in French and/or in English, depending on the requirements of national counterparts and potential donors/investors.

All delivered documents must be of sufficient enough quality so 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	Delivery date (after contract start date)
<b>Activity 1: Situational review</b>	
Report covering sites identified, actors, activities, capacity, constraints and existing	Week 10



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communication mechanisms, and proposal of a mechanism for the communication of baseline data and information to producers.	
<b>Activity 2: Capacity building for national actors</b>	
Terms of reference for training	Week 11
Data needed to use the software made available	Week 11
Report on training for actors in use of the software (25 people receive two sets of two-day training)	Week 12
<b>Activity 3: Capacity building for regional actors</b>	
Terms of reference for training	Week 13
Report on training for trainers (40 agricultural extension workers and 20 meteorological observers)	Week 15
Report on awareness-raising workshops for municipal and other actors	Week 16
Contracts with local radio stations	Week 15
<b>Activity 4: Implementation of the system</b>	
Communication of agro-meteorological information via radio	Every two weeks, commencing week 19
Agro-meteorological bulletins	Every four weeks, commencing week 21
<b>Activity 5: Making the system sustainable</b>	
Project concept note	Week 42
List of potential funding sources and recommendation on future funding	Week 42
Final report on activities and outcomes obtained and recommendations	Week 46
Printing and distribution of 100 copies of the report	Week 47