Replaced on the same memorandum and date

Government of the People's Republic of Bangladesh
Agro-Meteorological Information Systems Development Project
Component-C of BWCSRP
Department of Agricultural Extension
Khamarbari, Farmgate, Dhaka-1215

Revised Request For Expressions of Interest
(Consulting Services – Firm Selection)
Developing sub-seasonal to seasonal forecasts and associated climate information for agricultural decision-making on
"Agro-Meteorological Information Systems Development Project" (Component C of Bangladesh Weather and
Climate Services Regional Project) (Contract Package No.: AMISDP-SD-010)

Memo: 12.01.0000.018.01.001.21.6372   **Date: 19.12.2021**

The People's Republic of Bangladesh has received a credit in the amount of USD 113million as from the International Development Association (IDA) towards the cost of Agro-Meteorological Information Systems Development Project [Component –C of Bangladesh Weather and Climate Services Regional Project (BWCSRP)] to be implemented by Department of Agricultural Extension (DAE) and it intends to apply part of the proceeds to payments for the provision of consultancy services for the project by hiring of an International Agro-Meteorological Services Consultant.

2.   **Scope of Task /Service:**
     The services, among others, include the following:

     Develop and support BMD to implement cutting-edge sub-seasonal and seasonal forecasts of rainfall and temperature relevant to agricultural planning and decision-making processes, including the evaluation of product skill. Given evidence that the predictability of the climate of Bangladesh at seasonal and sub-seasonal timescales is limited, it will be essential for the selected firm to make use of international best practices for objective, reproducible forecast methodologies that take advantage of the latest state-of-the-art dynamical model predictions available. The forecasts should be developed based on seasonal and sub-seasonal dynamical model forecasts, calibrated against gridded data fields from BMD. They should include calibrated forecasts of rainfall, and temperature) issued in real-time, from a week to one month and ultimately to 1-2 seasons in advance, that can be tied and tailored to specific agriculture thresholds and decisions.

     The selected organization will work in collaboration with BMD and local agrometeorological experts to develop and connect climate information products designed to help address the needs of DAE and its stakeholders, using the firm's cutting-edge forecasting approach, along with best available historical and monitoring information to inform agriculture decisions. This will involve the development and implementation of largely automated forecasting systems and of online interactive tools to display and disseminate forecasts, as well as past and present data. It will also produce recommendations for the development of standard procedures to operationalize, operate and maintain the systems in real-time and beyond the life of the project.

     Provide relevant localized climate information products from BMD that can be integrated into existing and new agricultural advisories, and into the BAMIS portal. The selected firm will support DAE to identify and integrate skillful seasonal – to - sub-seasonal forecasts and other relevant past, present and future gridded weather and climate information products and analyses available from BMD such as newly generated merged datasets of quality-controlled station and satellite data (e.g., ENACTS) that may be useful to inform weather-sensitive agricultural management decisions. They firm will guide their integration of these data into existing agromet-advisories and explore opportunities to develop new advisories that consider the increased lead-time of seasonal and sub-seasonal forecasts. The selected firm will support the integration of newly developed products and datasets into the Bangladesh Agro-Meteorological Information Portal, in order to disseminate agro-meteorological services and related information to different users, especially to the farmers, in Bangladesh.

     Assess the usefulness and usability of new climate information products and advisories for local agricultural decision-making and for national planning and disaster risk-reduction. The selected firm will propose a process based on years of experience in the use of climate services for agricultural decision-making to assess how the new climate information products contribute to improving agromet-advisories developed from the perspective of farmers and other decision-makers, and analyze and share the results with DAE.

     Transfer the developed technology to DAE staff, and strengthen DAE capacity via training activities to generate, access, communicate and use new climate information products and agromet advisories. The selected firm will work with DAE to understand their capacity needs, and provide training for up to ten DAE staff on generating, communicating and supporting the use of new climate information and advisory products. It will provide recommendations on the development of a SOP manual covering accessing BMD products, integrating BMD products into relevant agricultural advisories, and incorporating the climate information products into the BAMIS portal.

     Continued technical support following completion of the project. The selected firm and its local partner will provide technical support as needed, on a fee basis, for troubleshooting, maintenance and enhancement of the systems at DAE and BMD.

3.   Department of Agricultural Extension (DAE) now invites eligible consulting firms ("Consultants") to indicate their interest in providing the Services. Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services. The short-listing criteria are:

(a)   General experience of the Firm(s);

(b)   Experience in similar assignments of compatible size, complexity and technical specialty in the required area;

(c)   Financial soundness of the firm; and staffing and logistics of the firm.

Consultants are requested to submit the following supporting documents in support of the above-mentioned criteria:

(a) Registration paper of the firm (s); (b) JV agreement/letter of intent (if applicable); (c) Firm's brochure; (d) Audited financial reports for last three years including top sheet; (e) service experience record (including nature, total cost, total input in terms of man month, employer, location of service etc.).

4.   Consultants may associate to enhance their qualification, but should mention whether the association is in the form of a "joint-venture" or of "sub-consultancy". In the case of an association, all members of such "association" should have real and well-defined inputs to the assignment and in such "association" it is preferable to limit the total number of firms including the associates to a maximum of three (03).

5.   The consultant will be selected in accordance with the Quality and Cost Based Selection (QCBS), ICB method set out in the World Bank's Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, January 2011 (Revised July 2014).

6.   Terms of Reference (ToR) will be available in the office of the undersigned and also in the DAE's website (www.dae.gov.bd/site/view/tenders/tender-EOI-job-circular and https://www.bamis.gov.bd/en/page/tender/). Interested consultant may obtain further information from the office of the undersigned from 09:00 to 17:00 hours (Except holidays).

7. Expression of Interest (both hard and soft copy) must be delivered to the address below (in person or by mail or by email) by **16:00 hours (GMT+ 6 hours) on or before January 23, 2022.** The authority reserves the right to accept or reject any or all EOIs without assigning any reason, whatsoever.

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Terms of Reference (ToR)
For Hiring a Consulting Firm
for
Developing sub-seasonal to seasonal forecasts and associated climate information for agricultural decision-making, Package No: AMISDP-SD-010

Assignment Duration	:	**18 Months**
Assignment location	:	Country-wide
Funding source (s)	:	IDA, World Bank
Contracting entity	:	Project Director, Agro-Meteorological Information Systems Development Project' (Component-C of "Bangladesh Weather and Climate Services Regional Project"), Department of Agricultural Extension, Khamarbari, Dhaka.
Method	:	QCBS, ICB

1. Background

As part of the Agro-Meteorological Information Systems Development Project (AMISDP), Component C: Bangladesh Weather Climate and Services Regional Project, funded by the World Bank, the consulting firm will support the development of improved Agro-Meteorological services to farmers of Bangladesh in order to sustain and increase agricultural productivity and assist them in coping with weather and climate extremes. The goal is to contribute to the development of agromet-advisories that are informed by the best available climate science including historical information, monitoring systems, and state-of-the-art forecasts at sub-seasonal and seasonal timescales, contributing to provide the agricultural sector with a decision support information system to mitigate climate-related agricultural production risks. New global and regional seasonal and sub-seasonal forecast products that have recently become available are allowing for more seamless prediction products across timescales (from 1-2 weeks to one month and ultimately 1-2 seasons), allowing for more tailoring to specific agricultural needs, pending sufficient skill.

2. Objectives

- Identify the best available climate information currently available and assess its skill and usability to help inform and improve agromet-advisories, including (a) sub-seasonal and seasonal forecasts (including weather-within-climate), (b) gridded historical information and (c) real-time data analyses.

- Develop and support BMD to implement objective, calibrated sub-seasonal and seasonal climate and forecasts products for rainfall, and temperature and evaluate their skill.

- Support BMD to develop operational, web-based climate information products and tools helping address the DAE and its stakeholders.

- Integrate climate information products from BMD into the BAMIS portal in order to increase its relevance at local level.

- Assess the usability of new climate information products and advisories for local agricultural decision-making and for national planning and disaster risk-reduction.

- Strengthen the capacity of DAE staff to access, understand, communicate and use new climate information products and integrate them into advisories, through training and training of trainers.

- Identify the needs for monitoring, maintenance, troubleshooting, and upgrading (if required) of the developed system to ensure long-term sustainability.

3. Scope of Work

Develop and support BMD to implement cutting-edge sub-seasonal and seasonal forecasts of rainfall and temperature relevant to agricultural planning and decision-making processes, including the evaluation of product skill. Given evidence that the predictability of the climate of Bangladesh at seasonal and sub-seasonal timescales is limited, it will be essential for the selected firm to make use of international best practices for objective, reproducible forecast methodologies that take advantage of the latest state-of-the-art

dynamical model predictions available. The forecasts should be developed based on seasonal and sub-seasonal dynamical model forecasts, calibrated against gridded data fields from BMD. They should include calibrated forecasts of rainfall, and temperature) issued in real-time, from a week to one month and ultimately to 1-2 seasons in advance, that can be tied and tailored to specific agriculture thresholds and decisions.

The selected organization will work in collaboration with BMD and local agrometeorological experts to develop and connect climate information products designed to help address the needs of DAE and its stakeholders, using the firm's cutting-edge forecasting approach, along with best available historical and monitoring information to inform agriculture decisions. This will involve the development and implementation of largely automated forecasting systems and of online interactive tools to display and disseminate forecasts, as well as past and present data. It will also produce recommendations for the development of standard procedures to operationalize, operate and maintain the systems in real-time and beyond the life of the project.

Provide relevant localized climate information products from BMD that can be integrated into existing and new agricultural advisories, and into the BAMIS portal. The selected firm will support DAE to identify and integrate skillful seasonal – to - sub-seasonal forecasts and other relevant past, present and future gridded weather and climate information products and analyses available from BMD such as newly generated merged datasets of quality-controlled station and satellite data (e.g., ENACTS) that may be useful to inform weather-sensitive agricultural management decisions. They firm will guide their integration of these data into existing agromet-advisories and explore opportunities to develop new advisories that consider the increased lead-time of seasonal and sub-seasonal forecasts. The selected firm will support the integration of newly developed products and datasets into the Bangladesh Agro-Meteorological Information Portal, in order to disseminate agro-meteorological services and related information to different users, especially to the farmers, in Bangladesh.

Assess the usefulness and usability of new climate information products and advisories for local agricultural decision-making and for national planning and disaster risk-reduction. The selected firm will propose a process based on years of experience in the use of climate services for agricultural decision-making to assess how the new climate information products contribute to improving agromet-advisories developed from the perspective of farmers and other decision-makers, and analyze and share the results with DAE.

Transfer the developed technology to DAE staff, and strengthen DAE capacity via training activities to generate, access, communicate and use new climate information products and agromet advisories. The selected firm will work with DAE to understand their capacity needs, and provide training for up to ten DAE staff on generating, communicating and supporting the use of new climate information and advisory products. It will provide recommendations on the development of a SOP manual covering accessing BMD products, integrating BMD products into relevant agricultural advisories, and incorporating the climate information products into the BAMIS portal.

Continued technical support following completion of the project. The selected firm and its local partner will provide technical support as needed, on a fee basis, for troubleshooting, maintenance and enhancement of the systems at DAE and BMD.

4. Technical Approach and Methodology

The consulting firm should explain/describe its understanding of the objectives of the assignment, approach to the services, methodology for carrying out the activities and obtaining the expected output, outcomes and the degree of detail of such outcome. The proposed work should be based on the firm's own state-of-the-art products and methods, making use of the latest international forecasting databases and following international guidance on forecasting. The firm should be able to demonstrate its unique expertise in the field. The firm should highlight the problems being addressed and its importance and explain the technical approach that would adopt to tackle them. The firm should also explain the methodologies that it proposes or adopts and highlight the compatibility of those methodologies with the proposed approach.

5. Deliverables and Timeline

The main outcome of the project will be the generation of climate and climate-related products (including past, present and future information) to inform agro-advisories to improve climate risk management in agriculture systems.

The outputs will include:

- The development of a validated, operational system for BMD to generate sub-seasonal and seasonal forecasts for interpretation at sub-national levels, using cutting-edge international forecast models and methodologies and gridded datasets such as BMD's ENACTS;
- The development of operational climate information products and Map room tools designed to help address the needs of DAE;
- Guidance on the development of a suite of improved and new agricultural advisory designs and prototypes that incorporate BMD gridded forecast and historical climate products;
- Integration of new products and datasets into the BAMIS portal;
- Recommendations for the development of a Standard Operating Procedure document co-developed by BMD and DAE, and capacity building training to transfer new technology and capacity to DAE staff;

Deliverable	Date
Inception Workshop	Month 1
Report on advances in the development of seasonal and sub-seasonal forecasting systems	Month 3
Agricultural advisory workshop and report	Month 4
Validated, documented system for BMD to generate seasonal forecasts that address the needs of agriculture	Month 6
Validated, documented system for BMD to generate sub-seasonal and seasonal forecasts that address the to needs of agriculture	Month 8
Agricultural advisory workshop and report	Month 10
Documented suite of prototype agricultural support tools that incorporate BMD gridded, online (1) historical (2) monitoring and (3) forecast climate information products	Month 12
Updated BAMIS portal integrating new and enhanced DAE agricultural support tools and BMD gridded weather and climate products	Month 14
Recommendations for the development of Standard Operating Procedure (SOP) on the generation of enhanced and new agroadvisory products	Month 15
Training workshop and report for select DAE staff on the use of climate products and agricultural support tools and their inclusion into new agroadvisory products	Month 16
Assessment report on usability of climate products to inform agricultural advisories and decisions.	Month 18

6. Duration of Services and Reporting

Total Study period will be considered 12 months. After extension of the project the authority may extend the service contract. The tentative reporting schedule for the consultant's assignment is given below:

Reports	Planned Time
Inception Report: 05 copies	At the end of 1st month of contract signing
First quarterly progress report: 05 copies	During 3rd month

Second quarterly progress report: 05 copies	During 5th month
Third quarterly progress report: 05 copies	During 7th month
Fourth quarterly progress report: 05 copies	During 9th month
Fifth quarterly progress report: 05 copies	During 12th month
Sixth quarterly progress report: 05 copies	During 14th month
Draft final report: 05 copies	At the end of 16th month of contract signing
Final report: 10 copies	At the end of this study.

7. Selection Method

The consultant shall be selected following Quality and Cost Based Selection (QCBS) based selection method set forth in Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers, January 2011 (Revised July 2014) on the basis of consultant's qualification, experiences and capability to carry out the assignment.

8. Key Personnel and Qualifications

a) Key Personnel

The firm may propose the structure and composition of its team members, listing the main disciplines of the assignment, the key experts responsible, and proposed technical and support staff. The expected team profile is presented in Table 1.

Table 1: Proposed Team Composition (Key and non-key Experts)

Designation	Number	Total Person-Months	Type
Key Experts			
Team Leader	1	18	Continuous
Senior Agriculture Specialist	1	18	Continuous
Senior Climate Prediction Specialist	1	18	Continuous
Statistical Climatologist	1	16	Continuous
Agrometeorological Advisory Post-Doctoral Scientist	1	16	Continuous
Data Library Senior Manager	1	16	Continuous
Project manager	1	16	Continuous
Data Analyst	1	16	Continuous
Senior Agronomist	1	16	Continuous
GIS and Data Scientist	1	16	Continuous
Project coordinator	1	16	Intermittent
Non-Key Experts			
International Finance Manager	1	18	Intermittent
National finance Manager	1	18	Intermittent

Local project Manager	1	18	Continuous
Project Associate	1	18	Continuous
Total	**15**		

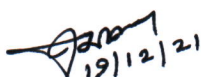## b). The Qualifications of the Proposed Team

Table 2: Qualification and Experiences of Key Experts

Sl. No.	Position	Qualifications	Experience
1.	Team Leader	Ph.D. in a field relevant to climate services	20 years of working experience on climate services, including 8 years of working experiences on leading projects and programs focused on developing countries
2.	Senior Agriculture Specialist	Ph.D. in a relevant field of Agriculture	15 years of working experience on climate services for agriculture, including 8 years of working experiences on leading projects and programs focused on developing countries
3.	Senior Climate Prediction Specialist	Ph.D. in Atmospheric Sciences or related field	15 years of working experience in seasonal and sub-seasonal prediction; expertise in methods to produce and assess forecasts; including 8 years of working experience of developing NMHS capacity of developing countries
4.	Statistical Climatologist	Ph.D. in Statistics or related field	10 years' experience developing and evaluating statistical methods for developing and evaluating seasonal and sub-seasonal forecasts
5.	Agrometorological Advisory Post-Doctoral Scientist	Ph.D. in a relevant field of Agriculture	2 years practical and/or research experience developing and evaluating farm management advisories based on weather and climate information
6.	Senior Agronomist	Ph.D. in a relevant field of Agriculture	15 years of working experience on agriculture, agricultural planning, agricultural project implementation and management including 8 years of working experience on agricultural technology transfer and extension services in the field level of Bangladesh.
7.	Data Library Senior Manager	Master's degree in atmospheric sciences, IT or a related field.	10 years' experience developing online climate information tool and products, including data manipulation, statistical analyses, visualization.
8.	Project Manager	Master's degree in a field relevant to climate services	10 years of experience in international project management on risk management, climate services or associated field.
9.	Data Analyst	Ph.D.in Atmospheric Sciences or related field	10 years of experience in meteorological and climate observational and data analysis

10.	Senior Agronomist	Ph.D. in a relevant field of Agriculture	15 years of working experience on agriculture, agricultural planning, agricultural project implementation and management including at least 8 years of working experience on agricultural technology transfer and extension services in the field level of Bangladesh.
11.	GIS and Data Scientist	Master's degree in field relevant to climate services	5 years of experience in programming and data science
12.	Project coordinator	Masters of Arts or in a field relevant to climate services	5 years of experience in participatory action research on climate change, climate services and associated fields, including several years of experience in Bangladesh.

19/12/21

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