

Replaced on the same memorandum and date

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

Revised Request for Expressions of Interest (REOI)
for

Senior International Agromet Technical Consultant (Intermittent) on "Agro-Meteorological Information Systems Development Project" (Component C of Bangladesh Weather and Climate Services Regional Project)
(Contract Package No.: AMISDP-SD-001)

Memo: 12.01.0000.018.01.010.21.6366

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 (BWCSR)] 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:

The Individual International Consultant shall work as part of the PIU of DAE. Since BMD is mandated to provide weather services, the consultant will also work in close coordination with relevant officials at the Agricultural Meteorology Division of BMD. Key tasks can be organized under the following areas: a) Prepare a comprehensive list of actions to develop appropriate agrometeorological products and services to be posted on the web portal, Bangladesh Agrometeorological Information System (BAMIS); (b) develop appropriate strategies for the dissemination of agrometeorological advisories and products to farming communities in different upazilas, their use by farmers and obtaining feedback from farmers; (c) prepare a comprehensive plan to provide agrometeorological information services and products for the farming communities at the Upazila and Union Parishad levels; and (d) develop an effective implementation plan for using state of art technology for operational agromet advisory services.

More specifically, this will include but not be limited to the following activities:

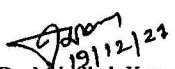
- a) Preparation of a comprehensive list of deliverables i.e., Final guidelines for developing agrometeorological databases for the 487 upazilas; Guidance document on agrometeorological data analysis and future scenario generation (including the use of crop models) and downscaling the scenarios to upazila level; and create and use of risk mapping of climate-vulnerable farming communities in Bangladesh;
- b) Support the government in issuance of agrometeorological advisories and development of products to farming communities in different regions of Bangladesh through the web portal, BAMIS and other communication channels;
- c) Undertake an assessment of existing data for development of agro-advisory bulletins and for crop modeling; along with enhance monitoring;
- d) Visit selected upazilas and develop a comprehensive strategy, after discussions with DAE and BMD staff, for developing agrometeorological databases for the 487 upazilas; work with DAE and other institutions to help develop such databases;
- e) Develop a plan, in consultation with experts from BMD, DAE, BARI, Bangladesh Rice Research Institute (BRRI), Bangladesh Sugar Crop Research Institute (BSRI) and Bangladesh Jute Research Institute (BJRI) for agrometeorological data analysis and future scenario generation (including the use of crop models) and downscaling the scenarios to block level; support and provide training to the agencies on these aspects;
- f) Visit selected sites where automatic weather stations will be installed and prepare a plan for the integration of data from these stations with the data from the agriculture sector collected by DAE through the Agricultural Officers in the Upazilas to facilitate the development of agrometeorological advisories and products for use by the farming community;
- g) Visit the offices of Union Parishads and develop the sustainable plan for use of data from the automatic rain gauges and on line reception and display of agrometeorological information through display boards in all the 4,051 Union Parishads for provision of agrometeorological information to farmers;
- h) Visit a few Upazila Agricultural Offices and operationalization on regular basis of agrometeorological kiosks with data display screens, computers and printers in the Upazila Agricultural Offices to cater to the specific information needs of the farming community;
- i) Provide guidance and work with DAE, BMD BARI, BRRI, BSRI and BJRI to support preparation of agrometeorological Advisories for all 64 districts and also in upazila level;

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- j) Develop and communication of information to farmers on the current weather, expected weather and the related impacts on crop growth and development and advice on controlling any emerging pests and diseases through mobile Apps and other media;
- k) Provide advice on the organization of roving seminars for farmers in local communities to help bridge the knowledge gap between DAE, BMD and farmers; and
- l) Provide technical support as needed to the DAE PIU on the development of agrometeorological services in Bangladesh.
- m) Develop and support of information dissemination through Community Radio Stations.
- n) Develop and support for automation in preparation of agromet advisory services.
- o) Develop and support for use of sub-seasonal weather forecast in Bangladesh agriculture.
- p) Develop and support for use of state of art technology (e.g., remote sensing, GIS etc) for preparation of crop and location specific agromet advisories.
- q) Develop and support for preparation of agromet advisories under different extreme weather in Bangladesh.

3. Qualification and Experience:

- The candidate should have a Master's degree in Agricultural Sciences Meteorology/Meteorology with applications to agriculture/agricultural meteorology with knowledge of Satellite Meteorology. PhD degree in agricultural meteorology is an advantage.
 - Should possess 20 years of work experience as full-time researcher in agricultural meteorology in Research Institute/ University/ International Institute/Govt. agency/ UN agency. Work experience in similar type of project is highly preferable.
 - Should have proven skills in writing reports, and use of computer.
 - Should have knowledge of statistical analysis and climate data management.
 - Knowledge of climate prediction techniques with familiarity in the use of climate models and downscaling methods and crop simulation models; basic knowledge of Geographical Information System and Remote Sensing will be an advantage.
 - Experience facilitating focus groups, conducting user testing, and generally working with end users preferred;
 - Should be energetic and be able to travel frequently to project sites.
4. Department of Agricultural Extension (DAE) now invites eligible applicants to indicate their interest in providing the services. Applicants are invited to provide information indicating that they are qualified to perform the services (**Application Submission Form, Complete CV and supporting documents**).
 5. Detailed Terms of Reference (ToR) will be available upon request from the address provided below either through email or in person. ToR will also be available in the website of DAE (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).
 6. The consultant shall be selected following Individual Consultant (SIC) 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.
 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


 19/12/21

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Terms of Reference
for Senior International Agro-Meteorological Services Consultant (Intermittent)
on “Agro-Meteorological Information Systems Development Project” (Component C
of Bangladesh Weather and Climate Services Regional Project) under
Package No: AMISDP-SD-001

1. Background

With support from the World Bank, the Government of Bangladesh (GOB) is currently implementing the Bangladesh Weather and Climate Services regional Project (BWCSR) to address weather & climate variability/change triggered challenges that agriculture is facing in the country. The main objective of the project is to strengthen capacity to deliver effective weather and climate information services and improve the quality and access to such services in priority sectors and communities. This objective is being achieved by strengthening the hydromet monitoring and forecasting, and service delivery related to water, agriculture and multi-hazard disaster risk management early warning systems. The BWCSR has the following three main Components:

Component A: Strengthening Meteorological Information Services implemented by the Bangladesh Meteorology Department (BMD);

Component B: Strengthening Hydrological Information Services implemented by the Bangladesh Water Development Board (BWDB); and

Component C: Agro-Meteorological Information Systems Development implemented by the Department of Agricultural Extension (DAE).

In this project, BMD provides weather and climate services, BWDB and DAE are using this information for producing sector specific information and tools to meet the needs of their own sectoral communities. BMD and BWDB provide critical information for extreme weather and flood warning. For severe weather or flood forecasts to reach people, the role of Department of Disaster Management (DDM) is essential hence, community based early warning system activities will be undertaken in close coordination with DDM.

The extreme weather events are on the rise and impacting more severely than before in Bangladesh. Preparedness, early warning and education on how to disseminate and apply forecast information in decision making are required to focus on action oriented, consistent messaging of the expected risk and reaching out to the farmers in more meaningful ways. In the first phase of the project, the Department of Agricultural Extension (DAE), Ministry of Agriculture, Bangladesh has initiated the service in which weather information & forecast are being translated into appropriate advisories before and after the occurrences of extreme weather events and communicated to the rural farmers by different modes to save crops, livestock, poultry and fishes. However, more intensive plan is required to strengthen this initiative. The project is focusing on enhancing access to weather information based agro-advisory services for farmers through Bangladesh Agrometeorological Information Systems (BAMIS) to increase agricultural productivity and reduce losses from meteorological and hydrological hazards. Key Sub-Components of Component C include:

1. Establishment of the Bangladesh Agro-Meteorological Information System (BAMIS)
2. Training, Capacity Building, Project Management and Monitoring and Evaluation

3. Agricultural Disaster Risk Management through Agro-Meteorological information dissemination.

At present BAMIS includes:

- Weather and Climate information across Bangladesh
- Updated 64 districts agromet bulletin twice a week and one national bulletin once in a week.
- Agromet information in respect of crop, weather sensitivities on crops, pests and diseases information and its linkages with weather along with control measures, Crop Weather Calendars for certain crops.

During the first phase of the project, though substantial work has been done and being used for the welfare of the farmers of Bangladesh, still there is enough scope to strengthen the BAMIS portal by incorporating smart information and data to make further improvement of operational Agromet Advisory Services in Bangladesh and make it scalable so that individual farmers in the country can get the benefit of the new approach.

The services of an Individual International Consultant are needed to assist DAE in planning and implementing Agrometeorological Information Systems.

2. Objectives

The main objective of the consultancy is to provide technical support to the Project Implementation Unit (PIU) at DAE for the development and delivery of an Agricultural Management Information System being supported by the BWCSR project. The consultant will draw upon international experience and based on contextual realities and context in Bangladesh to support the PIU on technical aspects relating to the implementation of project activities. This will include advice and guidance to the PIU on all aspects related to 'Component C' activities including further development and implementation of the BAMIS portal and decision-support system, development of agrometeorological products and tools, application of sub-seasonal to seasonal forecast in agriculture, wider dissemination of agromet advisories, dissemination of products and information to farmers and use of state of art technology in operational agromet advisory service system, support to Agrometeorological education to create experienced man power etc, in coordination with the Bangladesh Agricultural Research Institute (BARI) and other national and international institutes. The consultant will also help to implement a comprehensive plan for each of the activities outlined under the different sub-components of the Agrometeorological Information Systems Development. The ultimate objective is to help farmers and other users to improve their farm production based on sound interpretation of meteorological knowledge, information, products and services through better management of weather and climate risks.

3. Scope of Work

The Individual International Consultant shall work as part of the PIU of DAE. Since BMD is mandated to provide weather services, the consultant will also work in close coordination with relevant officials of BMD. Key tasks is to rendering support to agrometeorological service in the country which can be organized under the following areas: a) Prepare a comprehensive list of actions to develop appropriate agrometeorological products and services to be posted on the web portal, Bangladesh Agrometeorological Information System



(BAMIS); (b) develop appropriate strategies for the dissemination of agrometeorological advisories and products to farming communities in different upazillas, their use by farmers and obtaining feedback from farmers; (c) prepare a comprehensive plan to provide agrometeorological information services and products for the farming communities at the Upazilla and Union Parishad levels; and (d) develop an effective implementation plan for using state of art technology for operational agromet advisory services.

More specifically, this will include but not be limited to support the following activities:

- a) Preparation of a comprehensive list of deliverables i.e., Final guidelines for developing agrometeorological databases for the 487 upazillas; Guidance document on agrometeorological data analysis and future scenario generation (including the use of crop models) and downscaling the scenarios to upazila level; and create and use of risk mapping of climate-vulnerable farming communities in Bangladesh;
- b) Support the government in issuance of agrometeorological advisories and development of products to farming communities in different regions of Bangladesh through the web portal, BAMIS and other communication channels;
- c) Expand agromet advisory services at upazila level Undertake an assessment of existing data for development of agro-advisory bulletins and for crop modeling; along with enhance monitoring;
- d) Work on crop weather relationship;
- e) To Identify the areas of incidences of major pests and diseases along with the interrelation between weather parameters and pests & diseases incidences and integration of all the above information and others in preparation of Pest Weather Calendars of pests and diseases of economic importance for major cereals, cash crops, horticultural crops including livestock and poultry in Bangladesh.
- f) Development of products like Aridity anomaly, SPI seasonal update, SPI forecast, drought monitoring, soil moisture estimation etc.
- g) Development of different remote sensing products like land surface radiation products, estimation and downscaling of Soil Moisture etc.
- h) Transfer the developed technology to DAE staff and strengthen their capacity to issue seamless agromet advisories
- i) Visit selected upazillas and develop a comprehensive strategy, after discussions with DAE and BMD staff, for developing agrometeorological databases for the 487 upazillas; work with DAE and other institutions to help develop such databases;
- j) Develop a plan, in consultation with experts from BMD, DAE, BARI, Bangladesh Rice Research Institute (BRRI), Bangladesh Sugar Crop Research Institute (BSRI) and Bangladesh Jute Research Institute (BJRI) for agrometeorological data analysis and future scenario generation (including the use of crop models) and downscaling the scenarios to block level; support and provide training to the agencies on these aspects;
- k) Visit selected sites where automatic weather stations will be installed and prepare a plan for the integration of data from these stations with the data from the agriculture sector collected by DAE through the Agricultural Officers in the Upazillas to facilitate the development of agrometeorological advisories and products for use by the farming community;
- l) Visit the offices of Union Parishads and develop the sustainable plan for use of data from the automatic rain gauges and on line reception and display of

- agrometeorological information through display boards in all the 4,051 Union Parishads for provision of agrometeorological information to farmers;
- m) Visit a few Upazilla Agricultural Offices and operationalisation on regular basis of agrometeorological kiosks with data display screens, computers and printers in the Upazilla Agricultural Offices to cater to the specific information needs of the farming community;
 - n) Provide guidance and work with DAE, BMD BARI, BRRI, BSRI and BJRI to support preparation of agrometeorological Advisories for all 64 districts and also in upazila level;
 - o) Develop and communication of information to farmers on the current weather, expected weather and the related impacts on crop growth and development and advice on controlling any emerging pests and diseases through mobile Apps and other media;
 - p) Provide advice on the organization of roving seminars for farmers in local communities to help bridge the knowledge gap between DAE, BMD and farmers;
 - q) Provide technical support as needed to the DAE PIU on the development of agrometeorological services in Bangladesh.
 - r) Develop and support of information dissemination through Community Radio Stations.
 - s) Develop and support for automation in preparation of agromet advisory bulletins.
 - t) Develop and support for use of sub-seasonal weather forecast in Bangladesh agriculture.
 - u) Develop and support for use of state of art technology (e.g., remote sensing, GIS etc) for preparation of crop and location specific agromet advisories.
 - v) Develop and support for preparation of agromet advisories under different extreme weather in Bangladesh.

4. Required Skills and Qualifications

- The candidate should have a Master's degree in Agricultural Sciences/Meteorology/Meteorology with applications to agriculture/agricultural meteorology with knowledge of Satellite Meteorology. PhD degree in agricultural meteorology is an advantage.
- Should possess 20 years of work experience as full-time researcher in agricultural meteorology in Research Institute/ University/ International Institute/Govt. agency/ UN agency. Work experience in similar type of project is highly preferable.
- Should have proven skills in writing reports, and use of computer.
- Should have knowledge of statistical analysis and climate data management.
- Knowledge of climate prediction techniques with familiarity in the use of climate models and downscaling methods and crop simulation models; basic knowledge of Geographical Information System and Remote Sensing will be an advantage.
- Experience facilitating focus groups, conducting user testing, and generally working with end users preferred;
- Should be energetic and be able to travel frequently to project sites.

Under overall supervision by the Project Director, coordination and monitoring of progress of the expert will be provided by the PIU of DAE.

5. Contract Duration of Service

It is proposed that the Consultant will be hired for 16 months (Intermittent) from the date of signing of the contract. It will be based on 15 days monthly (Intermittent). After completion of one years the project may be extended of the contract for next 04 months.

6. Expected outcomes and Deliverables

The consultant will be responsible for the following expected outcomes & deliverables:

Sl. No.	Outputs/Deliverables	Time frame for the Report to be provided by the Consultant
1.	Upgradation of Existing 160 AGRs and install/setup Special Agromet Weather Station (Ag-AWS) at different location of Bangladesh	In the 3 rd month of consultancy
2.	Installation of Video-Conferencing System in 14 Regional offices, 64 Districts and 3 Research Institutes (BRIL, BJRI & BSRI)	In the 4 th month of consultancy
3.	Installation of Digital Display Board at 64 Districts & Head Quarter	In the 4 th month of consultancy
4.	Improvement, further additional to the on-going BAMIS portal & its integration with different APPs	In the 4 th month of consultancy
5.	Establishment of community Radio center in 12 DAE Regions of Bangladesh	In the 5 th month of consultancy
6.	Strengthening of dissemination of agromet advisories through SMS & IVR technology	In the 5 th month of consultancy
7.	Organization of Farmer Awareness Programme, Climate Farmer Schools etc.	
8.	Strengthening of BAMIS Portal by incorporation of Agromet data base and information and Development Crop Weather calendar & pest & Disease Weather Calendar for different major cereals, cash and horticulture crops	6 th month of consultancy
9.	Use of Sub seasonal to Seasonal (S2S) forecast for Agriculture	In the 6 th month of consultancy
10.	Create artificial intelligence or Automation in preparation of Agromet Advisory	In the 7 th month of consultancy

11.	Use of remote sensing data & tools in Agromet Advisory Services.	In the 7 th month of consultancy
12.	Explore the Early Warning Service (EWS) for Lightning in Bangladesh	In the 7 th month of consultancy
13.	Support to Agrometeorological education to create experienced man power	In the 8 th month of consultancy
14.	Development of different agromet/ hydromet products for its use in Agromet Advisory System.	9 th month of consultancy
15.	Assisting in Economic Assessment of the project.	9 th month of consultancy
16.	Capacity Building at different levels i.e., DAE officers, Extension officers, Sub-Assistant Agricultural Officers and Farmers Support to Agrometeorological education to create experienced man power	11 th month of consultancy

The Consultant will work as a core member of the DAE PIU and provide technical support to the PIU in the development of the Bangladesh Agricultural Management Information System. He will also participate in the Joint Technical Working Group (JTWG) formed between DAE, BMD, BRRI, BJRI, BSRI and BARI and other stakeholders.

7. Reporting:

The Consultant shall report all ToR activities to the Project Director of Project Implementation Unit (PIU) at DAE Headquarter, Khamarbari, and Dhaka. This position will be based at DAE Head Quarter, Khamarbari, Dhaka with frequent mission at field level. The Consultant will be a key member of the PIU and will work under the guidance of the Project Director, work in close Coordination with other members of the PIU and will provide constant feedback.

8. Selection Criteria

The consultant shall be selected following Individual Consultant (IC) 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.

9. Terms and Conditions

The Consultant shall be paid remuneration monthly basis at the rate agreed and included in the contract. Consultant shall be paid monthly remuneration at an agreed rate, which includes all his/her overheads, social charges and other associated costs including local transportation in Dhaka and insurance premium costs. The Consultant shall be responsible for all taxes and duties including income tax applicable as per GoB rules and regulations. In case of travel requirement outside Dhaka and within Bangladesh and also international visits for project related assignments, consultant shall be paid travel expenses and hotel expenses on actual cost basis and subsistence allowance to cover all other costs.

The Consultant will work under the guidance of the project director, work in close coordination with other members of the PIU and will provide constant feedback. S/he will also work in close coordination with BMD, BARI and other agencies. The Consultant will be based in Dhaka. However, under the pandemic like situation, Consultant may be allowed to work from home as per The world Bank/GOB norms.

DAE shall provide following facilities to consultant during his tenure of services:

- a) Office space with furniture, printing, computer etc.
- b) Internet access
- c) Office stationeries
- d) Photocopying facilities

10. Duration of Assignment

The duration of the assignment: 16 Months


19/12/21

Name: Dr. Md. Shah Kamal Khan

Designation: Project Director

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