Government of the People's Republic of Bangladesh

Department of Agricultural Extension

"Project Mid-term Evaluation (Package No: AMISDP/SD-01/19-20"

Project Draft Final Report

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Prepared By

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ACRONYMS AND ABBRIVIATIONS

AEO	:	Agricultural Extension Officer
AEZ	:	Agro Ecological Zones
AIS	:	Agricultural Information Service
AMI	:	Agro-Metereological Information
AMISDP	:	Agro-Meteorology Information System Development Project
ARIs	:	Agricultural Research Institutes
BARI	:	Bangladesh Agricultural Research Institute
BAMIS	:	Bangladesh Agro-Meteorological Information Systems
BBS	:	Bangladesh Bureau of Statistics
BMD	:	Bangladesh Meteorological Department
BRRI	:	Bangladesh Rice Research Institute
BWCSRP	:	Bangladesh Weather and Climate Services Regional Project
DAE	:	Department of Agricultural Extension
DDAE	:	Deputy Director of Agricultural Extension
DTO	:	District Training Officer
FGD	:	Focus Group Discussion
GDP	:	Gross Domestic Profit
GOB	:	Government of Bangladesh
HRD	:	Human Resources Development
ICT	:	Information and Communications Technology
IPCC	:	Intergovernmental Panel on Climate Change
JTWG	:	Joint Technical Working Group on Agro meteorology
KII	:	Key Informant Interview
MoA	:	Ministry of Agriculture
NGO	:	Non-Government Organization
PD	:	Project Director
PMU	:	Project Management Unit
SAAO	:	Sub-Assistant Agricultural Officer
SDG	:	Sustainable Development Goals
TOR	:	Terms of Reference
TQM	:	Total Quality Management
ToT	:	Training of the Trainers
UAO	:	Upazila Agriculture Officer
WB	:	World Bank
WG	:	Working Group

Executive Summary

This report presents the findings of Midterm Impact Assessment under "Agro-Meteorological Information System Development Project (AMISDP)", implemented by the Government of the People's Republic of Bangladesh (GOB) through the Department of Agricultural Extension (DAE) with the financial assistance of the World Bank. The AMISDP is a five-year project to develop DAE's capacity to provide quality Agro- meteorological Advisory Services and forecasts to the farmers. The midterm impact assessment involves collection and analysis of quantitative data (3200 household from 64 districts) and qualitative data (Focus Group Discussions and Key Informant Interview). The study also involves collection and analysis of 30 years historical data of Bangladesh on different weather components. Summary findings of the study is presented here.

Climate & Weather

The single most dominant element of the climate of Bangladesh, is the rainfall. Because of the country's location in the tropical monsoon region, the amount of rain is very high. However, there is a distinct seasonal pattern in the annual cycle of rainfall, which is much more pronounced than the yearly cycle of temperature. The winter season is dry and accounts for only 2%-4% of the total annual rainfall. In late December and early January, the minimum temperature in the extreme northwest and northeastern parts of the country reaches within 4 to 7°C. In Bangladesh, the cloud cover has two opposing seasonal patterns, coinciding with the winter season and the summer season. As a result of the flow of cold-dry winds from the northwestern part of India during the winter season, the cloud cover is at a minimum.

Disaster and Crop Damage

Though there were weather & climatic problems but farmers have reduced average production loss in last year than previous year. In baseline 32.75% farmers incurred more than 100kg loss of production per acre, while only 1.38% farmers incurred more than 100kg loss of production per acre in midline. That is there is sharp decline in loss of production due to natural calamity, due to increased access to agro-meteorological data, which can be regarded as a success of the AMISDP project. Farmers responded that, they have overcome huge damage of production as past after getting early forecasting of agro-meteorological information, as they took effective action in last year.

Access to Agro-meteorological Information

We observe that farmers have more accessibility to meteorological information in midline than the baseline. Around 54% increased accessibility of meteorological information was observed in midline. Not accessibility has declined by 52.12% in midline. That comply with the aim of project, it signals that the farmers are benefitted from the project. The increased accessibility is due to the fact that Kiosks machine were installed in 487 upazilla, analog display board with rain gauge machine in 4051 Union Porishod and communication of location and specific crop alert and SMS message at right time to large number of farmers in the country. Also agro-meteorological information were updated regularly in BAMIS portal, national bulletin and district bulletin were updated there. All these activities of the project increased the accessibility of agro-meteorological information to the farmers.

Cope-up Methodologies & Technology Adoption

Asking the question about cope-up methodologies adopted based on the knowledge gained from training/awareness raising program, around three forth farmers (73%) reported that they adopted technique in varietal change like cropping pattern and crop production schedule to avoid weather and climate induced problems. About 21% farmer applied crop change, 5% in other change & 2% farmer did not adopt any technology based on the knowledge gained from training/awareness raising program. Out of 3200 farmers 37% reported that they could adopt drought tolerant crop varieties as new technology to avoid weather and climate induced problems, which was followed by insect pest tolerant crop varieties (17%), cold tolerant crop varieties (13%), no adoption (11%), disease tolerant crop varieties (8%) & heat tolerant crop varieties (8%).

Effectiveness of the Agro-meteorological Services

Around 42% farmers reported that current meteorological information services or forecast is effective. The second highest (30.66%) farmers indicated that it is not effective to protect their crop from the disaster, they were failed to protect their crops from the damages. In base line survey, 91.37% farmer reported that the agro-met service provided earlier was not effective at all, they were failed to protect their crops from the damages. This is good sign that farmers are utilizing the information obtained from BAMIS and other medium by taking corrective action from advisory bulletin. It is noted that timing is also affecting factor to save crop from damage. The degree of satisfaction level has been measured by using 5-scale Likert scale. The index value (3.13) shows that the service of meteorological forecast provided by BAMIS is moderately effective. In baseline survey it was measured by using 4-scale. However the result of that was ‘not satisfied at all’ and definite improvement occurred in this regard.

Project Limitations

- It is alarming that poor communication by field officers is happening, it may create barrier to reach the project goal. While asking about the visit of DAE field officer to farmers, majority (38%) reported that once in a month, followed by once in a week (26%). 24% farmer reported once in two week, on the other hand 7% farmers reported no contact in a month by of DAE field officer.
- Due to the lack of accuracy of recording of observations by DAE personnel and lack of maintenance of machineries project progress is hampering. Rain gauge meter and weather board are not functioning properly in some stations.
- About 22% farmers didn't receive message of meteorological information in a week. Need to be improved in this regard.
- BAMIS is not providing early warning for drought, thunderstorm and flash flood.
- There is no crop calendar for minor crops.

Policy Recommendations

Popularizing Products of BAMIS

Availing agro-met service some farmers are still using traditional method for applying weather forecast. Need to be improved in this regard. It can be changed by highly accessible agro-data to farmers & making data more reliable to farmers. Project can employ a third party non-government organization (having experience of meteorological research and providing meteorological information/message) for popularizing BAMIS initiatives.

Increasing Message Coverage

In the project planning it is supposed to provide agro-met related messages to the farmers twice in a week. About 63% farmers indicated that they received message of meteorological information once per week. 22% farmers didn't receive message of meteorological information in a week. Need to be improved in this regard, 22% farmers are not receiving message. Project can employ a third party non-government organization (having experience of meteorological research and providing meteorological information/message) for providing message to the farmers.

Increasing Field Visit

From the obtained index value of 2.87 (out of 5) we realize that the farmers are less satisfied on frequency of field visit by the officers. If field officers contact more, farmer will get more confidence to execute the forecasting which is provided by BAMIS. Hence, in order to increase use of agro-meteorological information and hence increase the sustainability of the BAMIS project field visit should be enhanced. Otherwise, motivation of farmers will be distorted for using agro-meteorological information.

Introducing Early Warning System for Drought, Thunderstorm and Flash Flood

Like flood and cyclones drought is also a major disaster in Bangladesh. About 47 % of the country is drought-prone and 53 % of the total population are living in these areas. In the north-western part of Bangladesh, the average crop production reduced 25–30 % due to the effect of drought. In Bangladesh, Dewan et al identified 3,086 fatalities and 2,382 injuries by Thunderstorm from 1990 to mid-2016, for annual averages of 114 fatalities and 89 injuries. Again, flash Floods are caused by heavy or excessive rainfall, or upstream flooding, in a short period of time in Haor Basin of the northern belt of Bangladesh. In flash floods, water levels rise and fall rapidly with little or no advance warning. Since these disasters are barrier to sustainable livelihood development hence BAMIS should introduce early warning system for drought, thunderstorm and flash flood.

Introducing Crop Calendar for Minor Crops

Vetch is a major crop in Bangladesh, but not included in crop calendar of BAMIS. Tea, a minor crop comes as an export crop. Three other minor cash crops are tobacco, betel nut, and betel vine. These should be incorporated in crop weather calendar. Also Onion, sweet potato, green pea, sesame, linseed, garlic, pea & barley are usually considered as minor crops but not included in crop calendar. BAMIS should introduce crop calendar for these crops.

Increasing Training & Participation

In baseline survey farmers expressed their interest to participate in agro-met related training/awareness raising program. In midline 12% farmers didn't get any agro-met related training/awareness raising program. It should be mitigated. Training is regarded as a systematic and planned process to change the knowledge, skills and behavior of personnel to achieve the objectives of the organization they work for. In contrast to education, training is task-oriented because it focuses on the work an individual performs. Participants responses, learning and increased awareness of benefits can increase the efficiency and effectiveness of the running project.

Modernization of Equipment

Due to the lack of accuracy of provided machineries the project has not made expected advancement in the field level. Rain gauge meter and weather board are not functioning properly. Weather board should be digitalized. Sensor of raingauge meter should be changed or improved. Charging power of the Tab is not well functioning and monthly data on the Tab should be supplied timely. The ongoing project is sustainable and beneficiary, but to make the project more sustainable accuracy of machineries and quality program design should be ensured. By following these activities it may possible to achieve a full handover and nationaly agromet advisory program.

Increasing Efficiency of forecasting

To be effective, the advisories need to be delivered to the end users without any delay in simple language that can be easily understood. In using the forecast information for preparing agricultural advisory, it is important to bear in mind that weather forecast accuracy is inversely related to the lead time of the forecast. The shorter the lead time, the greater the accuracy of the forecast. However, complete avoidance of all farm losses due to weather factors is not possible but losses can be minimized to a considerable extent by making adjustments through timely and accurate weather forecast information.

Tailoring Information based on Farmer's Need

Weather information for agriculture needs to be tailored to meet the needs of farmers. It should not be a repackaging of the general weather forecast of the national forecasting centers. Generalized forecasts should be a tailored product that can be effectively used in growing crops, managing animals, and controlling pests and diseases. When specifically tailored weather support is available to the needs of farmers, it contributes greatly toward making short-term adjustments in daily farm operations, which minimize input losses and improve the quality and quantity of farm produce.

Ensuring Two-way Feedback Mechanism

Two-way feedback mechanism for weather and climate induced problems and solutions of farmers need to be introduced through SMS platform, call center/e-mail etc. Though in BAMIS portal there is option for receiving feedback from the users, but it is not functioning enough. Hence two-way feedback mechanism should be implemented with broader coverage.

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Chapter One

Study Background & Study Design

1.1 Background of the Study

Despite the susceptibility of Bangladesh to weather and climate extremes, the country's hydrometeorological information infrastructure over land, atmosphere and ocean, basic public weather services, forecasting, and multi-hazard end-to end early warning systems remain weak and need to be strengthened. Further, key climate dependent sectors such as water and agriculture, need tailored weather and climate data, products, information and services to improve planning and decision-making and to mitigate the adverse effects of climate variability and change. Provision of such services at present is limited and needs to be strengthened. An attempt has been undertaken by Agro-Meteorological Information Systems Development Project (AMISDP) under Component C: Bangladesh Weather Climate and Services Regional Project, funded by the World Bank) implemented by DAE. The goal is to ensure a science-based digitized agro-meteorological databases including information on the land holdings crops/cropping systems cultivated by farmers, average crop yields from 487 Upazilas that will provide the agricultural sector with a decision support information system to mitigate climate-related agricultural production risks. The present impact study is part of Agro-Meteorological Information Systems Development Project (AMISDP) under Component C: Bangladesh Weather Climate and Services Regional Project.

This evaluation is commissioned by Department of Agricultural Extension (DAE), Ministry of Agriculture, Bangladesh and cover the period from August 2017 (preparation phase) to July 2019 (midterm evaluation report). Since the AMISDP covers the period from September 2017 to June 2021, the midterm evaluation results will allow comparison with preliminary baseline survey results to measure the progress/ achievement in the proposed indicators. The midterm evaluation meet the criteria in the project's Evaluation Plan and World Bank Monitoring and Evaluation Policy. *Though the project work was supposed to start from August 2017, but due to preparatory work (Set up of project office, machinery set up etc.) the project work started in full phase from middle of 2018. A baseline survey was conducted at that time and report was submitted on June 2018. Thus this midterm evaluation actually measures the change in indicators from June 2018 to February 2020.*

1.2 Objectives of the Study

The overall objective of the midterm evaluation is to review progress towards the project's objectives and outcomes, identify strengths and weaknesses in implementation, identify risks and counter- measures, assess the likelihood of the project achieving its objectives and delivering its intended outputs, and provide recommendations on modifications to increase the likelihood of success (if necessary). Evaluations in AMISDP serve the dual and mutually reinforcing objectives of accountability and learning.

Accountability – The evaluation will assess and report on the performance and results of the AMISDP project.

Learning – The evaluation will determine the reasons why certain results occurred or not to draw lessons, derive good practices and pointers for learning. It will provide evidence-based findings to inform operational and strategic decision making. Findings will be actively disseminated and lessons will be incorporated into relevant lesson sharing systems.

Stakeholders and Users

A number of stakeholders both inside and outside of AMISDP have interests in the results of the evaluation and some of these will be asked to play a role in the evaluation process.

1.3 Rationale of the Study

The evaluations are being commissioned for the following reasons: Since 2017, AMISDP and the Government of Bangladesh have been implementing a three-year Agromet project a situational analysis and allowed AMISDP to establish indicator baseline information and to verify the targets established in the Project Agreement. These evaluations will allow AMISDP to monitor the progress of the indicators established based on the results of the initial baseline study. AMISDP and its project collaborators will use the mid-term evaluation to assess progress in implementation and to ensure the project is on track to meeting its goals; assess the relevance of the interventions; provide an early signal of the effectiveness of interventions; document lessons learned and to review the results frameworks and assumptions; assess sustainability efforts to date; and discuss and recommend midcourse corrections, if necessary. AMISDP will also use the evaluations findings as a platform for an evidence-based policy dialogue and to inform engagement with the Government of Bangladesh and World Bank as well on the development of the operationalization of Agromet advisory system in Bangladesh and also Monitoring and Evaluation system. The evaluations will look into this aspect to come up with

information on progress achieved and underline new strategies adapted to successful implementation of the project. Furthermore, AMISDP will use the mid-term evaluations' findings to create awareness among farmers and other stakeholders about project activities that could further refinement of the program for nationwide implementation.

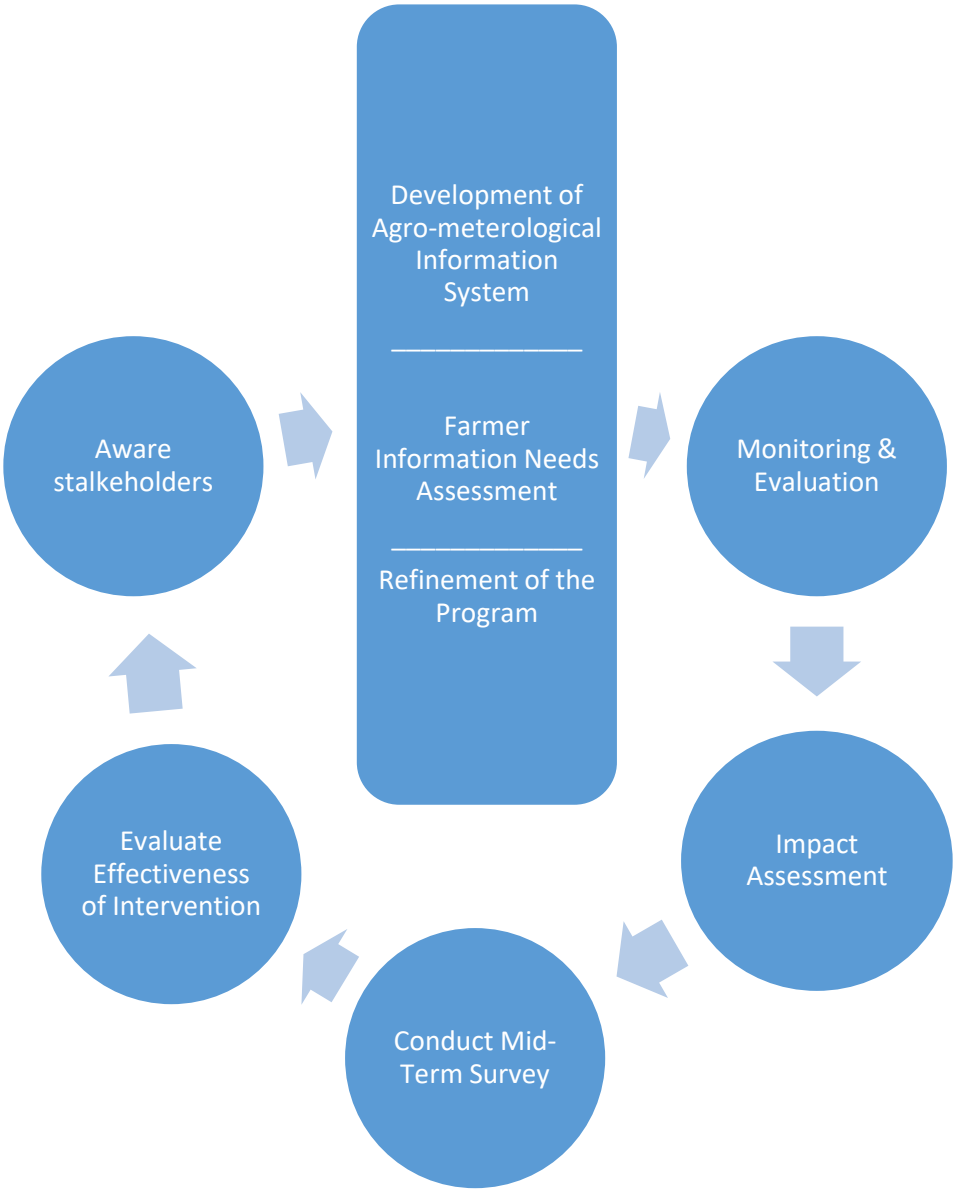


Figure 1.1 : Rationale of the Impact Assessment Study

1.4 Scope of the Study

The scope of the mid-term evaluations is the entirety of activities covered by the AMISDP project in Bangladesh (2018-2019) including procurement, services and technical activities. The evaluations was carried out with sample from different geographic regions in Bangladesh. Specifically, the midterm evaluation-

(1) Provided an early signal of the project's relevance, effectiveness and efficiency, impact and sustainability;
(2) Collected performance indicator data;
(3) Assessed whether the project is on track to meet results and targets;
(4) Reviewed the results frameworks and theory of change; and
(5) Identified any necessary mid-course corrections.

The evaluations relied on the initial Baseline Study for baseline data and situational analysis necessary to evaluate the project at interim. AMISDP envisions was that the midterm evaluation will be conducted approximately halfway through project implementation.

1.5 Expected Outcome of the study

It is expected that the project will

(a) Increase the capacity of DAE regarding agro-meteorology.
(b) Agromet advisories will help the farming community to reduce their production loss and better decision making in farming practices.
(c) Farmers will be able to use agromet advisories and send feedback/ user satisfaction.
(d) Crop simulation model and future scenario generation will help to take future plans and Policies in agriculture sector.
(e) BAMIS portal will facilitate to get hydro-meteorological information of Bangladesh.
(f) Digitization of Upazila information will help to utilize GIS and Remote Sensing Technology.

As a part of the project monitoring and evaluation, it is expected that the output of the present study will work as a part of the project intervention and will benefit the project as shown in the figure below.

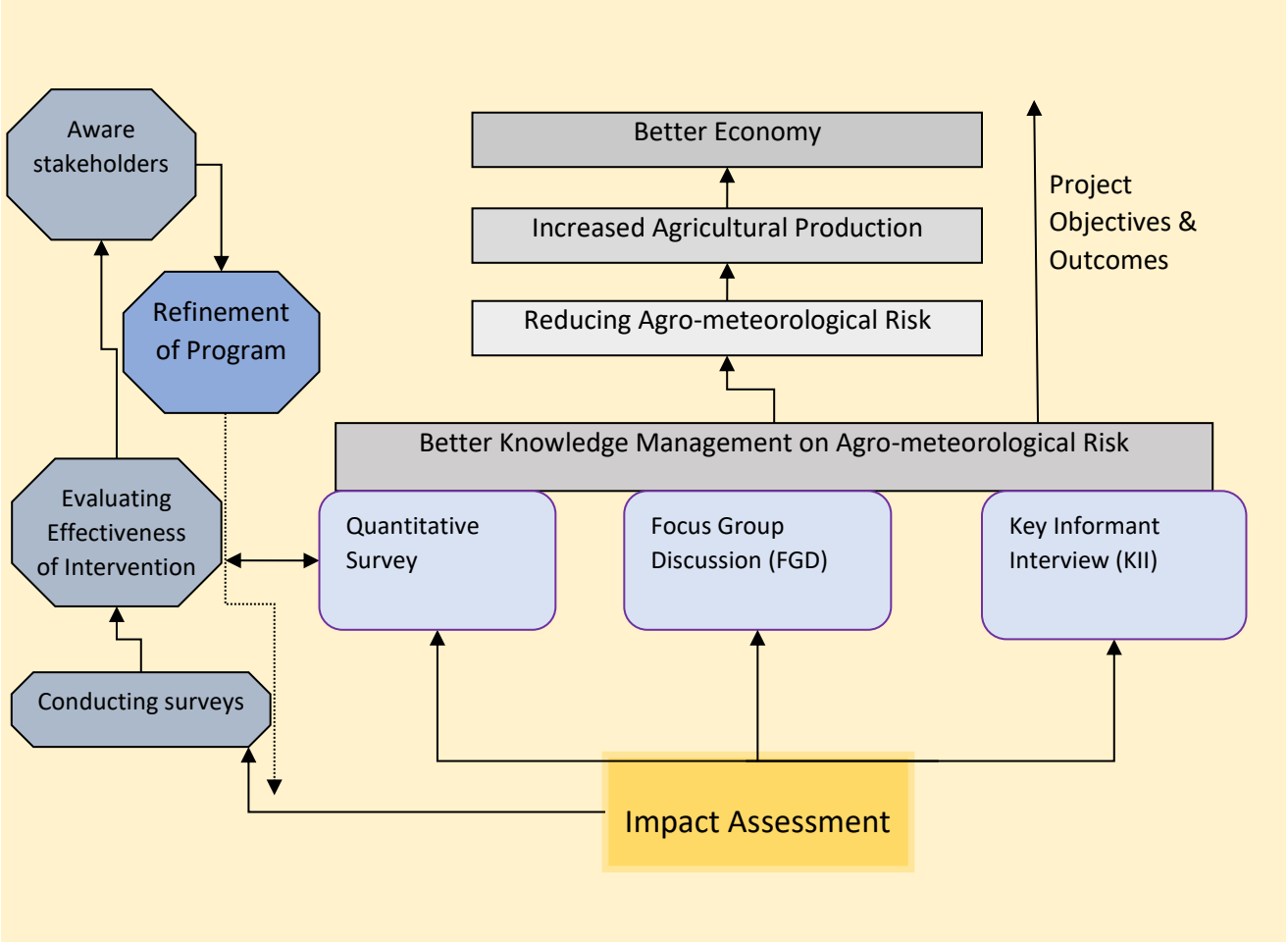
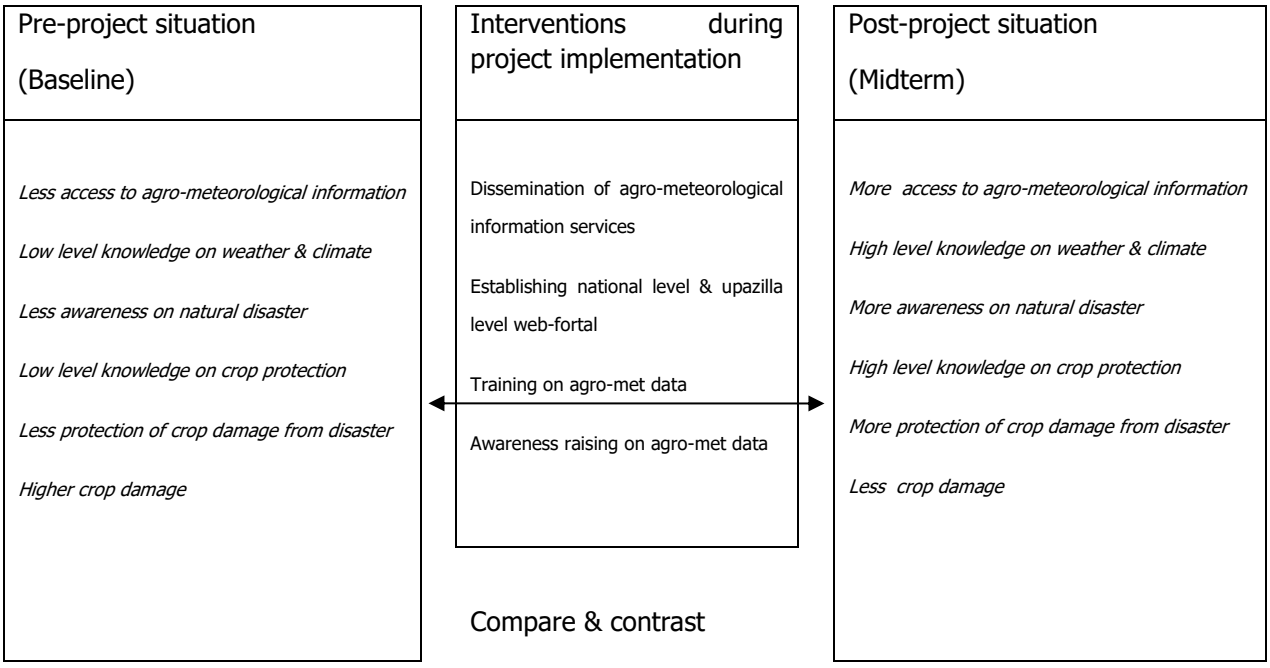


Figure 1.2 : Expected outcomes of the impact study as a part of the project intervention

1.6 Conceptual Framework of the Study

Implementation of AIMSDP is likely to bring about some positive changes in the livelihood status of the people living in the project areas.The Project required three studies- baseline, midterm and endline. At the beginning a Baseline study, the objective of which was to identify the pre-project (benchmark) situation. And an impact study at the middle and at the end of the project, on people's status in the form of agricultural products protection from damage due to natural disaster.The following diagram will show the conceptual framework of the present midterm impact study:



The model is:

Input ⟶ Output ⟶ Outcome ⟶ Impact

1.7 The Study Design

The changes in the project area are the outcome of interventions and other factors. The design appropriate for assessing the effect of interventions, is experimental design. We employed the experimental design that includes a single experimental group and it is called a **pretest-posttest design** with no control group. Since in the project the extraneous variation is minimal and the changes in the pre-project and post-project situation is caused by the intervention, hence control group is not necessary. That is why control group was not considered in the baseline study, hence we will not consider control group in the present impact study, to make it comparable with the baseline results. Thus pretest-posttest design is justified for the present impact study, the design includes the following steps:

- Select the subjects
- Select the experimental environment
- Conduct the pretest with measurement O_1
- Administer the experimental stimulus X

- Conduct the posttest with measurement O_2

Thus our pre-project or baseline observation is O_1 and post-project or midterm measurement is O_2. This design is diagrammed as follows:

Experimental Group: O_1 X O_2.

Since total variation in pre and post project scores is being attributed to the intervention, the formula for project impact assessment is:

$$\Delta_{Expt} = O_2 - O_1$$

1.8 Sampling Design:

Two stage stratified sampling procedure was applied for the impact study. At the 1st stage Districts were considered as strata, at the 2nd stage size of farm (marginal farmer, small farmer etc.) was considered as strata. The samples were distributed to strata proportionally and proper representation of male and female were ensured. The following formula was used to develop the survey sample. For selection of respondents for the project area, the following general formula was used for calculating sample size when population size is ignored.

$n = \frac{z^2 p(1-p)}{e^2} \times (deff)$ $= 3223$	Where: p = 0.6 = Estimate of the population proportion, (here we assume that 60% of the project farmers benefitted from the project) z = 1.96 (The standard value of z at 95% confidence level) deff = design effect = 1.4 e = 0.02 (Precision level 2%)

So we considered 3200 sample for the study. This sample was distributed among 64 Districts, among beneficiary group. From each district one upazilla was selected randomly and 50 samples were targeted from that upazilla. In each selected upazilla the 50

beneficiaries were expected to be selected almost proportionately from 4 types of farmers. The detailed ***sampling plan*** was as follows:

District	Farmer/Beneficiary Type				Total
	Landless	Marginal	Small	Medium & Large	
Bagerhat	16	12	14	8	50
Bandarban	16	12	14	8	50
Barguna	16	12	14	8	50
Barisal	16	12	14	8	50
Bhola	16	12	14	8	50
Bogra	16	12	14	8	50
Brahmanbaria	16	12	14	8	50
Chandpur	16	12	14	8	50
Chittagong	16	12	14	8	50
Chuadanga	16	12	14	8	50
Comilla	16	12	14	8	50
Cox's Bazar	16	12	14	8	50
Dhaka	16	12	14	8	50
Dinajpur	16	12	14	8	50
Faridpur	16	12	14	8	50
Feni	16	12	14	8	50
Gaibandha	16	12	14	8	50
Gazipur	16	12	14	8	50
Gopalganj	16	12	14	8	50
Habiganj	16	12	14	8	50
Jaipurhat	16	12	14	8	50
Jamalpur	16	12	14	8	50
Jessore	16	12	14	8	50

Jhalakati	16	12	14	8	50
Jhenaidah	16	12	14	8	50
Khagrachari	16	12	14	8	50
Khulna	16	12	14	8	50
Kishoreganj	16	12	14	8	50
Kurigram	16	12	14	8	50
Kushtia	16	12	14	8	50
Lakshmipur	16	12	14	8	50
Lalmonirhat	16	12	14	8	50
Madaripur	16	12	14	8	50
Magura	16	12	14	8	50
Manikganj	16	12	14	8	50
Meherpur	16	12	14	8	50
Moulvibazar	16	12	14	8	50
Munshiganj	16	12	14	8	50
Mymensingh	16	12	14	8	50
Naogaon	16	12	14	8	50
Narail	16	12	14	8	50
Narayanganj	16	12	14	8	50
Narsingdi	16	12	14	8	50
Natore	16	12	14	8	50
Nawabganj	16	12	14	8	50
Netrakona	16	12	14	8	50
Nilphamari	16	12	14	8	50
Noakhali	16	12	14	8	50
Pabna	16	12	14	8	50
Panchagarh	16	12	14	8	50
Parbattya Chattagram	16	12	14	8	50

Patuakhali	16	12	14	8	50
Pirojpur	16	12	14	8	50
Rajbari	16	12	14	8	50
Rajshahi	16	12	14	8	50
Rangpur	16	12	14	8	50
Satkhira	16	12	14	8	50
Shariatpur	16	12	14	8	50
Sherpur	16	12	14	8	50
Sirajganj	16	12	14	8	50
Sunamganj	16	12	14	8	50
Sylhet	16	12	14	8	50
Tangail	16	12	14	8	50
Thakurgaon	16	12	14	8	50
Total	1024	768	896	512	3200

Throughout the selection process it was tried to maintain the above mentioned proportion of different types of farmers, but the proportion and district total varied slightly depending on the field situation but the total sample size (3200) was strictly maintained.

1.9 Qualitative Survey

The qualitative data collection method included **Key Informant Interview (KII) and Focus Group Discussion (FGD).** 20 Key Informant Interviews were conducted. with relevant stakeholders including Government official engaged with agriculture. Also Focus Group Discussion (FGD) were conducted in Chittagong, Jhenaidah, Moulovibzar and Natore.

1.10 Measuring Project Outcomes

Progress regarding Project Development Indicators (PDO) achievement were measured through the following indicators:

PDO Indicator1. Number of beneficiaries with access to improved weather and climate services :(measured by a user satisfaction index)

(a) Meteorological and Hydrological services: For the purposes of measuring the main beneficiaries, access to data and information by government agencies, specifically, Department of Agricultural Extension were considered. The indicator measured whether DAE has access to the weather and climate information services they need. This information was derived from the surveys carried out at field level.

(b) Agro-Meteorological services: The main beneficiaries were farming households – for the purposes of measuring beneficiaries, 30,000 lead farmers were considered as the main beneficiaries (direct beneficiaries). There were 9,00,000 (nine lakh) indirect beneficiaries of the project. The indicator measured access (not usage) to agromet information services delivered through the project. It was measured through the surveys carried out at field level. Project beneficiaries were also measured in terms of upazilas with direct access to Agro-Meteorological information. It was measured in terms of kiosks set up at the upazila level that made agromet information and advisories available to farmers.

PDO Indicator 2. Improved reliability of weather forecasts and hazard early warnings

This indicator measure the changes in forecasts skills and lead time of forecasts. Under the AMISDP project the lead time for weather forecasts is 24 hours. In addition to the daily forecasts extended range weather forecasts for next five days are also used in generation of advisories under AMISDP project. Validation of the forecasts and standard skill verification methods may be obtained from BMD.

1.11 Selection of Indicators for the Study

Indicators selection identifying and setting intermediate indicators, sub-set indicators, and milestone indicators based on survey result, is an important task. The indicators were chosen from Results Based Framework that is a guideline. A list of indicators were developed in order to design the instruments appropriately. For the areas, where the project has been implemented information will be obtained on perceived, issues changes in view, priorities they do consider and envisioned intervention. While constructing questionnaire, in case of selection of the indicators & variables, the following issues were considered:

Relevance

- Is the project's strategy relevant to the beneficiaries' needs?
- Is the project aligned with national government's agricultural policies and strategies?
- Does the project complement other donor-funded and government initiatives?

Effectiveness and Efficiency

- What is the progress of project implementation – Is the project on track to carry out all and activities as planned?
- To what degree have (and have not) the interventions resulted in the expected results and outcomes
- How can the theory of change be altered to increase efficiency and effectiveness? Did assistance reach the right beneficiaries in the right quantity and quality at the right time?

Impact

- To what degree has the project made progress toward the results in the project level framework?
- Have there been any unintended outcomes, either positive or negative?
- What internal and external factors affect the project's achievement of intended results?

Sustainability

- Is the on-going program sustainable, including a strategy for sustainability; sound policy; stable funding; quality program design; institutional arrangements; local production and sourcing; partnership and coordination; community participation and ownership?
- What substantive progress has the government made toward developing a nationally Agromet Advisory program?
- How are local communities involved in and contributing toward these services?
- What needs remain in order to achieve a full handover and nationally-owned Agromet Advisory program?

The survey questionnaire based on the above indicators is provided in the Annexure-4.

1.12 Measuring User (Farmer) Satisfaction on agro-meteorological information

An index was developed for measuring farmer satisfaction, which is elaborated in the farmer satisfaction chapter (Chapter Seven).

1.13 Secondary Meteorological Data analysis

The consultant analyzed the national level meteorological data collected from Bangladesh Meteorological Department (BMD) to identify the weather and climate related problems existing in different regions of the country. Data of 30 years for different weather component were analyzed for 35 stations (data were available from BMD). The findings were presented in 'Climate, Weather and Agro-ecological Zones of Bangladesh' Chapter.

1.14 Analyzing Project Financial Progress

The consultant analyzed project procurement data, financial progress data and Project Audit Report and presented in the 'Project Financial Analysis and Log Frame' chapter.

Chapter Two

Implementation of the Study

2.1 Technical Approach to the Assignment

The Consultant carried out the services in the best interest of the project with reasonable care, skill and diligence with sound practices. Consultants appreciate the provision of making available documents and necessary assistance from the Client in the collection of data and liaison with other agencies. All the documents, data and information received from the Client are tagged and documented. Successful completion of the project in stipulated timeframe does greatly depend on the efficient and timely completion of each segment of activities by the concerned professional / staff. However, it equally depends on timely review and approval of deliverables by the Client. The field work of the impact study interrupted due to the lockdown imposed by the Government due to Covid-19 pandemic situation. Considering the restriction of movement later it was decided to continue data collection over telephone interview.

As AMISDP concept embodies a set of complementary, supplementary and synergistic approaches, the consultant team took into account the project development objectives in determining the qualitative and quantitative indicators. The project has special focus on institutional building, capacity building and agricultural productivity improvements. Indicators selection identifying and setting intermediate indicators, sub-set indicators, and milestone indicators based on survey result, is an important task. The indicators were chosen from Results Based Framework that is a guideline.

In order to keep up the whole survey compatible with objectives of project monitoring and impact assessment, apart from preparatory tasks pertaining to instrument developments, the consultants gave emphasis on adequate understanding and critical insights into an array of diverse issues, survey administration, refinements, and data requirements. Although it can be termed as a

traditional household survey complemented by additional qualitative methods, it includes a number of issues which should be addressed properly to get real picture of the project impact. Investigating some of the key socio-economic features, agro-ecological attributes, strength of local level institutions, and capacities of communities that relate to the project objective is also important. In view of the innovative features of the project, the impact study investigated into multi-dimensional issues.

2.2 Team Mobilization

On 25th January 2020, the assignment of conducting mid-term evaluations of the Agro-Meteorological Information Systems Development Project (AMISDP) has been awarded to REVE Systems Ltd. and its Sub-consultant MARS Ltd. First kick off meeting had taken place with the team members in MARS office on 30th January and 2nd kick off meeting had taken place with the team members in REVE office on 6th February. These initial meetings were intended to grasp and recapitulate the issues such as magnitude and breadth of survey gamut of key issues that needs to be addressed and to make a head way with regard to administrative and functional aspects of the mid-term impact assessment. The meetings also highlighted major milestones with regard to commencement of survey. Number of issues associated with quality control also came up. Several rounds of discussions among the team members highlighted various dimensions of the survey as well as expectations with regard to outcomes of the survey. The discussions shed light into a number of areas including selection of sample, indicators to add up, and the steps that consultant should follow in carrying out this survey.

The meetings of the team members were basically a follow up of the preparatory task and an orientation for the consultants with particular focus on the broad aspects of the AMISDP and the dynamics and strategic goals of the project. In these meetings, apart from identification and elaboration of some of the key building blocks and expectation from the consultants, the meeting stressed upon quality control issues. It should be noted that the discussion highlighted the key variables that needs to be taken into account and indicated to the spread and breadth of the survey. The discussion also underpinned issues with regard to climate vulnerability of agricultural productivity, institutional possibilities and impediments.

2.3 Key Issues Highlighted in Kick of Meetings

The team members had several rounds of discussions among them with particular focus on the issues relating to survey implementation and defining the key tasks as well as understanding of risks and challenges. Review of implementation strategies and Result Based Framework has provided the team insights into key indicators. The discussion also highlighted participation and status of the beneficiaries. The team leader also discussed about the scope and objectives of ToR with its comprehensiveness and some limitations. The other members of the study team also participated in discussion and raised some key issues for clarification. The discussions emphasized the following issues.

- The content of the inception report reflects that the study methodology has been designed in accordance with ToR and the focus of the survey;
- The sampling design should adequately cover the diversity of the respondents therefore, respondent selection procedure as set out in the methodology perfectly match with anticipated data.
- The mix and sequence of the techniques and methods (qualitative & quantitative) as presented in schematic diagram should be sequenced property. Nevertheless, indeed, an important task to distinguish & interrelate between the qualitative & quantitative tools.
- The areas where interventions have already been made the study should focus on the changes of the views & perceptions of the beneficiaries.
- Farmer satisfaction on agro-meteorological information services will be measured by applying user satisfaction index and will be compared with that of the baseline.
- Despite time constraints, the survey should be carried out in a fast tracking fashion in order to meet deadlines.
- In order to maintain authenticity and quality of data and to complete the survey work within time the data will be collected by using Android Mobile, data will be automatically stored in the server, then data will be processed by the IT specialist. This process will reduce the required time, since no time is required for data entry.
- The study should address:
  - What is mechanism of dissemination agro advisory and how beneficiaries received?
  -Project procurements and its output.
  -Agro advisories receive and feedback from beneficiaries.
  - Overall output of the project, overall Financial progress, etc.

2.4 Chalking out major tasks

The study team had a series of meeting regarding tasks. The team has chalked out the detailed strategy and work plan to carry out the study. The Team also identified the core tasks to be initiated immediately after the agreement signed. The team appraised the ToR and identified the key tasks to be performed at field level.

Task set-I

- Finalization and appropriation of survey methodology.
- Elaboration of the proposed sampling procedure.
- Designing data collection instruments/questionnaires.
- Designing supplementary instruments (qualitative data).

Task set-II

- Selection and recruitment of experienced enumerators;
- Conducting enumerators training, including practice of data collection using digital device.
- Preparing plan of operations and sharing with AMISDP.
- Assessment of field logistics and organize accordingly.
- Development of data entry program.

Task Set-III

- Survey Administration.
- Processing and analyzing field survey data.
- Processing and analyzing meteorological data (national level secondary data).
- Analyzing project procurement and financial progress.
- Sharing draft report with the client.
- Contents of the report agreed with the AMISDP Management

2.5 Main building blocks of the tasks

The Terms of Reference and the contract document was the basis of survey implementation plan. However, without iterating those issues which have been agreed upon and legally bind the consultants to comply with, we envisage which are critical to implementation of the survey.

Underpinning the whole gamut of issues that constitute the principles and basis of deriving key elements, the work builds on following issues:

- Full appreciation and translation of scope of work in consistent with deliverables and key tasks;
- At the end of the assignment, critical variables related to project objective will be identified and benchmark/baseline values would be compared for finding impact.
- The impact survey is to assess the change in the pre-project conditions after project intervention with regard to protecting damage of agricultural products due to natural disaster and extreme weather condition in all its forms and dimensions and with specific focus on institutional and livelihood related aspects.
- In view of the innovative features of the project, the impact study is for assessing project performance at the project midterm.
- Specific reference would be made to the project results framework in selection and finalization of indicators & indexes.

2.6 The Training of the Field Team

Consultant organized an orientation and training course for the field staff describing the objectives, importance and methodology of the study. The training program of the surveyors of the mid-term evaluation of BAMIS project (Package No: AMISDP/SD-01/19-20), was organized in MARS Ltd. office on 21st March 2020 and the field team moved from the next day. The training was scheduled to organize on 14th March 2020, but it was deferred due to lack of preparation by the REVE system. The feature of the training was:

a. The day started with the registration of eight surveyors at 09:30 a.m. All surveyors were present in time.

b. The training was ended at 05:15 p.m. with the distribution of the questionnaire.

c. The resources personnel were present:

1) Dr. Abdul Halim- Agriculture Expert
2) Mohammad Ahsan Uddin- Statistician
3) Maruf Al Mamun- IT specialist
4) Wg Cdr Sultan Masum (Retd)- Meteorologist
5) Wg Cdr Ahmed Ali- Coordinator & Meteorologist

d. The training schedule was as follows:

Place: Meteorological and Related Services Ltd (*MARS*) BAFWWA Shopping Complex South Building (3rd Floor) Dhaka Cantonment, Dhaka-1206 .

Date: March 21, 2020

Time	Events
0930-1000	Registration
1000 - 1015	Introductory speech (By Wing Commander Ahmed Ali)
1015 - 1145	Briefing on Questionnaires and survey methodology (By Associate professor Md. Ahsan Uddin)
1145-1200	Tea break
1200-1330	Digital Demonstration of Data Collection (By Md. Abu Rayhan)
1330-1430	Prayer and lunch break
1430-1500	Briefing on Agricultural data (By Professor Abdul Halim)
1500-1530	Briefing on Meteorological data (By Wing Commander Sultan Masum)
1630-1630	Practical Session

The Photos on training program of the data collectors are given in Annexure-1.

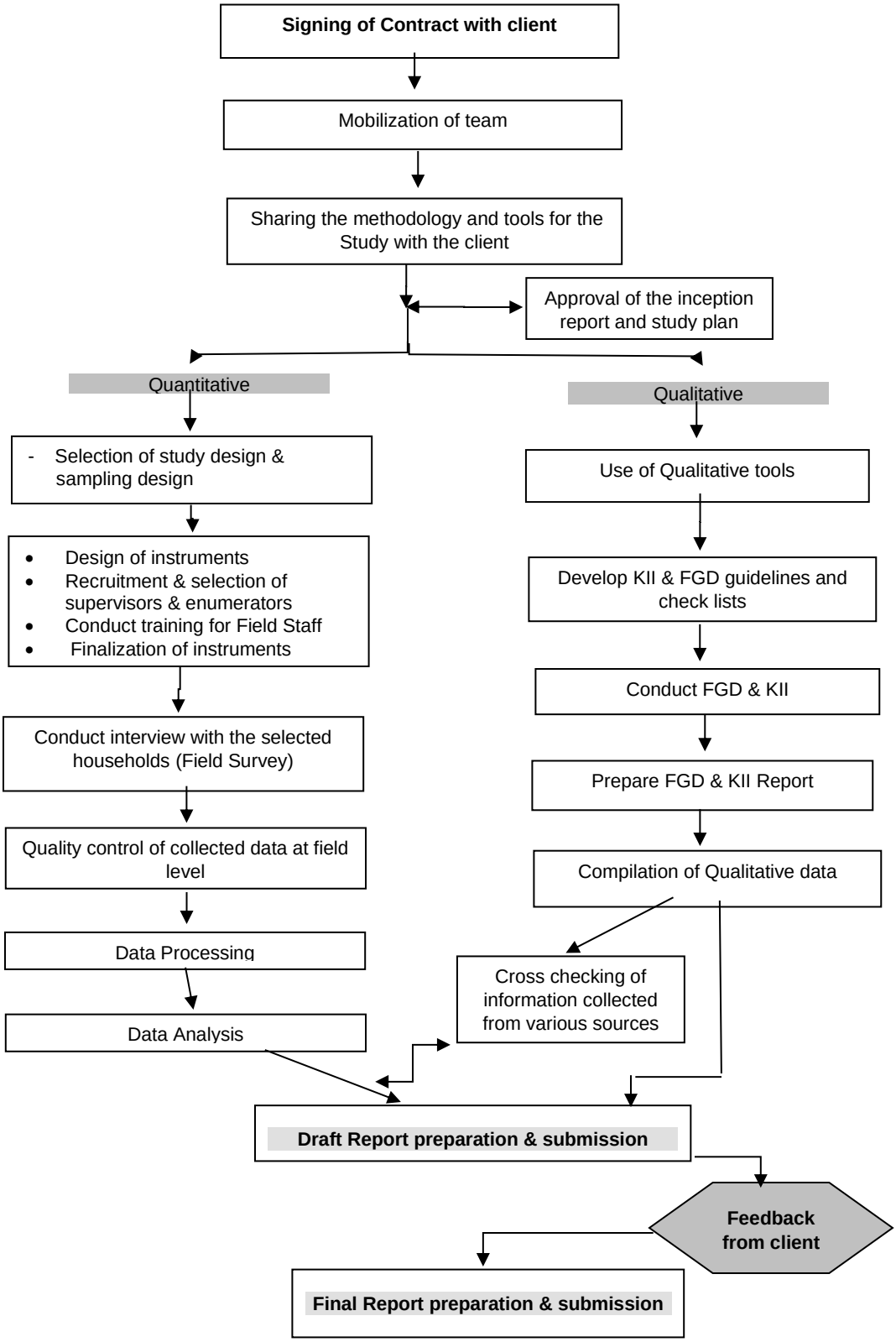
2.7 The Field Work

It was mentioned earlier that training was organized on 21st March 2020 and the field team moved from the next day. But they were not getting cooperation from the Upazilla level officers since the field officers were not informed about the study. Later the Consultant took initiatives to issue letter from the Project Director's office. By this time government imposed restrictions on movement due to Covid-19 pandemic, hence the data collectors returned home. After 60 days general leave of government office, when the government office reopened, in discussion with the project office it was decided that the data collection will be completed by telephone interview. In order to undertake field work, 8 data collectors have been appointed for one months. After reopening of government office the survey was conducted for three weeks and thus the data collection was completed.

The Photos on field work of the study are given in Annexure-1.

Sl	Name of Interviewer	Districts	Upazillas
1	Abdullah Al Mamun	Dhaka, Manikgonj, Gazipur, Tangail, Jamalpur, Sherpur, Mymenshingha, Netrokona	Savar, Singair, Ghatail, Jamalpur Sadar, Nokla, Fulpur, Netrokona, Kaliakoir
2	Tanvir Mahmud Sweet	Bagerhat, Khulna, Satkhira, Jessor, Chuwadanga, Meherpur, Jenedha, Kustia	Bagerhat Sadar, Rupsha, Kolarowa, Chwgacha, Cotchadpur, Kaligonj, Shoilokupa, Alamdanga
3	Farhana Yasmin	Borguna, Patuakhali, Bhola, Pirojpur,Jalokathi, Sariatpur Madaripur, Barisal	Lalmohan, Patuakhali sadar, Amtali, Kawakhali, Jalokathi Sadar, Gouronadi, Kalkini , Noria
4	Uttam Kumar	Sunamgonj, Sylhet, Moulibibazar, Hobigonj, B Baria, Narshingdi, Comilla, Chadpur	Jamalgonj, Balagonj, Moulavi Bazar Sadar, Habigonj Sadar, Austagram, Nashirnagar, Laksham, Hazigonj
5	Shisir Mahmud	Gaibandha, Rangpur, Dinajpur, Thakurgaon, Panchagarh, Nilphamari, Lalmonirhat, Kurigram	Palash Bari, Mithapukur, Birgonj, Thakurgaonj Sadar, Bodha, Domar, Lalmonirhat Sadar, Fulbari
6	Tanvir Ahmed	Coxsbazar, Khagrachari, Rangamati, Bandarban, Chattagram, Feni, Noakhali, Laxmipur	Chakoria, Lohagara, Bandarban Sadar, Rangamati Sadar, Mahalchari, Sonagazi, Mijdee, Raipur
7	Joynal Abedin	Pabna, Shirajgonj, Bogra, Natore, Rajshahi, Chapai, Naogaon, Joypurhat	Ullahpara, Shahajatpur, Natore Sadar, Putia, Nachal, Niamotpur,Joypurhat Sadar, Kahalo
8	Rehana Khatun	Gupalgonj, Narail, Magura, Faridpur, Rajbari, Munshigonj, Narayangonj, Narshingdi	Lohagora, Kashiani, Alfadanga, Rajbari Sadar, Shreenagar, Rupgonj, Madabdi

The following is a schematic diagram presented regarding the required stages involved in executing the proposed study.


Signing of Contract with client
Mobilization of team
Sharing the methodology and tools for the Study with the client
Approval of the inception report and study plan
Quantitative
Qualitative
- Selection of study design & sampling design
Use of Qualitative tools
Design of instruments
Recruitment & selection of supervisors & enumerators
Conduct training for Field Staff
Finalization of instruments
Develop KII & FGD guidelines and check lists
Conduct FGD & KII
Conduct interview with the selected households (Field Survey)
Prepare FGD & KII Report
Quality control of collected data at field level
Compilation of Qualitative data
Data Processing
Cross checking of information collected from various sources
Data Analysis
Draft Report preparation & submission
Feedback from client
Final Report preparation & submission

2.8 Work Plan

Effective and practicable work schedule is an important factor for timely completion of the project. A well-planned work schedule in Gantt chart is absolutely essential as a management tool for efficient management of project implementation. In spite of the advantage of network planning method, the Gantt Chart schedule is still the most widely used schedule form used in various projects. In line with the time frame mentioned in the TOR, a work schedule for a period of 5 months has been prepared.

It was estimated that it will require 5 months in total to complete the Project, that is the consultants expected to finish the work by June 2020 starting from February 2020. Total activities to be undertaken were determined by the consultants and then time has been allocated to perform that task in a systematic manner. It has been found that some of the tasks can be performed simultaneously while some others are to be started just after completion of a certain task. However, time has been allocated for each task in well calculated way to complete the whole assignment in shortest possible way with optimum result.

The survey work has been started from the 1st week of February 2020 and scheduled to be completed by last week of June 2020. Inception Report was submitted on 25th February 2020. The training of data collectors was conducted on 21st March 2020 and the team moved field in the next day. Data collection continued upto last week of April 2020. Due to online based data collection by using mobile phone, the data were automatically stored in the server, hence there were no need to data entry. But there were data processing, which was done at the beginning of May 2020. The data analysis and draft report preparation were done on month of May 2020. At the 1st week of June 2020 the Draft report was submitted. After comments and suggestions from the client the final report was prepared and submitted at the last week of June 2020.

The **Work Schedule** is shown in ***Figure 2.1*** in the form of chart.

No	Activity	Time Frame				
		Month-1	Month-2	Month-3	Month-4	Month-5
		Feb' 20	March' 20	April' 20	May' 20	June' 20
1	**Team Mobilization**					
2	**Development of Instruments**					
3	**Submission of Inception Report**					
4	**Training of Surveyors**					
7	**Data Collection and Entry**					
8	**Submission of Progress report**					
9	**Data Processing, Cleaning and Analysis**					
10	**Writing report**					
11	**Submission of Draft report**					
12	**Submission of Final report**					

Figure 2.1: Work Schedule of the Midline Impact Assessment of AMISDP Project

Chapter Three

Assessment of Project Impact on Farmer

3.1 Demographic Profile of the Farmers

Among the respondents 79% were male and 21% were female. 97% of the respondents were married, only 2% were unmarried. About two-third (66%) of the households have family size of 5-8 members, while 29% of the households have family size of 1-4 members. Among the farmers 34% are of age 36-45 years, 32% are of age 46-55 years, 17% are of 56-65 years and nearly 2% are of 66-75 years.

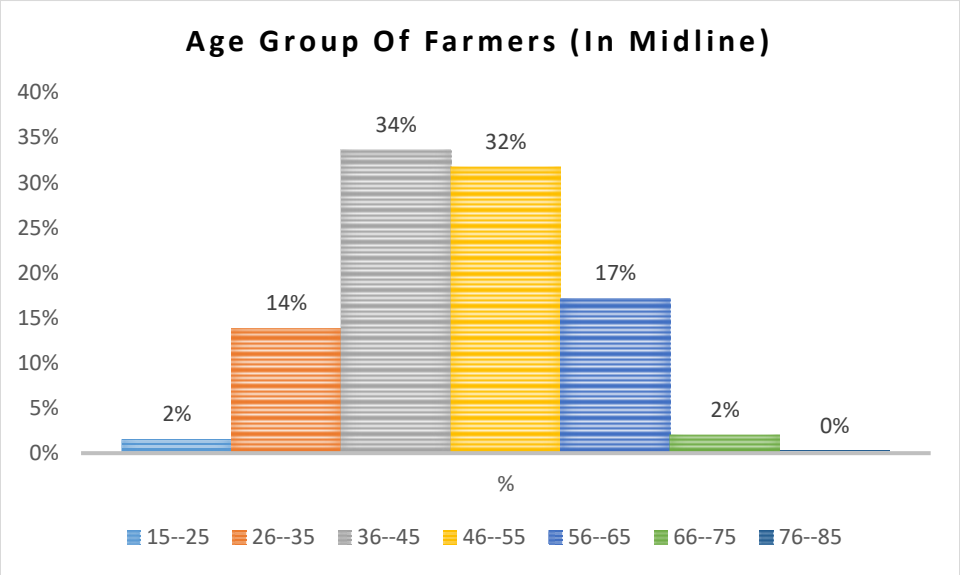


Figure 3.1: Age Group of the Farmers

Majority of the farmers (59%) have primary education, 19% have college level education, 11% can read and write only and 6% have no formal education. Among the farmers 88% have income from only farmland, only 12% have income from other sources.

Table 3.1: Education Level of the Farmers

Education Level	Frequency	%
No formal education	192	6%
Can read and write	342	11%
Primary school	1887	59%
Secondary/ Technical education	161	5%
College	601	19%
University	17	1%
Total	3200	100%

Table 3.2: Income Source of the Farmers

Income source	Frequency	%
Farm land	**2805**	**88%**
Other than farm land	**395**	**12%**
Total	**3200**	**100%**

Among the respondents, 25% are marginal farmers (0.01-0.49 acre land), 45% are small farmers (0.50-2.49 acre land) and 29% are medium and large farmer (more than 2.5 acre land). In 58% of the household 1 family member is engaged in agriculture, in 34% household 2 family members are engaged in agriculture and in 6% household 3 family members are engaged in agriculture.

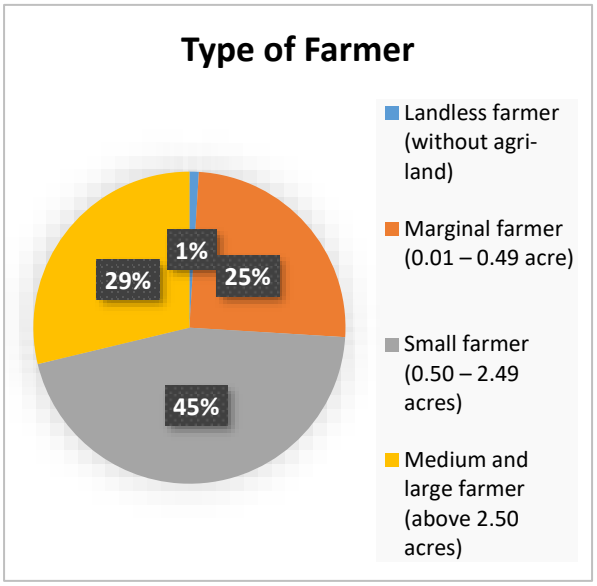


Figure 3.2: Type of the Farmers

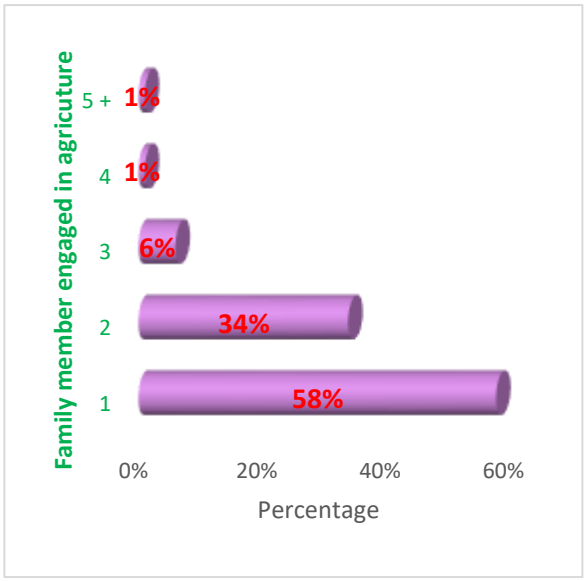


Figure 3.3: Family members in agriculture

3.2 Weather and Climate Induced Problems Faced

This section describes major weather and climate induced problems faced by the farmers for crop production in last year & the overall impact compared to baseline survey. Out of 3200 respondents, near about 28% farmers reported that the attack of cyclone and 25% faced Nor wester, 23% faced heavy rainfall in last year as major weather and climate induced problems .On the other hand, 21% farmers reported storm surge ,18% drought & 16% flood in last year as major weather and climate induced problems. Rest of above our respondent farmers reported cold wave 72%, heat wave 11.31%, lighting 2.63%, costal flood 2.38%, flash flood 7.25%, flood inundate 3.63%, salinity 0.69%, landslide 2.06%, forest degradation 1.25% respectively as major weather and climate induced problems *(See Table 3.3 in annexure-2).*

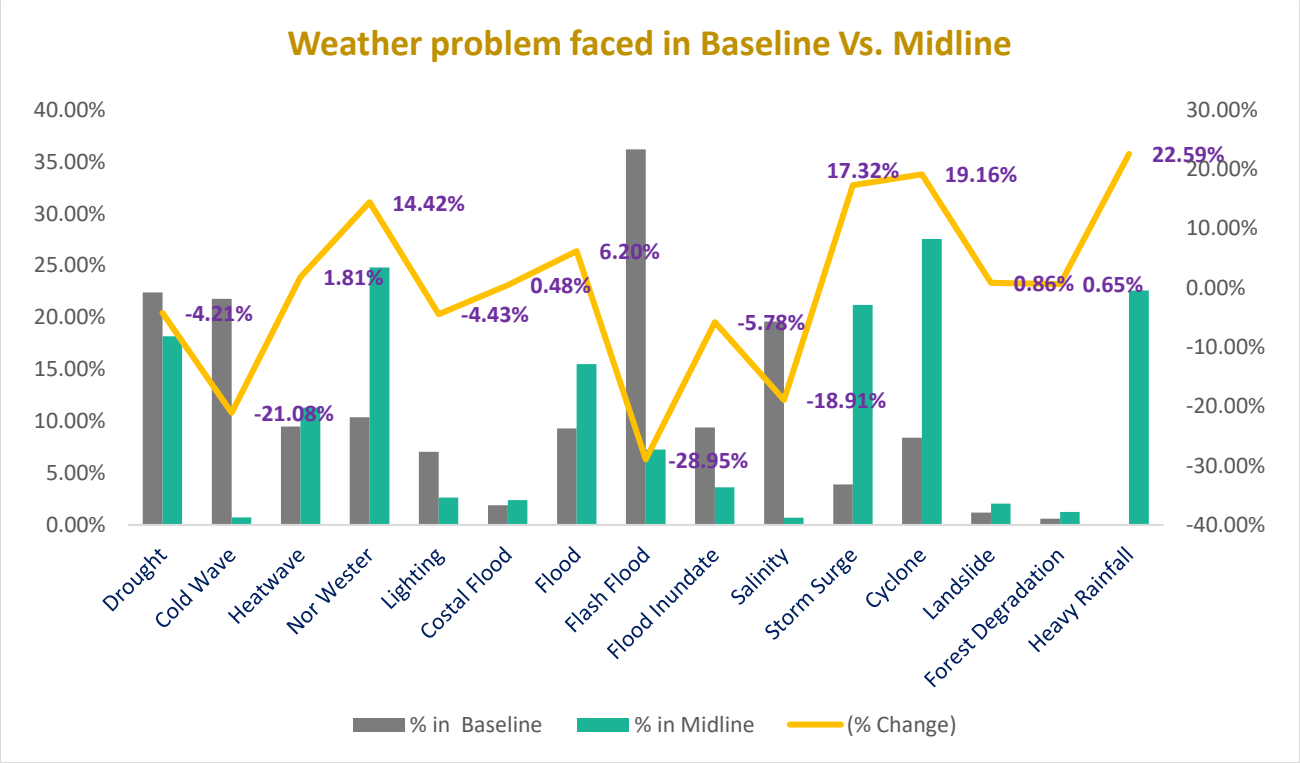


Figure 3.4: Major weather and climate related problems faced in last year compared to Baseline

Compared to baseline we can say drought, cold wave, lighting, flash flood, flood inundate, salinity are significantly decreased in last year. On the other hand rest type of weather & climate related problem are significantly increased. It is noted that, heavy rainfall has newly incorporated in midline survey as major weather and climate induced problems.

3.3 Crop damage due to weather and climatic problems

In midterm survey when we asked regarding crop damage due to weather & climate problem out of 3200 respondents, majority of farmers (53.28%) reported moderate crop damage, about 27% farmers indicated severe crop damage in last year, 16.31% reported negligible & around 3% reported no damage. It is good sign that crop damage has significantly decreased in last year relative to previous year. Severe damage has decreased in last year compared to Baseline survey. However around 3% respondent farmers reported no damage *(See Table 3.4 in Annexure-2)*. It is revealed that the crop damage due to weather and climatic problems has significantly downward. Hence early forecast of weather and climate services for the farmers is effectively running to protect their crops from the damages.

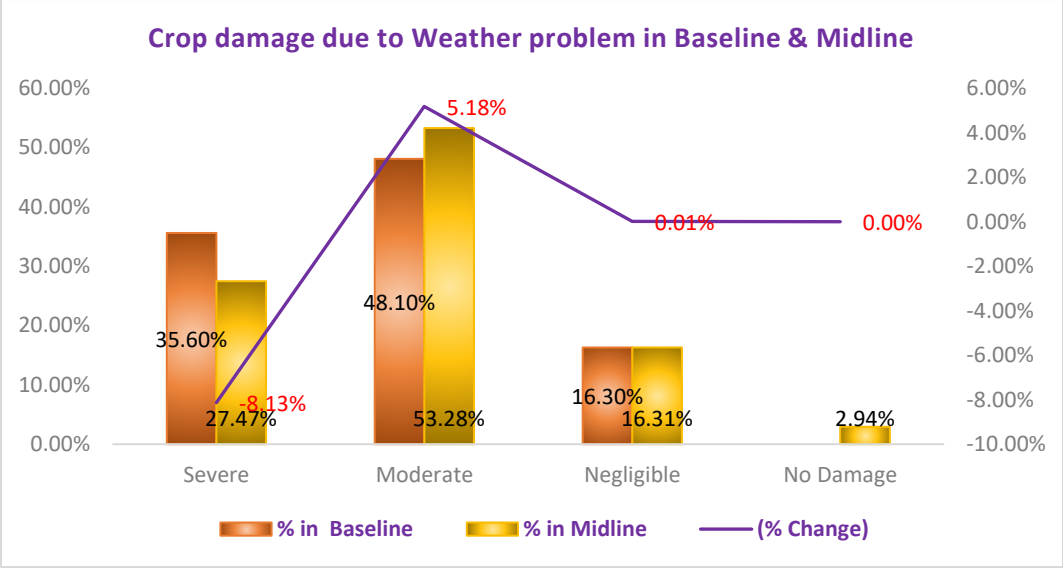


Figure 3.5: Crop damage due to weather and climatic problems (in last year)

3.4 Frequency of weather and climatic problems faced

To measure frequency of weather & climate problem faced during crop production in last year farmer were asked. In response out of 3200 respondent farmers, 87% farmers reported 1 to 2 times, around 7% reported 3 to 4 times, .06% farmers reported 5 to 6 times, and near about 6% farmers reported never occurred in last year.

It has been observed that, the frequency of facing natural disaster has significantly decreased compared to baseline survey. The number of 3 to 6 times weather & climate problem has decreased around 46% relative to baseline survey. The frequency of 1 to 2 times weather &

climate problem has increased around 41% relative to baseline survey *(See Table 3.5 in Annexure-2).*

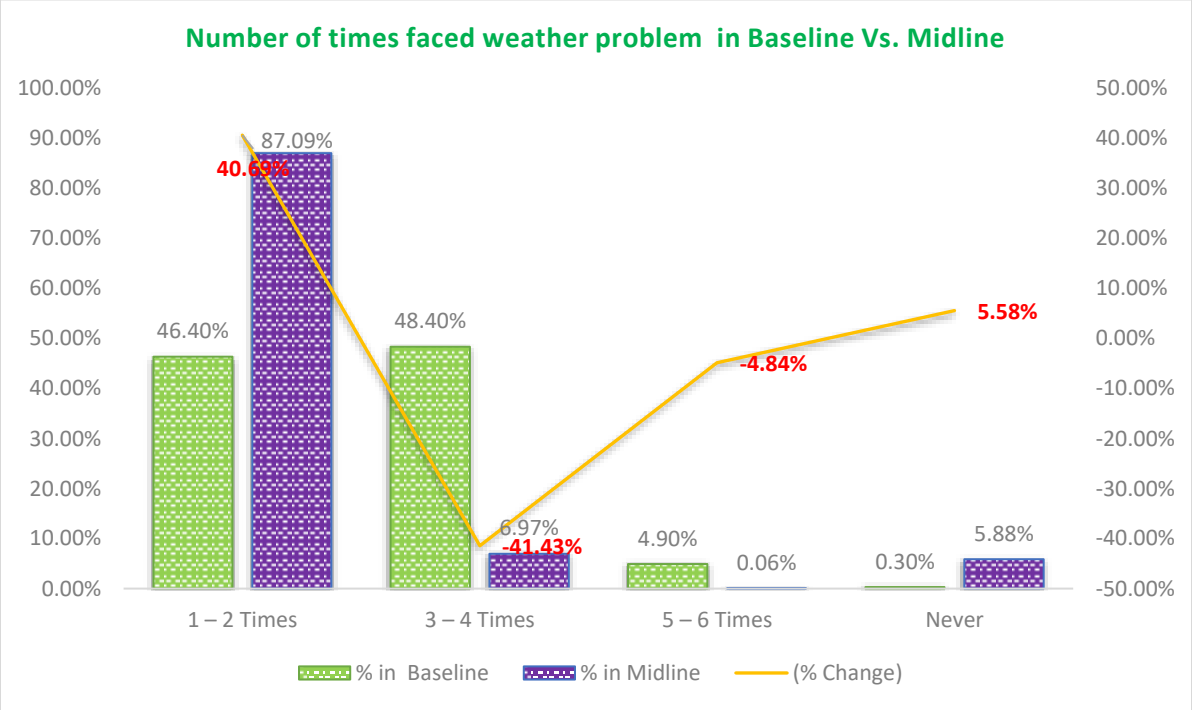


Figure 3.6 : Frequency of weather and climatic problems faced during crop production

3.5 Total number of days faced weather and climatic problems

In midline survey majority (65%) of farmers said, they faced 1 to 2 days of weather and climatic problems during crop production in last year. 15% indicated 3 to 4 days, 7% indicated 5 to 6 days & 7% indicted no weather and climatic problems faced. In addition about 5% of farmers faced more than 6 days weather and climatic problems in last year. Farmers are taking initiative based on early forecasting of agro-meteorological information. Hence they saved more crop from damage.

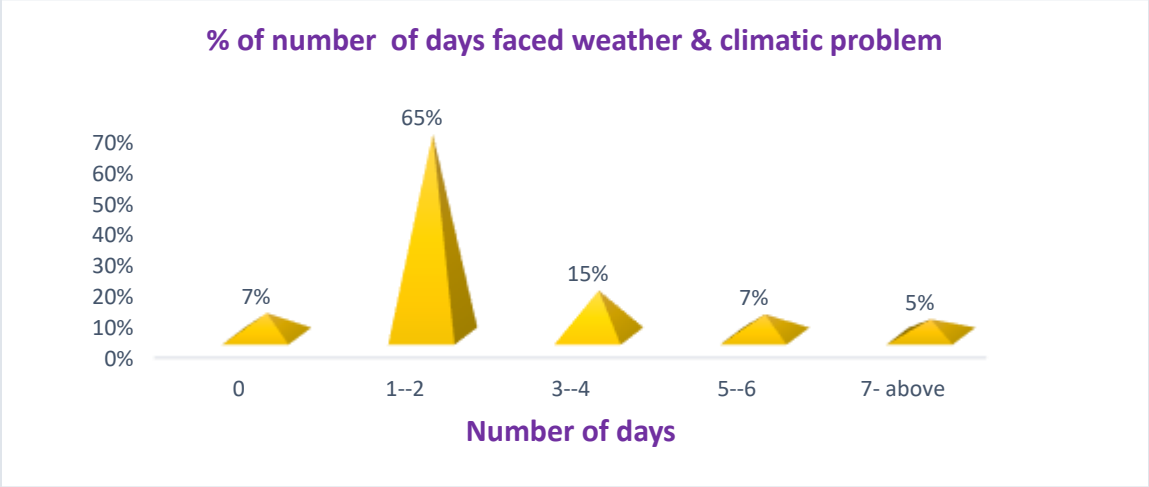


Figure 3.7: Number of days faced weather and climatic problems (in last year)

3.6 Production loss due to weather related problems

Though there were weather & climatic problems but farmers has reduced average production loss in last year than previous year. In baseline 32.75% farmers incurred more than 100kg loss of production per acre, while only 1.38% farmers incurred more than 100kg loss of production per acre *(See table 3.6 in annexure-2).*

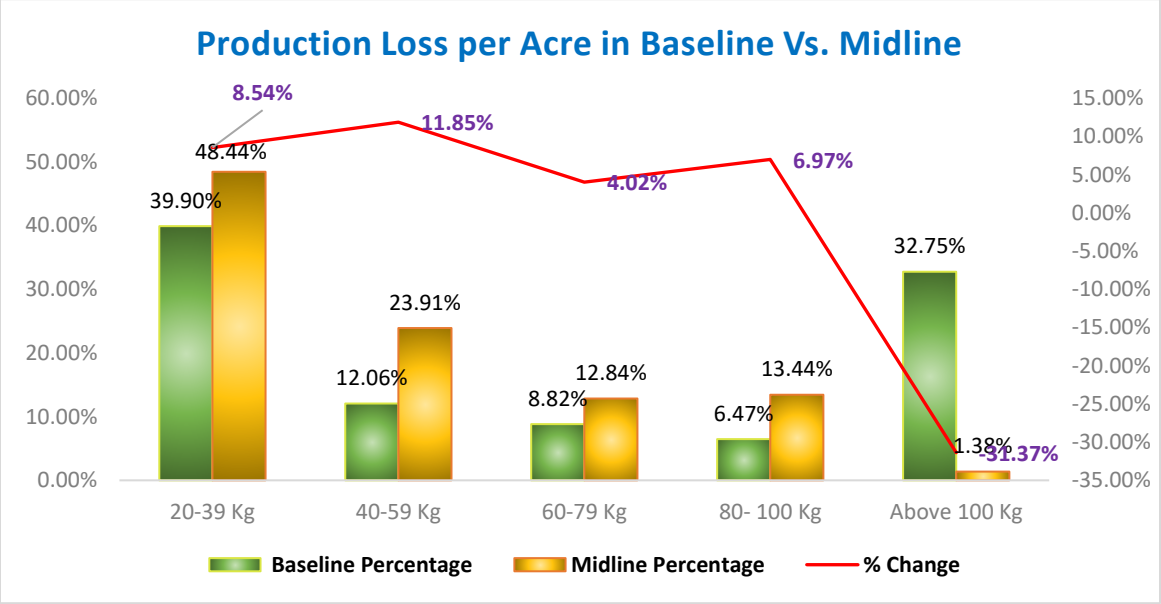


Figure 3.8: Average production loss (per acre) due to weather related problems (in kg)

That is there is sharp decline in loss of production due to natural calamity, due to increased access to agro-meteorological data, which can be regarded as a success of the AMISDP project. Farmers responded that, they have overcome huge damage of production as past after getting early forecasting of agro-meteorological information, as they took effective action in last year.

3.7 Source of Agro-meteorological Information

Farmers are getting forecast information on meteorological matters such as rain, storm, cyclone, heat wave, cold wave, thunderstorm etc. through different sources. Highest percentage (74.66%) of farmers received meteorological information from the DAE which was followed by TV (70.75%), received SMS 37.53%, community people 32.38%, radio 13.78% & social media 8.81%. Aside this around 2.19% farmers indicated that they received meteorological information from the analog board. The lowest 0.63% farmers informed that they didn't receive any information.

From the above finding we can say, farmers are becoming more informative regarding agro-met information, that in baseline around 43% farmer said they didn't received any information but in midline survey it is offsetting by 0.63%. Farmer are more informed by DAE than baseline, the project is contributing effectively *(See Table 3.7 in Annexure-2).*

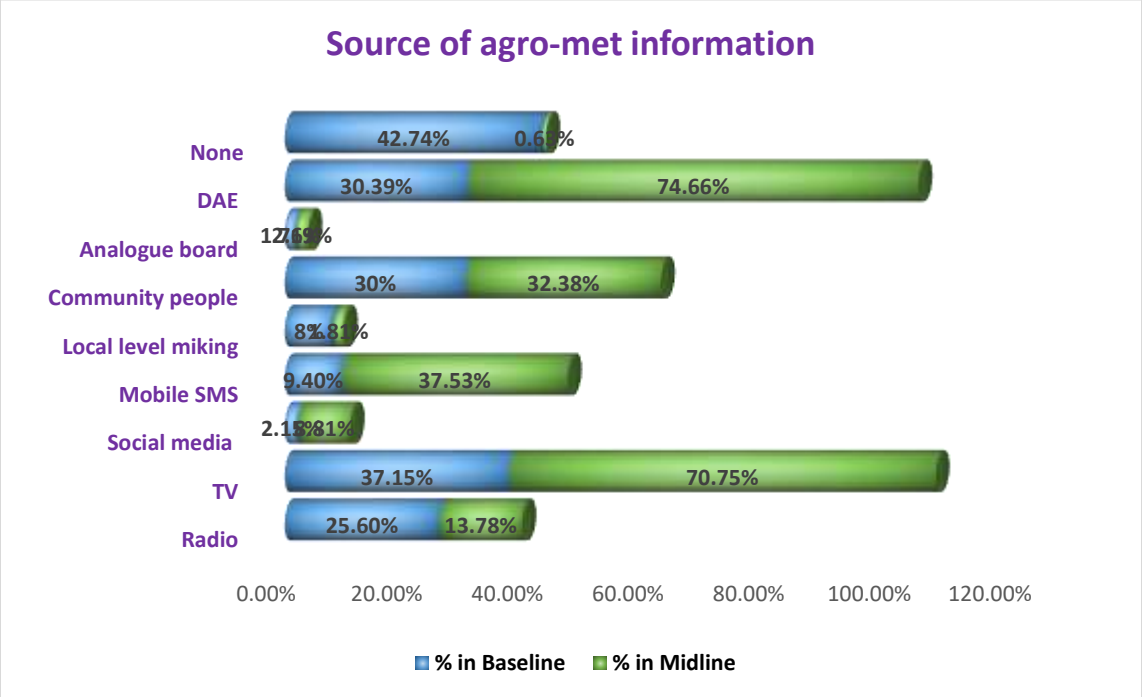


Figure 3.9: Source of Agro-met Information in Baseline and Midline

3.8 Knowledge of agro-meteorological organization

Surveyed farmers were asked about knowledge on government organizations which are providing information regarding temperature, rainfall, cyclone, storm, heat wave, and cold wave etc. More than three fourth (78%) farmers reported that they knew about Department of Agricultural Extension (DAE) through field level officials and extension batayan/IPM club etc. Second highest (13%) farmers reported that they knew about Bangladesh Meteorological Department (BMD) through radio, TV or local level miking. 9% farmers indicated that they didn't have any knowledge about such organization.

On the other hand very negligible (0.25%) percentage of farmers informed that they were getting weather and climate related information from Bangladesh Water Development Board (BWDB). From baseline survey we found that Maximum (56%) farmers do not have any knowledge on government organizations which are providing information regarding temperature, rainfall, cyclone, storm, heat wave, and cold wave etc. information, followed by DAE (25%) but in midline farmer are getting more knowledgeable regarding such agro-met information service provider organization *(See Table 3.8 in Annexure-2).*

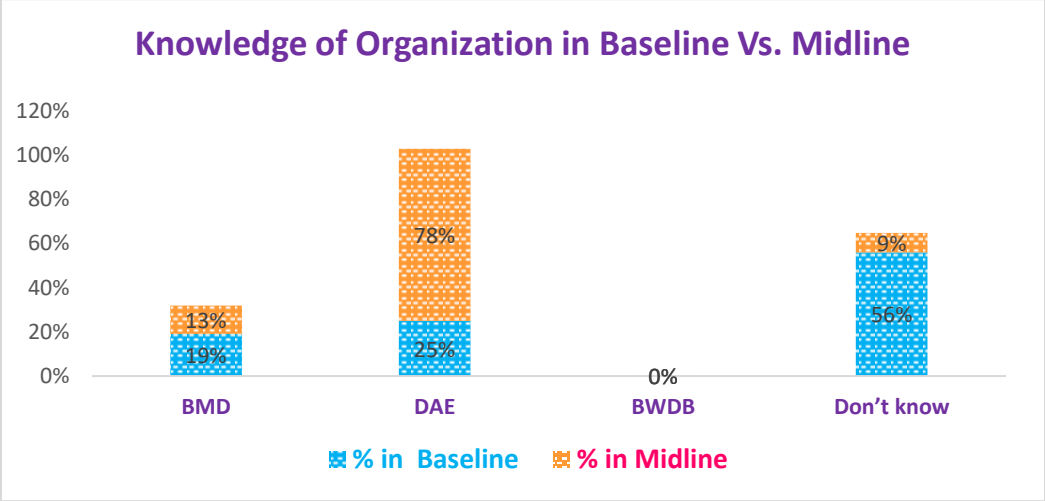


Figure 3.10: Knowledge on government organizations providing agro-meteorological information

From the above finding, DAE is offsetting 52.94% more information than baseline. That means, DAE is covering more farmer than past. No doubt the project is contributing effectively.

3.9 Knowledge about the services of BAMIS

Asking the question on knowledge about the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE, the majority farmers (77.94%) responded that they have

the knowledge regarding the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE & 22.06% farmers responded that have no idea regarding the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE *(See Table 3.9 in Annexure-2).* Comparing baseline survey we found that, farmers have 75.44% more knowledge regarding the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE in midline. Hence we can say that the project has reached to the farmers effectively.

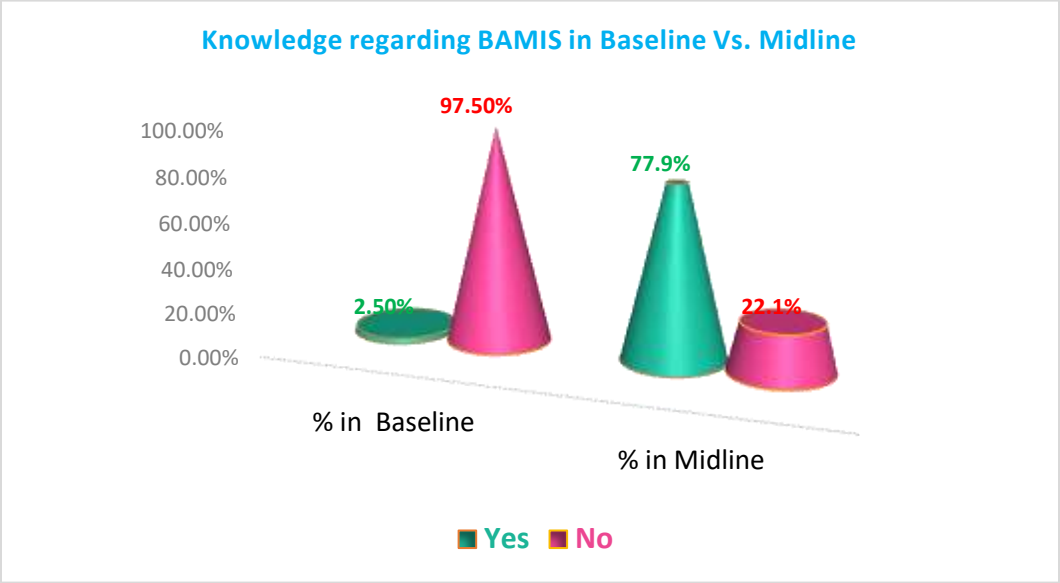


Figure 3.11: Knowledge about the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE

3. 10 Traditional Weather Forecasting

Generally farmers are used to apply traditional method to protect their crop from natural disaster. Majority (312%) farmers reported that they planned their crop production based on last year weather, 27% farmers followed others such as weather and climate forecast of government agencies ,while 21% farmers informed that they followed past 2 years weather for crop planning. On the other hand 21% farmers reported that they followed suggestion of older person of family *(See Table 3.10 in Annexure-2).* Farmers are following forecast from agro-met service provider agency more than past, as observed in the midline survey. If the trend exists, it is expected that in end line this proportion will increase substantially.

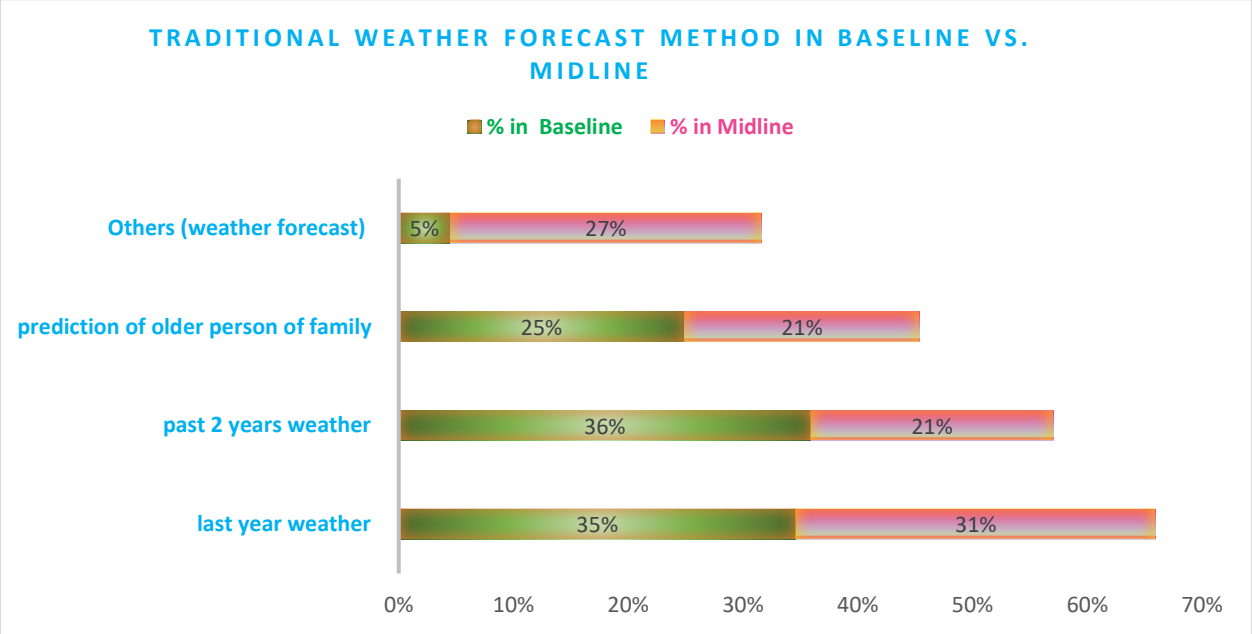


Figure 3.12: Traditional methods used for applying weather forecast (multiple response)

Availing agro-met service some farmers are still using traditional method for applying weather forecast. Need to be improved in this regard. It can be changed by highly accessible agro-data to farmers & making data more reliable to farmers. Project can employ a third party non-government organization (having experience of meteorological research and providing meteorological information/message) for popularizing BAMIS initiatives.

3.11 Frequency of mobile message received

In the project planning it is supposed to provide agro-met related messages to the farmers twice in a week. About 63% farmers indicated that they received message of meteorological information once per week. 22% farmers didn't receive message of meteorological information in a week. 9% farmers indicated that they received message of meteorological information twice per week followed by 3 time (4%). The lowest farmer (1%) reported that they received 4 times per week *(See Table 3.11 in Annexure-2).* Need to be improved in this regard, 22% farmers are not receiving message. Project can employ a third party non-government organization (having experience of meteorological research and providing meteorological information/message) for providing message to the farmers.

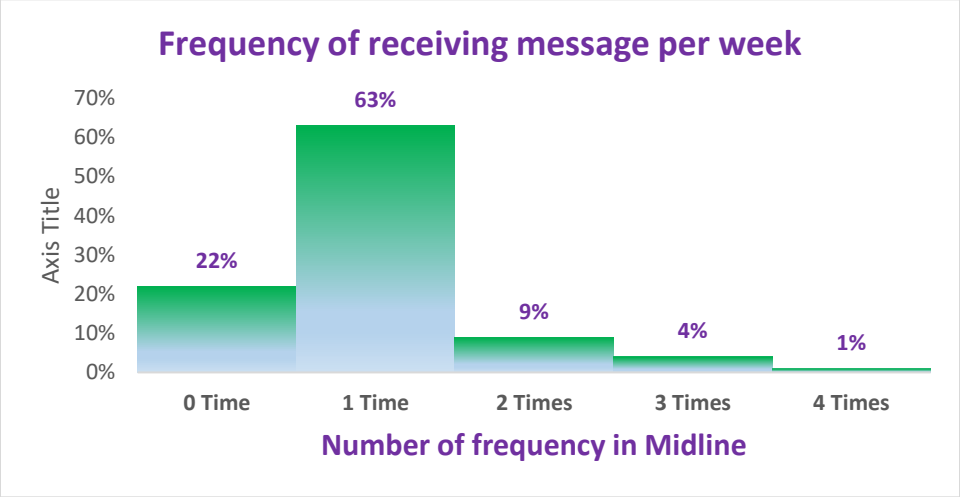


Figure 3.13: Number of days farmers used to receive the mobile message in a week

3.12 Participation in agro-met related training

In baseline survey farmers expressed their interest to participate in agro-met related training/awareness raising program. The project has arranged so. 61% farmers informed that they participated in the agro-met related training/awareness raising program for 1-3 days, 25% reported 4-6 days, 12% reported zero day, and 2% reported 7-above days in last one year. In midline 12% farmers didn't get any agro-met related training/awareness raising program *(See Table 3.12 in annexure-2).* It should be mitigated.

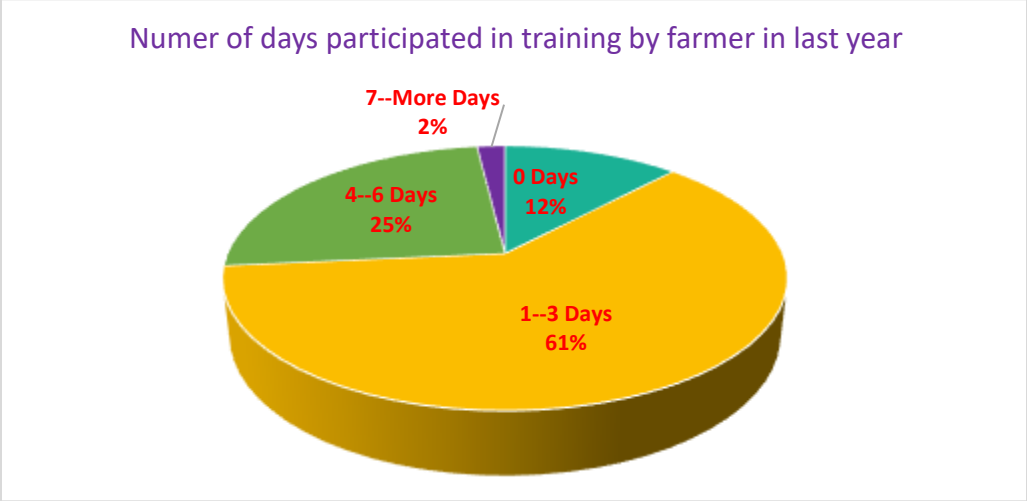


Figure 3.14: Number of days participated in training by farmer in last year

3.13 Necessity of agro-meteorological information services

Almost all (99%) farmers opined that they need agro-meteorological information and advisory services, which are required to protect their crops from the damage; while negligible percentage of farmers (0.22%) reported that they had no requirement of agro-meteorological information services to protect their crops from the damage. On the other hand 0.78% reported they don't know about this. It was due to their lack of knowledge on agro-met information and advisory services.

Table 3.13: Necessity of agro-meteorological information services

Necessary	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Yes	970	95.10%	3168	99.00%	3.90%
No	50	4.90%	7	0.22%	-4.68%
Don't know			25	0.78%	0.78%
Total	1020	100%	3200	100.00%	

Comparing with the baseline we found that, farmer's necessity of agro-met information and advisory services has increased compared to baseline. Hence farmer's knowledge on agro-met information and advisories services is increasing, which is a positive contribution of the project.

3.14 Timing of information to save crops from damage

More than 50% farmers (53.04%) indicated that they were getting enough time after receiving information to save crops from the damage, 31.75% farmers opined that they were not getting enough time after getting information to save crops from damage. On the other hand 15.19% farmers did not receive any message to save the crop from damage *(See Table 3.14 in Annexure-2).*

When comparing the midline data with the baseline we found that, farmers are getting enough time to save their crop from damage than past. Even they are quite sure what to do after getting this information. Because project is not only providing weather message but also the corrective measure.

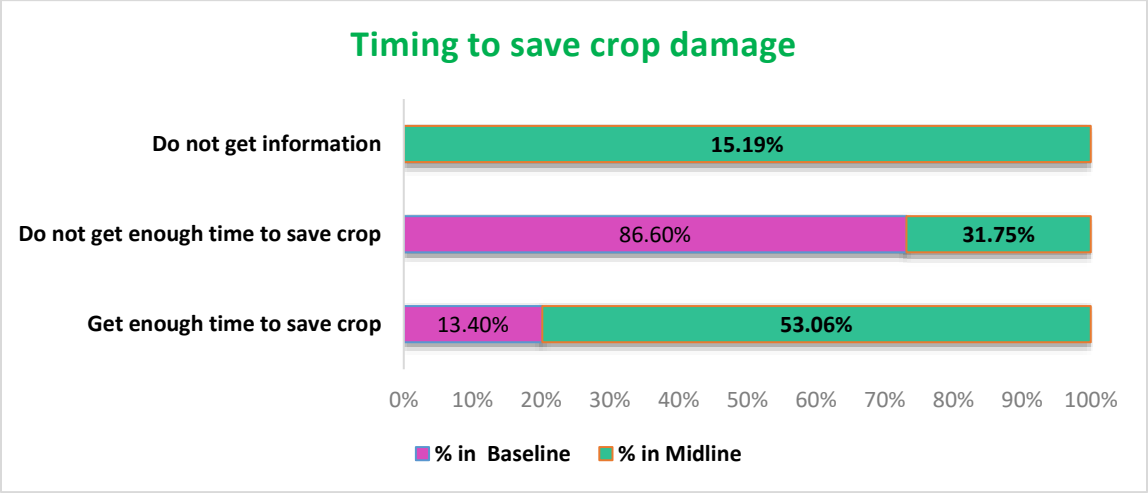


Figure 3.15: Timing of information to save crops from damage

3.15 Decision making regarding time of planting crops

Around 36% farmers opined that they used to make a decision for planting crops after receiving forecast of weather and climate. 33% farmers noticed that they used to follow usual season for making decision for planting crop, 14.91% wait for rain & 12.31% used traditional forecast. However, the lowest (3.59%) farmers informed that they followed neighbors *(See Table 3.15 in Annexure-2).*

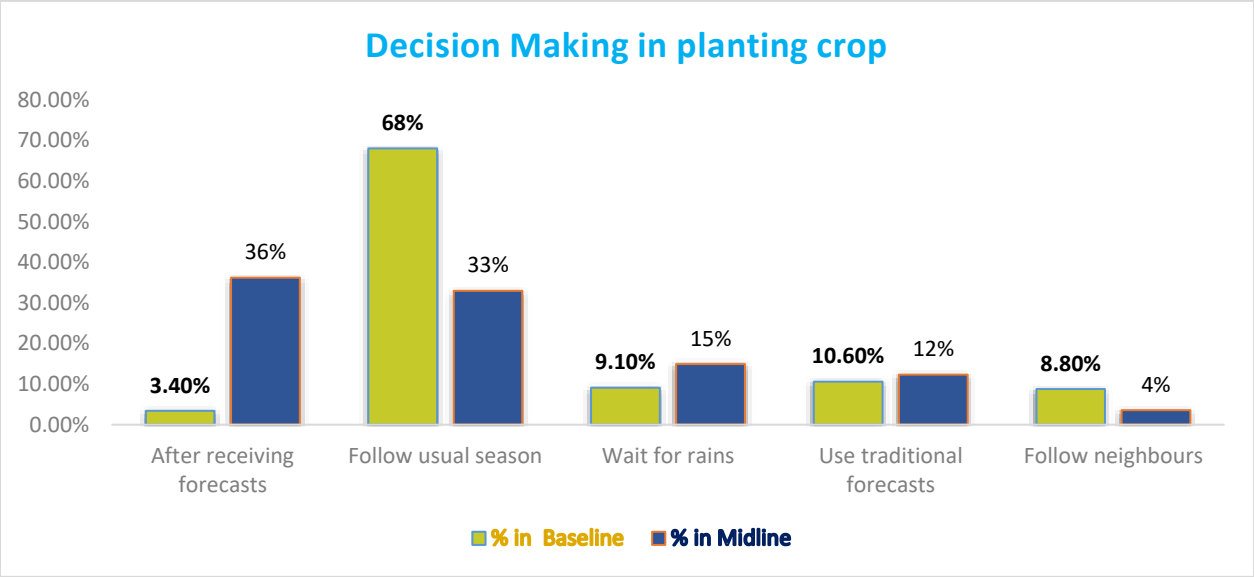


Figure 3.16: Decision making regarding time of planting crops

From the above findings we can say that, farmers are becoming independent in making decision for planting crop than past. Follow neighbor, follow usual season parameters are substantially

decreased. Simultaneously those are offsetting by after receiving message. Therefore they are becoming dependent on receiving weather forecast & advisory bulletin.

3.16 Ability to save crops from damage

Asking the question about the experience of saving crops from damage after receiving messages from BAMIS project, around 55% farmers reported that they saved their valuable crop from damage after receiving messages from BAMIS project, 31.47% farmers reported that they couldn't save their crop from damage. On the other hand 14.25% farmers answered that they didn't face such problem.

Table 3.16: Able to save crops from damage based on weather bulletin

Save your crops from damage	Midline	
	Frequency	Percentage
Yes	1737	54.28%
No	1007	31.47%
Did not face such problem	456	14.25%
Total	3200	100%

From the above finding it is obvious that, farmers are getting benefit from the BAMIS project as they can save their crop from damage by applying action suggested in bulletin by BAMIS.

3.17 Cope-up methodologies adopted

Asking the question about cope-up methodologies adopted based on the knowledge gained from training/awareness raising program, around three forth farmers (73%) reported that they adopted technique in varietal change like cropping pattern and crop production schedule to avoid weather and climate induced problems. About 21% farmer applied crop change, 5% in other change & 2% farmer did not adopt any technology based on the knowledge gained from training/awareness raising program *(See Table 3.17 in Annexure-2).* From the above finding we can say, farmers are adopting technique spontaneously from the knowledge gained from training/awareness raising program.

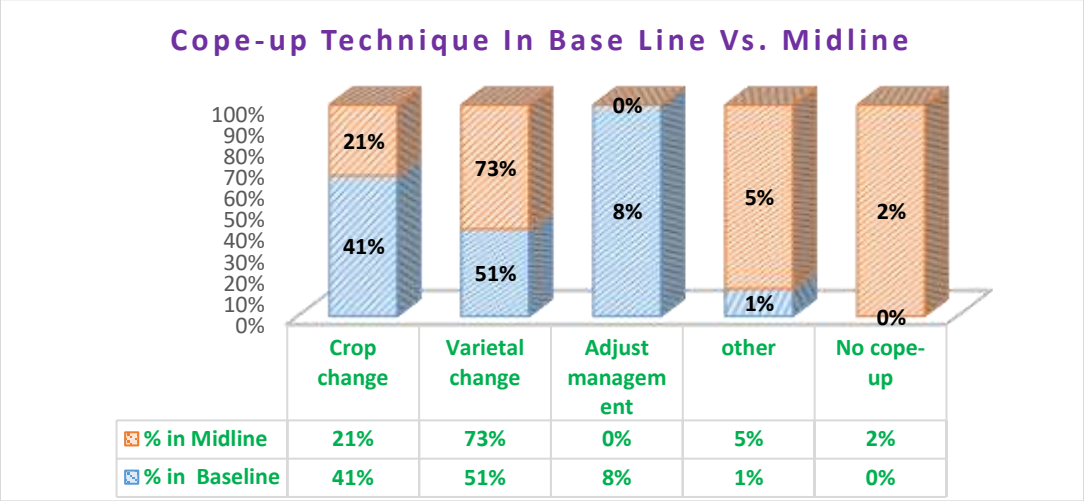


Figure 3.17: Cope-up methodologies adopted based on the knowledge gained from training

3.18 New technologies adopted

Out of 3200 farmers 37% reported that they could adopt drought tolerant crop varieties as new technology to avoid weather and climate induced problems, which was followed by insect pest tolerant crop varieties (17%), cold tolerant crop varieties (13%), no adoption (11%), disease tolerant crop varieties (8%) & heat tolerant crop varieties (8%).

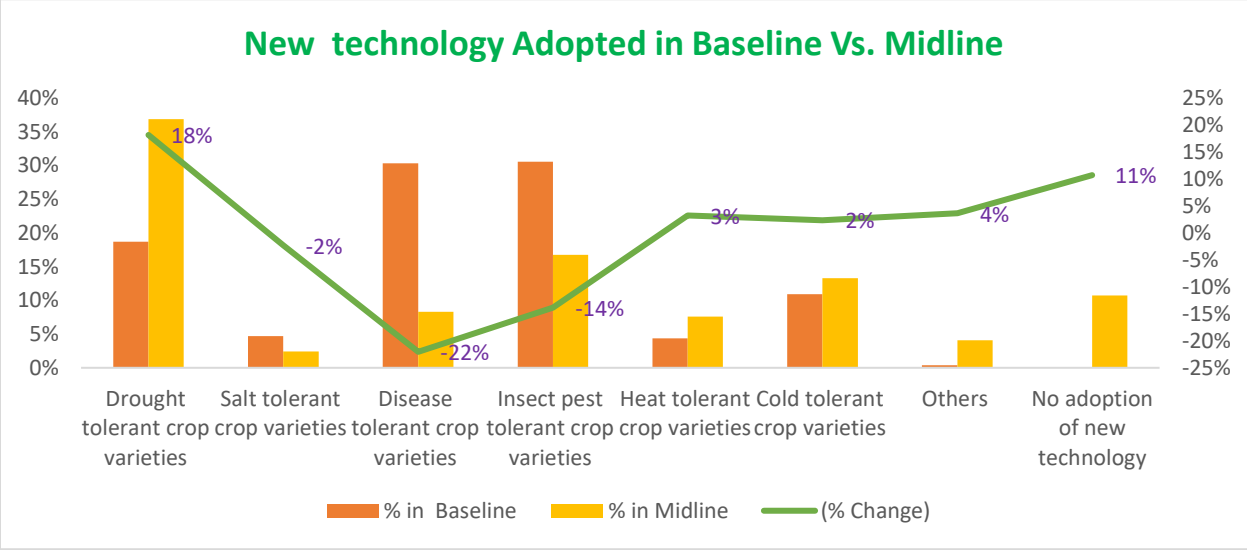


Figure 3.18: New technologies adopted based on the knowledge gained from weather and climate related services

About 4% farmer reported that they could apply other like crop management or planning or changing of cropping pattern to avoid weather and climate induced problems. However, the lowest (2%) percent farmers reported they could adopt Salt tolerant crop varieties *(See Table 3.18 in Annexure-2).* From the above finding it has been observed that farmers are using drought tolerant crop varieties significantly to avoid weather and climate induced problems. It might be more fruitful to them.

3.19 Project Alignment & Track

Majority (81%) farmers reported that the project aligned with other Government initiatives, 17% responded that the project is contradictory with other Government & donor initiatives, 2% reported don't know. The fact is that above 19% percent of farmers don't have proper knowledge regarding Government initiatives of agro –met services.

Table 3.19: Project aligned with other Government & donor initiatives

Project aligned with other Government initiatives	Midline	
	Frequency	Percentage
Aligned	2584	81%
Contradictory	553	17%
Don't know	63	2%
Total	3200	100%

Asking the question whether BAMIS is in right track, majority of the farmers (53%) reported the project was in right track followed by wrong track (43%). However 4% farmer reported they don't know regarding this. The fact is that above 47% farmers were unable to measure the project accuracy due to lack of knowledge.

Table 3.20: Is BAMIS project in right track?

BAMIS project in right track	Midline	
	Frequency	Percentage
Right track	1693	53%
Wrong track	1387	43%
Don't know	120	4%
Total	3200	100%

About three forth (75%) farmers reported that the project selected the right farmers followed by wrong farmer selected (22%). However 4% farmers reported they don't know *(See Table 3.21 in Annexure-2).*

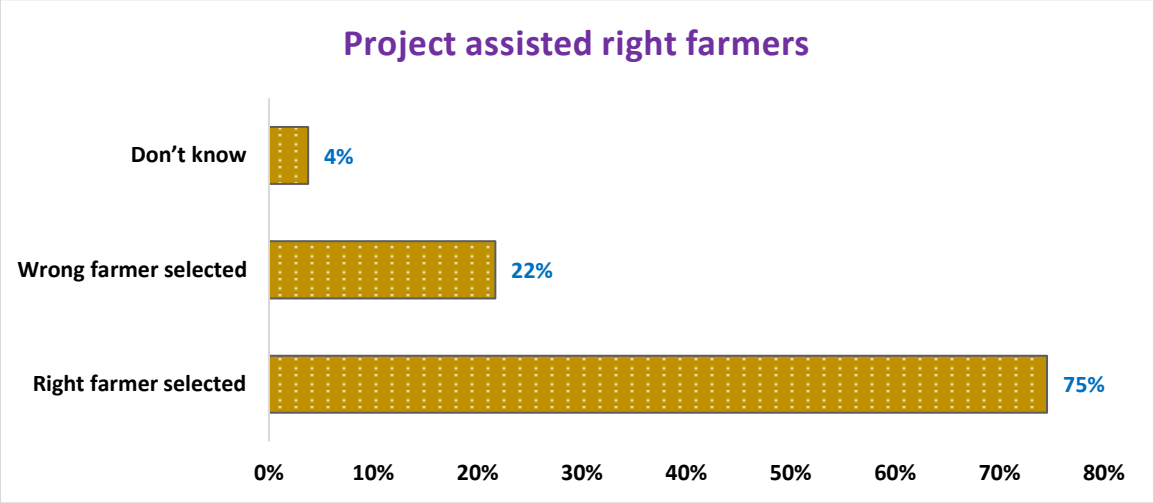


Figure 3.19: Did the project assisted/reached the right farmers?

Majority of the farmers (52%) reported that the project assisted the beneficiaries in right quality. On the other hand 43% farmer reported that project didn't assist the beneficiaries with right quality. Very poor percentage (5%) of farmers reported don't know regarding this. Majority of the farmers (56%) farmers reported that the project assisted the beneficiaries in right quantity followed by not (39%). On the other hand 5% farmers reported they don't know *(See table 3.22 in Annexure-2).*

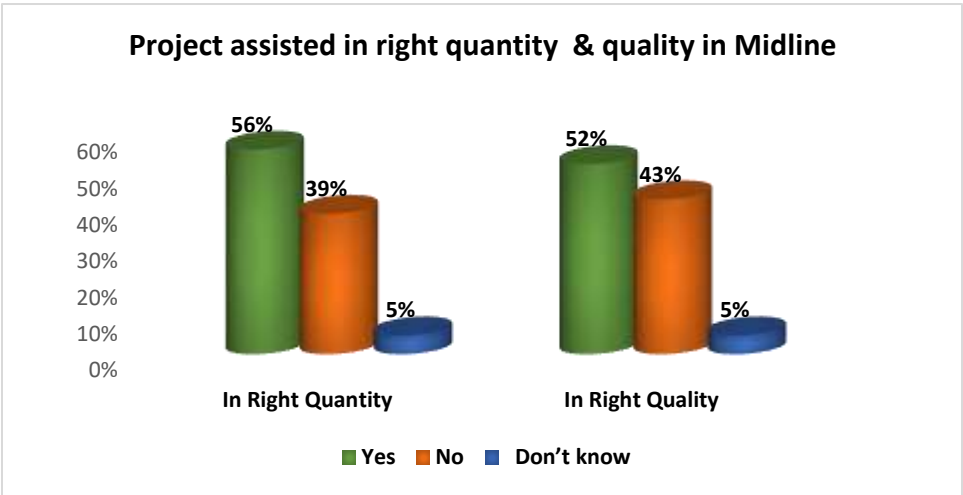


Figure 3.20: Project assisted in right quantity and quality

Chapter Four

User Satisfaction and Qualitative Impact Assessment

4.1 Introduction

Given the diversity of weather and climate in Bangladesh and the range of crops and cropping systems farmers operate, there are a number of critical weather, climate and agricultural issues on which advanced information is needed to develop effective strategies to maintain agricultural productivity. In this endeavor, AMISDP has established the BAMIS portal at the DAE headquarters in agrometeorological data analysis and development of service products. It is envisaged to develop Bangladesh agricultural meteorological information system services to help farmers mitigate climate related production risks. The objective of the midline study is to assess the farmer's satisfaction on weather forecast and or agromet advisory services provided by BAMIS. User's Satisfaction Index provides the information regarding the understanding of the user's or customer's on goods or services. This is basically the outcome-oriented approach regards satisfaction as an attribute extracted from a product or service after its consumption whether the objectives of systems or the organizational unit utilizing the systems are achieved or not. Thus, this chapter focuses on the present status of the user's satisfaction level on products of BAMIS. Also the qualitative assessment of project impact (obtained through Key Informant Interview) is included in this chapter.

4.2 The User Satisfaction Index (USI)

The User Satisfaction Index (USI) is a theoretically robust satisfaction measure for benchmarking and tracking user satisfaction of a product or service over time. The USI is an overall evaluation of the performance of a service provider. Therefore, the Index is the voice of the user of a service who consumes the specific product/service of interest, and it highlights the expectations and perceived quality of the user of a service or product. The USI is used to track trends in user satisfaction and deliver valuable guidance to service providers.

4.2.1 Basis of Index

This satisfaction index was developed on the basis of summated rating scale, which is most commonly known as Likert scale, was based on the assumption that each attribute on the scale has equal 'attitudinal value' or 'importance' or 'weight' in terms of reflecting an attitude towards the issue in question. Likert items are used to measure respondents' attitudes to a particular question or statement. To analyse the data it is usually coded as follows.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly agree

One must recall that Likert-type data is ordinal data, i.e. we can only say that one score is higher than another, not the distance between the points.

4.2.2 Transforming Ordinal Data into Interval (Continuous) Data

A ranking scale consisting of five verbal descriptors (e.g., strongly disagree, disagree, undecided, agree, strongly agree) can only produce ordinal data. The same applies when the descriptors are replaced by numerical codes, or any other kind of shorthand. The problem is assuming that the interval between two adjacent response options is always the same. There has been some controversy regarding the nature of the data produced by self-reported scales, these being considered a grey area between ordinal and continuous variables (Field, 2009; Kinnear & Gray, 2008). Although attitudes and feelings cannot be measured with the same precision of pure scientific variables, it is generally accepted in the social sciences that self-reported data can be regarded as continuous (interval) and used in parametric statistics (Agresti & Finlay, 1997; Pallant, 2007; Sharma, 1996). Blunch (2008, p. 83) maintains that treating self-reported scales as interval/ continuous variables is most realistic if the scales have at least 5 possible values and the variable distribution is "nearly normal".'

4.2.3 The Basic Formula

The USI score derived from latent factors (i.e., survey questions), rated on the different score provided by the respondents interviewed during the administration of the questionnaire. Each question has its score measure, which should reflect the identified quality dimension. Let n be the total number of respondents, k be the total division likert scale and t be the index for likert values. Let C_{ijt} be the total count of t value of likert scale for sub-attribute j of attribute i. Then the USI score is calculated with the following formula:

$$\text{USI} = \frac{1}{n \times k} \sum_{t=1}^{k} t \times c_{ijt}$$

4.2.4 The Customized Formula

For calculation of the user satisfaction index we follow the following procedure. 5-point Likert rating scale has been used to provide comparison and analysis by using the satisfaction rating classified as (i) Highly favourable (ii) Favourable (iii) Neutral (undecided) (iv) Not favourable and

(v) Not favourable at all. 4-point Likert rating scale has been used to provide comparison and analysis by using the satisfaction rating classified as (i) Highly favourable (ii) Favourable (iii) Not favourable and (iv) Not favourable at all. The responses indicating the least favourable to strongly favourableness degree had given the appropriate score; and the User's Satisfaction Index for different key attributes was calculated in baseline survey by using the following formula:

User Satisfaction Index for 5-point scale=

$$\frac{\text{fhs (Shs)} + \text{ fs (Ss)} + \text{fu (Su)} + \text{fns (Sns)} + \text{fnsal (Snsal)}}{N}$$

User Satisfaction Index for 4-point scale =

$$\frac{\text{fhs (Shs)} + \text{ fs (Ss)} + \text{fns (Sns)} + \text{fnsal (Snsal)}}{N}$$

Where, fhs = frequency of highly satisfied, and Shs = score of highly satisfied

$f\ s$ = frequency of satisfied, and Ss = score of satisfied

fu = frequency of undecided, and Su = score of undecideds

fns = frequency of not satisfied, and Sns = score of not satisfied

$fnsal$ = frequency of not satisfied at all, and $Snsal$ = score of not satisfied at all

N = Total number of observations

In the midterm evaluation, the same formula was applied to measure user satisfaction, it facilitated the comparison of baseline with the midterm and hence facilitated the impact assessment of the project. If we use new customized formula for measuring user satisfaction it would distort the comparability of baseline results with midterm results and would ultimately distort the impact assessment of the project.

4.2.5 Other Measures

With Likert scale data we cannot use the mean as a measure of central tendency as it has no meaning i.e. what is the average of Strongly agree and disagree? The most appropriate measure of is the mode the most frequent responses, or the median. The best way to display the distribution of responses i.e. (% that agree, disagree etc) is to use a bar chart.

4.2.6 Distortions

Likert scales are subject to distortion from several causes;

- Avoidance of using extreme response categories (central tendency bias).
- Agreeing with statements as presented (acquiescence bias).
- Attempt to portray themselves or their organization in a more favorable light (social desirability bias).

4.3 Effectiveness of Meteorological Forecast of BAMIS

Around 42% farmers reported that current meteorological information services or forecast is effective. The second highest (30.66%) farmers indicated that it is not effective to protect their crop from the disaster. However, the lowest (4.78%) percent farmers reported that current meteorological information is not effective at all, 16.94% farmers are undecided, 6.03% farmers stated that it is very effective to protect crop from the damages. In base line survey, 91.37% farmer reported that the provided agro-met service was not effective at all. They were fail to protect their crops from the damages. But in midline this percentage is converted into 4.78% (See Table 4.1 in Annexure-2).

This is good sign that farmers are utilizing the information obtained from BAMIS by taking corrective action from advisory bulletin. It is noted that timing of forecast is also an important factor to save crop from damage. It is expected that when we shall measure effectiveness of meteorological forecast in end line, the percentage of very effective will be increased. Therefore the project is running effectively.

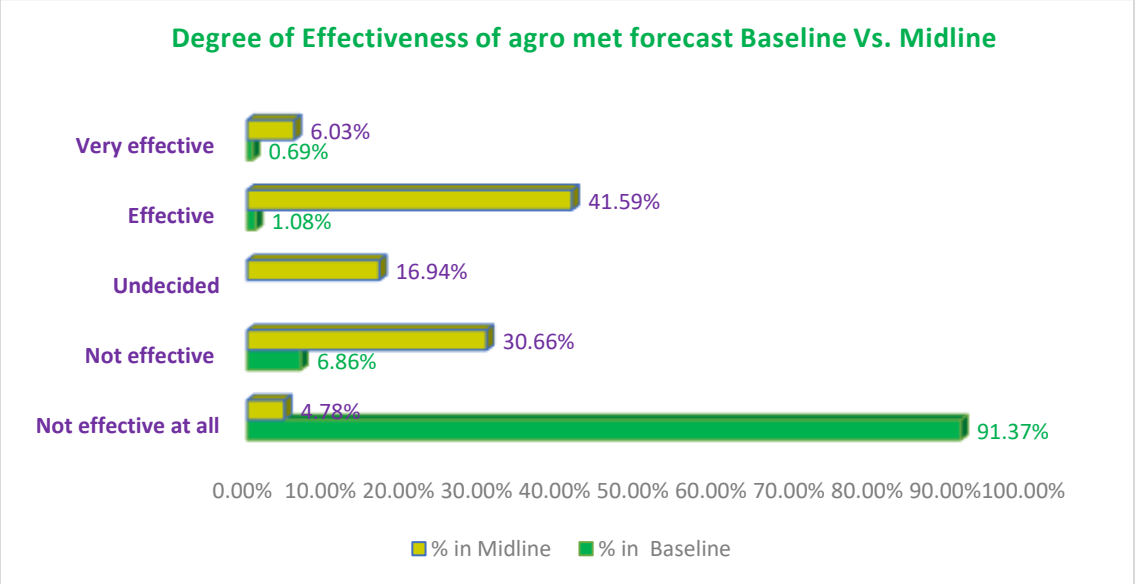


Figure 4.1 : Effectiveness of meteorological forecast

The degree of satisfaction level has been measured by using 5-scale Likert scale as has been mentioned beginning of this section along with the calculation.

Table 4.2 : Index of effectiveness of agro –met services in Baseline

Component	Farmers Response						
	Very effective	Effective	Less Effective	Not Effective	Total Respondents	index	% of Satisfaction
Degree of Effectiveness	0.69	1.08	6.86	91.37	100	1.1109	15.2725
	7	11	70	932	1020		

Table 4.3 : Index of effectiveness of agro –met services in Midline

Degree of Effectiveness	Frequency (No. of Respondent)	Weight	Satisfaction Index
Not effective at all	**153**	**1**	**3.13**
Not effective	**981**	**2**	
Undecided	**542**	**3**	
Effective	**1331**	**4**	
Very effective	**193**	**5**	
Total	**3200**	**15**	

The above index value (3.13) shows that the service of meteorological forecast provided by BAMIS is moderately effective. In baseline survey it was measured by using 4-scale. However the result of that was 'not satisfied at all' and definite improvement occurred in this regard.

4.4 Satisfaction on Agro-meteorological Services of BAMIS

Asking the question about satisfaction level on agro-meteorological information services provided by BAMIS under DAE, near about 49% farmers responded that the level on agro-meteorological information services provided by BAMIS under DAE is satisfied followed by not satisfied (38.13%). 6.81% farmers are undecided, 3.56% are highly satisfied & 2.69% are not satisfied at all. Compared to base line, the proportion of satisfied scale has increased by around 48% *(See Table 4.4 in Annexure-2).*

So it is noticeable that, farmers are becoming happier with using agro-meteorological information services provided by BAMIS under DAE. They have received the correct information with advisory services in right time that saved their crop from heavy damage.

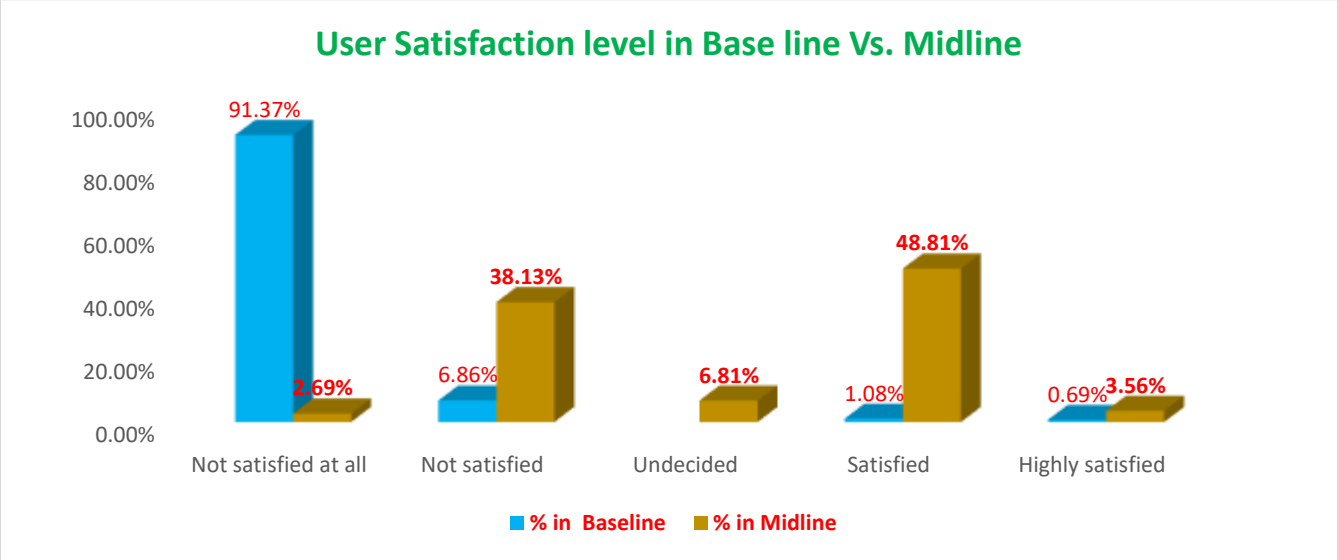


Figure 4.2: User satisfaction level in Baseline and Midline

The degree of satisfaction level has been measured by using 5-scale Likert scale as has been mentioned beginning of this section along with the calculation.

Table 4.5 : Index of user satisfaction level on services of BAMIS

Satisfaction level	Frequency (No. of Respondent)	Weight	Satisfaction Index
Not satisfied at all	86	1	3.12
Not satisfied	1220	2	
Undecided	218	3	
Satisfied	1562	4	
Highly satisfied	114	5	
Total	3200	15	

The obtained index value (3.12) revealed that the farmers are satisfied on the agro-meteorological information services provided by BAMIS under DAE.

4.5 Satisfaction on Services of Field Officer

While asking about the visit of DAE field officer to farmers, majority (38%) reported that once in a month, followed by once in a week (26%). 24% farmer reported once in two week, on the other hand 7% farmers reported no contact in a month by of DAE field officer *(See Table 4.6 in Annexure-2).*

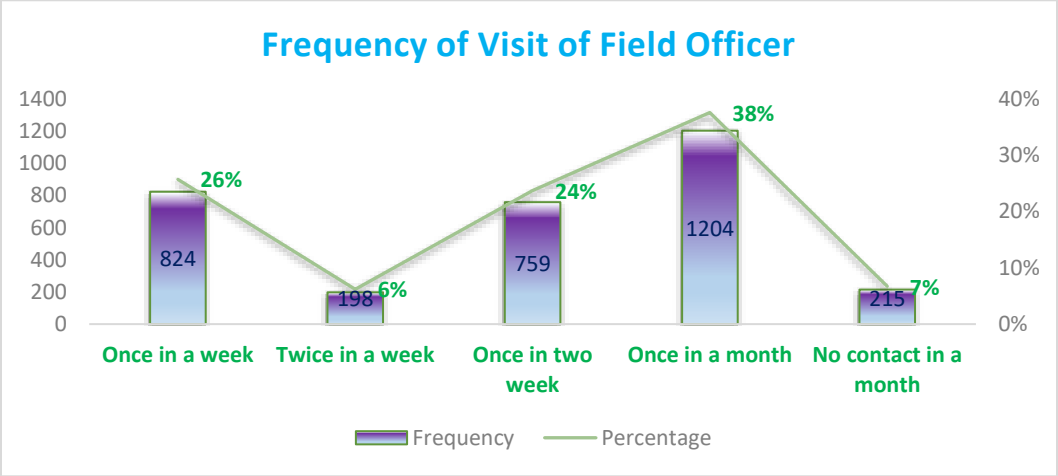


Figure 4.3: Frequency of field level officers contacted with the farmers

It is alarming that poor communication by field officers is happening, it may create barrier to reach the project goal. If project head office provide more emphasis regarding contact of field officers to the farmers, farmers will get more confidence regarding the project, which will in turn increase the sustainability of the project. The degree of satisfaction level has been measured by using 5-point Likert scale as has been mentioned in the beginning of this section.

Table 4.7 : Index of user satisfaction level on visit of field officers

Satisfaction level	Frequency (No. of Respondent)	Weight	Satisfaction Index
No contact in a month	215	1	2.87
Once in a month	1204	2	
Once in two week	759	3	
Once in a week	824	4	
Twice in a week	198	5	
Total	3200	15	

From the obtained index value of 2.87 (out of 5) we realize that the farmers are less satisfied on frequency of field visit by the officers. If field officers contact more, farmer will get more confidence to execute the forecasting which is provided by BAMIS. Hence, in order to increase use of agro-meteorological information and hence increase the sustainability of the BAMIS project field visit should be enhanced. Otherwise, motivation of farmers will be distorted for using agro-meteorological information.

4.6 Satisfaction on Accessibility of Agro-meteorological Information

In midline survey when we asked to farmers regarding accessibility of meteorological information, majority (90.16%) of the farmers reported that sometimes they received the information, followed by when they look forward. 2.78% farmers have no accessibility, 2.47% have the highly accessible. From the above finding we observe that farmers have more accessibility to meteorological information in midline than the baseline. Around 54% increased accessibility of meteorological information was observed in midline. Not accessible has declined by 52.12% in midline *(See Table 4.8 in Annexure-2)*. That comply with the aim of project, it signals that the farmers are benefitted from the project.

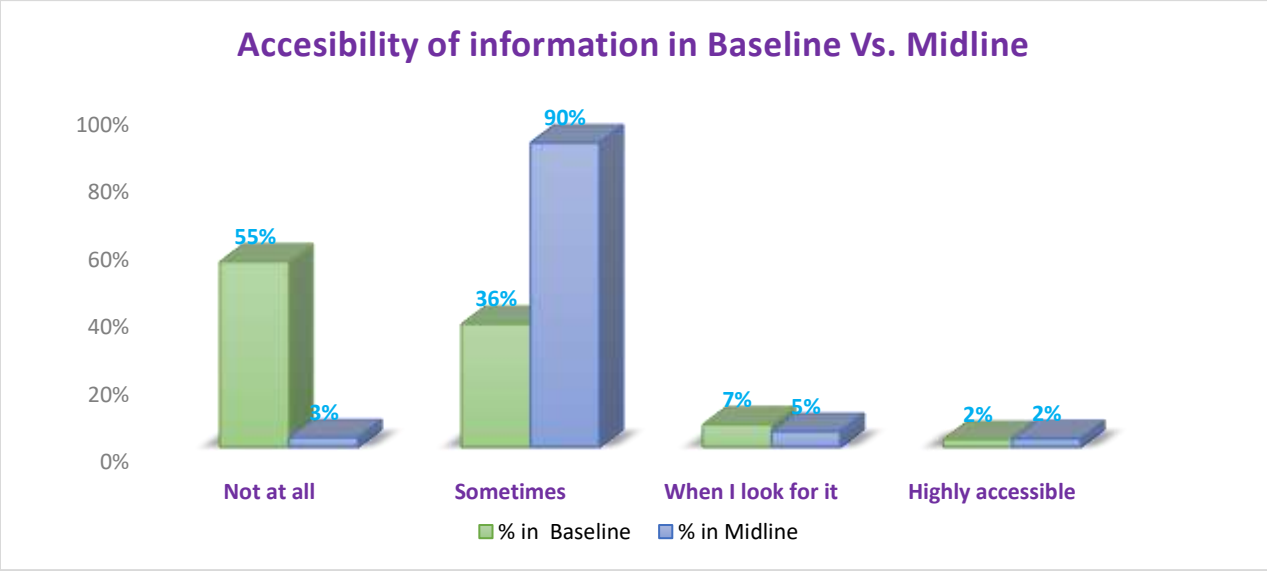


Figure 4.4: Accessibility of meteorological information to the farmers

The increased accessibility is due to the fact that Kiosks machine were installed in 487 upazilla, analog display board with rain gauge machine in 4051 Union Porishod. Also agro-meteorological

information were updated regularly in BAMIS portal, national bulletin and district bulletin were updated there. All these activities of the project increased the accessibility of agro-meteorological information to the farmers.

The degree of satisfaction level has been measured by using 4-point Likert scale as has been mentioned in the beginning of this section.

Table 4.9 : Index of user satisfaction level on access to agro-meteorological information

Frequency of information	Frequency (No. of Respondent)	Weight	Satisfaction Index
Not at all	89	1	2.92
When I look for it	147	2	
Sometimes	2885	3	
Highly accessible	79	4	
Total	3200	10	

From the above index table we realize that majority of the farmers are getting information sometimes. Need to be improved in this regard. After so many activities, the agro-meteorological information is not highly accessible to the farmers. If meteorological information can be provided by third party non-government organization (which is attributed in meteorological research), the situation may be improved.

4.7 Benefit of meteorological information received

More than 50% farmers (54%) opined that meteorological information was very useful for crop production planning followed by crop management (51%) ,irrigation (50%), harvest and processing plan of crops (37%), insect pests and disease management of crop (14%.%). However, insignificant percentage of (14%) farmers indicated that meteorological information was useful for others category like storage and marketing purposes *(See Table 4.10 in Annexure-2).* According to their opinion we found that, meteorological information received from BAMIS become more useful to them in crop management & irrigation (according to midterm survey).

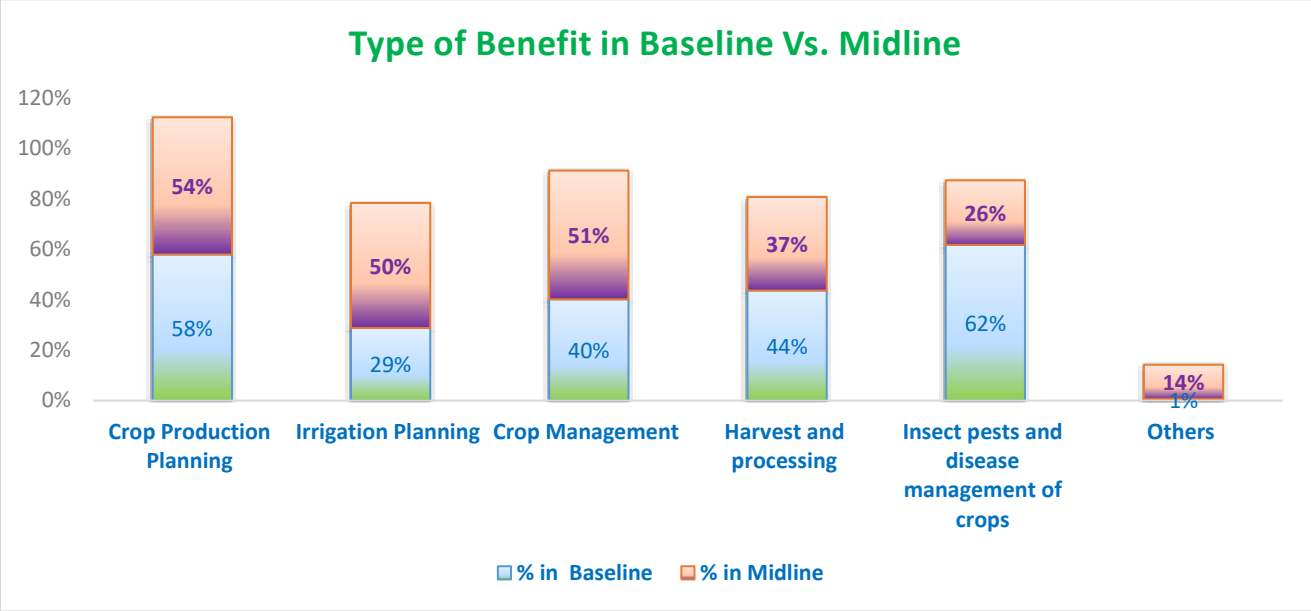


Figure 4.5 : Benefit of meteorological information received: (multiple answer acceptable)

The farmers are becoming more benefited by taking help of crop weather calendar & irrigation forecast of DAE project. It is expected that in end line survey the benefited percentage will be much higher.

4.8 Project Relevance & User Participation

Asking the question whether the project relevant to farmer's need, 87% farmers responded that the project is relevant to farmer's need. 9% reported don't know followed by irrelevant (4%). This is happening due to lack of knowledge regarding agro-met service *(See Table 4.11 in Annexure-2).*

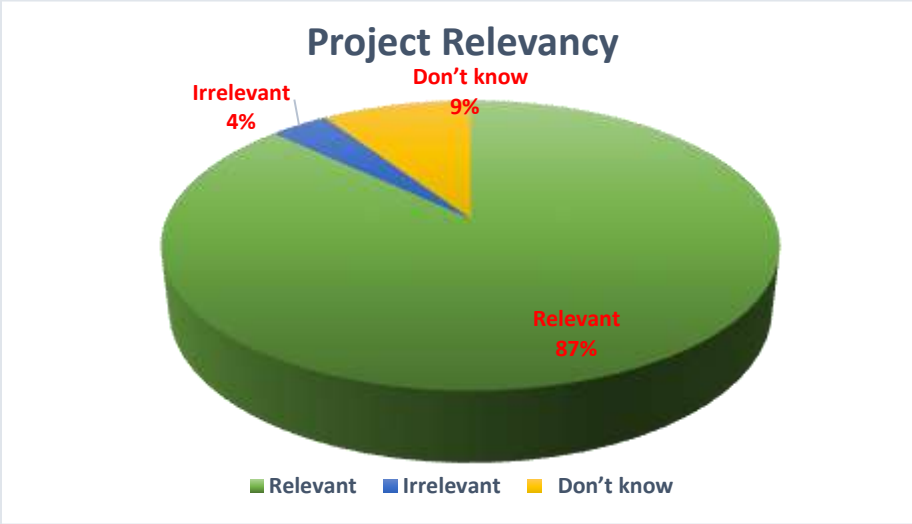


Figure 4.6 : Project relevance to farmer's need

Near about 50% farmers agreed that the community people participated in the project willingly. 45.16% farmers disagreed upon the community people's participation. 6.16% farmers responded don't know. It has been observed that farmers are appreciating the project & the community people as well.

Table 4.12: Community participation in the Project

Community people participated	Midline	
	Frequency	Percentage
Yes	1558	48.69%
No	1445	45.16%
Don't know	197	6.16%
Total	3200	100%

Majority of farmers (61.59%) wanted the extension of the area/coverage and time duration of BAMIS project. One the other hand 32.25% farmers reported that they didn't want the extension of the area/coverage and time duration of BAMIS project & 6.16% farmers responded don't know. The fact is that, this 38% farmers fail to judge the project due to lack of knowledge.

Table 4.13: Want extension of the Project

Want extension	Midline	
	Frequency	Percentage
Yes	1971	61.59%
No	1032	32.25%
Don't know	197	6.16%
Total	3200	100%

Majority of farmers (66.84%) wanted to participate in future activities of the BAMIS project & 33.16% farmers reported that they didn't want to participate in future activities of the BAMIS project. From the point of view we can say, farmers are getting more interest to participate the activities of BAMIS project.

Table 4.14: Want to participate in future activities of the Project

Participate in future activities	Midline	
	Frequency	Percentage
Yes	2139	66.84%
No	1061	33.16%
Total	3200	100%

Majority of farmers (56.38%) reported that they didn't want to consume agro-met messages by own cost when free message is not available. About 44% farmers wanted to consume agro-met messages by own cost when free message is not available (after ending of BAMIS project).

Table 4.15: Want to consume agro-met messages by own cost

Consume agro-met messages by own cost	Midline	
	Frequency	Percentage
Yes	1396	43.63%
No	1804	56.38%
Total	3200	100%

Hence more effort is needed to achieve farmer's extreme reliability regarding agro met service so that they can invest willingly to get the agro met forecast & advisory services as well.

4.9 Qualitative Impact Assessment of the Project

In order to evaluate the project impact in qualitative aspect, Focus Group Discussions (FGD) and Key Informant Interview were conducted. The findings of FGD and KII are presented in this section. The KII were conducted mainly with Upazilla Agriculture Officers from 20 Upazilla (one from each upazilla). The checklists for KII and the summary findings are presented below. The interviews mainly focused on the opinion of the key informants regarding relevance, effectiveness and efficiency, impact, sustainability and procurement of the project. The responses of all the Key Informants were similar, that was why instead of separate reports a summary report is presented here.

4.10 Format of questionnaire/Checklists for KII

Checklists for Key Informant Interview (KII)

Name of the Key Informant:

Designation of the Key Informant:

Upazilla & District Name:

A. Relevance

- Is the project's strategy relevant to the beneficiaries' needs?
- Is the project aligned with national government's agricultural policies and strategies?
- Does the project complement other donor-funded and government initiatives?

B. **Effectiveness and Efficiency**

- What is the progress of project implementation – Is the project on track to carry out all and activities as planned?
- To what degree have (and have not) the interventions resulted in the expected results and outcomes
- How can the theory of change be altered to increase efficiency and effectiveness? Did assistance reach the right beneficiaries in the right quantity and quality at the right time?

C. Impact

- To what degree has the project made progress toward the results in the project level framework?
- Have there been any unintended outcomes, either positive or negative?
- What internal and external factors affect the project's achievement of intended results?

D. Sustainability

- Is the on-going program sustainable, including a strategy for sustainability; sound policy; stable funding; quality program design; institutional arrangements; local production and sourcing; partnership and coordination; community participation and ownership?
- What substantive progress has the government made toward developing a nationally Agromet Advisory program?
- How are local communities involved in and contributing toward these services?
- What needs remain in order to achieve a full handover and nationally-owned Agromet Advisory program?

E. Procurement

- Which major equipment were procured for your office under BAMIS project?
- Are all the equipment still functioning? If not, which equipment are damaged?
- Evaluate the performance/effectiveness of the equipment.
- Do you think that the procurement of equipment were justified or not?

4.11 Summary of Findings of KII

A. Relevance:

- Yes, the project strategy is relevant to the beneficiaries need.
- Yes, the project aligned with national governments agricultural policies & strategies.
- Yes, the project complement with other donor funded & government initiatives.

B. Effectiveness and Efficiency:

- Project has been implemented properly but due to the inaccuracy of few machinery all the activities are not being done accurately.
- To get the information /outcome accurately the provided mechanization should be developed.
- Participants responses, learning and increased awareness of benefits can increase the efficiency and effectiveness of the running projects.

C. Impact:

- Due to the lack of accuracy of recording of observations by DAE personnel and lack of maintenance of machineries project progress is hampering. Rain gauge meter and weather board are not functioning properly in some stations.

- The outcomes of the project is positive. But the result of provided machineries must be digital.
- Problems of machineries: Proper training of officers & farmers, lack of awareness etc have been hampered to get expected results thus the projects intended achievement is hampering so.

D. Sustainability:

- Yes, the ongoing project is sustainable and beneficiary, but to make the project more sustainable accuracy of machineries, quality program design, community participation and training should be increased.
- Government has taken great initiatives to disseminate Agromet information services to the field level. Thus the farmers are getting proper meterological information time to time. By the way they are getting benefit in the decision making of field crops.
- Increasing the knowledge and awareness knowing the need of these services the local people can be involved and contributed towards these services.
- Agromet Information services should be spread/ disseminate to the Upazila, Union and community level. Training about these services should be provided for the officers & farmers, thus technical knowledge of the farmers may be increased. By following these activities it may possible to achieve a full handover and nationaly agromet advisory program. The mobile message should be send to the farmers through third party - a private organization working in meteorological sector and providing meteorological message may be engaged for this.

E. Procurement:

- All the equipments were procured by the project personnel.
- Automatic Rain gauge meter and weather display board are functioning properly.

- Weather board should be digitalized.
- Sensor of raingauge meter and charging power of the tab should be improved.
- All the equipment provided in the field office were procured by the project in consultation with all the stakeholders, hence the procurement of equipment were justified.

4.12 Summary of Findings of Focus Group Discussion

1. Existing weather and climate related problems and extent of Crop damage due to weather and climatic problems.

Response: Due to the weather-related problem, the farmers face a huge crop damage in every year. Especially due to the lack of advance information on droughts and floods this damage is occurred. The total crop damage in floods or droughts is about 150-2000 kg on an average. Even in the case of early harvesting, various crop diseases occur in response to adverse weather conditions, resulting severe crop damage. This damage rate is higher in the northern and southern regions. Crops are affected due to storms, floods, droughts, diseases of crop etc.

2. Source of Agro-meteorological information and Knowledge about the services of Bangladesh Agro-meteorological Information System (BAMIS).

Response: The Department of Agriculture of Bangladesh is working to provide weather related agricultural services directly to the farmers. Flood forecasts are known from installed rain gauges at local union councils. The latest weather bulletin posted at the Upazila Agriculture Department delivers to the farmers. This information is collected through satellite and informed directly to the farmers.

In addition, advance weather information is communicated directly to the farmers at the village level and at the union level through mobile SMS. At the level of union, officers of the Department of Agriculture share the advance weather information in farmer group meetings. In different region of the country, community radio provides weather information on a daily basis, from which farmers can know the weather information in advance. The Water Development Board and the Department of Agriculture and the Agricultural Information Service now have easy access to get weather information through the BAMIS Project.

Besides of weather-related issues, advance crop information is provided, field officials are in active working for that in the field. The information on poultry and livestock are also provided regularly. Automatic Rain Gauge Display Boards of Agricultural Weather have been set up in 4051 Union Parishads. From where marginal farmers can know all the information about the weather.

Besides, Kiosks have been set up in 487 upazila levels. Regular information is provided through SMS to about 30,000 nominated representatives of farmer.

3. Accessibility of agro-meteorological information to the farmers and the benefit of agro-meteorological information services.

Response: Farmers are benefited in many ways from the Agricultural Information Service and the Department of Agriculture services under the BAMIS project.

(A) To be alert about planting and sowing of crops as a result of getting advance information of weather & Climate
(B) Taking Advance preparation knowing of advance information of the flood.
(C) Protection of Cattle
(D) Irrigation management
(E) Reducing/mitigating the severe damage of crops
(F) Exchanging various information regarding agriculture
(G) Selection of crop varieties as a result of climate change, cultivation methods and selection of alternative crops.
(H) To acquire knowledge about various trainings related to climate and cultivation, increase agricultural production, provide advice on cultivation, agriculture improvement in a scientific way to adapt weather and climate, etc.

4. Timing of information to save crops from damage and minimum advance forecast time (days) required to save crops from damage.

Response: The Agricultural Information Service and the Meteorological Department and the Water Development Board are delivering advance weather information to the farmers through satellite. Special weather bulletins for the next 15 days, daily weather messages, temperature, humidity of the climate, etc. are updated in 1-2 days, besides that information is also provided by the nominated representatives of farmer. More important thing is to increase the regular contact of the local agricultural officer to farmer.

5. Frequency of receiving agro-met related messages by the farmers and use of the information in decision making.

Response: In the past, farmers used to produce crops based on the concept of lunar-solar or weather comparison of 2-3 years before. As a result, huge crop damage occurred. The

farmer did not have the ability to overcome natural disasters. As a result, the farmers were facing the damage of crop and cattle.

Providing weather information by BAMIS project, they have been able to slow down the damage of agriculture. Due to the mobile network, farmers are easily exchanging weather information through nominated representatives. The various communications under the project have increased so that agriculture related information can be utilized, especially in the case of decision regarding early crop production can be possible easily.

6. Satisfaction of the farmers on the present agro-meteorological services provided by BAMIS and the demand for extension of services and comparison with the traditional method of decision making.

Response: There is no conventional agro-farming system at present, the issues like crop production, cultivation, marketing, seed storage, etc. are done in the traditional way, farmer are faced more damaged and the farmers are more likely to lose their interest in crop production. Through the BAMIS project, the farmers have become active as a group and the farmers are benefiting through improved farming methods. Once upon a time farmers used to analyze the weather based on their speculation. Which proved as wrong. At present, it is possible to predict the weather through satellite, resulting benefit of the farmers.

Farmers have benefited from early crop production decisions, preparation of early flood, post-harvest preparation, harvesting and threshing, crop selection, irrigation management, use of pesticides and various advices. Therefore it has become easier to make decisions in crop production.

7. Participation in the agro-met related training/awareness raising program, effectiveness of the campaign and cope-up methodologies adopted based on the knowledge gained from training/awareness raising program.

Response: Cultivation in the traditional way was done long time ago. In that case production rate was very low. The scope of knowledge of the farmers has been widened through various trainings under the BAMIS project. Training has been received on modern farming methods, using and storing improved seeds, irrigation methods, land use, the effects of climate change, pesticide use, use of organic fertilizers and storage methods, early crop selection, production and marketing, the benefit of using modern agricultural machinery, etc. The formation of nominated farmer groups has increased the inter-

communication among them as well as the exchange of information regarding crops has increased.

They have gained knowledge about how to take precautionary measures in dealing with natural calamities, poultry, cattle care, what to do in after of disaster which has been able to use at the community level and getting the benefits from that.

8. Progress and popularity of BAMIS project, community participation in the project, change occurred in the livelihood of the beneficiaries and future sustainability of the project.

Response: The BAMIS project has gained popularity at the community level, as because weather-related bulletins are playing the vital role in farmers' crop production at the marginal level. Farmers faced crop damaged in every year, the advance information of weather through this project has reduced the rate of crop damaged. Learning about modern farming methods has encouraged crop production. Marginal farmers have benefited in many ways, have been trained in modern farming which has resulted in increased crop production. Hence the standard of living has improved. The farming community thinks that this project will continue in the future.

9. Limitations of existing agro-met services of BAMIS and what should do to improve the services of BAMIS.

Response: The services of the BAMIS project should be further enhanced. Conducting field level discussion meetings to create more awareness among the farmers to increase their mobility, arranging various types of training to increase their efficiency, strengthen e-agriculture business to solve farmers' problems through mobile network, taking opinion of the farmer in conducting project, utilizing community radio in that case, keeping notice board if necessary to provide updated agricultural information service at the union level.

To arrange separate shelter home for the farmers in case of natural calamity, regular weather information provided through mobile SMS, establishment of farmer schools at community level where all agriculture related information will be stored.

The pictures on Focus Group Discussions are given in the Annexure-1.

Chapter Five

Project Financial Analysis & Log-frame

5.1 Cumulative progress for GOB and RPA

FY-2017-18 RADP is BDT 1,074 Lakh where GoB RADP is BDT 164 Lakh and RPA RADP is BDT 910 Lakh. Expenditure is BDT-756.78 lakh where GoB expenditure BDT 122.48 Lakh and RPA Expenditure BDT 634.30 Lakh.

- Progress in percentage 70.46% (GoB-74.68%, RPA-69.70%)

FY-2018-19 RADP is BDT 5,618 lakh where GoB RADP is BDT 194.00 Lakh and RPA RADP is BDT 5424.00 Lakh. Expenditure is BDT 5,571.91 lakh where GoB expenditure BDT 186.45 Lakh, RPA Expenditure 5,385.47 Lakh

- Progress in percentage 99% (GoB-96%, RPA-99%)

FY-2019-20 RADP is BDT 1,443 lakh where GoB RADP is BDT 250.00 Lakh, RPA RADP is BDT 1,193.00 Lakh. Expenditure up to May-2020 is BDT 1,188.22 lakh where GoB expenditure BDT Gob-222.25 Lakh, and RPA expenditure 965.96.

- Progress in percentage 82.34% (GoB-88.90%, RPA-80.96%)

As per DPP total budget is BDT- 11,918.08 lakh (Gob- BDT 1,304.38 Lakh, RPA BDT 10,613.70 Lakh) and Cumulative Expenditure up to May-2020 is BDT 7,516.91 lakh (GoB BDT 531.17 Lakh, RPA BDT 6,985.73 Lakh)

-Cumulative Progress in percentage 63.07% (GoB-41%, RPA-66%)

FM-IUFR Status- Inception to March 2020 (IDA Fund category wise)

BDT- In Million				
	year -17-18	**year -18-19**	**year 19-20 (Up to March 20)**	**Total**

Fund received	80.79	544.07	92.48	717.34
Works	23.44	7.00	-	30.44
Goods	18.52	418.53	3.82	440.87
Non-Consulting		16.99	6.47	23.47
Consulting	15.88	43.31	30.97	90.15
Training	4.09	31.28	11.81	47.18
Incremental Operating	1.50	21.44	9.44	32.38
Total	**63.43**	**538.55**	**62.51**	**664.49**
Balance	**17.36**	**22.88**	**52.85**	**52.85**

FM-Withdrawal Application Status- Upto May 2020

- Withdrawal application DAE-30 Submitted to WB
- Withdrawal application up to 28 has received within May 2020 which amount is BDT 739492246.18 or in million 739.49 or 8 .70 million- USD, WA-29 received 1st June 2020 which amount is BDT-6694928.00 or in million 6.69 or 0.08 million USD. WA-30 is under process which amount is BDT-24336888.00 or in million 24.34 or 0.29 million USD.
- Direct received from IDA by Vendor for:

Automatic Rain Gauges: WA-12, BDT-72357718 or USD 858845.32 or 0.86 million USD, received date-02.04.2019,

Procurement of Tablets for SAAOs: WA-17, BDT-76847474 or US dollar- 909437.56 or 0.91 million Dollar, received date-12.06.2019,

Agromet Kiosk: WA-18, BDT-119898129 or USD 1418912.77 or 1.42 million USD, received date-12.06.2019,

- In FY-19-20 WA- 21 to 30 (July 19 to May 20) has submitted which amount is BDT-93546731.00 or in million 93.55 or 1.10 million USD.

FM-Disbursement Status upto May 2020

- FY-17-18 Disbursed BDT 80.79 million or 1.00 million USD
- FY-18-19 Disbursed BDT-544.06 million or 6.36 million USD

- FY-19-20 disbursed BDT-114.64 million or 1.34 million USD WA-29 , 30 not received in this period which amount is BDT-6694928.00 or in million 6.69 or 0.08 million dollar and BDT-24336888.00 or in million 24.34 or 0.29 million dollar respectively.
- WA- 20 has received in this period which amount is BDT-52120996.00 or in million 52.12 or 0.62 million USD
- **Project Inception to May 2020 BDT 739.49 million or 8.70 million** USD**.**

FM- Progress Inception to May 2020 (IDA part)

- Expenditure Inception to May 2020 is BDT in Lakh 6985.73 or in million 698.57 or 8.34 million USD.
- FY-2017-18 expenditure is in lakh 634.30 or in million 63.43 or 0.76 million USD.
- FY-2018-19 expenditure is in lakh 5385.47 or in million 538.54 or 6.43 million USD.
- FY-2019-20 expenditure is in lakh 965.96 or in million 96.60 or 1.15 million USD.

5.2 Project Audit Report for the Year 2017-18

Audit Inspection Report on the accounts of Agro-Meteorological Information systems development Project (Component -C of Bangladesh Weather and climate Services Regional Project) financed by IDA Under Credit No. 5837-BD for the year 2017-2018.

Summary of the Audit Observation

I. Subject	II. Amount Involved	III. Risk Assessment	IV. Remarks
V. VI. Status of Financial Statement	VII.	VIII.	IX. X. Un-qualified XI. Internal control is in placed XII. Found management is satisfactory. XIII.
XIV. Summary of Management Letter	XV.	XVI.	XVII. Government orders maintained properly

PART-A

VIII. Para No.	IX. Title	XX. Amount Involved	XXI. Risk Assessment	XXII. Remarks
XXIII. Nil				

PART-B

XIV. Para No.	XXV. Title	XVI. Amount Involved	XXVII. Risk Assessment	XVIII. Remarks
XIX. 01	XXX. Loss of Revenue Tk. 1,66,016.00 due to less deduction of IT from the supplier's bill	XXI. Tk. 1,66,016.00	XXII. Medium	XXXIII.

DETAIL AUDIT 0BSERVATIONS, FINDINGS AND RECOMMENDATIONS

PART-A

NIL

PART-B

Para:01

Title: Loss of Govt. revenue amounting to Tk. 1,66,016.00 due to less deduction of income tax from the supplier bills.

Criteria:

- ✓ As per S, R.O. No 257- Law/ Income Tax/2017 date.01.08.2017 of NBR.

Condition:

- ✓ Audit was conducted in the office of the Project Director "Agro-Meteorological Information Systems Devolvement Project (Component-C of `Bangladesh Weather and Climate Services Regional Project`)"financed by IDA under credit no-5837-BD in the office of Department of Agricultural Extension (DAB), Khamarbari, Farmgate, Dhaka for the year2017-2018

- ✓ It was observed from bill /voucher & related records that total Tk. 1,12,59,000.00 was paid to Navana Limited for supplying of vehicles.

- ✓ As per S,R.O. No 257- Law/ Income Tax /2017 date.01.08.2017 of NBR that Income Tax is deductible@5% amounting to Tk.5,62,950.00 from contractor's total payment.
- ✓ But the authority realized Tk. 3,96,934.00 as IT resulting less realization of IT Tk. 1,66,016.00 (5,62,950.00 - 3,96,934.00) from the contractor bills which loss of Govt. revenue.
- ✓ Details are shown in Annexure-6.
- ✓ Dr. Mazharul Aziz. was Project Director during the period of transaction.

Cause:

- ✓ Loss of Govt. revenue due to less deduction of IT.

Consequence:

- ✓ Govt. deprived of revenue receipt.

Comments of audit objection report of Agro-Meteorological Information systems development Project in FY 2017-18 (Component -C of Bangladesh Weather and Climate Services Regional Project) by IDA.

Para:01 : Loss of Govt. revenue amounting to Tk. 1,66,016.00 due to less deduction of income tax from the supplier bills.

Comments: The objected money deposited through invoice 77 dated on 12/03/2019 & got authenticity of that invoice from the verification, the objection has settled.

5.3 Project Audit Report for the Year 2018-19

Audit Inspection Report on the accounts of Agro-Meteorological Information systems development Project (Component -C of Bangladesh Weather and climate Services Regional Project) financed by IDA Under Credit No. 5837-BD for the year 2018-2019.

Summary of the Audit Observation

XXXIV. Subject	XXV. Amount Involved	XXVI. Risk Assessment	XXXVII. Remarks

XXXVIII. XXXIX. Status of Financial Statement	XL.	XLI.	XLII. XLIII. Un-qualified XLIV. • • Internal control is in placed • Found management is satisfactory XLV. XLVI.
LVII. Summary of Management Letter	XLVIII.	XLIX.	L. Government orders maintained properly

PART-A

LI. Para No.	LII. Title	LIII. Amount Involved	IV. Audit Area
LV. LVI. LVII. 01	LVIII. Procurement has made amounting to Tk. 21,68,08,292/- for Automatic Rain Gauges, Mobile Tablets and Agro met-Display Boards but the data information system that is not fully operational	LIX. LX. XI. 21,68,08,292/-	LXII. XIII. Asset, Supply & Service

PART- B

NIL

AUDIT OBSERVATIONS, FINDINGS AND RECOMMENDATIONS

Para no:01

Title: Procurement has made amounting to tk. 21,68,08,292/- for Automatic Rain Gauges, Mobile Tablets and Agro met-Display Boards but the data information system that is not fully operational.

Description:

Audit has conducted on the accounts of Agro-Meteorological Information systems development Project (Component -C of Bangladesh Weather and Climate Services Regional Project) in the office of the Project Director, Department of Agricultural Extension (DAE), Dhaka for the Year 2018-2019.

- ✓ Cash book, bill/Voucher, Contract agreement and other related records has been examined
- ✓ While examining the documents it has found that the project authority procured of Automatic Rain Gauges, Mobile Tablets and Disr`1ay Hoards from different suppliers amounting to TK. 21,68,08,292/-
- ✓ On detailed scrutiny of the documents it has seen that some items like as Automatic Rain Gauges, Mobile Tablets for SAAO`s and Agro met Analogue Display Boards were delivered and distributed in the field level offices.
- ✓ Detailed are shown in Annexure `` A ''.
- ✓ The field level officers set up all these instruments but lack of training of SAAO`s are unable to operate these due to SAAO`s untrained using such equipment.
- ✓ Dr. Mazharul Aziz was Project Director during the period.
- ✓ Causes: Lack of internal control.

Reply of the auditee:

(1) As per plan of the project officers, SAAO`s and Farmers training will be done gradually.

(2) Many SAAO`s did not pay their previous Internet Corporate Fees. After having paid that fees, their SIM card will be activated.

Decisions in the exit meeting:

- ✓ In the exit meeting, it has been decided that Broad Sheet Reply will be provided.

Audit Comments:

- ✓ Reply is not satisfactory primarily, but while physical verification in field level was made the equipment were found operational.
- ✓ Farmer /People are deprived getting from the benefit of weather & climate information services, if SAAOs are not trained up to use the equipment.

Audit Recommendation:

- ✓ Steps should be taken to use the all equipment effectively as early as pos, certification with evidence under intimation to audit.

Comments of audit objection report of Agro-Meteorological Information systems development Project in FY 2018-19 (Component -C of Bangladesh Weather and Climate Services Regional Project) by IDA.

Para: 01 : Procurement has made amounting to Tk. 21,68,08,292/- for Automatic Rain Gauges, Mobile Tablets and Agro met-Display Boards but the data information system that is not fully operational.

Comments: For using Agroment equipment, training is running & considering the information exchange will be happened after finishing training session having evidence of running training & having settlement recommendation of ministry, the objection has settled.

5.4 Project Financial Estimate During Planning:

Item wise total quantity and cost have been estimated as per suggestion of Agromet Specialist of the World Bank and non-schedule items estimated cost of the project has been calculated on the basis of present market price & vetted rates similar to other projects of DAE. The World Bank provided component wise indication of its funding possibility. The prepared total and item wise cost estimates were examined by the World Bank.

(a)	Net Present Value (NPV)(considering 15% discount rate) (i) Financial (ii) Economic	 7834.27 21,386.77
(b)	Benefit -Cost Ratio (BCR)(considering 15% discount rate) (i) Financial (ii) Economic	 1.04 1.08
(c)	Internal Rate of Return (IRR) (i) Financial (ii) Economic	 25% 52%

Sl. No.	Name of the project	Date of completion	Name of Major items	Unit/cost (in Lakh taka)
1	**2**	**3**	4	5
1.	Proposed Project: Agro Meteorological Information Systems Development Project	June/2021	a) BAMIS Portal i) ICT Equipment ii)Consultancy	 724.14 (Ls) 258.32 (Ls)

			b) Agromet Kiosk c) Computer tablet d) Automatic Rain gauge e) Agromet display board f) Training and capacity building	4.84 0.12 0.19 0.19 1100.68 (Ls)

Mode of financing:

Taka in Lakh)

Source/Mode	GOB (FE)	PA (RPA)	Own Fund (FE)	Others (specify)	PA source
1	2	3	4	5	6
Loan/credit		10,613.70			IDA (World Bank)
Grant	1304.38	0	0	0	
Equity	0	0	0	0	
Others	0	0	0	0	
Total	1304.38	10,613.70			

Source of Financing GOB Fund against DPP's Year wise allocation

(Taka in Lakh)

Whether the priority list of the projects has been made according to available resources in the FY 2016-17 If yes, give	Year wise Fund Requirement		Source of Required GOB Fund	In case of re-appropriation from other project(s), what will be the impact of the project(s)
	Financial Year	**Amount**		
		GOB		
1	**2**		**4**	**5**
Serial No.-8 & Page Number-772 of ADP Book.	2016-17	224.076	ADP	Not Applicable
	2017-18	320.076	ADP	Not Applicable
	2018-19	320.076	ADP	Not Applicable
	2019-20	220.076	ADP	Not Applicable
	2020-21	220.076	ADP	Not Applicable
Total:		**1304.38**		

5.5 Component Wise Estimated Cost Summary:

In Lakh Taka

Budget Head	Economic Cod/ Sub code	Economic code/sub code description	GoB (FE)	Project Aid			Total	% of Total Costing
				RPA		DPA		
				Through GoB	Special A/C.			
1	2	3	4	5	6	7	8	9
a. Revenue Component :								
	4500	Pay of Officers	186.00	0.00	0.00	0.00	186.00	1.56
	4600	Pay of Staff	30.78	0.00	0.00	0.00	30.78	0.26
	4700	Allowances for officers and staffs	150.00	0.00	0.00	0.00	150.00	1.26
	4800	**Supply & Services :**						
	4801	Travelling costs and daily allowances (TA/DA)	100.00	0.00	0.00	0.00	100.00	0.84
	4805	Overtime (for support staff such as messenger, drivers)	36.00	0.00	0.00	0.00	36.00	0.30
	4813/ 4803	VAT Provision for Individual Consultants[6] and Consultancy Services	83.40	0.00	0.00	0.00	83.40	0.70
	4816	Telephone for PIU	-	0.00	12.74	0.00	12.74	0.11
	4817	Internet Charge	-	0.00	24.00	0.00	24.00	0.20
	4818	Registration Fee for two vehicle	4.00	0.00	0.00	0.00	4.00	0.03
	4822/4823	Petroleum, Gas, Fuel, Oil etc. for running vehicles (PIU, DAE)	66.00	0.00	0.00	0.00	66.00	0.55
	4824	Insurance for project vehicles/Bank Charges (PIU)	10.80	0.00	0.00	0.00	10.80	0.09
	4827	Printing & Binding :	0.00	0.00	78.62	0.00	78.62	0.66
	4828	Stationary, Seals & Stamps	0.00	0.00	117.65	0.00	117.65	0.99
	4829	Operational Activities for BARI, BRRI, BJRI, BSRI	0.00	0.00	393.10	0.00	393.10	3.30
	4833	Circulation, Advertisement Publicity, Publications documentary etc.)	0.00	0.00	16.20	0.00	16.20	0.14
	4840	National/Local Training :	0.00	0.00	686.20	0.00	686.20	5.76
	4840	Training related to Agrometeorology module development	0.00	0.00	100.00	0.00	100.00	0.84
	4840	International Training :	0.00	0.00	314.48	0.00	314.48	2.64
	4842	National Workshop, Seminars, Meeting, Symposium etc.	0.00	0.00	120.93	0.00	120.93	1.01
	4842	International Workshops, Conventions etc.	0.00	0.00	36.31	0.00	36.31	0.30
	4845	Official Entertainment (honorary guests, mission, etc.)	0.00	0.00	10.64	0.00	10.64	0.09

	4845	Internet connectivity charge	0.00	0.00	399.84	0.00	399.84	3.35
	4846	Vehicle Hire/ Transportation (for Dist. Region & PIU)	10.00	0.00	0.00	0.00	10.00	0.08
	4874	Consultants (174 mm)	0.00	0.00	585.56	0.00	585.56	4.91
	4874	Consultancy Services (others)	0.00	0.00	757.02	0.00	757.02	6.35
	4883	Honorarium/ Fees/Remuneration	509.00	0.00	0.00	0.00	509.00	4.27
	4889	Audit Fee	0.00	0.00	43.98	0.00	43.98	0.37
	4893	Driver Outsourcing-2, grade-16 from GOB	26.40	0.00	0.00	0.00	26.40	0.22
	4893	Office Shahayak Outsourcing-1, grade-20 from GOB	12.00	0.00	0.00	0.00	12.00	0.10
	4899	Miscellaneous (other operational) expenditure	0.00	0.00	30.58	0.00	30.58	0.26
	4900	**Repair, renovation & maintenance**						
	4901	Vehicle Maintenance (PIU,DAE Office)	80.00	0.00	0.00	0.00	80.00	0.67
	4921	Renovation & Repair of PIU, DAE Project Headquarter & district offices of DAE	0.00	0.00	412.26	0.00	412.26	3.46
	4991	Other Repair & Maintenance (Office equipment) Maintenance & repair of old computers, AC, photocopier, etc.)	0.00	0.00	11.49	0.00	11.49	0.10
	Subtotal-a (Revenue Component)		**1,304.38**	-	**4,151.60**	-	**5,455.98**	**45.78**
	6800	**b. Capital Component**						
	6807	Double Cabin Pickup (2 Nos.) Carry boy	0.00	0.00	112.61	0.00	112.61	0.94
	6812	Camera & Accessories	0.00	0.00	3.40	0.00	3.40	0.03
	6815	Computer & Accessories	0.00	0.00	5520.77	0.00	5,520.77	**46.32**
	6817	Computer Software's & Mobile apps for the 487 Upazilas.	0.00	0.00	393.10	0.00	393.10	3.30
	6819	Office Equipments	0.00	0.00	116.86	0.00	116.86	**0.98**
	6821	Furniture and Fixtures		0.00	36.04	0.00	36.04	**0.30**
	6827	Electric Equipments	0.00	0.00	18.89	0.00	18.89	0.16
	7901/ 9301	CD/VAT, SD, VAT and Taxes Provision	0.00	0.00	128.16	0.00	128.16	1.08
	Subtotal-b (Capital Component)		**0.00**	**0.00**	**6329.83**	**0.00**	**6,329.83**	**53.11**
	6681	c. Price Contingency	0.00	0.00	132.27	0.00	132.27	1.11
Total Cost (a+b+c)			**1304.38**	**0.00**	**10613.70**	**0.00**	**11,918.08**	**100.00**

5.6 Project Log-frame

Planned date for project completion: 30-06-2021
Date of this summary preparation: 01-06-2016

Narrative Summary	**Means of Verifications (MOV)**	**Objectively Verifiable Indicators (OVI)**	**Important Assumptions (IA)**
Project Goal: To strengthen capacity 10% on the basis of existing situation on dissemination of reliable weather, water and climate information services and improve access at least 30% to such services by priority sectors and communities.	At least 30% access to improved Agro-Meteorological services to farmers ii) Improved Institutional capacity at least 10% iii) Improved forecasting system and reduced weather and water related multi hazard 30%	i) Ongoing/quarterly monitoring of project implementation ii) Mid-term and end-term assessments reports iii) Annual surveys during the project period	i) Adequate budget for operation and maintenance of the modernized hydro-meteorological network and services ii) Adequate staff capacity to manage the enhanced service delivery system iii) Smooth implementation of the project iv) Sustainability after implementation of the project
Project Objective/ Purpose: i) Established a science-based agro-meteorological information system ii) Disseminated of Agro-meteorological information to the farming community through BAMIS Portal and Joint	i) 30000 direct beneficiaries with access to improved weather and climate services ii) Improved Institutional capacity at 487 Upazilas of DAE iii) Improving forecasting system and reduced weather and water related multi hazard at 487 Upazilas of DAE	i) Performance evaluation and quality control ii) Field Observation	i) An efficient modernized information providing system for the farming community established ii) Availability of skilled manpower

Technical Working Group			iii) Diversified Hydro-meteorological Products and Information are disseminated to the various stakeholders
Outputs: i) Skilled manpower for Disseminating of Agro-meteorological information ii) Improved agro-meteorological and forecasting information dissemination iii) Established of BAMIS Portal and strengthened Network	- Manpower deputed [(5 person) and recruited (2 person) by August 2016 - 6 International/ National consultants recruited by October 2016. -Developed Content for media and communication by June 2021 - Trained personnel by June 2021 - Purchased equipment for the BAMIS for 4051 Union Parishads) by April 2018 -Arranged National and International Seminar and workshop by June 2021 -Need based vehicle hired, office entertainment completed by June 2021. - Need based repair, renovation and maintenance completed by June 2021 - Established 4051 display boards and 487 kiosks by June 2021 - Established 4051 Handheld ARGs by June 2021 - Distributed 6664 SIM cards by November 2016	i) Progress reports ii) Project Reporting iii) User Satisfaction surveys	i) Right placement to work ii) Trained officer are using new knowledge, Skill and attitude in quality assurance of hydrological forecast products and telemetry data collection Services.

	- Installed BARI/BRRI/BJRI/BSRI instruments for crop modelling by March 2017 - Digitized of historical and current data for development of agro meteorological databases for the 487 Upazilas by December 2017 -Risk mapping completed for 487 Upazila by January 2017 - Agromet data analyzed and developed products by June 2021 -2 no. Pickup cabin procured by February 2017		
Inputs (Activities): -Manpower -Consultants -Printing & Binding -Training -ICT Equipment for (BAMIS)	**Activities** - Manpower deputed [(5 person) and recruited (2 person) and cost 366.78 lakh taka - 1 International consultant and 5 National Consultants recruited by October 2016 and cost 585.57 lakh taka -Developed Content for media and communication (Communication materials like posters , leaflets, books & publications etc.) by June 2021 and cost 78.62 lakh taka -Stationary, Seals & Stamps, Logistic support for PIU, Circulation & Advertisement and cost 180.30 lakh taka by June 2022 - National and International Training completed by June 2021 and cost 1100.68 lakh taka	i) DPP of the project ii) Field verification iii)Field implementation reports	i) Required ADP budget allocation and placing of fund in the field on time ii) Timely delivery of Agromet information and forecasting

-Seminar - Office Entertainment and Vehicle hiring -Honorarium/ Fees/Remuneration (Sitting Allowance) - Repair, Renovation and Maintenance -Agromet display boards and Kiosks -Handheld ARG -Tab and SIM card for SAAOs -BARI/BRRI Instrumentation -Digitization of historical and current data -Risk mapping for climate vulnerability	- Purchased equipment for the BAMIS by March 2018 and cost 724.14 lakh taka -Arranged National and International Seminar and workshop and cost 157.24 lakh taka by June 2021 - Need based vehicle hired and office entertainment and cost 20.64 lakh taka by June 2021 -Training allowance, sitting allowance, honorarium for officer and staff and cost 674.30 lakh taka by June 2021 - Need based repair, renovation and maintenance completed and cost 503.75 lakh taka by June 2021 - Purchased 4051 display boards and 487 kiosks with cost 768.90 lakh taka by February 2019 - Purchased 4051 Handheld ARGs and cost 768.90 lakh taka by January 2019 - Purchased 6664 Tabs SIM cards for SAAOs and cost 812.25 lakh taka by June 2017 - Purchased BARI/BRRI instruments for crop modelling and cost 76.08 lakh taka by April 2017 - Digitized of historical and current data for development of agro meteorological databases for the 487		

-Agromet data analysis -Vehicles	Upazilas by December 2017 and cost 393.10 lakh taka -Risk mapping completed for 487 Upazila and cost 129.16 lakh taka by January 2020 - Agromet data analyzed and developed products by February 2021 and cost 193.74 lakh taka -2 no. Pickup cabin procured by February 2017 and cost 112.61 lakh taka. **Total Project Cost** **Tk. 11918.08 lakh**		

Chapter Six

Conclusion and Recommendations

6.1 Introduction

Despite tremendous improvements in technology and crop yield potential, agricultural production remains highly dependent on climate. The agro-meteorological information is most useful for the solution of agricultural problems. Weather components namely rainfall, temperature, relative humidity, sunshine hours, cloudiness, wind speed, evapotranspiration, etc., play a significant role in agricultural Production. It has a profound influence on crop growth, development, and yields; on the incidence of pests and diseases; on water needs; and fertilizer requirements. This is due to differences in nutrient mobilization as a result of water stress, as well as the timeliness and effectiveness of preventive measures, scientific and cultural operations with different Crops. Weather aberrations may cause optimal physical damage to crops and soil erosion. The quality of crop produce during movement from field to storage and transport to market depends also on weather conditions, which lead to economic variation.

Bangladesh agriculture is blessed by sub-tropical weather providing the opportunity of year-round production of a diverse range of crops in different seasons. However, weather abnormalities affects crop growth and development and abnormal and extreme weather events damages crops physically. To boost awareness on increasing climate variability and the elevating climate risk in agricultural production it is necessary to develop understanding on the phenomena. The initiative to develop and institutionalize the system of providing agrometeorological forecasts and advisory services to the farmers and other stakeholders alongside crop extension services by Agro-Meteorological Information Systems Development Project (AMISDP), Department of Agricultural Extension (DAE) is an appreciable venture. Success of this initiative lies in the proper functioning of the agro-meteorological units, some of them are marked here, explored from the above study. There is sharp decline in loss of production due to natural calamity, due to increased access to agro-meteorological data, which can be regarded as a success of the AMISDP project.

6.2 Major Findings of the Study

Climate & Weather

The single most dominant element of the climate of Bangladesh, is the rainfall. Because of the country's location in the tropical monsoon region, the amount of rain is very high. However, there is a distinct seasonal pattern in the annual cycle of rainfall, which is much more pronounced than the yearly cycle of temperature. The winter season is arid and accounts for only 2%-4% of the total annual rainfall. In late December and early January, the minimum temperature in the extreme northwest and northeastern parts of the country reaches within 4 to 7°C. April is the hottest month in Bangladesh. In some places in the west-central region, the maximum temperature in the summer season rises up to 40°C or more. March and April are the least humid months over most of the western part of the country. The lowest average relative humidity (57%) has been recorded in Dinajpur in the month of March. In Bangladesh, the cloud cover has two opposing seasonal patterns, coinciding with the winter monsoon and the summer monsoon. As a result of the flow of cold-dry winds from the northwestern part of India during the winter season, the cloud cover is at a minimum. On average, the cloud cover in this season is about 10% almost all over the country. In the months of July and August, which is the middle of the rainy season, the cloud cover varies from 75 to 90% all over the country.

Disaster and Crop Damage

Out of 3200 respondents, near about 28% farmers reported that the attack of cyclone and 25% faced Nor wester, 23% faced heavy rainfall in last year as major weather and climate induced problems. It is noted that, heavy rainfall has newly incorporated in midline survey as major weather and climate induced problems. It has been observed that, the frequency of facing natural disaster has significantly decreased compared to baseline survey. The number of 3 to 6 times weather & climate problem has decreased around 46% relative to baseline survey. The frequency of 1 to 2 times weather & climate problem has increased around 41% relative to baseline survey. It is good sign that crop damage has significantly decreased in last year relative to previous year. Severe damage has decreased in last year compared to Baseline survey. However around 3% respondent farmers reported no damage. Farmers are taking initiative based on early forecasting of agro-meteorological information. Hence they saved more crop from damage. Though there were weather & climatic problems but farmers has reduced average production loss in last year than previous year. In baseline 32.75% farmers incurred more than 100kg loss of production per acre, while only 1.38% farmers incurred more than 100kg loss of production per acre in midline. That is there is sharp decline in loss of production due to natural calamity, due to increased access to agro-meteorological data, which can be regarded as a success of the AMISDP project. Farmers responded that, they have overcome huge damage of

production as past after getting early forecasting of agro-meteorological information, as they took effective action in last year.

Necessity of Agro-meteorological Information

Almost all (99%) farmers opined that they need agro-meteorological information and advisory services, which are required to protect their crops from the damage. More than three fourth (78%) farmers reported that they knew about Department of Agricultural Extension (DAE) through field level officials and extension batayan/IPM club etc. From baseline survey we found that Maximum (56%) farmers do not have any knowledge on government organizations which are providing information regarding temperature, rainfall, cyclone, storm, heat wave, and cold wave etc. information, followed by DAE (25%) but in midline farmer are getting more knowledgeable regarding such agro-met information service provider organization. Majority farmers (77.94%) informed that they have the knowledge regarding the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE & 22.06% farmers responded that have no idea regarding the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE. Comparing baseline survey we found that, farmers have 75.44% more knowledge regarding the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE in midline. That means, DAE is covering more farmer than past. No doubt the project is contributing effectively.

Access to Agro-meteorological Information

We observe that farmers have more accessibility to meteorological information in midline than the baseline. Around 54% increased accessibility of meteorological information was observed in midline. Not accessible has declined by 52.12% in midline. That comply with the aim of project, it signals that the farmers are benefitted from the project. The increased accessibility is due to the fact that Kiosks machine were installed in 487 upazilla, analog display board with rain gauge machine in 4051 Union Porishod. Also agro-meteorological information were updated regularly in BAMIS portal, national bulletin and district bulletin were updated there. All these activities of the project increased the accessibility of agro-meteorological information to the farmers. Farmers are getting forecast information on meteorological matters such as rain, storm, cyclone, heat wave, cold wave, thunderstorm etc. through different sources. Highest percentage (74.66%) of farmers received meteorological information from the DAE which was followed by TV (70.75%), received SMS 37.53%, community people 32.38%, radio 13.78% & social media 8.81%. Aside this around 2.19% farmers indicated that they received meteorological information from the analog board. The lowest 0.63% farmers informed that they didn't receive any information. Farmers are following forecast from agro-met service provider agency more than past, as observed in the midline survey. If the trend exists, it is expected that in endline this proportion

will increase substantially. From the above finding we can say, farmers are becoming more informative regarding agro-met information, that in baseline around 43% farmer said they didn't received any information but in midline survey it is offsetting by 0.63%. Farmer are more informed by DAE than baseline, the project is contributing effectively.

Timing of Agro-met Information and Decision Making

More than 50% farmers (53.04%) indicated that they were getting enough time after receiving information to save crops from the damage, 31.75% farmers opined that they were not getting enough time after getting information to save crops from damage. On the other hand 15.19% farmers did not receive any message to save the crop from damage. When comparing the midline data with the baseline we found that, farmers are getting enough time to save their crop from damage than past. Even they are quite sure what to do after getting this information. Because project is not only providing weather message but also the corrective measure. Around 36% farmers opined that they used to make a decision for planting crops after receiving forecast of weather and climate. 33% farmers noticed that they used to follow usual season for making decision for planting crop, 14.91% wait for rain & 12.31% used traditional forecast. Follow neighbor, follow usual season, wait for rain, use traditional forecast parameter substantially decreased. Simultaneously those are offsetting by after receiving message. So they are becoming dependent on receiving weather forecast & advisory bulletin. About 55% of the farmers reported that they saved their valuable crop from damage after receiving messages from BAMIS project.

Cope-up Methodologies & Technology Adoption

Asking the question about cope-up methodologies adopted based on the knowledge gained from training/awareness raising program, around three forth farmers (73%) reported that they adopted technique in varietal change like cropping pattern and crop production schedule to avoid weather and climate induced problems. About 21% farmer applied crop change, 5% in other change & 2% farmer did not adopt any technology based on the knowledge gained from training/awareness raising program. Out of 3200 farmers 37% reported that they could adopt drought tolerant crop varieties as new technology to avoid weather and climate induced problems, which was followed by insect pest tolerant crop varieties (17%), cold tolerant crop varieties (13%), no adoption (11%), disease tolerant crop varieties (8%) & heat tolerant crop varieties (8%).

Effectiveness of the Agro-meteorological Services

Around 42% farmers reported that current meteorological information services or forecast is effective. The second highest (30.66%) farmers indicated that it is not effective to protect their crop from the disaster. They were fail to protect their crops from the damages. But in midline

this percentage is converted into 4.78%. This is good sign that farmers are utilizing the information obtained from BAMIS by taking corrective action from advisory bulletin. It is noted that timing is also affecting factor to save crop from damage. The degree of satisfaction level has been measured by using 5-scale Likert scale. The index value (3.13) shows that the service of meteorological forecast provided by BAMIS is moderately effective. In baseline survey it was measured by using 4-scale. However the result of that was 'not satisfied at all' and definite improvement occurred in this regard.

Satisfaction of the Agro-meteorological Services

Asking the question about satisfaction level on agro-meteorological information services provided by BAMIS under DAE, near about 49% farmers responded that the level on agro-meteorological information services provided by BAMIS under DAE is satisfied followed by not satisfied (38.13%). 6.81% farmers are undecided, 3.56% are highly satisfied & 2.69% are not satisfied at all. Compared to base line, the proportion of satisfied scale has increased by around 48%. So it is noticeable that, farmers are becoming happier with using agro-meteorological information services provided by BAMIS under DAE. They have received the correct information with advisory services in right time that saved their crop from heavy damage. The degree of satisfaction level has been measured by using 5-scale Likert scale. The obtained index value (3.12) revealed that the farmers are satisfied on the agro-meteorological information services provided by BAMIS under DAE.

Project Relevancy

Asking the question whether BAMIS is in right track, majority of the farmers (53%) reported the project was in right track followed by wrong track (43%). However 4% farmer reported they don't know regarding this. The fact is that above 47% farmers were unable to measure the project accuracy due to lack of knowledge. Asking the question whether BAMIS is in right track, majority of the farmers (53%) reported the project was in right track followed by wrong track (43%). However 4% farmer reported they don't know regarding this. The fact is that above 47% farmers were unable to measure the project accuracy due to lack of knowledge. Majority of the farmers (52%) reported that the project assisted the beneficiaries in right quality. On the other hand 43% farmer reported that project didn't assist the beneficiaries with right quality.

Project Limitations

- It is alarming that poor communication by field officers is happening, it may create barrier to reach the project goal. While asking about the visit of DAE field officer to farmers, majority (38%) reported that once in a month, followed by once in a week (26%). 24% farmer reported once in two week, on the other hand 7% farmers reported no contact in a month by of DAE field officer.

- Due to the lack of accuracy of recording of observations by DAE personnel and lack of maintenance of machineries project progress is hampering. Rain gauge meter and weather board are not functioning properly in some stations.
- About 22% farmers didn't receive message of meteorological information in a week. Need to be improved in this regard.
- BAMIS is not providing early warning for drought, thunderstorm and flash flood.
- There is no crop calendar for minor crops.

6.3 Policy Recommendations

Popularizing Products of BAMIS

Availing agro-met service some farmers are still using traditional method for applying weather forecast. Need to be improved in this regard. It can be changed by highly accessible agro-data to farmers & making data more reliable to farmers. Project can employ a third party non-government organization (having experience of meteorological research and providing meteorological information/message) for popularizing BAMIS initiatives.

Increasing Message Coverage

In the project planning it is supposed to provide agro-met related messages to the farmers twice in a week. About 63% farmers indicated that they received message of meteorological information once per week. 22% farmers didn't receive message of meteorological information in a week. Need to be improved in this regard, 22% farmers are not receiving message. Project can employ a third party non-government organization (having experience of meteorological research and providing meteorological information/message) for providing message to the farmers.

Increasing Field Visit

From the obtained index value of 2.87 (out of 5) we realize that the farmers are less satisfied on frequency of field visit by the officers. If field officers contact more, farmer will get more confidence to execute the forecasting which is provided by BAMIS. Hence, in order to increase use of agro-meteorological information and hence increase the sustainability of the BAMIS project field visit should be enhanced. Otherwise, motivation of farmers will be distorted for using agro-meteorological information.

Modernization of Equipment

Due to the lack of accuracy of provided machineries the project has not made expected advancement in the field level. Rain gauge meter and weather board are not functioning properly. Weather board should be digitalized. Sensor of raingauge meter should be changed or improved. Charging power of the Tab is not well functioning and monthly data on the Tab should be supplied timely. The ongoing project is sustainable and beneficiary, but to make the project more sustainable accuracy of machineries and quality program design should be ensured. By following these activities it may possible to achieve a full handover and nationally agromet advisory program.

Introducing Early Warning System for Drought, Thunderstorm and Flash Flood

Like flood and cyclones drought is also a major disaster in Bangladesh. About 47 % of the country is drought-prone and 53 % of the total population are living in these areas. In the north-western part of Bangladesh, the average crop production reduced 25–30 % due to the effect of drought. Although less attention has been paid for drought preparedness and management in Bangladesh than other disasters, drought is more damaging than floods and losses from drought are higher than floods. In Bangladesh, Dewan et al identified 3,086 fatalities and 2,382 injuries by Thunderstorm from 1990 to mid-2016, for annual averages of 114 fatalities and 89 injuries. In 2018, total deaths and injuries were 120 and 77 respectively due to thunderstorm and lightning. Again, flash Floods are caused by heavy or excessive rainfall, or upstream flooding, in a short period of time in Haor Basin of the northern belt of Bangladesh. In flash floods, water levels rise and fall rapidly with little or no advance warning. Since these disasters are barrier to sustainable livelihood development hence BAMIS should introduce early warning system for drought, thunderstorm and flash flood.

Introducing Crop Calendar for Minor Crops

Vetch is a major crop in Bangladesh, but not included in crop calendar of BAMIS. Tea, a minor crop comes as an export crop. Three other minor cash crops are tobacco, betel nut, and betel vine. These should be incorporated in crop weather calendar. Also Onion, sweet potato, green pea, sesame, linseed, garlic, pea & barley are usually considered as minor crops but not included in crop calendar. BAMIS should introduce crop calendar for these crops.

Increasing Training & Participation

In baseline survey farmers expressed their interest to participate in agro-met related training/awareness raising program. In midline 12% farmers didn't get any agro-met related training/awareness raising program. It should be mitigated. Training is regarded as a systematic

and planned process to change the knowledge, skills and behavior of personnel to achieve the objectives of the organization they work for. In contrast to education, training is task-oriented because it focuses on the work an individual performs. Participants responses, learning and increased awareness of benefits can increase the efficiency and effectiveness of the running project.

Increasing Efficiency of forecasting

To be effective, the advisories need to be delivered to the end users without any delay in simple language that can be easily understood. In using the forecast information for preparing agricultural advisory, it is important to bear in mind that weather forecast accuracy is inversely related to the lead time of the forecast. The shorter the lead time, the greater the accuracy of the forecast. However, complete avoidance of all farm losses due to weather factors is not possible but losses can be minimized to a considerable extent by making adjustments through timely and accurate weather forecast information.

Tailoring Information based on Farmer's Need

Weather information for agriculture needs to be tailored to meet the needs of farmers. It should not be a repackaging of the general weather forecast of the national forecasting centers. Generalized forecasts should be a tailored product that can be effectively used in growing crops, managing animals, and controlling pests and diseases. When specifically tailored weather support is available to the needs of farmers, it contributes greatly toward making short-term adjustments in daily farm operations, which minimize input losses and improve the quality and quantity of farm produce.

Ensuring Two-way Feedback Mechanism

Two-way feedback mechanism for weather and climate induced problems and solutions of farmers need to be introduced through SMS platform, call center/e-mail etc. Though in BAMIS portal there is option for receiving feedback from the users, but it is not functioning enough. Hence two-way feedback mechanism should be implemented with broader coverage.

Annexure – 1

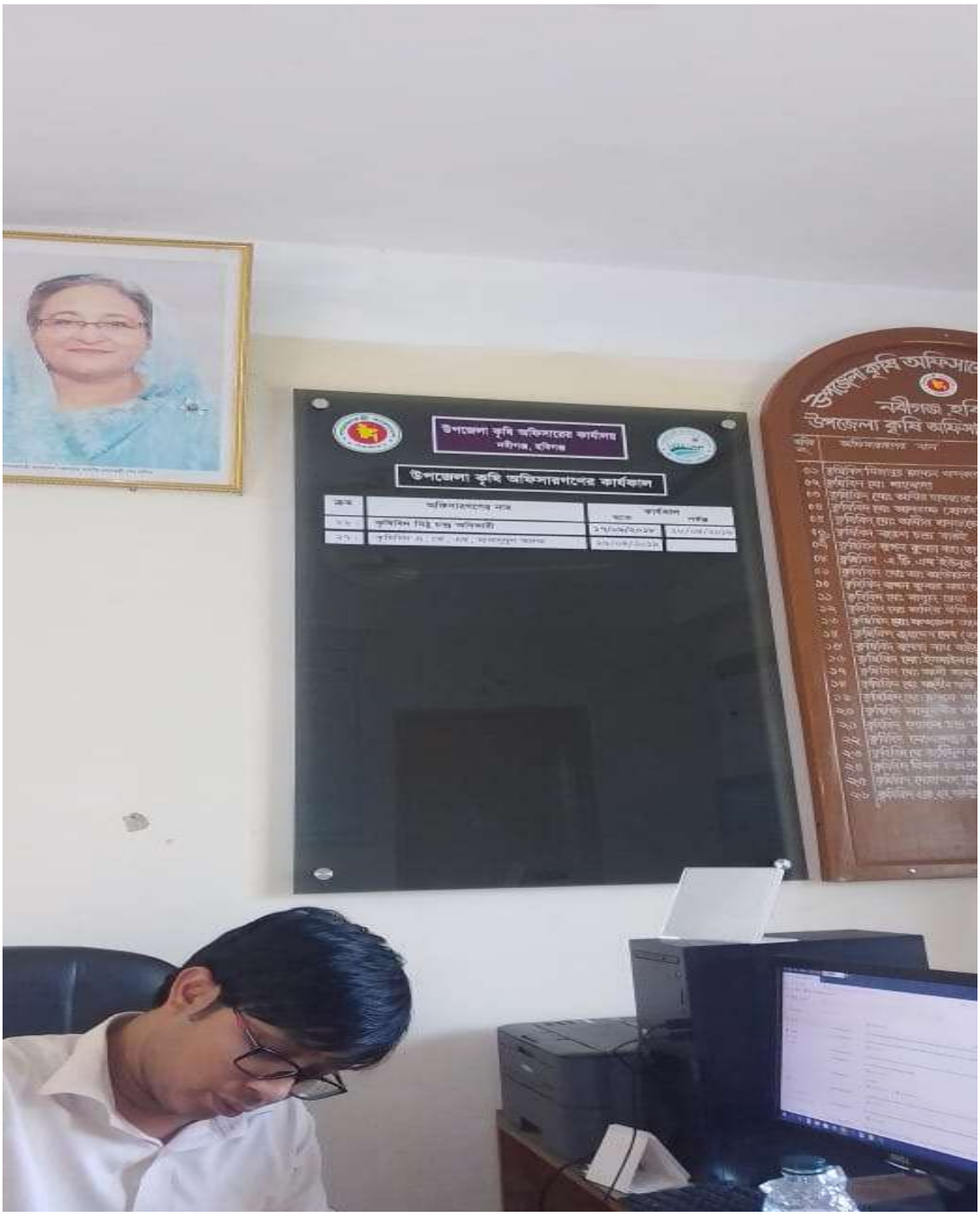
Photos of the Study Work

Picture 1: Training session of Agriculture Expert Dr. Abdul Halim

Picture 2: Training session of Associate Professor Md. Ahsan Uddin

Picture 3: Training session of Meteorologist Wing Com. (Rtd.) Ahmed Ali

Picture 4: Trainers and the trainees.



Picture 5: Field vist in Upazilla Agriculture Office

Picture 6: Visiting equipment provided under BAMIS project.

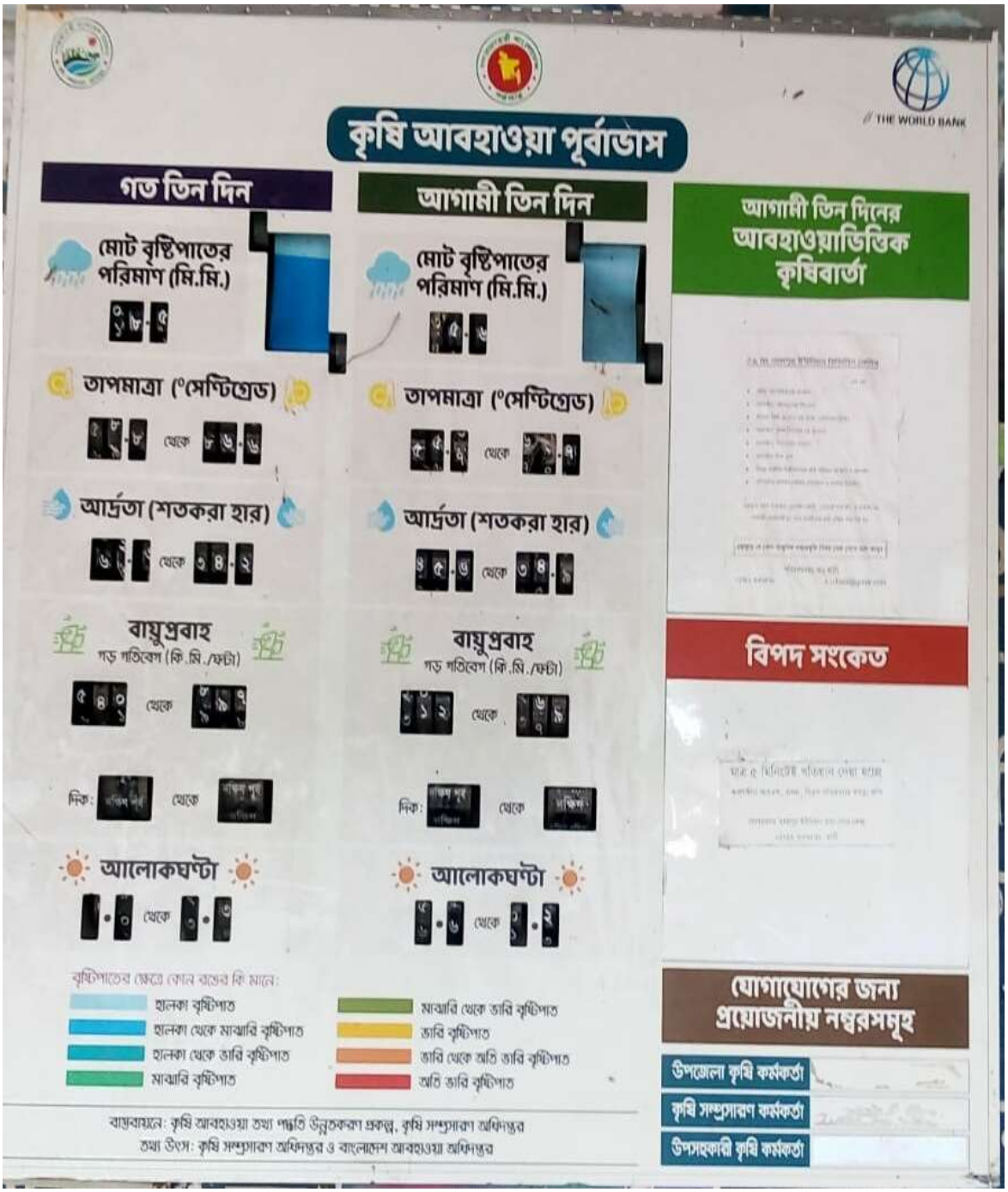
Picture 7: Focus Group Discussion (FGD) in Zenaidah

Picture 8: Focus Group Discussion (FGD) in Natore

Picture 9: Focus Group Discussion (FGD) in Moulovibazar

Picture 10: Focus Group Discussion (FGD) in Chattogram

Picture- 11: Training on Automatic Rain Gauges



Picture- 12: Weather Display Board set up in Union porishod

Picture- 13: Kiosks machine set up in Upazilla

Annexure-2 (Supplementary Tables)

Table 3.3: Major weather and climate related problems faced in last year compared to Baseline

Problems	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Drought	219	22.40%	582	18.19%	-4.21%
Cold Wave	213	21.80%	23	0.72%	-21.08%
Heat wave	93	9.50%	362	11.31%	1.81%
Nor Wester	106	10.39%	794	24.81%	14.42%
Lighting	32	7.05%	84	2.63%	-4.43%
Costal Flood	19	1.90%	76	2.38%	0.48%
Flood	91	9.30%	496	15.50%	6.20%
Flash Flood	353	36.20%	232	7.25%	-28.95%
Flood Inundate	92	9.40%	116	3.63%	-5.78%
Salinity	191	19.60%	22	0.69%	-18.91%
Storm Surge	38	3.90%	679	21.22%	17.32%
Cyclone	82	8.40%	882	27.56%	19.16%
Landslide	12	1.20%	66	2.06%	0.86%
Forest Degradation	6	0.60%	40	1.25%	0.65%
Heavy Rainfall	-	-	723	22.59%	22.59%

Table 3.4: Crop damage due to weather and climatic problems (compared to Baseline)

Crop Damage	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Severe	363	35.60%	879	27.47%	-8.13%
Moderate	491	48.10%	1705	53.28%	5.18%
Negligible	166	16.30%	522	16.31%	0.01%
No Damage	-	-	94	2.94%	0%
Total	1020	100%	3200	100%	

Table 3.5: Frequency of weather and climatic problems faced (compared to Baseline)

No. of Times problem faced	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
1 – 2 Times	473	46.40%	2787	87.09%	40.69%
3 – 4 Times	494	48.40%	223	6.97%	-41.43%
5 – 6 Times	50	4.90%	2	0.06%	-4.84%

Never	**3**	**0.30%**	**188**	**5.88%**	**5.58%**
Total	**1020**	**100%**	**3200**	**100.00%**	

Table 3.6: Average production loss (per acre) due to weather related problems (in kg)

Production Loss per Acre	Baseline		Midline		Impact
	Frequency	**Percentage**	Frequency	Percentage	**% Change**
20-39 Kg	**407**	**39.90%**	1550	48.44%	8.54%
40-59 Kg	**123**	**12.06%**	765	23.91%	11.85%
60-79 Kg	**90**	**8.82%**	411	12.84%	4.02%
80- 100 Kg	**66**	**6.47%**	430	13.44%	6.97%
Above 100 Kg	**334**	**32.75%**	44	1.38%	-31.37%
Total	**1020**	**100%**	3200	100%	

Table 3.7: Source of Agro-meteorological information: (multiple answer acceptable)

Source of getting information	Baseline		Midline		Impact
	Frequency	**Percentage**	**Frequency**	**Percentage**	**(% Change)**
Radio	**260**	**25.60%**	**441**	**13.78%**	**-11.8%**
TV	**379**	**37.15%**	**2264**	**70.75%**	**33.6%**
Social media	**22**	**2.15%**	**282**	**8.81%**	**6.7%**
Mobile SMS	**95**	**9.40%**	**1201**	**37.53%**	**28.1%**
Local level *miking*	**81**	**8%**	**58**	**1.81%**	**-6.2%**
Community people	**305**	**30%**	**1036**	**32.38%**	**2.4%**
Analogue board	**18**	**1.76%**	**70**	**2.19%**	**0.4%**
DAE	**310**	**30.39%**	**2389**	**74.66%**	**44.3%**
None	**436**	**42.74%**	**20**	**0.63%**	**-42.1%**

Table 3.8: Knowledge on organizations providing agro-meteorological information:

Organization	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
BMD	194	19%	414	13%	-6.06%
DAE	255	25%	2494	78%	52.94%
BWDB	0	0%	8	0%	0.25%
Don't know	571	56%	284	9%	-47.13%
Total	1020	100%	3200	100%	

Table 3.9: Knowledge about the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE:

Knowledge Regarding BAMIS	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Yes	25	2.50%	2494	77.94%	75.44%
No	995	97.50%	706	22.06%	-75.44%
Total	1020	100%	3200	100%	

Table 3.10: Traditional methods used for applying weather forecast (multiple response acceptable)

Traditional Weather forecasts method	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
last year weather	545	35%	1003	31%	-3%
past 2 years weather	566	36%	674	21%	-15%
prediction of older person of family	392	25%	656	21%	-4%
Others (weather forecast)	71	5%	867	27%	23%
Total	1574	100%	3200	100%	

Table 3.11: Number of days farmers used to receive the mobile message in a week

Times of Receiving Message	Midline	
	Frequency	Percentage
0 Time	713	22%
1 Time	2031	63%
2 Times	293	9%
3 Times	142	4%
4 Times	21	1%
Total	3200	100%

Table 3.12: Number of days farmers attended/participated in the agro-met related training/awareness raising program in last one year

Participated agro-met related training	Midline	
	Frequency	Percentage
0 Day	385	12%
1-3 Days	1967	61%
4-6 Days	787	25%

7-More Days	**61**	**2%**
Total	3200	100%

Table 3.14: Timing of information to save crops from damage

Timing	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Get enough time to save crop	137	13.40%	1698	53.06%	39.66%
Do not get enough time to save crop	883	86.60%	1016	31.75%	-54.85%
Do not get information			486	15.19%	15.19%
Total	1020	100%	3200	100%	

Table 3.15: Decision making regarding time of planting crops is based on

Decision making	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
After receiving forecasts	35	3.40%	1158	36.19%	32.79%
Follow usual season	694	68%	1056	33.00%	-35.00%
Wait for rains	93	9.10%	477	14.91%	5.81%
Use traditional forecasts	108	10.60%	394	12.31%	1.71%
Follow neighbors	90	8.80%	115	3.59%	-5.21%
Total	1020	100%	3200	100%	

Table 3.17: Cope-up methodologies adopted based on the knowledge gained from training

Cope-up technique	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Crop change	355	41%	656	21%	-20%
Varietal change	443	51%	2327	73%	22%
Adjust management	66	8%	0	0%	-8%
other	6	1%	148	5%	4%
No cope-up		0%	69	2%	2%
Total	870	100%	3200	100%	

Table 3.18: New technologies adopted based on the knowledge gained from weather and climate related services

Type of adopted technology	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Drought tolerant crop varieties	326	19%	1180	37%	18%
Salt tolerant crop varieties	82	5%	77	2%	-2%
Disease tolerant crop varieties	529	30%	266	8%	-22%
Insect pest tolerant crop varieties	533	31%	536	17%	-14%
Heat tolerant crop varieties	76	4%	243	8%	3%
Cold tolerant crop varieties	190	11%	425	13%	2%
Others	7	0%	130	4%	4%
No adoption of new technology		0%	343	11%	11%
Total	1743	100%	3200	100%	

Table 3.21: Did the project assisted/reached the right farmers?

Assisted/reached the right farmers	Midline	
	Frequency	Percentage
Right farmer selected	2386	75%
Wrong farmer selected	694	22%
Don't know	120	4%
Total	3200	100%

Table 3.22: Project assisted the beneficiaries

Project assisted the beneficiaries	Midline		
	Yes	No	Don't know
In Right Quantity	56%	39%	5%
In Right Quality	52%	43%	5%

Table 4.1: Effectiveness of meteorological forecast

Degree of Effectiveness	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Not effective at all	932	91.37%	153	4.78%	-86.59%
Not effective	70	6.86%	981	30.66%	23.79%
Undecided		0.00%	542	16.94%	16.94%

Effective	11	1.08%	1331	41.59%	40.52%
Very effective	7	0.69%	193	6.03%	5.34%
	1020	100%	3200	100%	

Table 4.4: User satisfaction level in Baseline and Midline

Satisfaction level	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Not satisfied at all	932	91.37%	86	2.69%	-88.68%
Not satisfied	70	6.86%	1220	38.13%	31.27%
Undecided			218	6.81%	6.81%
Satisfied	11	1.08%	1562	48.81%	47.73%
Highly satisfied	7	0.69%	114	3.56%	2.87%
Total	1020	100%	3200	100%	

Table 4.6: Frequency of field level officers contacted with the farmers

Frequency of visit	Midline	
	Frequency	Percentage
Once in a week	824	26%
Twice in a week	198	6%
Once in two week	759	24%
Once in a month	1204	38%
No contact in a month	215	7%
Total	3200	100%

Table 4.8: Accessibility of meteorological information to the farmers

Accessibility of information	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Not at all	560	54.90%	89	2.78%	-52.12%
When I look for it	67	6.60%	147	4.59%	-2.01%
Sometimes	371	36.40%	2885	90.16%	53.76%
Highly accessible	22	2.20%	79	2.47%	0.27%
	1020	100%	3200	100%	

Table 4.10 : Benefit of meteorological information received: (multiple answer acceptable)

Type of benefit	Baseline		Midline		Impact
	Frequency	Percentage	Frequency	Percentage	(% Change)
Crop Production Planning	498	58%	1742	54%	-4%
Irrigation Planning	247	28%	1589	50%	21%
Crop Management	345	40%	1635	51%	11%
Harvest and processing	375	43%	1188	37%	-7%
Insect pests and disease management of crops	530	61%	820	26%	-36%
Others	5	0.6%	437	14%	13%

Table 4.11: Project relevance to farmer's need

Project relevant to farmer's need	Midline	
	Frequency	Percentage
Relevant	2784	87%
Irrelevant	117	4%
Don't know	299	9%
Total	3200	100%

Annexure-3

Attendance Sheet of FGD

Midterm Impact Assessment of Agro-Meteorological Information Systems Development Project

- **Focus Group Discussion**

Attendance Sheet

Male Participants: 08 **Female Participants:** 06

Upazilla: Lohagara **District:** Chattagram **Date:** 26.03.2020

Sl.	Name	Mobile No.	M/F	Signature
1	Milon Das	01818-608632	M	
2	Hamanda Babu	01812-659407	M	
3	Kajal Nath	01827-876869	M	
4	Suvas das	01713-603991	M	
5	Md. Alamgir	01848-213090	M	
6	Parvin Akter	01837-844379	F	
7	Bolai Rosh	01927-304963	M	
8	Basu Deb Shil	01827-342077	M	
9	Saha Alam	01875-154709	M	
10	Rehena Begum	01896-132605	F	
11	Shahanaz Akter	01864-611860	F	
12	Fahima Akter	01816-301013	F	
13	Nazma Begum	01895-099239	F	
14	Milan Rani	01721-200846	F	
15				
16				
17				
18				
19				
20				

26.03.2020

Midterm Impact Assessment of Agro-Meteorological Information Systems Development Project

Focus Group Discussion

Attendance Sheet

Male Participants: 11 **Female Participants:** 03

Upazilla: কাঁঠালিয়া **District:** ঝিনাইদহ **Date:** 27/03/2020

Sl.	Name	Mobile No.	M/F	Signature
1	মোঃ আতিয়ার রহমান	01924-401733	M	
2	মোঃমহিউদ্দিন	01713-951002	M	
3	মোঃ বাদশা	01835-013028	M	
4	আবুল হাসান	01843-628079	M	
5	রতন কুমার	01749-564306	M	
6	সুজিত ঘোষ	01995-540123	M	
7	সুজন ঘোষ	01715-875059	M	
8	মিতা রানী	01704-440425	F	
9	সুবর্না রানী		f	
10	শম্ভু কুমার	01914-829798	M	
11	অপর্না রানী	01816-640047	F	
12	বিমল পাল	01715-872920	M	Amil
13	মিজানুর রহমান	01924-401210	M	Mizan
14	আশরাফুল	01765-080528	M	
15				
16				
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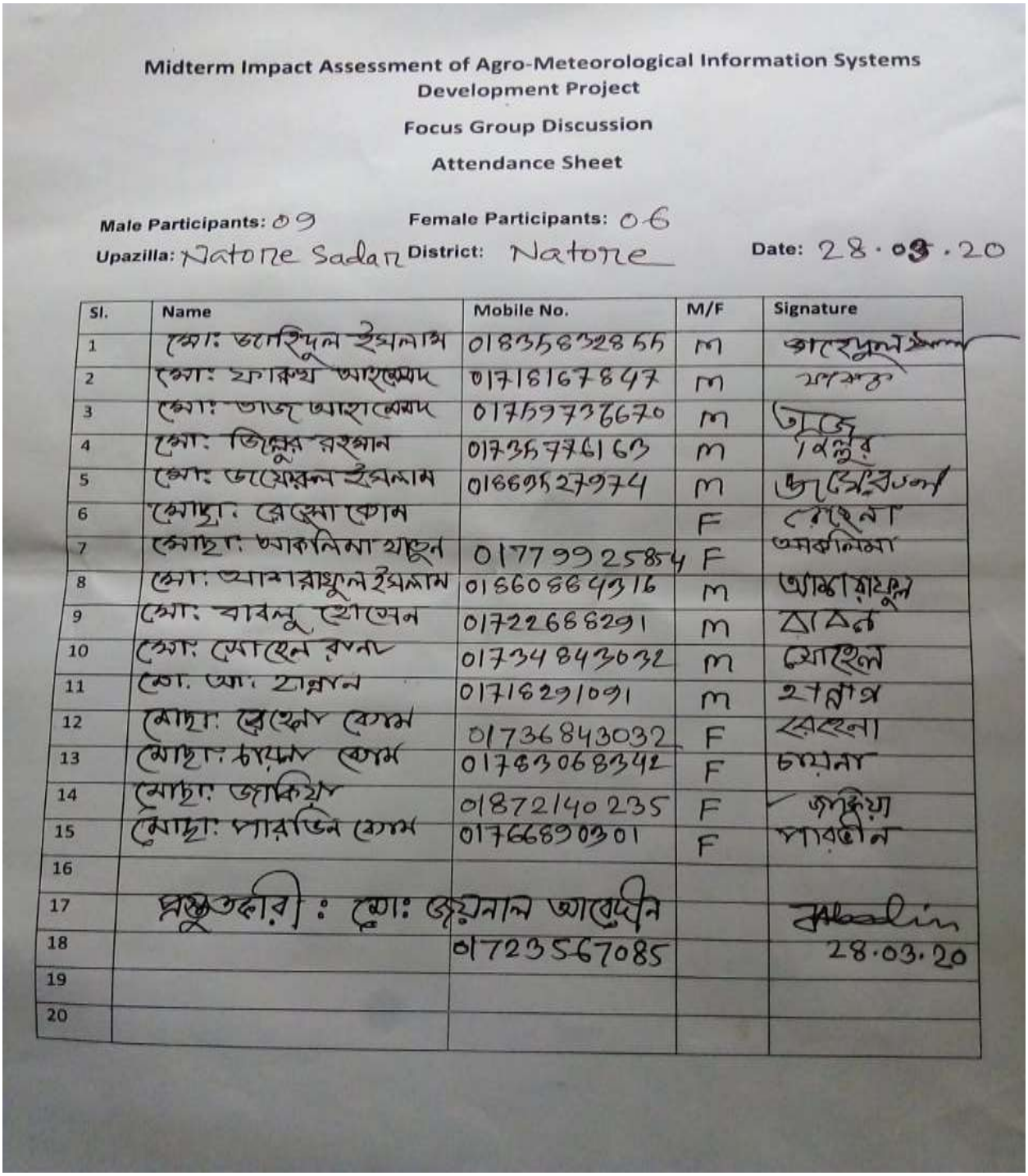
20				

Sweet
27/03/2020



Midterm Impact Assessment of Agro-Meteorological Information Systems Development Project

Focus Group Discussion

Attendance Sheet

Male Participants: 09 **Female Participants:** 06

Upazilla: Natore Sadar **District:** Natore **Date:** 28.03.20

Sl.	Name	Mobile No.	M/F	Signature
1	মো: জাহিদুল ইসলাম	01835832855	m	জাহিদুল ইসলাম
2	মো: ফারুখ আহমেদ	01718167847	m	ফারুক
3	মো: তাজ আহাম্মেদ	01759737670	m	তাজ
4	মো: জিল্লুর রহমান	01736776163	m	জিল্লুর
5	মো: জয়েনাল ইসলাম	01669527974	m	জয়েনাল
6	মোছা: রেহেনা বেগম		F	রেহেনা
7	মোছা: আকলিমা খাতুন	01779925854	F	আকলিমা
8	মো: আনারাফুল ইসলাম	01560864316	m	আনারাফুল
9	মো: বাবলু হোসেন	01722688291	m	বাবলু
10	মো: সোহেল রানা	01734843032	m	সোহেল
11	মো. আ: হান্নান	01716291091	m	হান্নান
12	মোছা: রেহেনা বেগম	01736843032	F	রেহেনা
13	মোছা: চায়না বেগম	01783068342	F	চায়না
14	মোছা: জাকিয়া	01872140235	F	জাকিয়া
15	মোছা: পারভিন বেগম	01766890301	F	পারভীন
16				
17	প্রস্তুতকারী: মো: জয়নাল আবেদীন			Zaboedin
18		01723567085		28.03.20
19				
20				

Midterm Impact Assessment of Agro-Meteorological Information Systems Development Project

Focus Group Discussion

Attendance Sheet

Male Participants: 10 **Female Participants:** 01

Upazila: Moulivibazar Sadar **District:** Moulivibazar **Date:** 26-03-2020

Sl.	Name	Mobile No.	M/F	Signature
1	Mala Begum	01752-747361	F	
2	Humayun	01733-907670	m	
3	Ziblur Rahman	01712-772919	m	
4	Adorl Ahmed	01715-052735	m	
5	Md. Monor Miah	01720-830448	m	
6	Debeujoti	01727-255460	m	
7	Foyez Ahmed	01722-523486	m	
8	md. Saleh Ahmed	01714-267418	m	
9	md. Rukul Amin	01713-816986	m	
10	md. Rasheduk	01718-283932	m	
11	Sahangir Alam	01712-854214	m	
12				
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26.03.2020

Annexure -4

Questionnaire for

Midterm Impact Assessment of Agro-Meteorological Information Systems Development Project

Identification Number :				
Name of Respondent				
Name of District				
Name of Upazilla				

Section 1 : Farmer's Basic Information

1.1 Gender of the respondent :

Gender	**Code**
Male	1
Female	2

1.2 Marital Status of the respondent:

Marital status	**Code**
Never Married	1
Married	2
Divorced	3

Widow/Widower	4
Separated	5

1.3 Education level of the respondent:

Education Level	Code
No formal education	1
Can read and write	2
Primary school	3
Secondary school	4
Technical education	5
College	6
University	7

1.4 Major Source of Income:

Income source	Code
Farm land	1
Other than farm land	2

1.5 Number of family members:

1.6 Number of family members engaged in agriculture:

1.7 Type of farmer:

Type of farmer	Code

Landless farmer (without agri-land)	1
Marginal farmer (0.01 – 0.49 acre)	2
Small farmer (0.50 – 2.49 acres)	3
Medium and large farmer (above 2.50 acres)	4

1.8 Land Ownership of the household:

Land pattern	**Area of land (in decimal)**
Own land	
Lease /mortgage land	
Total cultivable land of the household	
Own cultivable land	
Leased/mortgage cultivable land	
Total land of the household	

Section 2: Weather and Climate Induced Problems

(Note: Some of the Weather related problems will be identified from analysis of national level Secondary Meteorological data collected from BMD)

2.1 Major weather and climate related problems faced in last year: (Multiple answer acceptable)

Problems	**Code**
Drought	1
Cold-wave	2
Heatwave	3
Nor 'wester	4

Lightening	5
Coastal flood	6
Flood	7
Flash Flood	8
Flood Inundate	9
Salinity	10
Storm surge	11
Cyclone	12
Landslide	13
Forest degradation	14

2.2 Extent of Crop damage due to weather and climatic problems (in last year):

Damage	**Code**
Severe	1
Moderate	2
Negligible	3

2.3 Frequency of weather and climatic problems faced during crop production (in last year):

2.4 Total number of days faced of weather and climatic problems faced during crop production (in last year):

2.5 Average production loss in last year due to weather related problems (in kg):

Section 3 : Access to Agro-meteorological Information Services

3.1 Source of Agro-meteorological information: (multiple answer acceptable)

Source of getting information	**Code**
Radio	1
TV	2
Social media	3
Mobile SMS	4
Local level *miking*	5
Community people	6
Analogue board	7
DAE	8
None	9

3.2 Knowledge on government organizations providing agro-meteorological information:

Organization	**Code**
BMD	1
DAE	2
BWDB	3
Don't know	4

3.5 knowledge about the services of Bangladesh Agro-meteorological Information System (BAMIS) under DAE:

Knowledge	**Code**
Have knowledge	1
Do not have knowledge	2

3.6 Accessibility of meteorological information to the farmers:

Frequency of information	**Code**
Not at all	1
Sometimes	2
When I look for it	3
Highly accessible	4

3.11 Traditional methods used for applying weather forecast:

Traditional Weather forecasts method	**Code**
last year weather	1
past 2 years weather	2
prediction of older person of family	3
Others (weather forecast)	4

3.12 How frequently DAE field level officers contacted with the farmers?

Satisfaction level	Code
Once in a week	1
Twice in a week	2
Once in two week	3
Once in a month	4
No contact in a month	5

3.13 How many days farmers used to receive the mobile message in a week?

3.14 How many days' farmers attended/participated the agro-met related training/awareness raising program in last one year?

Section 4: Satisfaction on Agro-meteorological Information Services

Section 4-A : Relevance

4.1 Necessity of agro-meteorological information services:

Necessity	Code
Yes	1
No	2
Don't know	3

4.2 Benefit of meteorological information received: (multiple answer acceptable)

Type of benefit	Code
Crop Production Planning	1
Irrigation Planning	2
Crop Management	3
Harvest and processing	4
Insect pests and disease management of crops	5
Others	6

4.3 Is the project relevant to farmer's need?

Relevance	Code
Relevant	1
Irrelevant	2
Don't know	3

4.4 Is the project aligned with other Government initiatives?

Alignment	Code
Aligned	1
Contradictory	2
Don't know	3

4.5 Is the project aligned with other donor funded initiatives?

Alignment	Code
Aligned	1
Contradictory	2
Don't know	3

Section 4-B : Effectiveness & Efficiency

4.6 Is the BAMIS project in right track?

Track	Code
Right track	1
Wrong track	2
Don't know	3

4.7 Did the project assisted/reached the right farmers?

Farmer selection	Code
Right farmer selected	1
Wrong farmer selected	2
Don't know	3

4.8 Did the project assisted the beneficiaries with right quality?

Right Quality	Code
Yes	1

No	2
Don't know	3

4.9 Did the project assisted the beneficiaries of right quantity?

Right quantity	**Code**
Yes	1
No	2
Don't know	3

4.10 Did the project assisted the beneficiaries in right time?

Right time	**Code**
Yes	1
No	2
Don't know	3

4.11 Timing of information to save crops from damage:

Timing	**Code**
Get enough time to save crop	1
Do not get enough time to save crop	2
Do not get information	3

4.12 Effectiveness of meteorological forecast:

Degree of effectiveness	**Code**
Not effective at all	1
Not effective	2

Undecided	3
Effective	4
Very effective	5

Section 4-C : Impact

4.13 User satisfaction level on agro-meteorological information services provided by BAMIS under DAE:

Satisfaction level	**Code**
Not satisfied at all	1
Not satisfied	2
Undecided	3
Satisfied	4
Highly satisfied	5

4.14 Decision making regarding time of planting crops is based on:

Decision making	**Code**
After receiving forecasts	1
Follow usual season	2
Wait for rains	3
Use traditional forecasts	4
Follow neighbours	5

4.15 Did you able to save your crops from damage due to the messages received from BAMIS project?

Willingness	**Code**
Yes	1

No	2
Did not face such problem	3

4.16 are the farmers Willing to participate in training/awareness raising program related to agro-met services?

Willingness	**Code**
Yes	1
No	2

4.17 What cope-up methodologies adopted based on the knowledge gained from training/awareness raising program attended previously?

Cope-up technique	**Code**
Crop change	1
Varietal change	2
Adjust management	3
other	4
No cope-up	5

4.18 What new technologies adopted based on the knowledge gained from weather and climate related services?

Type of adopted technology	**Code**
Drought tolerant crop varieties	1
Salt tolerant crop varieties	2

Disease tolerant crop varieties	3
Insect pest tolerant crop varieties	4
Heat tolerant crop varieties	5
Cold tolerant crop varieties	6
Others	7
No adoption of new technology	8

Section 4-D: Sustainability

4.19 Did the community people participated in the project willingly?

Community participation	**Code**
Yes	1
No	2
Don't know	3

4.20 Do the farmers want extension of the area/coverage and time duration of BAMIS project?

Want extension	**Code**
Yes	1
No	2
Don't know	3

4.21 Will you participate in future activities of the BAMIS project?

Future participation	**Code**
Yes	1
No	2

4.22 Will you consume agro-met messages by own cost when free message is not available (after ending of BAMIS project)?

Future participation in own cost	Code
Yes	1
No	2

Annesure-5

Terms of Reference (ToR) of the study

Introduction

These Terms of Reference (TOR) are for the mid-term evaluations of the Agro-Meteorological Information Systems Development Project (AMISDP), Component-C of Bangladesh Weather and Climate Services Regional Project. This evaluation is commissioned by Department of Agricultural Extension (DAE), Ministry of Agriculture, Bangladesh and will cover the period from August 2017 (preparation phase) to July 2019 (midterm evaluation report). These TOR were prepared by the Monitoring and Evaluation unit of AMISDP upon an initial document review and consultation with stakeholders and following a standard template. The purpose of the TOR is twofold. Firstly, it provides key information to the evaluation team and helps guide them throughout the evaluation process; and secondly, it provides key information to stakeholders about the proposed evaluation. Thirdly, since the AMISDP covers the period from September 2017 to June 2021, the midterm evaluation results will allow comparison with preliminary baseline survey results to measure the progress/ achievement in the proposed indicators. The midterm evaluation will meet the criteria in the project's Evaluation Plan and World Bank Monitoring and Evaluation Polic1 Currently, 64 districts and 30000 farmers in Bangladesh receive Agromet advisory services twice a week (Wednesday & Sunday). The mid-term evaluation might apply a reduced scope, which will be defined by the team of evaluators during the mid-term inception phase.

Reasons for the Evaluation

The reasons for the evaluation being commissioned are presented below.

Rationale

The evaluations are being commissioned for the following reasons: Since 2017, AMISDP and the Government of Bangladesh have been implementing a three-year Agromet project a situational analysis and allowed AMISDP to establish indicator baseline information and to verify the targets established in the Project Agreement. These evaluations will allow AMISDP to monitor the progress of the indicators established based on the results of the initial baseline study. AMISDP and its project collaborators will use the mid-term evaluation to assess progress in implementation and to ensure the project is on track to meeting its goals; assess the relevance of the interventions; provide an early signal of the effectiveness of interventions; document lessons learned and to review the results frameworks and assumptions; assess sustainability efforts to date; and discuss and recommend midcourse corrections, if necessary. AMISDP will also use the evaluations

findings as a platform for an evidence-based policy dialogue and to inform engagement with the Government of Bangladesh and World Bank as well on the development of the operationalisation of Agromet advisory system in Bangladesh and also Monitoring and Evaluation system. The evaluations will look into this aspect to come up with information on progress achieved and underline new strategies adapted to successful implementation of the project. Furthermore, AMISDP will use the mid-term evaluations' findings to create awareness among farmers and other stakeholders about project activities that could further refinement of the program for nationwide implementation.

Objectives

The overall objective of the midterm evaluation is to review progress towards the project's objectives and outcomes, identify strengths and weaknesses in implementation, identify risks and counter- measures, assess the likelihood of the project achieving its objectives and delivering its intended outputs, and provide recommendations on modifications to increase the likelihood of success (if necessary).

Evaluations in AMISDP serve the dual and mutually reinforcing objectives of accountability and learning.

Accountability – The evaluation will assess and report on the performance and results of the AMISDP project.

Learning – The evaluation will determine the reasons why certain results occurred or not to draw lessons, derive good practices and pointers for learning. It will provide evidence-based findings to inform operational and strategic decision making. Findings will be actively disseminated and lessons will be incorporated into relevant lesson sharing systems.

Stakeholders and Users

A number of stakeholders both inside and outside of AMISDP have interests in the results of the evaluation and some of these will be asked to play a role in the evaluation process.

Evaluation Approach

Scope and Purpose.

The scope of the mid-term evaluations is the entirety of activities covered by the AMISDP project in Bangladesh (2017-2019) including procurement, services and technical activities. The evaluations will be carried out with sample from different geographic regions in Bangladesh.

Specifically, the midterm evaluation will-

(1) provide an early signal of the project's relevance, effectiveness and efficiency, impact and sustainability;

(2) collect performance indicator data;
(3) assess whether the project is on track to meet results and targets;
(4) review the results frameworks and theory of change; and
(5) identify any necessary mid-course corrections.

The evaluations will rely on the initial Baseline Study for baseline data and situational analysis necessary to evaluate the project at interim. AMISDP envisions that the midterm evaluation will be conducted approximately halfway through project implementation,

Evaluation Criteria and Questions

Evaluation Criteria The evaluation will apply the international evaluation criteria of relevance, effectiveness and efficiency, impact and sustainability. Gender Equality and empowerment of women should be mainstreamed throughout.

Evaluation Questions Allied to the evaluation criteria, the evaluation will address the following key questions, which will be further developed by the evaluation team during the inception phase.

Collectively, the questions aim at highlighting the key lessons and performance of the World Bank funded AMISDP project, which could inform future strategic and operational decisions.

Gender equality and women's empowerment will be mainstreamed throughout the evaluation questions and sub-questions with consideration of how the perspectives of men, women, will be sought in the evaluation process. Data collected will require disaggregation by gender as relevant.

Key criteria and questions are outlined in given below

Relevance

- Is the project's strategy relevant to the beneficiaries' needs?
- Is the project aligned with national government's agricultural policies and strategies?
- Does the project complement other donor-funded and government initiatives?

Effectiveness and Efficiency

- What is the progress of project implementation – Is the project on track to carry out all and activities as planned?
- To what degree have (and have not) the interventions resulted in the expected results and outcomes
- How can the theory of change be altered to increase efficiency and effectiveness? Did assistance reach the right beneficiaries in the right quantity and quality at the right time?

Impact

- To what degree has the project made progress toward the results in the project level framework?
- Have there been any unintended outcomes, either positive or negative?
- What internal and external factors affect the project's achievement of intended results?

Sustainability

- Is the on-going program sustainable, including a strategy for sustainability; sound policy; stable funding; quality program design; institutional arrangements; local production and sourcing; partnership and coordination; community participation and ownership?
- What substantive progress has the government made toward developing a nationally Agromet Advisory program?
- How are local communities involved in and contributing toward these services?
- What needs remain in order to achieve a full handover and nationally-owned Agromet Advisory program?

Data Availability

It is expected to employ a variety of data collection and analysis techniques for both quantitative and qualitative data to ensure a comprehensive evaluation exercise. This will likely include, at a minimum:

- Document and systems review: Review of existing documentations, including; project reports, project log frame and monitoring and evaluation data.
- Surveys: Application of structured survey questionnaires with a representative, random sample of target population to quantitatively assess outcomes. This will be in greater in scope, breadth and depth compared to standard routine project monitoring.
- Focus Group Discussions: With target groups and other stakeholders to assess implementation experiences and effectiveness, document successes, challenges and lessons learned, and develop recommendations for improvement.
- Key Informant Interviews: Consultations with key project stakeholders, including field staff and partners. Guidance on appropriate stakeholders will be provided by field and Country Office staff

During the process, the evaluation team may rely on the following specific sources of information about the project:

✓ DPP

✓ Procurement reports;

✓ Project databases;

✓ The project baseline survey;

AMISDP annual Standard Project Reports and other data collected periodically by the project team, including district and national AAS bulletins. These documents contain quantitative and qualitative information that will assist the evaluators in the analysis of the evolution of the project during this half-period. Of implementation. Some data and/or information can also be obtained through the decentralized services of the Ministry of Agriculture, Ministry of Livestock & Fishery which can be used for the comparison of some indicators. During the inception phase of the mid-term, the evaluation team will determine whether gaps exist in data availability. All of this would involve a combination of skills and experience on the part of the assessment team, which could provide solutions to these adjacent situations.

Methodology

The methodology will be designed by the evaluation team during the inception phase. It should:

- Employ the relevant evaluation criteria already mentioned.
- Demonstrate impartiality and lack of biases by relying on a cross-section of information sources (stakeholder groups, including beneficiaries, etc.) The selection of field visit sites will also need to demonstrate impartiality.
- Using mixed methods (quantitative, qualitative, participatory etc.) to ensure triangulation of information through a variety of means.
- Contain a sampling strategy, including the sampling method, sample size calculations, and power calculations.
- Ensure comparability to the baseline evaluation, although a reduced scope might be applied for the mid-term evaluation, depending on the methodological approach that will be defined in the mid-term inception report.
- Apply an evaluation matrix geared towards addressing the key evaluation questions taking into account the data availability challenges, the budget and timing constraints;
- Ensure through the use of mixed methods that women and men from different stakeholder's groups participate and that their different voices are heard and used;
- Mainstream gender equality and women's empowerment, as above;
- The evaluation team must assess the quality of the baseline data and design during inception, to see whether it can be used to design and implement a high-quality impact evaluation for the midterm evaluation.

For the mid-term evaluation, all the evaluation criteria must be used to answer the key evaluation questions, but a full impact evaluation design will not be needed. If an impact evaluation design

for the midterm evaluation is not feasible, another high-quality evaluation design must be proposed by the evaluation team.
In particular, the mid-term evaluation will draw on the existing body of documented data, including the AMISDP baseline and, as much as possible, regular program implementation assessments. A quantitative survey similar to the baseline study will be conducted. It will utilize survey instruments designed to collect key project data from Government official engaged with agriculture, intermediaries, progressive farmer and rural farming community. Ideally, the survey will be administered according to the design stipulated during the baseline study. The analysis of the collected data will be mainly descriptive, to capture key trends (cross tables, simple frequencies, etc.). In addition – at a minimum – t-tests will be performed to compare the treatment and comparison groups based on the criteria provided for selecting controls.

The qualitative data collection methods will include **key interviews** with relevant stakeholders, including: Government official engaged with agriculture, intermediaries, progressive farmer and rural farming community. Additionally, different collaborating organisation, research institute etc will be targeted for **focus group discussions.**

The following mechanisms for independence and impartiality will be employed: an external service provider will be hired to conduct the evaluation; It is proposed to appoint a dedicated evaluation manager to manage the evaluation process internally; and will make key decisions on the evaluation; an Evaluation Reference Group (ERG) (including AMISDP and external stakeholders) will be set up to steer the evaluation process and further strengthen the independence of the evaluation. All feedback generated by these groups will be shared with the service provider. The service provider will be required to critically review the submissions and provide feedback on actions taken/or not taken as well as the associated rationale.

One of the risks associated to the methodology includes a potential difference in the methodological approach used by the service provider for the mid-term evaluation and the one used for the baseline exercise. To mitigate this risk, an in-depth review of the methodological approach for the baseline study will be needed during the inception phase. The inception report will be carefully reviewed by AMISDP and stakeholders to ensure methodology and approach are sound.

Quality Assurance and Quality Assessment

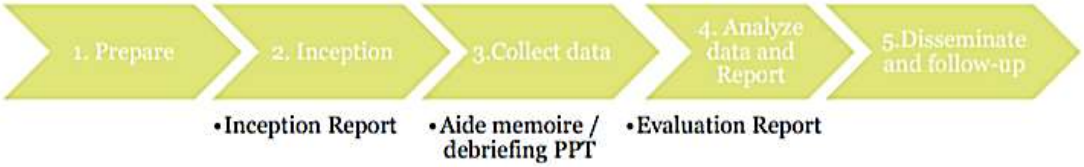
The evaluation team will be required to ensure the quality of data (validity, consistency and accuracy) throughout the analytical and reporting phases. The evaluation team should be assured of the accessibility of all relevant documentation within the provisions of the directive on disclosure of information. All final evaluation reports will be subjected to quality assessment by

an independent entity. The overall rating category of the reports will be made public alongside the evaluation reports.

Phases and Deliverables

The evaluation will proceed through the following phases. The deliverables and deadlines for each phase are as follows

The evaluation process (combined for mid-term and final evaluations) will proceed through nine phases. The timeline for fieldwork and reporting will be confirmed during inception phases.



Preparation phase:

The Evaluation Manager in AMISDP will conduct background research and consultation to frame the evaluation; prepare the TOR; select the evaluation team and contract the company for the management and conduct of the evaluation.

Mid-term evaluation Inception phase:

This phase aims to prepare the evaluation team for the evaluation phase by ensuring that it has a good grasp of the expectations for the evaluation and a clear plan for conducting it. The inception phase will include a desk review of secondary data and initial interaction with the main stakeholders.

Deliverable

Inception Report (IR):

The Inception Report details how the team intends to conduct the evaluation with an emphasis on methodological and planning aspects. It will present an analysis of the context and of the operation, the evaluation methodology articulated around a deepened evaluability and gender-sensitive stakeholders' analysis; an evaluation matrix; and the sampling technique and data collection tools. It will also present the division of tasks amongst team members as well as a detailed schedule for stakeholders' consultation. The draft IR will be submitted to the for comments; a revised version

will then be shared with the Evaluation Reference Group for comments before being submitted to the Evaluation Committee for approval. Stakeholders' comments will be recorded in a matrix by the evaluation manager and provided to the evaluation team for their consideration before finalisation of the IR.

Mid-term Evaluation Data Collection phase:
The fieldwork will span over one month and will include visits to farmers' field and primary and secondary data collection from local stakeholders. Two debriefing sessions will be held upon completion of the field work. An exit debriefing presentation of preliminary findings and conclusions (PowerPoint presentation) will be prepared to support the de-briefings.

Mid-term Evaluation Reporting phase:
The evaluation team will analyse the data collected during the desk review and the field
1. Prepare Inception
2. Inception Report
3. Collect work, conduct additional consultations with stakeholders, as required, and draft the evaluation report.

It will be submitted to the evaluation manager for quality assurance.

Evaluation report (ER): The evaluation report will present the findings, conclusions and recommendations of the evaluation in a concise report. Findings should be evidence-based and relevant to the evaluation questions. Evaluation findings and conclusions will highlight differences in performance and results of the operation for different beneficiary groups as appropriate. There should be a logical flow from findings to conclusions and from conclusions to recommendations. Recommendations will be limited in number, actionable and targeted to the relevant users. The draft ER will be submitted for comments; a revised version will then be shared for comments before being submitted. Stakeholders' comments will be recorded in a matrix by the evaluation manager and provided to the evaluation team for their consideration before finalisation of the ER. The draft ER must be submitted to AMISDP within 60 days of fieldwork completion.
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Notes on deliverables (mid-term and final evaluations): A full list of expected deliverables is provided below:

a. Inception, draft, and evaluation reports (mid-term)
b. Quality Assurance Plan
c. Raw and clean data sets
d. Suggested table of contents for evaluation reports:
    - Executive Summary

- Introduction
- Background (Program description and purpose of evaluation)
- Methodology and Implementation
- Results and Findings
- Conclusions
- Recommendations
- Lessons Learned
- List of meetings

e. A final evaluation summary brief, not to exceed 4 pages, that summarizes the main findings of the report. It should include charts, graphs, etc. to visualize the data in a clear, easy to read format, accessible to stakeholders from the community level to the government level. The final results and summary reports will be shared with project stakeholders. (final evaluation only)

The inception and evaluation reports shall be written in English and follow the standard templates. The evaluation team is expected to produce written work that is of very high standard, evidence-based, and free of errors. The evaluation company is ultimately responsible for the timeliness and quality of the evaluation products. If the expected standards are not met the evaluation company will, at its own expense, make the necessary amendments to bring the evaluation products to required quality level.

The evaluation TOR, evaluation reports and management responses will be public and posted on the BAMIS Portal of the AMISDP project. The other evaluation products will be kept internal.

Management and Implementation Responsibilities

The consultant will report directly AMISDP. However, s/he will also be expected to work closely with the field staff. Any proposed changes to the personnel listed in the application must be explained in the inception report and approved by AMISDP. This project is funded by the World Bank and will provide:

- Relevant project documents
- Guidance and technical support as required throughout the evaluation;
- Logistical arrangements for all field travel;
- Copies of all key background resources identified;
- Field staff time to assist with data collection;
- Introductory meetings with key government staff;
- Comments and feedback on, and approval of, all deliverables within agreed timeline. The consultant will be responsible for:
- Review documents and submit inception report;

- Developing the detailed evaluation methodology;
- Conducting all data collection;
- Analysis of data and reporting in a clear and accessible format;
- Regular progress reporting to the evaluation manager, including responding to any comments or technical inputs wherever reasonable;
- Production of deliverables within agreed timeline and in accordance with quality requirements of evaluation manager;
- Seeking comments and feedback from Farm Africa regularly, through the evaluation manager, in sufficient time to discuss and incorporate these into the final report.
- Production of the final evaluation report containing data against all indicators in the project log frame, evidence-based responses to the key evaluation questions, summary of lessons learnt and recommendations for future implementation.

Qualification and Desirable Competencies: Applications from consulting firm will be assessed on their ability to demonstrate the following qualifications and competencies:

- A minimum of 7 years' experience in carrying out impact evaluations, demonstrable academic and practical experience in qualitative and quantitative research methodology, evaluation design and implementation.
- Strong analytical, facilitation and communication skills.
- Good understanding on present operational agromet advisory services in Bangladesh and other countries. An exposure to these processes at the district and upazila/ union level is also important to this assignment. Consultant must be knowledgeable on the Bangladesh Agricultural policy and other relevant policy.
- Excellent reporting and presentation skills.
- All team members should be fluent in spoken and written English.
- The lead researcher should possess a Masters in Natural Resources Management, Natural Resources Assessment, Sustainable Development, Economics or related subject and practical knowledge in conducting evaluations.

Previous knowledge of conducting evaluation for agriculture project in Bangladesh. Interested evaluators or firms are requested to submit:

1. A capability statement demonstrating how they meet the required qualifications and competencies;

2. Copies of all relevant Curriculum Vitae (CVs). Only CVs for the specific individuals that will form the proposed evaluation team should be included;

3. A sample of an evaluation report for a similar project completed within the last 24 months (this will be treated as confidential and only used for the purposes of quality assurance);

4. Two references (including one from your last client/employer).

All documents must be submitted by email to the project coordinator Dr. Mazharul Aziz (aziz mazharul <azizdae@gmail.com>) copied to the (Hasan Imam <hasan.imam0@gmail.com>) by close of business by Friday 14th November 2014. Please request for a copy of the ToR by emailing aziz mazharul <azizdae@gmail.com> (Hasan Imam <hasan.imam0@gmail.com>))

Key personnel and Qualifications

a) Key Personnel

It is expected that 4 months may be required for the study. In the following Table 1. The firm may propose the structure and composition of its team members. It may list the main disciplines of the assignment, the key experts responsible, and proposed technical and support staff.

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

XIV. **Sl.**	LXV. **Position**	XVI. **Number of Professional**	XVII. **Person Months**
1.	VIII. Team Leader/ Argo-meteorologist/ Agriculture Expert/ Agro-economist	LXIX. 1	LXX. 4
2.	XXI. Agriculture Expert	LXXII. 1	LXXIII. 4
3.	XIV. Metrological Specialist	LXXV. 1	LXXVI. 4
4.	XVII. Data Analyst	LXXVIII. 2	LXXIX. 6
5.	XXX. System Analyst	LXXXI. 2	LXXXII. 2
6.	XXIII. Statistician	LXXXIV. 1	LXXXV. 2
7.	XXVI. Field Coordinator	LXXXVII. 4	LXXXVIII. 8
8.	XXIX. Data Collector	XC. 4	XCI. 8

b). The Qualifications of the Proposed Team

Position wise qualification and experiences of the Experts is provided in Table 2.

Table 2: Qualification and Experiences of Key and non-key Experts

XCII. **Position**	XCIII. **Qualification**	XCIV. **Experience**

CV. Team Leader/ Agro-meteorologist/ Agriculture Expert/ Agro-economist	CVI. Master' degree in CVII. Agrometeorology/Agronomy/ CVIII. Entomology or related CIX. subject.	C. 15 years' experience in agriculture field with CI. Seven years experiences in conducting and CII. preparing climate related agricultural study CIII. and assessment.
IV. Agriculture Expert	CV. Master in CVI. Agronomy/Agrometeorology/ CVII. Entomology/ Pathology.	VIII. Seven years working experience in the field IX. of crop production in public/private sectors.
CX. Metrological Specialist	XI. Master's degree in Atmospheric XII. Physics/Mathematics/ Engineering/ XIII. Environmental Science or related XIV. subject.	XV. Total experience will be 15 years with XVI. Ten years experiences in Meteorological XVII. / Climatological research at any reputed VIII. organization. XIX. He/she have capability to analyze the XX. Meteorological/ Climatological data and XXI. should have knowledge on climate XXII. model.
XIII. Data Analyst	XIV. Graduate degree in computer XXV. Science/ Statistics/ mathematics XXVI. or related field.	XVII. Five years of experience in computer XVIII. programming at any renowned software XIX. development company at

		XXX. National/International level.
XXI. System Analyst	XXII. Minimum Bachelors in Computer XXIII. Science/MIS or software XXIV. development	XXV. Seven years working experience in the field XXVI. of MIS software development, Large scale database management system for any XXVII. public/private sectors.
XVIII. Statistician	XXIX. M.Sc. in statistics	XL. Five years working experience in data XLI. collection & analysis.
XLII. Field Coordinator	XLIII. Diploma in Agriculture or XLIV. equivalent degree or higher XLV. degree.	XLVI. 2-3 years of experience in conducting and XLVII. preparing climate change and agricultural XLVIII. assessment study.
XLIX. Data Collector	CL. Diploma in agriculture/statistics or equivalent degree	CLI. At least 02 years working experience in data CLII. collection.

Annexure – 6

Audit Report

Foreign-Aided Project Audit Directorate
Audit Complex (6th & 11th Floor)
Segunbagicha, Dhaka.

No: 1656/FAPAD/S-4/IDA/2018-2019/ Credit No. 5837-BD/ Date:31 /12/2019.

Sub: Audit Inspection Report on the accounts of ``Agro-Meteorological Information systems development Project (Component –C of Bangladesh Weather and Climate Services Regional Project)"financed by IDA Under Credit No. 5837-BD for the year 2018-2019.

The Auditor's Report along with a Management Letter containing audit observations on the accounts of the above mentioned project is enclosed for your information and necessary action.

Enclosure:
01. Auditor's Report.
02. Financial Statements.
03. Management Letter.

sd/-
(Taslema Sultana)
Deputy Director
For Director General
Foreign Aided Projects Audit Directorate
Phone: 9361788

Secretary
Ministry of Agriculture
Bangladesh Secretariat, Dhaka.

No: 1656/FAPAD/S-4/IDA/2018-2019/ Credit No. 5837-BD/ 118 Date:31 /12/2019.

Copy for information and necessary action to:

1. **The Country Director**, World Bank, E-32, Agargaon, Sher-e-Bangla Nagar, Dhaka.
2. **The Project Director**, Agro-Meteorological Information systems development Project (Component –C of Bangladesh Weather and Climate Services Regional Project) DAE Bhaban, Room no-627, Khamarbari, Dhaka-1215.

(a)Replies/comments on the Audit Report and Management Letter may please be sent to the undersigned within 35(Thirty-five) days of receipt of this letter in your office.
(b) Observations in Part-A (SFI) should be responded to through the Ministry concerned and observations in Part-B (Ordinary) should be responded to FAPAD directly.

3. Office Copy.

31/12/19
(Taslema Sultana)
Deputy Director
For Director General
Foreign Aided Projects Audit Directorate
Phone: 9361788

Summary of Audit observations

Subject	Amount Involved	Risk Assessment	Remarks
Status of Financial Statement			Un-Qualified • • *Internal control is in place.* • *Found management is satisfactory.*
Summary of Management Letter			• *Government orders maintained properly.*

PART-A

Para No	Title	Amount Involved (Tk.)	Audit Area
01.	Procurement has made amounting to Tk. 21,68,08,292/- for Automatic Rain Gauges, Mobile Tablets and Agromet-Display Boards but the data information system that is not fully operational.	21,68,08,292/-	Asset, Supply & Service

PART-B

NIL

Section Two

AUDIT OBSERVATIONS, FINDINGS AND RECOMMENDATIONS: PART-A.

Para no:01

Title: Procurement has made amounting to tk. 21,68,08,292/- for Automatic Rain Gauges, Mobile Tablets and Agromet-Display Boards but the data information system that is not fully operational.

Description:

Audit has conducted on the accounts of Agro-Meteorological Information systems development Project (Component –C of Bangladesh Weather and Climate Services Regional Project) in the office of the Project Director, Department of Agricultural Extension (DAE), Dhaka for the Year 2018-2019.

- ✓ Cash book, bill/Voucher, Contract agreement and other related records has been examined.
- ✓ While examining the documents it has found that the project authority procured of Automatic Rain Gauges, Mobile Tablets and Display Boards from different supplicrs amounting to TK. 21,68,08,292/- .
- ✓ On detailed scrutiny of the documents it has seen that some items like as Automatic Rain Gauges, Mobile Tablets for SAAO's and Agromet Analogue Display Boards were delivered and distributed in the field level offices.
- ✓ Detailed are shown in Annexture '' A ''.
- ✓ The field level officers set up all these instruments but lack of training of SAAO's are unable to operate these due to SAAO's untrained using such equipment.
- ✓ Dr. Mazharul Aziz was Project Director during the period.
- ✓ **Causes:** Lack of internal control.

Reply of the auditee:

(1) As per plan of the project officers, SAAO's and Farmers training will be done gradually.
(2) Many SAAO's did not pay their previous Internet Corporate Fees. After having paid that fees, their SIM card will be activated.

Decisions in the exit meeting

- ✓ In the exit meeting, it has been decided that Broad Sheet Reply will be provided.

Audit Comments:

- ✓ Reply is not satisfactory primarily, but while physical verification in field level was made the equipment were found operational.
- ✓ Farmer /People are deprived getting from the benefit of weather & climate information services, if SAAOs are not trained up to use the equipment.

Audit Recommendation:

- ✓ Steps should be taken to use the all equipment effectively as early as pos. certification with evidence under intimation to audit.

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
বৈদেশিক সাহায্যপুষ্ট প্রকল্প অডিট অধিদপ্তর
অডিট কমপ্লেক্স (৭ম ও ১২শ তলা)
সেগুনবাগিচা, ঢাকা।

নম্বর- ১৬৫৬/ফাপাড/সেঃ-০৪/IDA/২০১৮-২০১৯/৬৩৭

তারিখ: ২৩ আষাঢ় ১৪২৬ বঙ্গাব্দ / ৭ জুলাই ২০২০ খ্রিষ্টাব্দ

বিষয় : আইডিএ সাহায্য প্রাপ্ত "Agro-Meteorological Information systems development Project (Component –C of Bangladesh Weather and Climate Services Regional Project)" এর ২০১৮-২০১৯ অর্থ বছরের অডিট আপত্তির প্রাপ্ত বি/এস জবাবের উপর মন্তব্য প্রদান প্রসঙ্গে।

সূত্র: স্মারক নং-১২.০০.০০০০.০৪২.০১.০০৪.২০.৭৯ তারিখ: ১২-০৩-২০২০ খ্রি:।

উপর্যুক্ত বিষয় ও সূত্রের মাধ্যমে প্রাপ্ত বি/এস জবাবের উপর এ কার্যালয়ের মন্তব্য আদিষ্ট হয়ে নিম্নে প্রদান করা হলো:-

অনু : ০১: Procurement has made amounting to Tk. 21,68,08,292/- for Automatic Rain Gauges, Mobile Tablets and Agromet-Display Boards but the data information system that is not fully operational.

মন্তব্য : Agroment যন্ত্রপাতি ব্যবহারের জন্য ব্যবহারকারীদের প্রশিক্ষণ চলমান এবং প্রশিক্ষণ সমাপ্তির পর তথ্য আদান প্রদান প্রক্রিয়া সম্পূর্ণরূপে কর্মক্ষম হবে বিবেচনায় চলমান প্রশিক্ষণের প্রমাণাদি প্রেরণ করায় এবং মন্ত্রণালয়ের নিষ্পত্তির সুপারিশ থাকায় আপত্তিটি নিষ্পত্তি করা হলো।

স্বাক্ষরিত/-
(এটিএম মোস্তাফিজুর রহমান)
উপ-পরিচালক
ফোন: ৯৩৬১৭৮৮।

সবিচ
কৃষি মন্ত্রণালয়
বাংলাদেশ সচিবালয় ঢাকা-১০০০।

নম্বর- ১৬৫৬/ফাপাড/সেঃ-০৪/IDA/২০১৮-২০১৯/৬৩৭ (২)

তারিখ: ২৩ আষাঢ় ১৪২৬ বঙ্গাব্দ / ৭ জুলাই ২০২০ খ্রিষ্টাব্দ

সদয় অবগতি ও প্রয়োজনীয় ব্যবস্থা গ্রহনের জন্য অনুলিপি প্রেরণ করা হলো :

১. মহাপরিচালক, কৃষি সম্প্রসারণ অধিদপ্তর, খামারবাড়ি, ঢাকা।
২. অডিট এন্ড একাউন্টস অফিসার, সমন্বয় শাখা।
৩. অফিস কপি।
৪. গার্ড ফাইল।

০৭/০৭/২০

(মোহাম্মদ আলী হোসেন)
অডিট এন্ড একাউন্টস অফিসার

F:\TAMIM FAPAD\Sector-4...1.docx -514-

Ms. Kawsar
Please check
31.1.2019

[Replaced by Same Memo No. & Date]

Foreign Aided Projects Audit Directorate
Audit Complex, (6th & 11th Floor)
Segunbagicha, Dhaka.

NO: 1615/FAPAD/S-4/IDA/BWCSRP(C)/2017-18/95 Date: 31-12-2018.

Sub: Audit Inspection Report on the accounts of "Agro-Meteorological Information Systems Devolvement Project (Component –C of Bangladesh Weather and Climate Services Regional Project)" financed by IDA Under Credit No. 5837-BD for the year 2017-2018.

The Auditor's Report along with a Management Letter containing audit observations on the accounts of the above mentioned project is enclosed herewith for your kind information and necessary action.

Enclosure :
1. Auditor's Report.
2. Financial Statements & notes to FS.
3. Management letter.
4. Audit opinion on Statement of Expenditure (SOE)
5. Auditor's Report on Special Accounts.

31.12.18
(Sarkar Mohammad Khairul Alam)
Deputy Director
For Director General
Foreign Aided Projects Audit Directorate
Phone: 88-02-8391548

Secretary
Ministry of Agriculture
Bangladesh Secretariat, Dhaka.

NO: 1615/FAPAD/S-4/IDA/BWCSRP(C)/2017-18/95 Date: 31-12-2018.

Copy for information and necessary action to :-

1. **Country Director**, The World Bank, E-32, Sher-e-Bangla Nagar, Agargaon, Dhaka.
2. **Project Director**, "Agro-Meteorological Information Systems Devolvement Project (Component –C of Bangladesh Weather and Climate Services Regional Project)" Department of Agricultural Extension (DAE), Khamarbari, Farmgate Dhaka

(a)Replies/comments on the Audit Report and Management Letter may please be sent to the undersigned within 35(Thirty five) days of receipt of this letter in your office.
(b) Observations in Part-A (SFI) should be responded to through the Ministry concerned and observations in Part-B (Ordinary) should be responded to FAPAD directly.

3. Office Copy.

31.12.18
(Sarkar Mohammad Khairul Alam)
Deputy Director
For Director General
Foreign Aided Projects Audit Directorate
Phone: 88-02-8391548

Received
31-01-2019

Summary of Audit observations

Subject	Amount Involved	Risk Assessment	Remarks
Status of Financial Statement			Un-qualified *Internal control is in place. Fund management is satisfactory.*
Summary of Management Letter			*Government orders should be maintained properly.*

PART-A

Para no.	Title	Amount Involved (Tk.)	Risk Assessment	Remarks
Nil				

PART-B

Para no.	Title	Amount Involved (Tk.)	Risk Assessment	Remarks
01.	Loss of Revenue Tk. 1,66,016.00 due to less deduction of IT from the supplier's bill.	Tk. 1,66,016.00	medium	

SECTION-TWO

DETAIL AUDIT OBSERVATIONS, FINDINGS AND RECOMMENDATIONS.

PART-A

Nil

Part-B

Para:01

Title: Loss of Govt. revenue amounting to Tk. 1,66,016.00 due to less deduction of income tax from the supplier bills.

Criteria:

- ✓ As per S.R.O. No 257- আইন/আয়কর/2017 date.01.08.2017 of NBR.

Condition:

- ✓ Audit was conducted in the office of the Project Director "**Agro-Meteorological Information Systems Devolvement Project (Component–C of `Bangladesh Weather and Climate Services Regional Project`)**"financed by IDA under credit no-5837-BD in the office of Department of Agricultural Extension (DAE), Khamarbari, Farmgate, Dhaka for the year 2017-2018.
- ✓ It was observed from bill /voucher & related records that total Tk. 1,12,59,000.00 was paid to Navana Limited for supplying of vehicles.
- ✓ As per S,R.O. No 257-আইন/আয়কর/2017 date.01.08.2017 of NBR that Income Tax is deductible @ 5% amounting to Tk. 5,62,950.00 from contractor's total payment.
- ✓ But the authority realized Tk. 3,96,934.00 as IT resulting less realization of IT Tk. 1,66,016.00 (5,62,950.00 -3,96,934.00) from the contractor bills which loss of Govt. revenue.
- ✓ Details are shown in Annexure-A.
- ✓ Dr. Mazharul Aziz. was Project Director during the period of transaction.

Cause:

- ✓ Loss of Govt. revenue due to less deduction of IT.

Consequence:

- ✓ Govt. deprived of revenue receipt.

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
বৈদেশিক সাহায্যপুষ্ট প্রকল্প অডিট অধিদপ্তর
অডিট কমপ্লেক্স (৭ম ও ১২শ তলা)
সেগুনবাগিচা, ঢাকা।

নং- ১৬১২/আপাপ্র/সেক্টর-৪/BWCSRP/2017-18/৫৪০ তারিখ: ০৯-০৬-২০১৯ খ্রি

বিষয়: Agro-Meteorological Information systems devolvement Project (Component –C of Bangladesh Weather and Climate Services Regional Project)" এর ২০১৭-২০১৮ অর্থবছরের অডিট আপত্তির উপর বি/এস জবাবের উপর মন্তব্য প্রদান প্রসঙ্গে।

সূত্র: Memo No.12.01.0000.042.01.005.17 (Part)-39, Dated-05/03/2019 from Audit-I, Ministry of Agriculture.

উপর্যুক্ত বিষয় ও সূত্রের মাধ্যমে প্রাপ্ত বি/এস জবাবের উপর এ কার্যালয়ের মন্তব্য নিম্নে প্রদান করা হলো।

অনু ০১ : Loss of Govt. revenue amounting to Tk. 1,66,016.00 due to less deduction of income tax from the supplier bills.

মন্তব্য : আপত্তিকৃত অর্থ চালান নং-৭৭ তারিখ: ১২/০৫/২০১৯ এর মাধ্যমে জমা দেয়ায় এবং Verification এ চালানের সত্যতা পাওয়ায় আপত্তিটি নিষ্পত্তি করা হলো।

মহাপরিচালক মহোদয়ের সদয় অনুমোদনক্রমে।

(অনিমা [illegible])
উপপরিচালক
ফোন [illegible]

প্রকল্প পরিচালক
Agro-Meteorological Information systems devolvement Project
(Component –'C' of BWCSRP)
Department of Agriculture Extension
Khamarbari, Dhaka.

নং- ১৬১২/আপাপ্র/সেক্টর-৪/BWCSRP/2017-18/৫৪১ তারিখ: ০৯-০৬-২০১৯ খ্রি:

সদয় অবগতি ও প্রয়োজনীয় ব্যবস্থা গ্রহণের জন্য অনুলিপি প্রেরণ করা হলো:-

১। অডিট এন্ড একাউন্টস অফিসার, সমন্বয় শাখা, আপাপ্র।
২। অফিস কপি।
৩। গার্ড ফাইল।

(মো: [illegible])
অডিট এন্ড একাউন্টস অফিসার

.../TANIYA/...AD/SECTOR-04/ 287