

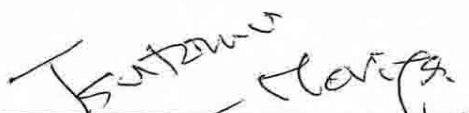
MINUTES OF MEETING
BETWEEN THE JAPANESE MID-TERM EVALUATION TEAM
AND THE AUTHORITIES CONCERNED OF
THE GOVERNMENT OF MONGOLIA
ON JAPANESE TECHNICAL COOPERATION
FOR THE PROJECT FOR DEVELOPMENT OF HUMAN CAPACITY
FOR WEATHER FORECASTING AND DATA ANALYSIS IN MONGOLIA

The Japanese Mid-Term Evaluation Team (hereinafter referred to as “the Japanese Team”) organized by the Japan International Cooperation Agency (hereinafter referred to as “JICA”) and headed by Mr. Tsutomu MORIYA, visited Mongolia from August 12 to 26, 2006 for the purpose of conducting mid-term evaluation of the Project for Development of Human Capacity for Weather Forecasting and Data Analysis in Mongolia (hereinafter referred to as “the Project”).

For this purpose, the Japanese Team and the Mongolian authorities concerned formed the Joint Evaluation Team (hereinafter referred to as “the Team”). The Team evaluated performance and achievements of the Project through field visits, interviews, and had a series of discussions in respect of desirable measures to be taken by both Governments for the successful implementation of the Project.

The Team agreed on the contents of the Evaluation Report attached, which was accepted by the Joint Coordinating Committee. As a result of the discussions, the Team agreed to recommend to their respective Governments the matters referred to in the attached evaluation report.

Ulaanbaatar, August 25, 2006



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**THE MID-TERM EVALUATION REPORT ON
THE PROJECT FOR DEVELOPMENT
OF HUMAN CAPACITY
FOR WEATHER FORECASTING
AND DATA ANALYSIS IN MONGOLIA**

Ulaanbaatar, August 25, 2006

Mid-Term Evaluation Team



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1. INTRODUCTION

1-1 Objectives of the Evaluation

The evaluation activities were performed with the following objectives:

- (1) Evaluating degree of achievement based on the Project Design Matrix (hereinafter referred to as “PDM”) and the Plan of Operations (hereinafter referred to as “PO”) during the first half of the Project,
- (2) Reviewing the progress of the project in accordance with the PDM,
- (3) Reviewing and revising PDM and PO for the remaining cooperation term, if necessary,
- (4) Identifying problems on any aspects of the Project implementation,
- (5) Making recommendations for the future perspective of the Project

1-2 Method of the Evaluation

The Evaluation Team (hereinafter referred to as “the Team”) conducted surveys by questionnaires and interviewed the counterpart personnel (herein after referred to as “CPs”), and the Japanese experts as well as those officials concerned with the Project. The Team also made the field visit to the aimag center and other project sites. The Team analyzed and evaluated the Project by means of Evaluation Grid from the viewpoints of evaluation criteria according to the method of Project Cycle Management (PCM).

Both sides reviewed all activities and achievement, and evaluated the Project based on the following five criteria:

(1) Relevance:

The extent to which the Project Purpose and Overall Goal are consistent with the government development policy of Mongolia as well as the development assistant policy of Japanese, and needs of beneficiaries.

(2) Effectiveness:

The extent to which the Project has achieved its purpose, clarifying the relationship between the Project Purpose and Outputs.

(3) Efficiency:

The extent to how economically resources/inputs (funds, expertise, time, etc.) are converted to results/output with particular focus on the relationship between inputs and outputs in terms of timing, quantity and quality.

(4) Impact:

Project effect on the surrounding environment in terms of technical, socio-economic, cultural, institutional and environmental factors. Project impacts are cross-tallied according to positive or negative effects.

(5) Sustainability

Sustainability of the Project is assessed from the standpoint of organizational, financial and technical aspects, by examining the extent to what the achievements of the Project will be sustained or expanded after the assistance is completed.



1-3 Members of the Evaluation Team

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2. OUTLINE OF THE PROJECT**2-1 Background and Proceeding of the Project**

In Mongolia, agriculture and livestock farming are key industries which account for about 20% of GDP and 42% of laborers of the country. In this situation, country-wide drought and dzud (cold/snow conditions which cause damage to agriculture and livestock farming sector) which occurred in these few years have brought about serious damage to the society and economy of Mongolia. The amount of the damage of 2.69 million death of livestock and 1,008 billion Tugrik (approximately 96 billion Japanese Yen) of the total damage in 2001-2002 season was reported, and the annual average from 1999 is 2.31 million death of livestock and 316.8 Billion Tugrik (approximately 30.2 billion Japanese Yen).

The Government of Mongolia places alerting the phenomena which cause disasters through improving technologies of early warning against natural hazards to one of the policy objectives in the draft of the government program of 2004 - 2008.

National Agency for Meteorology, Hydrology and Environment Monitoring (NAMHEM) of Mongolia, the sole governmental meteorological organization of Mongolia, has been promoting systematic implementation of the variety of activities according to its development program up to 2015, which is based on the master plan recommended by an expert of Japan International Cooperation Agency (JICA) in 1996.

The sector of meteorological services in Mongolia has been well developed at the central level of the service in terms of hardware by the two Grant Aid Assistances of the Government of Japan. From the software point of view, although dispatch of the engineers/scientists to overseas and training courses have contributed at a certain level to upgrading of the technical level and improvement of the meteorological services, the total technical level of NAMHEM in terms of weather information has yet to be enhanced by




introducing advanced technologies of the other countries in the fields of numerical weather prediction (NWP) and weather forecasting.

Based on the above-mentioned analyses on current status of Mongolian meteorological services, “The Project for Development of Human Capacity for Weather Forecasting and Data Analysis in Mongolia” (hereinafter referred to as “the Project” was started for the period of 3 years and 2 months from February 2005 to March 2008.

The Japanese Project Consultation Team visited to Mongolia for the purpose to revise the PDM of the Project, because the activities of “Dust and Sand Storm (DSS) Monitoring Networking Project” (hereinafter referred to as “ the DSS Project”) separately requested by Mongolia will be carried out in the project, and to confirm the installation sites of the Lidar and other necessary equipment which will be settled for the activities of the DSS Project. The Project Consultation team signed the Minutes of Meetings for the project on March 11, 2005.

2-2 Objective of the Project

The objectives of the Project are to provide more reliable, useful and timely weather information and to promote their use by introducing new weather analysis and forecasting technologies using new products.

The project is composed of three phases, Preparation (Phase I), Basic Training (Phase II), and Establishment of Operational System (Phase III).

The outputs of the Project are confirmed as follows.

- 1) Operational numerical weather prediction (NWP) is implemented.
- 2) Climate change projection using a climate model is implemented.
- 3) Short/middle/long-term weather forecasts based on NWP outputs are issued.
- 4) Drought/dzud early warning system (DDEWS) is established.
- 5) Knowledge and understandings about weather and climate information in central/local governments, related organizations/agencies, and end-users including herders and general public in Mongolia are deepened.
- 6) Weather observation and forecasting systems, especially weather radar and computer network are stably operated.
- 7) Information on monitoring of DSS is issued.

3. PROGRESS OF THE PROJECT

The Team reviewed the progress of the Project in accordance with the PDM.

3-1 Progress of Activities

Activities consist of the following twenty-eight (28) fields as shown in the PDM. The Team reviewed activities and recognized that the project activities have been going on steadily except those under Output 7. The activities carried out until the time of the mid-term evaluation are summarized as follows:

	Activities	Current Progress ¹
Output 1: Operational numerical weather prediction using a regional model around Mongolia is implemented.		
1-1	To conduct training/seminars on numerical weather prediction (NWP)	Seminars on NWP has been conducted every Friday and the textbook 「 An Introduction to Dynamic Meteorology」 has been used to acquire the basic understandings of numerical weather prediction. (60%)

¹ Percentage shown in each activity indicates the subjective overviews by the Japanese expert on its achievement level.

1-2	To establish operational 5 to 7-day NWP system and assess its result in comparison with the existing operational forecast.	Some research were conducted to assess its results in comparison with the existing operational forecast (55%)
1-3	To procure and set up equipment for training on numerical weather prediction	Equipment and software have been properly installed. (100%)
Output 2: Climate change projection due to global warming using a climate model is implemented.		
2-1	To conduct training on climate change projection using a climate model	Seminars on NWP has been conducted every Friday and 「An Introduction to Dynamic Meteorology」 has been used to acquire the basic understandings of climate change projection. (75%)
2-2	To implement climate change projection such as surface temperature, humidity, precipitation, snowfall and wind.	The regional climate model over Mongolia has been examined. (45%)
2-3	To procure and set up equipment for climate change projection	Equipment and software have been properly installed. (95%)
Output 3: Short/middle/long-term weather forecasts based on NWP outputs are issued.		
3-1	To conduct training on interpretation of NWP outputs including ensemble forecasting technique	Seminars on guidance has been conducted every Tuesday Most of the basic methods of interpretation of NWP has been introduced. (90%)
3-2	To develop operational guidance for forecasting	Guidance has been implemented on a trial base (40%)
3-3	To develop a computer-aided case study handbook on typical and unusual phenomena	Information collection has been completed. (50%)
3-4	To develop new concepts of forecast such as precipitation probability forecast	Seminars on projection of precipitation have been conducted (40%)
3-5	To conduct training on very short-range forecast using weather radar data	Seminars on radar weather and practical trainings have been conducted (40%)
3-6	To procure and set up equipment for operational forecasting work	Equipment and software have been properly installed. (50%)
Output 4: Drought/dzud early warning system (DDEWS) is established.		
4-1	To conduct training on conceptual framework of a combined drought/dzud early warning system (DDEWS)	Seminars on early warning system were conducted. This activity were completed (90%)
4-2	To conduct training of database and GIS technique in the framework of the DDEWS	Due to the change of CP, the activity has been delayed. (45%)
4-3	To revise the present zoo-meteorological observation programme and manual	The manual of zoo-meteorological observation has been prepared. Further revision may be required (45%)
4-4	To produce guidelines of warning and advisory messages	This will be prepared as the next phase activity (0%)
4-5	To produce pasture condition maps on the village (bag) scale	GPS measurement has been completed and the map of bio-mass has been prepared on trial basis. (35%)
4-6	To procure and set up equipment for agro/zoo-meteorology and GIS	Equipment and software have been properly installed. (90%)
Output5: Knowledge and understandings about weather and climate information in central/local governments, related organizations/agencies and end-users including nomads and general republic in Mongolia are deepened.		
5-1	To conduct seminars in Ulaanbaatar both for the project launching and wrapping-up	Kick-off seminars were conducted and 88 persons were participated (100%)
5-2	To conduct workshops targeted to government organizations/agencies	Three workshops for those administrative officials were conducted and needs assessment were carried out through questionnaires (90%)
5-3	To conduct seminars/workshops in pilot aimags (Hentii, Dondogobi, Gobialtai) on use of weather information targeted to local government (aimag/soum) and end users including herders and general public	Two workshops for end-users were conducted and needs assessment were carried out through questionnaires. (90%)
5-4	To procure and set up equipment for seminars/workshops	Equipment and software have been properly installed. Currently, that equipment is effectively used for disseminating the weather information (100%)
Output 6: Weather observation and forecasting systems especially weather radar and computer network are stably operated.		
6-1	To produce operation and maintenance manual of	Manuals for equipment maintenance of radars and

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	weather radar system	regular checking list are prepared as planned (100%)
6-2	To conduct training on operation and maintenance of weather radar system	5 counterparts have received trainings as planned (50%)
6-3	To make overall plan of computer network in NAMHEM	Current situation of computer networks were examined and improvement plan was prepared by the expert. (25%)
6-4	To conduct training on computer networking	Seminars on basic skills and knowledge of computer network have been conducted in 2005 and 2006 (25%)
Output 7: Information on monitoring of DSS is issued.		
7-1	To procure and set up DSS monitoring system	Equipment was purchased and delivered for set up (5%)
7-2	To conduct training on operation and maintenance of DSS monitoring network and data analysis	No activities have been conducted so far (0%)

3-2 Inputs

Inputs to the Project during the past one and a half (1.5) years since its inception in February 2005 to August 2006 are as follows: Inputs were generally appropriate in terms of timing, quantity and quality.

3-2-1 Japanese Side

Most of the inputs from Japanese side, such as dispatch of experts, training of CPs and local cost support, are executed as planned. Some delay of equipment in the field of drought/dzud early warning system occurred, however this did not negatively affect the proceeds of activities. On the other hands, the provision of equipment in the field of DSS monitoring has been delayed, causing the big delays in implementation of activities. Details of Japanese inputs are shown in Annex 1~4.

3-2-2 Mongolian Side

Mongolian side assigned the appropriate counterparts for conducting project activities. Some of them have been transferred to other departments or dispatched to the long-term trainings overseas. Sub-counterparts who have been members of same working groups have replaced the position in order to effectively continue the technical transfer. Some counterparts are assigned to receive trainings in several different fields from Japanese experts. In spite of their heavy workload, they are actively contributing to the project activities with the strong intention of accomplishment. Details of Mongolian inputs are shown in Annex 5~6.

4. RESULTS OF EVALUATION

4-1 Achievement of the Project Purpose and Outputs

4-1-1 Achievement of the Outputs

The extent of the achievement is judged as reasonable level. According to the indicators on PDM, the achievements of Outputs are summarized as follows:

Output 1: Operational numerical weather prediction using a regional model around Mongolia is implemented.

1-1: 「Regional numerical weather prediction system originated by NAMHEM is commenced in the daily operation.」

1-2: 「Four (4) staffs are capable of operational numerical weather prediction (NWP).」

Equipment for training on numerical weather prediction were purchased and properly set up. Every

Friday, the seminars on dynamic meteorology / numerical weather prediction have been conducted. Some CPs already started the trial of two days integration. In the phase of establishment of operational system, more of trial integration will be implemented in the daily operation. It is likely that the numerical weather prediction model will be incorporated into the daily operation system by the end of project period. NAMHEM is requested to take measures to set up the proper environment with air-condition for Work Station (Cluster System) provided by the Japanese Grant Aid Project.

The number of staffs in NAMHEM who are targeted to be trained decreased due to that the one being in long-term training overseas. It is recommended that the check list should be prepared to ensure the level of improvement of those trained CPs.

Output 2: Climate change projection due to global warming using a climate model is implemented.

2-1: 「Information on climate change due to global warming over Mongolia is publicized」

2-2: 「Two (2) staffs are capable of climate change projection」

Equipment for training on information on climate change projection were purchased and properly set up. Every Friday, the seminars on dynamic meteorology /climate change projection have been conducted.

In 2007, it is planned that the climate change projection using a climate model is implemented and the result will be publicized by the end of the project period. One (1) counterpart participated in the trainings in Japan. It is recommended that the check list should be prepared to ensure the level of improvement of those trained CPs.

Output 3: Short/middle/long-term weather forecasts based on NWP outputs are issued.

3-1: 「Short/middle-term forecasts for scale smaller than province (aimag) are implemented」

3-2: 「Long-term forecast for scale similar to the province (aimag) is implemented」

3-3 : 「Five (5) staffs are capable of advanced weather analysis using data from NWP models」

Equipment for training on weather forecasts based on NWP outputs were purchased and properly set up. Every Tuesday, the seminars on weather forecasts based on NWP have been conducted. In the next phase, the short/middle-term/long-term weather prediction will actually be implemented on a trial basis by applying the knowledge and skills acquired through the trainings. So that it is likely that the Output will be achieved.

Four (4) COs participated in the trainings in Japan. Software for satellite data analysis applied through CP training were implemented to the system in NAMHEM, and practically utilized in daily forecast operation. Five (5) staffs are to be trained under this Output. It is recommended that the check list should be prepared to ensure the level of improvement of those trained CPs.

Output 4: Drought/dzud early warning system (DDEWS) is established.

4-1: 「Maps of pasture biomass and plant height on the village (bag)scale are developed」

4-2 : 「Guideline of warning and advisory messages is implemented in the operation」

4-3: 「Four (4) staffs are capable of early warning using GIS data」

Equipment for training on drought/dzud early warning system were delivered in delay, however, the project activities have been carried out as planned due to the combined efforts of both Mongolian CPs and Japanese experts. Three (3) experts in the different specialty are assigned to conduct the technical transfer

under this Output and close communication among experts has been made periodically to carry out the activities. It is most likely that the maps of pasture biomass and plant height on the village (bag) scale are developed shortly. To make information generated through activities more user-friendly considering the users' viewpoints, the collaboration with those members working for Output (5) will be made. The guideline for warning and advisory messages will be completed during the next phase.

The unpredictable transfer of CP has been resolved by assigning sub-CP who has also to be trained, thus the technical transfer has not been interrupted. It is recommended that the check list should be prepared to ensure the level of improvement of those trained CPs.

Output 5: Knowledge and understandings about weather and climate information in central/local governments, related organizations/agencies and end-users including nomads and general republic in Mongolia are deepened.

5-1: 「Six Hundred and Forty (640) users are receiving explanation on use of weather information」

Equipment to be used for workshops and seminars is properly obtained and effectively utilized at workshops in regional settings. Workshops have served to increase the interests and understandings of weather information for end-users, such as herders and public administrators. It is most likely that the Output (5) will be achieved if workshops and seminars are to be conducted as originally planned. Some considerations should be given to the timing of workshops. For the convenience of the participants, June and September will be more appropriate to hold the workshops. The results of questionnaires to investigate the needs of end-users will be analyzed and be reflected on the seminars and workshops for further improvement. These activities already carried out in the first and second year of the project period, but have not been reflected on the PDM. Therefore, they should be included in as activities of Output (5) of the PDM.

5-5 「To conduct surveys to assess the needs of weather information and the level of understandings for end-users (public administrators, nomads, etc.)」

5-6 「To analyze the survey results and provide feedback to the related project activities」

Output 6: Weather observation and forecasting systems especially weather radar and computer network are stably operated.

6-1: 「Appropriate operating rates of weather radar are maintained」

6-2: 「Three (3) staffs are capable of maintenance of radar」

6-3 : 「System problems of computer networks in NAMHEM are properly managed」

6-4: 「More than two (2) staffs are capable of maintenance of computer networks」

This Output includes two (2) components. One for weather radar system, the other for computer networks in NAMHEM.

1) Weather radar system : Installed equipment are properly operating and equipment maintenance system has been established. Working by shift has been well managed by the CP who is actively participated in the seminars and on the job trainings. Manuals on weather radar maintenance system as well as inspection records have been prepared. It is recommended that the check list should be prepared to ensure the level of improvement of those trained CPs.

2) Computer Networks: Installed equipments are properly operating. CPs are actively participating in the

seminars and their level of understandings is greatly improved. Combined efforts by both CPs and the expert have enabled them to complete the network improvement plan under which some of the network problems have been managed accordingly. In order to sustain the current level of equipment maintenance, the appropriate budget allocation should be ensured. It is recommended that the check list should be prepared to ensure the level of improvement of those trained CPs.

Output 7: Information on monitoring of DSS is issued.

7-1: 「Analyzed DSS monitoring information is developed.」

7-2: 「Four (4) staff is capable of DSS monitoring 」

The installation of equipment has been delayed drastically; therefore, activities under this Output have not been started yet. In order to position this Output as one of the components to achieve the Project Purpose, it is necessary that the information on DSS is included in the weather information and delivered to those end-users. It is recommended that the check list should be prepared in advance to ensure the level of improvement for those who will be trained under this Output.

4-1-2 Achievement of the Project Purpose

The capacity of the weather service staff of NAMHEM has been steadily improved, and it is estimated that the Project Purpose will be achieved within the Project period in accordance with the Project schedule.

Project Purpose : 「More reliable, useful and timely weather information including dust storms and yellow sand (DSS) data is provided through developing the capacity of the weather service staff and related environmental experts」

- a. 「Weather forecasts using regional numerical weather prediction and new weather analysis methods are provided twice a day for Short-term/ once a day for Middle-term /once a month for Long-term.」
- b. 「Information on climate change projection over Mongolia is publicized once before the end of the project period.」
- c. 「Information on drought/dzud is provided annually (at the end of August) 」
- d. 「DSS monitoring data is provided for 300 days in a year 」
- e. 「Satisfaction level of users (public administrators, normads, etc.) on the available weather forecast information is improved」

Each output (except DSS monitoring) has been progressed as planned, contributing to the achievement of the Project Purpose. The Project will move into the third phase of establishment of operating system and if those trained staffs utilize the knowledge and skills in the daily operation, the project purpose is likely to be achieved by the end of the project period.

Indicators of the Project Purpose should be updated to reflect the numerical targets and their source information. It is also recommended that the Project should conduct the survey to examine the satisfaction level of end-users.

4-2 Project Implementation Process

Project activities under Output (1) to (6) have been progressed mostly as planned. However, activities under Output (7) have not been started yet due to the delay of installation of equipment.

All CPs and staff to be trained are actively participating in the project activities. Japanese experts and Mongolian CPs have been closely working together at NAMHEM headquarter as well as in the field level such as Morin Uul radar center. In order to increase the benefit of the technical transfer, English language skills of some CPs need to be strengthened. NAMHEM is requested to provide their staffs with the special trainings to improve their English proficiencies.

It appears that the progress of project activities has not always been monitored by the PDM. One of the reasons is that the PDM has not been well referred by those Mongolian CPs. Semi-annual review monitoring of activities have jointly been conducted by both Mongolian and Japanese sides, and the result were reflected on the progress report. However, the communication among the project members needs to be improved further. Since the Joint Coordinating Committee has not been established at the beginning of the Project, it has made it difficult to resolve several issues, especially on DSS monitoring.

A budget constraint at the side of JICA has forced the Project to postpone some of activities to be conducted at the beginning of the next fiscal year. Implication of this interrupted period of six months should be minimized by careful planning and close communication among project members.

The 2nd phase of the project period (basic training) has been almost completed for all Outputs by the end of August. The Project will move into the new phase (establishment of operational system) in which more collaboration and information sharing among project members is required.

4-3 Evaluation under Five Criteria

4-3-1 Relevance

The project's overall goal and project purpose have consistency with the policy of the Government of Mongolia (GOM) with the following reasons.

According to the Environmental Policy in the "Action Plan of the Government of Mongolia for 2004-2008", it is stated that information related to nature and the environment will be made transparent and accessible, and public participation and monitoring in the protection of nature will be increased. For this objective, in order to increase capabilities to protect, prevent and eliminate consequences of natural calamity, and to carry out rehabilitation measures, the GOM will, 1) improve the transfer and analysis of weather information, to develop the weather forecast and warning and to upgrade the technology and equipment for further increasing rate of information transfer, 2) to expand the channel to deliver the weather information through radio, TV, internet and other transmission lines and to upgrade the transmission system, and 3) to evaluate the natural and chemical disaster, to disclose the information to improve the capacity of supervisory institutions to respond such disasters. The Project is aiming to upgrade the quality of weather forecast information and to improve the weather information service itself. Therefore, the Project's overall goal and the project purpose are relevant to the development policy of GOM.

Staff of NAMHEM has acquired the knowledge of meteorology, but they have lacked the computerized weather information analysis and advanced weather forecasting. By introducing the new weather information analysis and forecasting method, the Project is fully responding to the needs of capacity development of NAMHEM staff.



According to the Japan's Country Assistance Program for Mongolia, November 2004, Japan has declared the importance of supporting the environmental protection stating that it is necessary to grasp the state of the natural environment by monitoring climate and environment in a comprehensive manner and to encourage preparation of early warning and disaster prevention systems.

The Project has been assisting the human capacity development by effectively utilizing the facilities and equipment of radar and weather information computer networks provided by the Japanese grant aids in the past. The approach to implement the project is also assured to be very appropriate.

4-3-2 Effectiveness

1) Project Purpose:

「More reliable, useful and timely weather information including dust storms and yellow sand (DSS) data is provided through developing the capacity of the weather service staff and related environmental experts」

- a. 「Weather forecasts using regional numerical weather prediction and new weather analysis methods are provided twice a day for Short-term/ once a day for Middle-term /once a month for Long-term.」
- b. 「Information on climate change projection over Mongolia is publicized once before the end of the project period.」
- c. 「Information on drought/dzud is provided annually (at the end of August) 」
- d. 「DSS monitoring data is provided for 300 days in a year」
- e. 「Satisfaction level of users (public administrators, nomads, etc.) on the available weather forecast information is improved」

The capacity of the weather service staff of NAMHEM has been steadily improved. Each output (except DSS monitoring) has been progressed as planned, contributing to the achievement of the Project Purpose. If those trained staff continue to utilize the acquired knowledge and skills in the daily operation, the project purpose is likely to be achieved by the end of the project period.

In order to ensure the achievement level of the Project Purpose, some indicators of the Project Purpose should be restated to reflect the quantitative targets. It is also recommended that the one indicator should be added to examine the satisfaction level of end-users as shown above.

2) Contribution of each output

Seven outputs have been directly contributing to the Project Purpose and the Project is heading for the right direction. Combined efforts of Japanese and Mongolian sides have contributed to strengthening the capacity of NAMHEM.

As shown in the attached diagram, each output is closely related each other. (See Annex 10 for your reference) First, the Operational numerical weather prediction using a regional model around Mongolia is implemented. (Output1) And this information will be incorporated into the system established by Output (3) which is short/middle/long-term weather forecasts based on NWP outputs. At the same time, climate change projection implemented through Output (2) as well as the "Drought/dzud early warning system (DDEWS) established through Output (4) are generating the useful weather information. Furthermore, through DSS monitoring, information is also issued for dissemination. All these Outputs are served to collect data effectively and disseminate those as the practical useful weather information. Output (5) is to

find the better way to receive information for end-users through seminars and workshops and to help them to increase the understandings of weather information. Output (6) will serve to improve the transmission of data and maintain the facilities and equipment provided by the Grant Aid Projects. In summary, all these Outputs are contributing to improve the human capacity of NAMHEM in the relevant fields. The Project will facilitate the self-help efforts by the NAMHEM staff, so that they can produce the reliable and useful weather information in a timely manner to the nations.

3) Inhibiting factors to achieve the Project Purpose

As previously mentioned, the budget constraints at the side of JICA have forced the Project to postpone some of activities to be conducted at the beginning of next fiscal year. This may serve as the inhibiting factor to achieve the project purpose. Therefore, implication of this interrupted period of six months should be minimized by careful planning and close communication among project members. And the delay of activities under Output (7) may not affect the implementation process of other Outputs, however, the bulk of budget will be used to set up the equipment for DSS and this may decrease the budget allocation to other Outputs. It is strongly recommended, therefore, that the implementation of activities under the Output (7) should be thoroughly discussed among all concerned and the schedule should be carefully designed.

4-3-3 Efficiency

1) Japanese Side

Most of the inputs from Japanese side, such as dispatch of experts, training of counterparts in Japan and local cost support, are executed as planned. Some delays of equipment in the field of drought/dzud early warning system occurred, however this did not negatively affect the proceeds of activities. On the other hands, the provision of equipment in the field of DSS monitoring has been delayed, causing the big delays in implementation of activities. Details of Japanese inputs are shown in Annex 1 to 4.

2) Mongolian Side

Mongolian side assigned the appropriate CPs for conducting project activities. Some of them have been transferred to other departments or dispatched to the long-term trainings overseas, however, sub-counterparts who have been members of the same working groups have replaced the position in order to effectively continue the technical transfer. Some CPs are assigned to receive trainings in several different fields from Japanese experts. In spite of the heavy workload, they are actively contributing to the project activities with the strong intention of accomplishment. Details of Mongolian inputs are shown in Annex 5 and 6.

3) Management of the Project

The communication among the project members may have not been always smooth. One of the reasons could be that the Joint Coordinating Committee has not been established at the beginning of the Project, and this makes it difficult to resolve some issues, especially on DSS monitoring. Another reason could be that the PDM of the Project has not been well referred as a management tool of the project implementation by the Mongolian side.

It is recommended that the JCC or its equivalent meetings should be established to regularly monitor the overall activities and to make decisions through discussions among project members. Furthermore, a budget constraint at the side of JICA has forced the Project to postpone some of activities to be conducted at the beginning of next fiscal year. Implication of this interrupted period of six (6) months should be



minimized by careful planning and close communication between Japanese experts and CPs.

4-3-4 Impact

The impact of the Project Purpose cannot be judged at the middle point of the project period. However, following positive impacts by the Project activities have been observed.

First, the Project has contributed to the capacity development of NAMHEM. According to the interviews and questionnaires, many CPs mentioned that their knowledge and skills of weather information have been greatly increased, especially the English terminologies. Some CPs mentioned that their motivation and interests to acquire more professional knowledge have been augmented, and that they can even teach others, etc. Second, those end-users who participated in the workshop and seminars, appreciated the value of weather information delivered by the NAMHEM as well as aimag centers.

Although it may not be the direct impact of this Project, there is one episode which illustrates the timely weather forecast information has made it possible for public administrators to cope with the difficult situation. This year, drought weather information was detected and the public administration has taken measures to mitigate the drought calamity by generating artificial raining.

No negative impact has been observed.

4-3-5 Sustainability

1) Organizational aspects

The Project Purpose is consistent with the Mongolian development policy, and there is a demand of upgrading the weather forecast information for public administrators as well as general public such as nomads. The MOG has placed the NAMHEM to play a major role in the weather sector. To retain the organizational sustainability, it is recommended that NAMHEM should make a continuous effort to further upgrade the weather information services by strengthening the staff capacities.

2) Financial aspects

It is difficult to judge the financial sustainability at the middle point of the project period. It is necessary confirm with those concerned at the Ministry of Nature and Environment

3) Technical aspects

Technical transfer by the Project has perfectly been responding to the needs of the capacity development of NAMHEM staff. They can continuously improve their knowledge and skills by utilizing the facilities and equipment provided by the Japanese Grant Aids. If further improvement of English proficiency has been achieved, the benefit of the technical transfer will be sustained. As for the DSS monitoring, it is difficult to project its technical sustainability at this moment.

5. MODIFICATION OF THE PDM

Based on the discussions among the Team and the concerned Mongolian authorities, it was agreed that the revised PDM (PDM2) would be used to monitor the project activities for the remaining period of the Project. (See Annex 8) Details of modification of the PDM are listed below:



Details of Modification of PDM

Items	Modifications	Reasons	
Project Purpose: Followings are rephrased.			
	More reliable , useful and timely weather information including dust storms and yellow sand (DSS) data is provided through developing the capacity of the weather service staff and related environmental experts.	Sentences are rephrased, so that the state of achievement is properly expressed in the Project Purpose.	
Activities: Following activities are added.			
5-5	To conduct surveys to assess the needs of weather information and level of understandings for end-users (public administrators, herders, etc.)	These activities have already been conducted, but have not been stated in the PDM.	
5-6	To analyze the survey results and provide feedback to the related project activities		
Indicators: Following indicators are added.			
Project Purpose	e. Satisfaction level of users (public administrators, nomads, etc.) on the available weather forecast information is improved.	In order to examine the quality/quantity of services by NAMHEN from the viewpoints of end-users, this indicator is added.	
	Following indicators are revised.		
	a. 「Weather forecasts using regional numerical weather prediction and new weather analysis methods are provided twice a day for Short-term/once a day for Middle-term /once a month for Long -term.」		The quantitative target is set to examine the level of weather information services.
	b. 「Information on climate change projection over Mongolia is publicized once before the end of the project period.」		
	c. 「Information on drought/dzud is provided annually (at the end of August)」		
d. 「DSS monitoring data is provided 300 days in a year」			
Outputs: Following indicators are added and rephrased.			
Outputs	Indicators for Output 1 1-1: 「Regional numerical weather prediction system originated by NAMHEM is commenced in the daily operation.」 1-2: 「Four (4) staffs are capable of operational numerical weather prediction (NWP)」	1-1 Sentences are rephrased, so that the state of achievement is properly expressed 1-2 The quantitative target is set to examine the level of human resources development	
	Indicators for Output 2 2-1: 「Information on climate change due to global warming over Mongolia is publicized」 2-2: 「Two (2) staffs are capable of climate change projection」	2-1 Sentences are rephrased, so that the state of achievement is properly expressed 2-2 The quantitative target is set to examine the level of human resources development	
	Indicators for Output 3 3-1: 「Short/middle-term forecasts for scale smaller than province(aimag) is implemented」 3-2: 「Long-term forecast for scale similar to the province (aimag) is implemented 」 3-3: 「Five (5) staffs are capable of advanced weather analysis using data from NWP models」	3-1、3-2、 Sentences are rephrased, so that the state of achievement is properly expressed 3-3 The quantitative target is set to examine the level of human resources development	
	Indicators for Output 4 4-1: 「Maps of pasture biomass and plant height on the village (bag)scale are developed」 4-2 : 「Guideline of warning and advisory messages is implemented in the operation」 4-3: 「Four (4) staffs are capable of early warning using GIS data」	4-1、4-2、 Sentences are rephrased, so that the state of achievement is properly expressed 4-3 The quantitative target is set to examine the level of human resources development	

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	Indicators for Output 5 5-1: 「Six Hundred and Forty (640) users are receiving explanation on use of weather information」	5-1 Sentences are rephrased, so that the state of achievement is properly expressed
	Indicators for Output 6 6-1: 「Appropriate operating rates of weather radar are maintained」 6-2: 「Three (3) staffs are capable of maintenance of radar」 6-3 : 「System problems of computer networks in NAMHEM are properly managed」 6-4: 「More than two (2) staffs are capable of maintenance of computer networks」	Indicators are separated to each different activities 6-2, 6-4 The quantitative target is set to examine the level of human resources development 6-3 Sentence is rephrased, so that the state of achievement is properly expressed.
	Indicators for Output 7 7-1: 「Analyzed DSS monitoring information is developed」 7-2: 「Four (4) staffs are capable of DSS monitoring 」	7-1 Sentences are rephrased, so that the state of achievement is properly expressed 7-2 The quantitative target is set to examine the level of human resources development
Important Assumptions: Following important assumptions are added.		
	From Activities to Outputs 「Sufficient budget on equipment maintenance is allocated」	Budget allocation for equipment maintenance is essential by the Mongolian side. Therefore, it is stated in the important Assumption to monitor.
	From Outputs to Project Purpose 「Sufficient budgets is allocated to NAMHEM in a timely manner」	Financial situation of NAMHEM will have the strong influence of the Project. Therefore, it is stated in the Important Assumption to monitor.

6. CONCLUSION

The evaluation result shows that the progress of the activities is quite well, and the achievement level of Outputs except the DSS monitoring at the time of evaluation is judged reasonable. In order to increase the benefit of the technical transfer, English language skills of some CPs need to be strengthened. And to improve the communication among project members, it is recommended that the progress of activities should be periodically monitored by both Mongolian and Japanese side and identified problems are to be resolved by discussions between them.

The 2nd phase of the Project (basic training period) has been almost completed for all Outputs by the end of August. The Project will move into the 3rd phase (establishment of operational system) in which more collaboration and information sharing among project members is expected.

7. RECOMMENDATIONS

As a result of the mid-term evaluation, the team recommended the followings for smooth implementation of the Project.

1) Promotion of the activities for end-users

The Team confirmed that end-users of pilot areas accepted this project as trustworthy through seminars. But they want to have more opportunities for getting such information. The activities help them to acquire the knowledge and understandings about weather and climate information deeply, and the Team regards it as an important activity for attaining the Overall Goal.




It is recommended, therefore, that the Project should increase activities for end-users on taking opportunities of “Bag’s Open-day”, director’s regular meeting of sums and aimags. In case of using regular events, the Project will be able to hold down per cost of seminars for end-users.

2) Increase the Project budget of NAMHEM

It is important for the project sustainability to secure the administrative costs. The Team appreciated that NAMHEM has borne the giving fee of the minutes so far. However, the Project will need more costs for setting-up and maintenance for equipments, expansion of activities in local area.

Therefore, it is recommended that the Mongolian side should continue to secure the budget for activities of the Project in the future as well.

3) Improve the language skill of CPs

In general, Japanese experts and CPs use English as means of communication. It was pointed out, however, by both sides that some of CPs have some difficulties in communicating in English.

The Team appreciated that CPs have wrestled with the Project activities, but, in order to maximize the benefit of technical transfer, it is recommended that the Mongolian side should make some efforts to improve their English language skills.

4) Establishment of the regular meeting or committee for joint coordination

Joint Coordination Committee was not established in the project. Japanese experts and CPs have regular meeting twice a year, but all participants of the Project may not be able to share the necessary information for promoting the Project.

Therefore, the Project should establish the meeting/committee on a regular basis to consult and confirm about the progress, outputs, and problems of the project. The proposed composition of the meeting or committee is attached as Annex 9.

5) Activities for DSS monitoring

The Japanese Project Consultation Team added activities for DSS monitoring to the Project on March 2005. And a short-term expert of DSS was dispatched on May 2005.

But thereafter, the activities are delayed due to some different problems for about one year in work-plan. The different problems include budget allocation, lack of survey for procurement and set-up for the equipment, and absence of working group, etc.

Therefore the Team recommends that the both sides should take necessary actions and measures mentioned below.

- a) Mongolia: Mongolian side should organize the working group as soon as possible.
- b) Japan: Japanese side should make a precise schedule which is based on careful survey on procurement of necessary equipment. And, Japanese side should secure the necessary budget for activities of DSS monitoring.

Because the Project was attended by activities for DSS monitoring, the cooperation term of the Project should be extend to October 2008.

8. LESSONS LEARNED

- 1) If the Project is attended by the additional component after the onset of the project, it is necessary to thoroughly analyze the relevant issues in terms of set-up condition for equipments, financial aspects as well as any effects of the added component on other project components.
- 2) Even though the Project is small-scale, it is necessary to establish the Joint Coordinating Committee. Through such regular meetings, all participants of the Project will be able to understand their roles and responsibilities and be able to share the necessary information among them.

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