添付資料

添付資料 3-1 評価結果要約表（英語および現地公用語）

(1)英語

Summary

Evaluation conducted by: INTEM Consulting, Inc. MIHO ITO

1. Outline of the Project	
Country: The State of Mongolia	Project title: The Project for Improvement of Technology on Diagnosis of Animal Infectious Diseases in Mongolia
Issue/Sector: Livestock Sanitation	Cooperation scheme: Technical Cooperation Project
Division in charge: Agriculture Development Cooperation Dept. Livestock Gardening Division	Total cost: 781 million yen
	Partner Country's Implementing Organization: Immunological Research Center: IRC
Period of Cooperation: 1997. July 1～2002. June 30	Supporting Organization in Japan: Obihiro University of Agriculture and Veterinary Medicine, Kitasato University, Gifu University, Nihon University
	Related Cooperation: Long-term trainee (Participants)

1-1. Background of the Project

In Mongolia, the percentages of agriculture and livestock industry among GDP and employment are 30% and 40% which are respectively high, and export of agriculture and livestock products accounts for 40% among the total export amount. The growth of agriculture and livestock sector is regarded as promising in the economic reform started from the middle of 1980, and export expansion of value-added agriculture and livestock products is pursued in the future, therefore countermeasures and control of animal infectious diseases become important subjects.

Stagnation of Mongolian economy and lack of the latest scientific information from outside world brought difficulties in developing technology for animal diseases and in providing services for animal health in the Institute of Veterinary Medicine (IVM) which is the only educational research institute of veterinary medicine in Mongolia, and in charge of survey and diagnosis of animal infectious diseases and developing vaccine. As a result, there was a possible emergency of considerable epidemic diseases in domestic animals and endangering the national plan for increasing animal products.

Under these circumstances, in January 1996, the Government of Mongolia requested the Government of Japan for technical cooperation for the purpose of minimizing wastage in producing livestock, improving income for worker in agriculture and livestock sector, increasing food, and getting foreign currency through improving technology for diagnosis of animal infectious diseases.

1-2. Project Overview

(1) Overall Goal

The diagnostic techniques for the animal diseases are improved.

(2) Project Purpose

The immunological and immunopathological research for the diagnosis of infectious diseases is reinforced through basic and applied research activities.

(3) Outputs

1) The researchers of the Institute of Veterinary Medicine (IVM) and the faculty of Veterinary Medicine acquire basic and applied research techniques for immunological diagnosis of animal infectious diseases.
2) The research techniques for immunological diagnosis of selected infectious diseases are introduced and established.
3) Laboratory management and research conditions are improved.

4) Methodology of field application trial of immunological diagnosis is improved.

(4) Inputs (as of the Project's termination)

Japanese side:

Long-term Expert:	10 experts	Equipment:	205,640 thousand yen
Short-term Expert:	38 experts	Local cost:	64,118 thousand yen
Expert dispatch Total:	48 experts (449,901 thousand yen)	Study team dispatch:	19,593 thousand yen
Trainees received:	22 trainees (41,900 thousand yen)	Total cost: 781 million yen	

Mongolian side:

Counterpart:	41 C/Ps	Providing Land and Facilities
Local cost:	147,950,000 MNT (around 14,795,000 yen)	

2. Evaluation Team

Members of Evaluation Team	Evaluation Analysis:	Miho Ito	INTEM Consulting, Inc.
Period of Evaluation	17 May, 2009 – 4 June, 2009	Type of Evaluation: Ex-post	

3. PROJECT PERFORMANCE

3-1. Performance of Project Purpose

The terminal evaluation report mentioned that the project purpose was achieved. In this ex-post evaluation study, it is concluded that the achievement of the project purpose has continued after the Project.

(1) Verifiable Indicators 1: Established diagnostic techniques at Immunological Research Center

Diagnostic techniques established by the Project have been applied to various infectious diseases after the Project. In addition to AGID, ELISA and IFAT, diagnostic techniques established after the project are PCR system and diagnostic techniques of molecular level. Molecular Genetics laboratory was newly established in 2007, so that it became possible to diagnose at the molecular level. Besides vaccine, medicine and diagnostic kits are manufactured in IVM.

(2) Verifiable Indicators 2: Level, quality and appropriateness of ongoing research topics.

There are 21 diagnostic techniques registered as national standards from bacteriology and pathology laboratory. They are published as a manual and widely used in related organizations.

IVM receives accreditation of national standard from 2006 to 2010, which means that IVM's diagnoses are recognized as national diagnoses. It can be stated that IVM's technique, personnel, and equipment are approved, and then IVM's status is settled in the Mongolian veterinary sector.

(3) Verifiable Indicators 3: Number and quality of research publications

After the Project, there are 233 of publication and presentation in total from bacteriology, pathology, virology, protozoology and molecular genetics laboratory, which include reports in the national and international symposium, veterinary journals, scientific articles, and presentation in the national and international symposium, forum, seminar and international conference.

(4) Verifiable Indicators 4: Results of field application test on immunological diagnostic techniques.

The field application tests are conducted after the Project, and the tests contribute to manufacturing of vaccine, medicine, and diagnostic kits. Regarding AGID test of brucellosis and leukosis, antigen is differentiated, so that it is planned to manufacture diagnostic kits. Regarding pasteurellosis, antigen is differentiated, so that it is planned to produce vaccine.

3-2. Achievement related to Overall Goal

Problems have still remained regarding the extension of diagnostic techniques to the local veterinary laboratory, and making database and detailed analysis of the information submitted from each prefecture and district. However, it is summed up that the Overall Goal has almost been achieved because the diagnostic techniques for the animal diseases have been improved, preparation of manuals for diagnosis of infective agents make progress well, and channel of record of diagnoses and report of disease occurrence is established.

(1) Verifiable Indicators 1: Diagnostic techniques used in central and rural laboratories.

Diagnostic techniques used in central and rural laboratories have improved in each laboratory. However, 2 prefectures of Tuv and Selenge have not equipped necessary materials and facilities yet, and 14 among 22 prefectures have not had ELISA equipment and 8 prefectures have not had IFAT equipment yet. Therefore, there is a room for improvement in the extension of diagnostic techniques to the local veterinary laboratory.

(2) Verifiable Indicators 2: Preparation of manuals for diagnosis for infective agents

There are 21 diagnostic techniques registered as national standards from bacteriology and pathology laboratory, and they are published as a manual. Besides, 23 books used in university and related organizations, and 100 instruction manuals of vaccine and diagnostic kits have been published from bacteriology, pathology, virology and protozoology laboratory. Hence, preparation of manuals for diagnosis for infective agents progresses well.

(3) Verifiable Indicators 3: Record of diagnoses and report of disease occurrence

Regarding record of diagnoses, reports from district's veterinary centers are submitted to prefecture's veterinary laboratories, and reports from prefecture's veterinary laboratories are submitted to the Department of Veterinary and Animal Breeding four times a year by post or email.

Concerning report of disease occurrence, channel among the line of district, prefecture and Department of Veterinary and Animal Breeding is working smoothly, and the way to deal with disease occurrence has been established.

Nevertheless, making database and detailed analysis of the information submitted from each prefecture and district has not been carried out yet. Through making database, analyzing information, and visualizing results and problems, it becomes easy to grasp the present situation and to share information among related people, and then the information submitted from prefectures and districts can be utilized more effectively.

3-3. Follow-up of the Recommendations by Terminal Evaluation Study

(1) Maintenance system of machinery and equipment

Although most of machinery and equipment were purchased 10 years ago, condition and utilization of the machinery and equipment provided by the Project are favorable. Most of spare parts are possible to be procured in Ulaanbaatar. IVM mainly bears the cost of maintenance, though IVM sometime requests the cost to JICA or other donors depending on spare parts. Because of convenience and lower cost, since last year IVM has made a contract to repair the machinery and equipment with a private engineer who belongs to State Central Veterinary Laboratory neighboring on IVM. Properly it is desirable to make a contract with the company which manufactures mechanical equipments. Though IVM makes a private contract, it is difficult to say that maintenance system of machinery and equipment is provided.

(2) Allocation of IRC after the Project (future status of IRC)

It is conceivable that IRC was integrated as a part of IVM, since IVM takes over all of activities of which IRC were in charge during the Project.

(3) Financial measurement after the Project

The Ministry of Education, Culture and Science allocated 500 million MNT, which is equal to 400,000 USD, in 2008 for newly established Molecular Genetics Laboratory. Also, IVM was allocated 150 million MNT in 2008 and 100 million MNT in 2009 from the Ministry of Education, Culture and Science for the National

Program on Establishment of Innovation System in Mongolia 2008-2015, Biotechnology Development Subprogram to level up scientific biotechnology and to manufacture diagnostic kits, medicines, and vaccines for foot-and-mouth disease, avian influenza and anthrax.

As for income of IVM, IVM receives income from the Department of Veterinary and Animal Breeding by producing vaccines, income from local veterinary laboratories and related organizations by selling vaccines, diagnosis kits and mAb mice and by diagnosis of infectious diseases, and income by conducting trainings. Besides, IVM receives support from donor agencies.

(4) Appropriate management of machinery and equipment

IRC is a part of IVM now, and IVM takes responsibility and control machinery and equipment provided by the Project.

(5) Collaboration with related organizations

After the Project, for the purpose of extension of diagnostic techniques, training courses have been held to the staff of local veterinary laboratories and centers. IVM organized the training course for 31 times (32 times till July, 2009) collaborating with the State Central Veterinary Laboratory. In addition, researchers of IVM participate as a lecturer to extension training courses organized by Department of Veterinary and Animal Breeding, Mongolian State University of Agriculture and veterinary laboratory in each prefecture.

(6) Formulating a strategic framework for the development of livestock sector

There are the tasks of food safety and fight against diseases. Consequently, the Ministry of Food, Agriculture and Light Industries conducts the policy of “National Program on Livestock Healthy” now in the third stage (2005-2010). Besides, the Ministry of Education, Culture and Science carry out “the National Program on Establishment of Innovation System in Mongolia 2008-2015”. These two policies work together.

4. Results of Evaluation

4-1. Summary of Evaluation Results

(1) Relevance

In Mongolia, livestock sector is the most important in economy and most of population heavily depends on the livestock production and related industries. The Mongolian government has a policy to promote export of livestock products, thus a disease control system with improved diagnostic techniques is required. In this context, the Project Purpose is highly relevant to the policy of Mongolian government as well as JICA’s assistance strategy to Mongolia. In addition, the Project had satisfied the needs of IVM researchers and staff of the School of Veterinary Science and Biotechnology. On the other hand, it is considered that the project framework itself lacks pertinence, because careful examination of financial and managerial aspects of IRC did not seem sufficient at the project planning.

(2) Effectiveness

Indicators of achievement showed that the Project Purpose has almost been achieved; hence effectiveness of the Project is high. C/P training and equipment as well as support of Japanese experts were attributed to the effect of the Project. Necessary equipment was provided to conduct the research activities. C/P training program had provided opportunities for many C/P to strengthen their knowledge and skills and to build a network with Japanese academician. There had been no other major donor-funded project. Therefore, it is fair to say that the Project Purpose had been achieved by the project activities rather than some other factors, and the Project was effective enough in this sense.

(3) Efficiency

Most part of the expected outputs had been achieved, and inputs had been fully utilized at their utmost potentials, thus efficiency of the Project is high. As for temporal efficiency, the Project completed the expected

Outputs as scheduled term. As to Inputs, Inputs of Japanese side were conducted appropriately. Inputs of Mongolian side, selection of C/P was almost suitable, and machinery and equipment provided by the Project were sufficiently utilized, however they had depended on Japan for a part of local costs, for example, purchasing consumables of laboratories and maintenance of equipment.

(4) Impact

①To foster high leveled researchers

There are 2 C/P who obtained Ph.D in Japan, and came back to IVM (one of them was appointed as a head of Molecular Genetics laboratory), and now 3 researchers of IVM are getting Ph.D in Japan. During the Project, 22 C/P received training courses in Japan, and even after the Project, a total of 17 researchers of IVM studied in Japan. This Project produced qualified persons who studied in Japan and got scientific degree, and then they teach and create researchers of new generation.

②Collaboration with Japanese universities

Due to collaborating with Japanese universities through the Project, and continuing to foster high leveled researchers, IVM adopted Japanese research way.

③Accreditation of national standard

IVM receives accreditation of national standard from 2006 to 2010, which means that IVM's diagnoses are recognized as national diagnoses. It can be stated that IVM's technique, personnel, and equipment are approved, and then IVM's status is settled in the Mongolian veterinary sector.

④Diagnostic techniques registered as national standards

There are 21 diagnostic techniques registered as national standards from bacteriology and pathology laboratory. They are published as a manual and widely used in related organizations.

⑤Collaboration with related organizations

After the Project, it has been promoted to collaborate with Mongolian State University of Agriculture, Department of Veterinary and Animal Breeding, State Central Veterinary Laboratory and local veterinary laboratories. It is fair to say that positive impacts are seen in both of the technical improvement and extension through collaboration with related organizations. It can be considered that the activity by the follow-up (F/U) expert contributed towards promoting collaboration with related organizations.

(5) Sustainability

①Policy and Institutional Aspect

There are the tasks of food safety and fight against diseases. Consequently, the Ministry of Food, Agriculture and Light Industries conducts the policy of "National Program on Livestock Healthy" now in the third stage (2005-2010). This kind of policy will continue after 2010. Besides the Ministry of Education, Culture and Science carries out "the National Program on Establishment of Innovation System in Mongolia 2008-2015".

The institutional structure of IVM is stable, since IVM is affiliated to Mongolian State University of Agriculture. As IVM is the only educational research institute of veterinary medicine in Mongolia, and has institutional presence by developing vaccines and diagnosis kits as well as holding trainings in collaboration with related organizations, it could be said that their institutional sustainability is high.

②Financial Aspect

IVM receives direct financial support from the Ministry of Education, Culture and Science, and the above National Program is continuing, so that IVM's financial sustainability is high.

③Technical Aspect

The collaboration with Japanese universities through the Project contributes to sustainable technical improvement. 17 C/P (12 C/P are working at IVM and 5 C/P study in Japan) still belongs to IVM among 38 C/P

at the end of the Project. Although 3 C/P who received training course in Japan quitted IVM, 12 C/P are working at related organizations. Accordingly, it is fair to say that technical sustainability is high.

4-2. Factors that have promoted project

(1) Impact

To foster high leveled researchers

This Project produced qualified persons who studied in Japan and got scientific degree, and then they teach and create researchers of new generation. It can be considered that continuing to foster high leveled researchers and a great success of personnel development contribute to accreditation of national standard and collaboration with related organizations, so that it is a great factor that have promoted the Project.

(2) Sustainability

High employees retention rate

C/P retention rate to IVM and related organizations is high, that greatly contributes to sustainable improvement for diagnostic techniques.

Personnel development and technical improvement in collaboration with universities including Japanese Univ.

Collaborating with Japanese universities during the project period and continuing good relationship with them after the Project considerably attribute to sustainable technical improvement.

Policy and financial support

IVM allocates in “the National Program on Establishment of Innovation System in Mongolia 2008-2015” and obtained financial support from the Ministry of Education, Culture and Science. Through improving collaboration with the Department of Veterinary and Animal Breeding, IVM receives income from them by producing vaccines, diagnosis kits and mAb mice. The policy and financial support for IVM contributes to sustainable improvement for diagnostic techniques.

4-3. Factors that have inhibited project

(1) Impact

Extension of diagnostic techniques

Two prefectures of Tuv and Selenge have not equipped necessary materials and facilities yet, and 14 among 22 prefectures have not had ELISA equipment and 8 prefectures have not had IFAT equipment yet. Therefore, it is necessary to improve in the extension of diagnostic techniques to the local veterinary laboratory.

(2) Sustainability

Non in special

4-4. Conclusions

It is fair to say that there are considerable impacts and sustainability is high, due to a great success of personnel development by continuing to foster high-leveled researchers in collaboration with universities, due to having accreditation of national standard and 21 diagnostic techniques registered as national standards, and due to receiving policy and financial support.

On the other hand, although diagnostic techniques used in central and rural laboratories have been improved in each laboratory, 2 prefectures of Tuv and Selenge have not equipped necessary materials and facilities yet, and 14 among 22 prefectures have not had ELISA equipment and 8 prefectures have not had IFAT equipment yet. Therefore, there is a room for improvement in the extension of diagnostic techniques to the local veterinary laboratories.

4-5. Recommendations

(1) To equip machinery and equipment for extension of diagnostic techniques

It is necessary for Mongolian government to keep policies and equip machinery and equipment to support

prefecture veterinary laboratories and county veterinary units which need to be equipped more in better condition, and developed more to improve quality of diagnostic techniques.

(2) Technical support for extension of diagnostic techniques

It is needed for IVM to keep continuing research works with good quality connecting manufacture to introduce techniques and vaccines and to tighten relation with related organizations. Also, continue trainings and seminars having more collaboration with SCVL and other service laboratories to contribute toward spreading techniques to local veterinarians.

(3) Utilization of record of diagnoses and report of disease occurrence

For Department of Veterinary and Animal Breeding, record of diagnoses and report of disease occurrence are utilized well, whereas making database and detailed analysis of the information submitted from each prefecture and district have not been carried out yet. Through making database, analyzing information, and visualizing results and problems, it becomes easy to grasp the present situation clearly and to share information among related people well. In this way, quality of their decisions is improved more and the information submitted from prefectures and districts can be utilized more effectively.

4-6. Lessons Learned

(1)Continuation of the Project matching with needs of partner country

After this Project (1997-2002), F/U project (2003-2005) and training of veterinary specialist (2006-2009) are implemented in the Mongolian veterinary sector. Continuation of the Project matching with the needs of partner country for a long time can be one of the factors of continuous improvement for diagnostic techniques of animal infectious diseases in Mongolia.

(2) Allocation of IRC

Regarding the status of IRC, IRC is now one of the units of IVM. Although IVM is working very well now in the Mongolian veterinary sector, at the time of designing a project framework, careful consideration on institutional, financial, and managerial aspects to implement an organization has a critical importance.

(3) Overall Goal and Indicators

The Overall Goal of the PDM revised on 2002.3.28 was similar to the Project Purpose, and its indicators were not expressed with detailed numerical value. The important thing is to set up the Overall Goal and its indicators together with C/P, and to share and tackle with it during and after the Project. Therefore, it is better that indicators have more visible ones in which the present situation, outcomes (good results) and problems can be shared with related persons.