

## Evaluation Summary

<b>1. Outline of the Project</b>		
Country: The People's Republic of Bangladesh		Project Title: The Project for Research and Development of Prevention and Diagnosis for Neglected Tropical Diseases, especially Kala-Azar
Issue/Sector: Healthcare and medical treatment		Cooperation Scheme: Technical Cooperation Project (Science and Technology Research Partnership for Sustainable Development: SATREPS)
Division in charge: Health Team 4, Health Group 2, Human Development Department		Total Cost: 300 million JPY
Period of Cooperation	(R/D): 1/Jun/2011 -31/May/2016	Partner Country's Implementing Organization: International Centre for Diarrhoeal Disease Research, Bangladesh, and Ministry of Health and Family Welfare
		Supporting Organization in Japan: University of Tokyo and Aichi Medical University
		Other Related Projects: Surya Kanta Kala-Azar Research Center, Mymensingh Medical College and Mymensingh Medical College Hospital
<b>1-1 Background of the Project</b>		
<p>Leishmaniasis, a vector-borne disease that is transmitted by a hematophagous insect of <i>Phlebotomus</i> (sandflies) is a protozoan zoonosis and regarded as one of neglected tropical diseases (NTD) with a large distribution in the world as many as 88 countries, 77 of which are developing countries. The prevalence of Visceral Leishmaniasis (Kala-Azar), the severest type of Leishmaniasis, is highly prevalent especially in poverty group in the People's Republic of Bangladesh (hereinafter referred to as "Bangladesh") as well as neighboring countries such as the Republic of India and the Federal Democratic Republic of Nepal, and approximately 200 million people are endangered for infection in the said 3 countries. In Bangladesh, it is estimated that 65 million people are compromised for Kala-Azar infection and more than 50,000 are newly infected in each year. Kala-Azar is highly lethal and difficult to achieve a complete cure; nonetheless, measures for Kala-Azar control in terms of diagnosis, treatment and prevention are lagging behind. Under the circumstances, Bangladesh, in consort with the World Health Organization (WHO), has been putting efforts into reducing its prevalence from 25 to 1 per 10,000 populations by the year 2015.</p> <p>"The Project for Research and Development of Prevention and Diagnosis for Neglected Tropical Diseases, especially Kala-Azar" (hereinafter referred to as "the Project") is aiming to realize the capacity enhancement of Bangladeshi research institutes for surveillance of prevalence of Kala-Azar and Post Kala-Azar Dermal Leishmaniasis (PKDL), development of its rapid diagnostic tools, and research on vector insect of sandflies through collaborative research activities with Japanese research institution. The Project is implemented with Bangladeshi counterpart organization such as the International Centre for Diarrhoeal Disease Research, Bangladesh (hereinafter referred to as "icddr,b") and the Ministry of Health and Family Welfare (hereinafter referred to as "MoHFW") for five years from June 2011 under the scheme of the Science and Technology Research Partnership for Sustainable Development (SATREPS).</p>		
<b>1-2 Overview</b>		
<p>The Project aims to implement collaborative researches at SKKRC that contribute to the Kala-Azar Elimination Programme in Bangladesh and to enhance the researching capacity of Bangladeshi research institutes through the collaborative researches.</p> <p>(1) Project Purpose</p> <p>Capacity of icddr,b for surveillance of prevalence of Kala-Azar and PKDL, development of its rapid diagnostic tools, and research on vector insect of Sand Fly is improved through collaborative research activities with Japanese research institution.</p>		

(2) Outputs

- 1) Rapid and reliable diagnostic tools for clinical and sub-clinical Kala-Azar cases and PKDL developed by the Project are introduced as methods for practical use in clinical laboratories in Bangladesh.
- 2) Mechanisms of Kala-Azar and PKDL are elucidated in Bangladesh, through epidemiological, immunological, pathological, parasitological and biochemical analysis.
- 3) Vector control methods including insecticides application are established through identification of vector insect and its distribution, and reservoir-focused investigations.
- 4) Implementation of Kala-Azar-related researches are streamlined.

(3) Input (as of the Evaluation)

The Japanese Side

Dispatch of JICA Experts: Long-term Experts: a total of 4 persons (Drug Resistance, Epidemiological research and Project Coordinator) (115.6 M/M), Short-term Experts: a total of 53 persons) (32.9 M/M)

Provided Equipment: Automated Clinical Chemistry Analyzer, Automated Hematology Analyzer, Refrigerated Micro Centrifuge, High-speed Micro Centrifuge, Inverted microscope, Fluorescence Microscope, 1 vehicle for project activities, etc.

Local Cost: approx. JPY 54,129,000 (≒ USD 449,950)

Bangladesh Researchers visiting Japan for meeting: a total of 11 persons (2.7 M/M)

The Bangladeshi Side

Counterparts: 12 persons (3 from icddr,b and 9 from SKKRC)

Land and Facilities: Project office in icddr,b and SK Hospital, and research spaces in SKKRC

Local Cost: approx. 1,800,000 BDT (≒ USD 23,500)

**2. Terminal Evaluation Team**

Members	Dr. Kaname KANAI	Leader	Executive Technical Advisor to the Director General, Human Development Department, JICA
	Ms. Yukiyo KOMINE	Cooperation Planning	Deputy Director, Office for Science and Technology Cooperation, Infrastructure and Peacebuilding Department, JICA
	Mr. Tatsuya ASHIDA	Evaluation Planning	Assistant Director, Health Team 4, Health Group 2, Human Development Department, JICA
	Dr. Yoichi INOUE	Evaluation and Analysis	Senior Consultant, Consulting Division, Japan Development Service Co., Ltd.
	Dr. Takeshi KURATA (Observing member)	Infectious Diseases Control Research	Program Supervisor, International Collaborative Research Program, Department of International Affairs, AMED Professor, International University of Health and Welfare, Shioya Hospital
	Dr. Haruo WATANABE (Observing member)	Infectious Diseases Control Research	Research Supervisor, International Collaborative Research Program, Department of International Affairs, AMED
	Ms. Yuko SATO (Observing member)	Planning and Evaluation	Section Chief, Department of International Affairs, AMED
Period of Evaluation	29/Dec/2015 - 18/Jan/2016		Study Type: Terminal Evaluation

### **3. Summary of Evaluation Results**

#### **3-1 Achievements**

##### (1) Output 1

Due to an unexpected external factor, the Project could not realize the introduction of POC testing through the development of LAMP-based rapid diagnostic test; however, the Project succeeded in developing multiplex quantitative realtime PCT method that can diagnose Kala-Azar with high sensitivity and specificity. The realtime-PCR method was introduced to SKKRC; owing to that, more correct diagnosis is enabled. The Project also developed a simply handled-test strip that can measure L-FABL in urine semi-quantitatively. The strip was introduced to SKKRC and used for the monitoring of disease activity and adverse events cause by chemotherapy. Further, the ELISA method that detect Leishmania antibody in urine was already commercialized. Since the kit uses urine for testing, a lot of samples can be processed at one time non-invasively. Therefore, the kit can be used for mass screening for identifying high endemic zone of Kala-Azar.

On the other hand, the Japanese research institutes proposed highly sensitive immunochromatography method using rKRP42, which was promising to detect early Kala-Azar even at early-phase or subclinical infection, and continued developing work for a ELISA-based detection method of antibody against rKRP42 in urine, and prepared a prototype as of the time of the Terminal Evaluation. The Project is supposed to evaluate the clinical performance and to determine the cut-off value for diagnosis of the said method at SKKRC in February 2016 using clinical specimens obtained from the Kala-Azar patients.

For these reasons, it is anticipated that the rapid and reliable diagnostic tools for Kala-Azar cases and PKDL will be introduced as methods for practical use by the end of the project period; hence, it is deemed that the Output 1 is achieved in general.

##### (2) Output 2

Due to the unexpected external factors such as the reconstruction of project implementation system at the initial phase and political uncertainty and incidents that happened and intermittently continued from the time around the Mid-term Review, the Project could not recruit sufficient number of family cohorts to analyze the mechanism of the onset of PKDL, naturally, no significant finding have not been obtained as of the time of the Terminal Evaluation.

Meanwhile, the Project developed a Kala-Azar mass screening system by combining urinalysis for Kala-Azar antibody with positional information using GIS technology. Using this system, the Project found that Kala-Azar-prone zones have difference in density even in an endemic area; this finding can be a risk factor for Kala-Azar infection.

Analyses for the risk factors for atypical infection and the onset of PKDL have not been done since the progress of the whole project activities lagged behind schedule, and remaining future challenges. Thus, though the Project exerted maximum efforts within the limited period activity time, it is deemed the achievement of Output 2 is moderate as of the time of the Terminal Evaluation.

##### (3) Output 3

Concerning vector research, the Project confirmed the existence of seven (7) species of sandflies in Bangladesh, one (1) of which is known to transmit the leishmanial protozoa; the Project detected Leishmania-derived DNA from individuals of the said species, but not for others. Interestingly, however, the Project obtained some provisional results for indicating the existence of another species which can transmit the leishmanial protozoa. Meanwhile, the Project could not draw an concrete conclusion with regard the possibility of reservoir animals except for humans; therefore, further research should be done to solve this question.

Concerning the vector research, the ecology of sandflies has been poorly understood. The Project was moving ahead with the researches with the Ege University, and obtained several novel findings regarding its ecology such as bimodal activity periods and entry route to rooms (upper wall). With regard to other ecological characters such as places for oviposition and rest, preference and seasonal change, the Project is still working on accumulating information and data as of the time of the Terminal Evaluation due to the unexpected delay aforementioned. Meanwhile, the University of Tokyo in consort with the Ege University confirmed that Olyset® Plus demonstrated strong insecticidal effect to sandflies. On the basis

of the result, Sumitomo Chemical Co., Ltd. has provided the Project with 3,340 nets of Olyset® Plus. The Project has started an operational research to verify the effectiveness of Olyset® Plus for the prevention of Kala-Azar in 2014 and currently is still undergoing in the monitoring activities in Pabna on a monthly basis.

As described, the Project have not reached at the level of achievement for both vector and reservoir researches as expected at the time of the Terminal Evaluation due to the delay of the project activities as aforementioned; however, it is anticipated that the Project is supposed to conclude the results of the experimental study for the effectiveness of Olyset® Plus for the prevention of Kala-Azar by the end of the Project period.

#### (4) Output 4

The the Japanese research institutes and icddr,b were supposed to work hand in hand to the whole process of project research activities from the development of basic techniques and/or technologies, implementation of experiments and/or studies to the data analyses and its interpretation; nevertheless, it was inevitable for the Japanese research institutes to take lead role to implement practical research activities with the direct and/or indirect support of icddr,b and other partner organizations due to the change in implementation structure of the Bangladesh side. The Project had greatly assisted the MoHFW to launch SKKRC with icddr,b and other partner organizations such as DNDi, and subsequently, the Project provided SKKRC to establish the laboratory diagnosis services technically and physically. Through these great deal of efforts, it is deemed that the environment for the research was successfully established at SKKRC using its resources; nonetheless, it is also deemed that the implementation system of the collaborative research between the Japanese research institutes and icddr,b for the Project.

For these reasons, it is deemed that the achievement of the Output 4 is moderate as of the time of the Terminal Evaluation.

#### (5) Project Purpose

The Project Purpose, according the PDM, is to enhance the capacity of “icddr,b”; however, practical research activities couldn’t be done at and with icddr,b due to unexpected external factors. Under the circumstances, it can be said that the Project has been doing assistances for enhancing the capacity of Kala-Azar control not at a specific research institute but whole Bangladesh. Meanwhile, the Project was negatively affected by the unexpected external factors even after the time of of the Mid-term Review intermittently because of the restriction of project activities especially field activities. Even though such difficult situation, the Project exerted maximum efforts for the implementation of project research activities and generated research outcomes as described in the “Achievement of Outputs” section.

As was described in the Achievement of Output 4, since the Japanese research institutes have been taking lead role for the practical research activities, the original purpose of the Project that aimed the enhancement of research capacity of the Bangladeshi counterpart hasn’t been achieved. Having said that, the Project had significantly contributed for the establishment of SKKRC-centered laboratory diagnosis system for Kala-Azar in Bangladesh as well as the reinforcement of SKKRC as a research center, and this achievement was beyond our expectations. The Project set a Super Goal as “Government Programme on Kala-Azar Elimination is strengthened in Bangladesh”. It is considered that the Project advanced toward the achievement of the Super Goal whereas the original purpose hasn’t been fulfilled. For these reasons, the Project Purpose is expected to be achieved in general by the end of the project period.

### 3-2 Summary of Evaluation Results

#### (1) Relevance

The relevance of the Project has been maintained throughout the project period.

The MoHFW has enhanced its efforts in the Kala-Azar Elimination Programme; as a practical initiative, it took the lead for the establishment of SKKRC at Mymensingh. For this reason, it is considered that the Project has moved to the forefront of Kala-Azar control in Bangladesh. Especially in recent years, the number of newly-infected patients of Kala-Azar is steadily decreasing, and the target prevalence of Kala-Azar in Bangladesh came closer to the national target value of 1/10,000 set in the government-led “Kala-Azar Elimination Programme”. In order to maintain the low number of new infection and even ideal control of Kala-Azar in near future, the MoHFW decided to extend the programme period for 2

years until 2017. For these reasons, it is considered that the importance of the Project in the Bangladeshi policies for the control of Kala-Azar is enhanced further. Meanwhile, Japan's aid policies put the emphasis of the significance of the preparedness against infectious diseases and international collaboration for it. For these reasons, the relevance of the Project Purpose has been maintained throughout the project period.

Concerning the technical transfer of the scientific technologies, due to changes in the project implementation setup, the novel setup of the Project entails the research institutes on the Japanese side establishing the basic technologies and preparing the protocol for research and then introducing them to SKKRC. Since the Project was compelled to change direction of assistance, it is deemed that the technical transfer for the enhancement of "research" capacity of the Bangladeshi counterpart organization. However, the Japanese research institutes continued the research activities in consideration of functional enhancement of laboratory diagnostic services as well as research capacity of SKKRC. From the standpoint, the Project provided a total of 11 persons engaged in Kala-Azar research, laboratory diagnosis and/or patient management in SKKRC with short-term training opportunities in Japan for various subjects. Moreover, the Japanese research institutes put the maximal efforts to give technical assistance to the local staff members regarding the management of the laboratory such as procurement of reagents and consumables as well as the maintenance of laboratory instruments for the maintenance of laboratory function in both for research and diagnostic services.

## (2) Effectiveness

The effectiveness of the Project is considered to be high in general at the time of the Terminal Evaluation. As was described in "the Achievement of the Project Purpose" section, due to the fact that the Japanese research institutes have been taking lead role for the practical research activities, the original purpose of the Project, aiming the enhancement of research capacity of the Bangladeshi counterpart, hasn't been achieved as expected. Having said that, the Project had significantly contributed for the establishment of SKKRC-centered laboratory diagnosis system for Kala-Azar in Bangladesh as well as the reinforcement of SKKRC as a research center, and this achievement was beyond our expectations. The Project set a Super Goal as "Government Programme on Kala-Azar Elimination is strengthened in Bangladesh". It is considered that the Project advanced toward the achievement of the Super Goal whereas the original purpose hasn't been fulfilled. For these reasons, the desired effects expected from the implementation of the Project, in spite of the different approach, is anticipated to be achieved in general by the end of the project period.

Meanwhile, the Project was negatively affected by the unexpected external factors even after the time of of the Mid-term Review intermittently because of the restriction of project activities especially field activities. Even though such difficult situation, the Project exerted maximum efforts for the implementation of project research activities and generated research outcomes as described in the "Achievement of Outputs" section. Specifically, the diagnostic methods, developed or modified by the Project, are used at SKKRC for rapid and accurate diagnosis of Kala-Azar as well as monitoring of the effect or adverse reactions of chemotherapy. Moreover, the research results with regard to the preventive effect of Olyset® Plus against Kala-Azar as well as the Kala-Azar mass screening system by combining urinalysis for Kala-Azar antibody with positional information using GIS technology will be effectively utilized for the MoHFW and other relevant parties to come up with policies for the control of Kala-Azar in future. The Project is supposed to accelerate the analysis work with the information and data that are obtained, and is being preparing a total of five (5) drafts of scientific articles or book(s) to publish as of the time of the Terminal Evaluation.

## (3) Efficiency

The efficiency of the Project is moderate as unexpected external factors negatively affected smooth implementation of research activities.

The Project has proceeded research activities under direct or indirect collaboration with external institutes such as Mymensingh Medical College and its Hospital, DNDi and the Ege University. However, unexpected external factors made it necessary to change the project implementation setup, and the project research activities faced major delays (approx. one and a half years) before the setup was established. After SKKRC was opened, the project research activities were vigorously conducted thanks to the efforts of related parties. Besides, due to the political unrest from late 2013 to early 2014, JICA

experts (foreign researchers) were restricted to visit to Bangladesh in timely manner for the planned activities that are necessary to be done in the specific season. In correct terms, the periods when the project activities were affected are as follows: whole year in 2013; from January to April 2014; from January to April 2015; and from September to December 2015. From the viewpoint of the effective utilization of time resources, these incidents hindered the efficiency of the Project to an extent. In addition, the Japanese and Bangladeshi sides have not necessarily achieved full recognition of each other's research progress. Having said that, the Project is working for finalizing the research outcomes as of the time of the Terminal Evaluation, it is anticipated that the discussions amongst the stakeholders such as MoHFW, icddr,b, and other partner organizations regarding the practical application of research outcomes of the Project to society immediately after the time of the Terminal Evaluation.

Setups of the research instruments had been completed in general by the time of the Mid-term Review. Especially at SKKRC, not only research instrument but also medical instruments and apparatus such as ultrasound diagnostic system were introduced for testing, diagnosis and monitoring of Kala-Azar patients as a part of the project activities. Those instruments and apparatus are effectively used for research activities and clinical services at SKKRC as of the time of the Terminal Evaluation.

#### (4) Impact

The following positive impacts are confirmed and/or expected by the implementation of the Project.

Various development partners such as the Project (JICA/AMED), MSF and DNDi has been assisting the MoHFW to control Kala-Azar under “the Kala-Azar Elimination Programme” through diversified approaches for the prevention, treatment and research of Kala-Azar. As an integrated result, the number of Kala-Azar reported cases decreased steadily in recent years, the target value of the Programme (1<10,000 population) is about to be fulfilled. Meanwhile, the total number of Kala-Azar cases in Bangladesh is decreasing significantly in recent years whereas the number in SKKRC is maintained as much as around 400 cases in each year; which is to say that the portion of Kala-Azar patients treated at SKKRC is increased in relative terms. Sixty-six percent (66%) of Kala-Azar patients was treated at SKKRC in 2015 indeed. In addition, with the support of the Project, genetic diagnosis of Kala-Azar using multiplex quantitative realtime PCR as well as the L-FABP test strip for the monitoring of the effect and adverse reactions of chemotherapy had been installed and that helped SKKRC to provide accurate concrete diagnosis as well as patient management. In case of patients are at the primary stage, concrete diagnoses can be made accurately in general. After the installation in December 2014, SKKRC is accumulating results and achievement of PCR-based diagnoses; particularly, a total of 250 tests were done with the said PCR-based method to support the medical professionals to make concrete diagnoses in SKKRC. For these reasons, SKKRC nowadays plays an important role for the control of Kala-Azar, and is, as a matter of practice, deemed to function as a reference centre for the treatment of Kala-Azar in Bangladesh.

Meanwhile, the positive impacts derived from the Project are as follows: 1) Accuracy improvement of concrete diagnosis of Kala-Azar by genetic diagnosis using multiplex quantitative realtime PCR; 2) Contribution to capacity enhancement of young researchers and health professionals; 3) Establishment of the Department of Tropical Infectious Diseases in the Mymensingh Medical College; and 4) Findings regarding the efficacy of pharmaceutical on Kala-Azar treatment in Bangladesh and the influence of the quality of pharmaceuticals on the success of treatment.

#### (5) Sustainability

A self-sustainability as well as a self-deployment of the benefits provided by the Project can be expected to some extent as of the time of the Terminal Evaluation.

MoHFW with the support of development partners has been putting great effort to control Kala-Azar under the “Kala-Azar Elimination Programme” over the years. As a result of the integrated efforts, the number of Kala-Azar patients came closer to the target value of the Programme. MoHFW, responding to the situation, had decided to extend the Programme for 2 years until 2017. For these reason, it is confirmed that the importance of Kala-Azar control is maintained after the end of the Project, and the significance of the achievements and outcomes of the Project will not be detracted.

From the aspect of the financial sustainability, the costs for procuring reagents and consumables used for diagnostic services and research have been covered by the Project. Therefore, the Project is expected to

prepare a list of reagents and consumables with providers, unit costs, etc., followed by the estimation of annual costs for the maintenance of the services on the basis of relevant records and experiences. The Bangladeshi stakeholders such as MoHFW, Mymensingh Medical College and its Hospital should discuss about the segregation of duties at each organization and determine the clear results by the end of the project period.

From the viewpoint of the technical sustainability, owing to the assistances of the Project, the staff of SKKRC had received training not only for testing manipulation but also management of laboratory; as a result, they reached at a sufficient level enough to sustain the operation and management of the laboratory independently as of the time of the Terminal Evaluation. The manipulation skills and procedures have been standardized as a form of SOP in various testing methods. Therefore, standardized testing and diagnostic services are supposed to continue after the end of the project period.

### **3-3 Factors that promoted the attainment of the Project**

#### **(1) Concerning the project design**

No major promoting factor have been observed as far as the project plan is concerned.

#### **(2) Concerning the implementation process of the Project**

The Japanese research institutes have been actively engaged not only in research at SKKRC but also in laboratory testing, examination and treatment technologies required for diagnosis and treatment of Kala-Azar, and it has made a major contribution to the establishment of SKKRC as a core agency for research and treatment of Kala-Azar. Moreover, MoHFW provided funding for the improvement of facilities and assigned personnel for realizing the establishment of SKKRC, which was no more than a vision at the start of the Project, and establishing a research base in the Kala-Azar endemic area.

### **3-4 Factors that impeded the attainment of the Project**

#### **(1) Concerning the project design**

No major obstacles have been observed as far as the project plan is concerned.

#### **(2) Concerning the implementation process of the Project**

The said resignation of the Bangladeshi representative (Project Manager) has negatively affected the generation of research outcomes as well as project achievements since the research activities are procrastinated at the initial phase of the Project. In addition, Political uncertainty that has been intermittently continued from 2013 as well as the said criminal incidents happened in 2015 limited the field activities of the Project substantially. These issues are recognized as hindering factors against effectiveness of the Project.

### **3-5 Conclusions**

Based on the series of interviews and discussions with authorities concerned as well as literature reviews, the result of the Terminal Evaluation showed high relevance, effectiveness and sustainability in general, whereas effectiveness was deemed to be moderate due to unexpected and inevitable delay of the project activities. The results also showed positive expectation of the achievement of Super Goal in future, implying the impact of the Project is deemed to be high.

This report will emphasize on SKKRC's capacity enhancement for its diagnostic and curative services enough to bear an important role for the control of Kala-Azar in Bangladesh. In light of the above, the Project is evaluated to be highly satisfactory.

### **3-6 Recommendations**

- (1) The Team confirmed that the SKKRC was strengthened in its capacity in terms of diagnostic as well as curative services through the implementation of the Project; therefore, approx. 70% of reported patients with Kala-Azar was definitively diagnosed determined by the DNA-based testing at SKKRC. As the elimination of Kala-Azar is coming into the range, the Team recommends that the MoHFW should determine the role of SKKRC in the national surveillance system, i.e., SKKRC functions as National

Reference Laboratory for diagnosis of Kala-Azar.

- (2) The stakeholders of the Project such as CDC in MoHFW, MMC and MMCH should discuss under the advice of JICA Experts the sustainability of SKKRC after the end of Project's support; in concrete terms, securing the costs for maintenance and utilities as well as maximum utilization of the laboratory instruments provided by the Project, an internal quality control system such as the mechanism for checking the compliance of SOPs, etc. human resources nurtured by the Project. The said stakeholders should determine the role of each party for sustaining the function of SKKRC and report to JICA office after make consensus within MoHFW no later than the end of the project period.
- (3) The JICA experts should summarize the achievements and research outcomes and share widely with the personnel in charge of infection control in MoHFW as well as health and medical professionals in related organization.

### **3-7 Lessons Learnt**

- (1) The Project was launched in June 2011; unfortunately, the Bangladeshi representative researcher, assigned as the Project Manager of the Project, had resigned his position at icddr,b in February 2012, just 8 months after the commencement of the Project. The implementation system at the Bangladeshi side was taken over to the new Project Manager; however, the reconstruction of the system was in a difficult condition as a matter of practice since the former Project Manager had led the Project with strong initiative at the Bangladeshi side from the designing to the implementation stage. In addition, icddr,b is an independent international research institute that organize research activities in units of individual research grant. For these reasons, the collaborative research implementation system, planned by the former Project Manager, couldn't be maintained, and unplanned research budget couldn't be allocated under the new administration of the Bangladesh side. That is to say, icddr,b faced a critical situation to allocate necessary human and financial resources as well as research spaces dedicated to the Project. As a result, the collaborative researches couldn't be done at icddr,b materially.

As a lessons learnt, a change in implementation structure of counterpart organizations can impede project activities substantially in case that the counterpart research organizations are run with external funding resources, that is, without independent budget for research activities including staffing researchers. Though it is impossible for projects to control the turnover of counterpart personnel, relevant organizations including counterpart organizations of projects should discuss countermeasures for such state of affairs at the designing stage of projects.

- (2) The Project is a technical cooperation project, implemented under the framework of SATREPS. The JICA experts well understand such principle, and made efforts not only for seeking research outcomes but also for yielding a positive impact on the steady achievement of the Super Goal of the Project in future by introducing and/or applying research outcomes to the clinical practices of Kala-Azar treatment as well as providing technical training for health personnel in SKKRC.

As a results of those efforts, SKKRC has enhanced its functions for diagnostic and curative services and, as a consequence, is functioning as a referral centre of Kala-Azar treatment in Bangladesh practically.