

Republic of the Union of Myanmar

FY2017 Ex-Post Evaluation of Technical Cooperation Project
“The Major Infectious Diseases Control Project Phase 1 & 2”

External Evaluator: Tomoko Tamura, Kaihatsu Management Consulting, Inc.

0. Summary

This project supported control measures against major infectious diseases such as HIV/AIDS, tuberculosis (hereinafter referred to as “TB”) and malaria in Myanmar.

Throughout the project implementation period, HIV/AIDS, tuberculosis and malaria control were priority issues of the country, and the need to strengthen measures for the control was high; the project was consistent with Myanmar's development policies and development needs. Implementation of the project was urgent and duly consistent with Japan's ODA assistance policy to the country, which was promoting assistance for truly humanitarian needs. Therefore, the relevance of this project is high.

With regard to the HIV/AIDS control component, the project engaged mainly in preventing HIV infection from donated blood, expanding external quality control¹ of HIV and syphilis tests, and improving data management capability; these were among the measures for capacity enhancement of the National AIDS Program (hereinafter referred to as "NAP")², which was the Project Purpose of the component and created expected outputs at large. The HIV prevalence of donated blood, which was one of the indicators of Overall Goal, was maintained at the expected level, and the prevalence of HIV among the adult population showed a decreasing trend. From this, effectiveness and impact are evaluated as high. There is no problem in sustaining the effects of the project in political, institutional, technical, and financial aspects; therefore, its sustainability is high.

With regard to the TB control component, the project engaged in strengthening TB control in various aspects. However, the level of achievement of the Project Purpose, improvement of TB control measures in Yangon and Mandalay Regions³, was moderate in both Phases 1 and 2 of the project. The decrease in the number of TB patients in both regions, which was the Overall Goal of the project, was not realized in the expected manner. Therefore, effectiveness and impact of the component was evaluated as fair. There is no problem in sustaining the effects of the project

¹ “External quality control” refers to quality and accuracy control activities for clinical tests, which are conducted by the third-party institutions; “internal quality control” refers to those conducted internally by the laboratories and testing institutions themselves.

² NAP is the implementing organization for HIV/AIDS control in the Infectious Diseases Control Division of the Department of Public Health.

³ Region is one of the administrative boundaries of Myanmar at the time of the military administration. There are 7 regions and 7 states in the country. Under the regions and states, there are districts, townships and villages. After the transition to civilian administration, “regions” are called “divisions”. In this ex-post evaluation report, “regions” which was used in the reports of the projects most of the time, is used.

in political, institutional, technical and financial aspects; therefore, its sustainability is high.

With regard to the malaria control component, strengthening the National Malaria Control Program (hereinafter referred to as "NMCP")⁴, which was the Project Purpose, was realized. Reduction of numbers of malaria in-patients, serious and complicated patients, and malaria deaths, which were the Overall Goal, was realized. The effectiveness and impact of the component is evaluated as high because the planned effect was realized in this manner. There is no problem in sustaining the effects of the project in political, institutional, technical, and financial aspects; therefore, its sustainability is high.

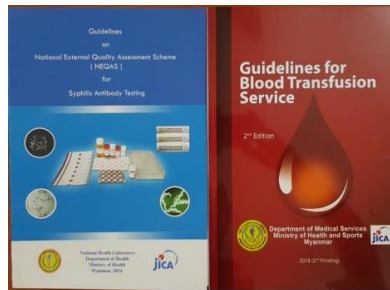
Efficiency was evaluated for the three components together. Although the project period was as planned, the project cost exceeded the plan. Therefore, efficiency of the project is fair.

From the above results, this project was evaluated as “highly satisfactory”.

1. Project Description



Project Locations



A guideline for blood safety



A volunteer for TB control



A volunteer conducting a malaria test



Delivery of mosquito nets to remote areas

1.1 Background

This project assisted control measures against HIV/AIDS, TB and malaria, the major infectious diseases in Myanmar. During the period when Phase 1 of this project was planned, the country was under the military regime. Therefore, overseas assistance, including that for control measures against major infectious diseases, was limited. Under this situation, this project was started based on the urgency of strengthening measures against the infectious diseases prevalent in the country

⁴ NMCP is the implementing organization for malaria control under the Vector-borne Disease Control (hereinafter referred to as “VBDC”) in the Disease Control Division of the Department of Public Health.

and the necessity of providing humanitarian assistance. Phase 2 of the project was started corresponding with changes in the environment, such as the democratization movement in the country and a rapid increase in international support for infectious disease control. This project was implemented over a total period of 10 years for the two phases.

1.2 Project Outline

This project had two phases, Phase 1 and Phase 2, and each phase consisted of three components: HIV/AIDS, TB and malaria control. A Project Design Matrix (PDM) was developed for each component. This ex-post evaluation covers all of these. Considering the fact that the three components were independently implemented, this ex-post evaluation evaluated the sub-ratings, such as relevance, effectiveness and impact and sustainability, for each component. Efficiency was evaluated for the three components together because there were some inputs made for entire project. The overall rating was evaluated based on the sub-ratings of the three components.

【Common for all 3 components】

Total cost (Japanese Side)	【Phase 1】 1,240 million yen 【Phase 2】 689 million yen
Period of Cooperation	【Phase 1】 January 2005 – January 2012 (Period of extension out of the above period: January 2010 – January 2012) 【Phase 2】 March 2012 – March 2015
Implementing Agency	Department of Public Health, Ministry of Health and Sports, Myanmar (It was called “Department of Health, Ministry of the Health, Myanmar” during the project period ⁵)
Supporting Organizations in Japan	<ul style="list-style-type: none"> • National Center for Global Health and Medicine • The Research Institute of Tuberculosis • Japan Anti-tuberculosis Association (JATA) • Humanitarian Medical Assistance

【HIV/AIDS Control Component】

Other Relevant Organizations: NAP, National Health Laboratory (hereinafter referred to as “NHL”, National Blood Center (hereinafter referred to as “NBC”))		
【Phase 1】		
Overall Goal	HIV transmission is reduced nationwide.	
Project Purpose	NAP is strengthened.	
Outputs	Output 1	Blood safety for HIV and Transfusion Transmissible Infection (hereinafter referred to as TTI) is enhanced.
	Output 2	Quality Assurance of HIV tests and other TTIs are improved.

⁵ The implementing agency was called “Department of Health, Ministry of Health” during the project period; however, it was mentioned as “Department of Public Health, Ministry of Health and Sports” in this ex-post evaluation report, even it stated about the matters happened during the project.

	Output 3	Capacity of NAP is strengthened.
【Phase 2】		
Overall Goal	Transmission of HIV and syphilis due to blood transfusion is prevented.	
Project Purpose	NAP is strengthened for preventing HIV transmission through blood transfusion ⁶ in collaborated with NHL and NBC, and for managing data.	
Outputs	Output 1	Safe blood donation is enhanced.
	Output 2	Quality of screening of HIV and syphilis is ensured.
	Output 3	Capacity of data management and analysis on HIV/AIDS control activities is improved.

【TB Control Component】

Other Relevant Organizations: National Tuberculosis Program (hereinafter referred to as “NTP”) ⁷		
【Phase 1】		
Overall Goal	New TB infection is controlled in Yangon and Mandalay regions	
Project Purpose	TB control in Yangon and Mandalay regions is improved.	
Outputs	Output 1	Capacity for program management and epidemiological data management for TB control is strengthened at central level.
	Output 2	TB laboratory services are improved.
	Output 3	Capacity for TB control is strengthened in Yangon and Mandalay regions in accordance with Stop TB strategy ⁸ .
	Output 4	Public-Private Partnership is enhanced.
	Output 5	Communication and advocacy activities for TB control is promoted.
【Phase 2】		
Overall Goal	To halt and reverse the TB incidence by the year of 2015	
Project Purpose	TB control in Yangon and Mandalay regions is improved.	
Outputs	Output 1	Capacity for program management and data management for TB control is strengthened.
	Output 2	Capacity for TB control is strengthened in Yangon and Mandalay regions in accordance with Stop TB Strategy.

⁶ In the PDM and reports of the project, the aim of the project in the field of blood safety was described as "prevention of transmission of HIV through blood transfusion" or "prevention of HIV infection by donated blood". However, in this evaluation report, the latter is used except for the terms in the PDM. Similarly, both "prevalence" and "positive rate" are used; however, in this evaluation report, the former is used.

⁷ NTP is the implementing organization for TB control established under the Disease Control Division of the Department of Public Health.

⁸ A strategic package developed by World Health Organization (WHO) globally in 1994. The core item of the package is the Directly Observed Treatment, Short course (DOTS). The main contents are (a) Commitment of the government to TB control measures, (b) Case findings by bacteria tests, (c) Patients take drugs in front of medical staff to make sure that they take them, (d) Stable supply of drugs, (e) record/ report and periodic evaluation.

【Malaria Control Component】

Other Relevant Organizations : NMCP、VBDC		
【Phase 1】		
Overall Goal	Malaria control is strengthened beyond the project sites.	
Project Purpose	NMCP is strengthened.	
Outputs	Output 1	Capacity of health personnel on malaria control (reporting, supply, planning and epidemiological analysis) at Region/ State, Township levels is strengthened.
	Output 2	The community-based malaria control program is effectively implemented in target areas.
	Output 3	System for prediction and management of epidemics is utilized in target areas.
	Output 4	Collaborative activities with other institutions and sectors are strengthened.
【Phase 2】		
Overall Goal	NMCP is strengthened.	
Project Purpose	Implementation/ monitoring capability of NMCP are strengthened in the project area.	
Outputs	Output 1	Myanmar Artemisinin Resistance Containment (hereinafter referred to as “MARC” ⁹) Project is strengthened in the MARC area.
	Output 2	Community-based malaria control program is effectively conducted in Bago Region.
	Output 3	Capacity of program management in different levels of malaria and other vector borne diseases are strengthened.
	Output 4	Outcomes from the project are effectively utilized among the partners for further strengthening of NMCP.

2. Outline of the Evaluation Study

2.1 External Evaluator

Tomoko Tamura, Kaihatsu Management Consulting, Inc.

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: August 2017 – November 2018

Duration of the Field Study: January 14 - 26, 2018 and March 14 - 23, 2018

3. Result of Evaluation of the HIV/AIDS Control Component

In the HIV/AIDS control component, the project worked with the major health care facilities in the country, aiming to strengthen the NAP. The project mainly engaged in preventing infection of HIV and syphilis from donated blood, improving HIV and syphilis tests, and strengthening the capacity of NAP staff. The terminal evaluation of phase 2 assessed that the project purpose was

⁹ MARC is the program for preventing Artemisinin Resistance Malaria from expanding to Myanmar.

achieved, and there was a high prospect that the project would contribute to achieving the Overall Goal of reducing the prevalence of HIV and syphilis.

3.1 Relevance (Rating: ③¹⁰)

3.1.1 Consistency with the Development Plan of Myanmar

Control of HIV was regarded as one of the most important national priorities in the National Health Plans of the country during the periods of planning and completion of both Phases 1 and Phase 2, and national programs were carried out. Therefore, the project was consistent with the development policy of the country.

3.1.2 Consistency with the Development Needs of Myanmar

At the time of planning Phase 1, the number of HIV-infected people, especially young people, tended to increase¹¹, and it was urgent to strengthen the operation and management functions of the NAP and introduce measures to prevent HIV infection from donated blood. At the time of planning Phase 2, HIV was ranked first in the causes of death in the country¹², and the need for strengthening control measures remained high. At the completion of Phase 2, the incidence of HIV in the country had declined; however, control of infection among the high-risk groups¹³, prevention of mother-to-child transmission, treatment, care and support for infected people were very necessary; and the need for assistance continued.¹⁴ In this way, the contents of assistance of this component was consistent with the development needs of the country throughout the period from planning of Phase 1 to completion of Phase 2.

3.1.3 Consistency with Japan's ODA Policy 【Common to all 3 components】

The purpose of the project of prevention of infectious diseases falls under the category of "highly urgent and truly humanitarian projects" mentioned in the Economic Cooperation Policy for Myanmar of the Japanese government (revised in 2012) at the time of planning of Phase 1 and Phase 2. Therefore, the purpose of the project was consistent with the ODA policy of Japan.

In light of the above, this component was highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

¹⁰ ③: High, ②: Fair, ①: Low

¹¹ The peak of new HIV infections among the adult population (15 years old or more) was 2000, that of the prevalence was 2006 in the country. Source: *Global AIDS Response Progress Report Myanmar*, NAP, June 2015 (Figures 17 and 15)

¹² Single leading causes of mortality (2011), *Health in Myanmar 2013*, Ministry of Health, Myanmar (p147)

¹³ MSM: Men who have Sex with Men, IDUs: Injecting Drug Users, FSW: Female sex workers were identified as high-risk groups.

¹⁴ Source: *Global AIDS Response Progress Report*, NAP, 2015, NAP (p6-7)

3.2 Effectiveness and Impact¹⁵ (Rating: ③)

3.2.1 Effectiveness¹⁶

【Phase 1】

In Phase 1, the project mainly aimed to prevent HIV infection from donated blood, improve external quality control of HIV tests, and enhance data management and monitoring of the NAP, as measures to enhance the capacity of the NAP. The project developed a blood donor registration system¹⁷, a blood donor screening system based on a standardized questionnaire format¹⁸, and the National External Quality Assessment (hereinafter referred to as "NEQA"¹⁹) for HIV and syphilis tests, which were expansively implemented all over the country. Standard operational procedure for blood transfusion screening and guidelines for quality control for HIV tests were developed; and the test method for syphilis was also improved²⁰. In addition, data management and monitoring of NAP were strengthened. In this manner, all the planned outputs were achieved. The HIV prevalence of blood donors in seven major general hospitals²¹ in the country, for which the indicator of Project Purpose was less than 0.5%, was largely achieved, as shown in Table 1.

From the above, strengthening the NAP, which was aimed at in Phase 1, was largely realized.

¹⁵ Sub-rating for Effectiveness is to be put with consideration of Impacts. (This applies to other components, too.)

¹⁶ See the attachment for the status of achievement of the Outputs.

¹⁷ A system for recording blood donors and their test results. NBC became able to refer to history of blood donation and test results and summarize and analyze information about blood donation by using this system.

¹⁸ A system for screening the appropriateness of donating blood based on the result of the questionnaire survey. People who came to donate blood completed the questionnaire forms, such as past blood donation record, health condition, medical history, etc.

¹⁹ A system for NHL, the external quality control agency, to conduct quality control of the laboratories was introduced (EQA). It was called NEQA because it began to be implemented nationwide.

²⁰ At that time of starting Phase 1, the syphilis test in the country was predominantly conducted as a glass slide test method called VDRL test based on flocculation precipitate reaction. However, as a result of the inspection made by JICA experts, officers of NHL and NBC, it was found that this test method was likely to produce false negatives, and was not suitable as the test for the blood transfusion service. Because of this, the project decided to introduce a quick diagnostic method that was more sensitive and less likely to produce false negatives to the blood transfusion service units in the country.

²¹ The blood transfusion service was conducted by NBC, which was attached to the Yangon General Hospital, at the central level under the Department of Health at that time. There were blood transfusion units in the six major general hospitals at the regional level, named Mandalay General Hospital, Patheingyi General Hospital, Myitkyinar General Hospital, Magway General Hospital, Taunggyi General Hospital, and Mawlamyaing General Hospital. "Seven major general hospitals" in the PDM included NBC and the six general hospitals.

Table 1 Achievement of Project Purpose – HIV Control Component Phase 1

Project Purpose	Indicator	Status of Achievement
NAP is strengthened.	HIV Prevalence of blood donor in the seven major general hospitals of the country is less than 0.5% ²² [Largely achieved]	At the time of completion of the Phase 1 in 2011, HIV prevalence in 3 out of the 7 major general hospitals was less than 0.50%. Prevalence in the other 4 hospitals was 0.50%, 0.52%, 0.54% and, 0.55%, which was slightly above 0.50%; however, these figures were generally close to the target. ²³

【Phase 2】

As planned, a standard operational procedure for the blood transfusion service was developed, adopted by the blood transfusion service units nationwide, NEQA for HIV and syphilis tests was implemented in laboratories nationwide, and the false result rates (the rate of laboratories reporting false positives and false negatives) for HIV tests and qualitative tests of syphilis²⁴ in NEQA were maintained at a low level. Data management and analytical skills related to blood safety and quality management for laboratory tests with regard to the HIV/AIDS control activities were also improved. However, the false result rates in the quantitative test for syphilis did not reach the target.

The indicator of the Project Purpose, "Prevalence on HIV and syphilis of donated blood show a downward trend in the project area", was achieved for HIV, however not for syphilis (Table 2). Therefore, the achievement level of Project Purpose is moderate.²⁵

From the above, the degree of achievement of strengthening NAP, which was aimed at in phase 2, is fair.

²² If the blood tested before donating blood is positive, the blood is discarded. Therefore, the prevalence of donated blood itself does not indicate the risk of infection through blood transfusion. However, it is important to keep the prevalence of donated blood below a certain value by appropriate implementation of screening and registration of blood donors to prevent the risk that many blood donors who are in the window period are included as donors. This is what the Project Purpose of "Prevention of HIV infection of blood transfusion and enhancement capacity of data management" was aiming at.

²³ Source: Document provided by NBC.

²⁴ The qualitative test for syphilis judges positive and negative by rapid diagnosis test. Quantitative tests measure dilution factor (positive end point). Quantitative tests, which need dilution and stirring, require higher technical skills than the qualitative test.

²⁵ When the external evaluator studied the statistics at the time of the ex-post evaluation, it was found that the prevalence in 2010, which was used as the baseline figure for this indicator at the time of planning, was unreliable. There was a problem with the test method and accuracy for the syphilis test in particular at that time, and it is highly likely that false negatives were reported from each hospital. Because the reliability of the baseline figure was low, it is not possible to measure whether the prevalence rate has declined from 2010 to 2015, as shown in the indicator. On the other hand, as stated in footnote 22, the project was aiming to keep HIV and syphilis prevalence of the donated blood below a certain value. Therefore, in this ex-post evaluation, the external evaluator paid attention to whether the prevalence rate of the target year 2015 was within the target figure, which was set at the time of planning, for the evaluation of the level of achievement of the project purpose of the Phase 2.

Table 2 Achievement of Project Purpose – HIV Control Component Phase 2

Project Purpose	Indicators	Status of Achievement
NAP is strengthened for preventing HIV transmission through blood transfusion in collaborated with NHL and NBC, and for managing data.	Prevalence of HIV and syphilis of the donated blood show a downward trend in the project area. <ul style="list-style-type: none"> • HIV: from 0.6% (in 2010) to 0.4% (in 2015) [Achieved] • Syphilis: from 0.8% (in 2010) to 0.6% (in 2015) [Not achieved] 	At the time of completion of the Phase2 in 2015, <ul style="list-style-type: none"> • It was equal or less than 0.4% in all 7 major general hospitals.²⁶ • It was equal or less than 0.6% in the five hospitals.²⁷

3.2.2 Impact

The registration system and screening of blood donors and NEQA of HIV and syphilis tests, which were disseminated nationwide by this project, were carried out continuously even after completion of this project.²⁸ For the prevalence of syphilis of donated blood at the seven major general hospitals in the country, which was still a problem at the completion of Phase 2, six of them improved their performance and achieved the rates of equal or less than 0.6% at the time of the ex-post evaluation.

As a result of guidance from NHL, the rate of false result rates in NEQA of HIV tests has decreased in recent years. On the other hand, the percentage of laboratories that did not reach the target score (correct answer rate was 90% or more) in NEQA for both the qualitative and quantitative tests for syphilis did not show stable improvement (Fig. 1).

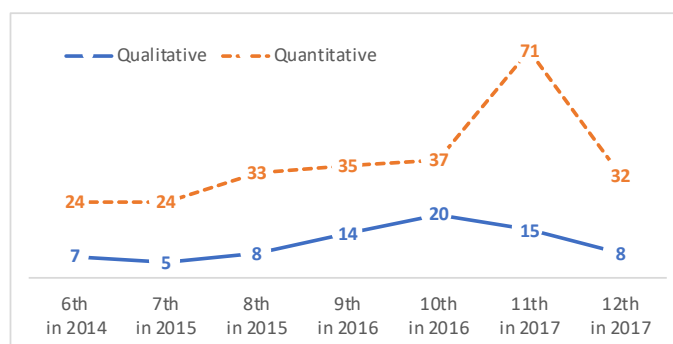


Figure 1 Percentage of laboratories that did not reach the target score in syphilis NEQA (%)

Source: Documents provided by NHL

As mentioned above, except for the instability of the technical level of syphilis tests, the major effects that were created by the project were sustained even after completion.

²⁶ Prevalence of HIV of donated blood was 0.2% in NBC, 0.1% in Mandalay, 0.4% in Pathein, 0.4% in Myitkyinar, 0.2% in Magway, 0.4% in Taunggyi and 0.0% in Mawlamyaing. (Source: Document provided by NBC).

²⁷ Prevalence of syphilis of donated blood was 0.6% in NBC, 0.8% in Mandalay, 1.7% in Pathein, 0.7% in Myitkyinar, 0.8% in Magway, 0.9% in Taunggyi and 0.4% in Mawlamyaing. (Source: Document provided by NBC).

²⁸ The NEQA of HIV and syphilis, which was assisted by the project, has been conducted twice a year. The annual reports of NEQA were also published continuously (See “3.4 Sustainability”).

3.2.2.1 Achievement of Overall Goal

As shown in Table 3, at the time of ex-post evaluation, the national average of the prevalence of HIV of donated blood was maintained at 0.4% or less, which was the target figure. HIV prevalence of adult population has declined after 2006, which had the highest record, and it was maintained at the same level in recent years. There is no information on the prevalence of syphilis among the adult population, and it is unknown whether it was decreasing or not. Since the target figure with regard to HIV control, which was addressed intensively over the two phases, has been achieved, the Overall Goal of the project as a whole is considered to be achieved in general.

Table 3 Achievement of Overall Goal – HIV Control Component Phase 1 & 2

Overall Goal	Indicators	Status at the time of Ex-post Evaluation
【Phase 1】 HIV transmission is reduced nationwide.	Adult (15-49) HIV prevalence shows a downward trend. [Achieved]	This has the same meaning as the indicator for Phase 2, “National prevalence shows a downward trend.” See the statement below.
	HIV prevalence of blood donor keeps < 0.5%. [Achieved]	National average of HIV prevalence of blood donors has been 0.1% – 0.2 % continuously since 2011; it has been equal or less than 0.4%, which was the target figure of the project. ²⁹
【Phase 2】 Transmission of HIV and syphilis due to blood transfusion is prevented.	National prevalence shows a downward trend. [HIV: Achieved. Syphilis: Unknown as there is no information]	HIV prevalence of adult population has declined after 2006, which had the highest recorded figure, and it was maintained at the same level from 2014 to 2017. ³⁰ NAP expects this trend to continue. There is no survey result for the prevalence of syphilis among the adult population, and it is unknown whether it was decreasing or not. ³¹

<Relationship between the project and Overall Goal “Decrease in prevalence of HIV”>

This project mainly focused on preventing infection from HIV and syphilis by donated blood and improving the quality of HIV and syphilis tests, among others for strengthening the functions of NAP. These efforts are only a part of various measures for HIV/AIDS control. Yet, conducting tests with high accuracy is also important for treatment of HIV and syphilis, and prevention of mother-to-child transmission. Therefore, the project was an important effort for lowering HIV prevalence, which was the Overall Goal of the project.

²⁹ Source: Document provided by NBC.

³⁰ Source: Document provided by NAP.

³¹ According to the explanation of the officer in-charge of NAP, survey of prevalence of syphilis was conducted only for high-risk groups of HIV infection and pregnant women due to the limited budget of the survey.

3.2.2.2 Other Positive and Negative Impacts

In 2014, NBC received the Developing Country Award of the International Society of Blood Transfusion in recognition of the dramatic reduction in HIV prevalence of donated blood as a result of the donor screening conducted by the project. In recognition of this award, the Ministry of Health and Sports had launched a policy to strengthen the function of NBC, and in 2015 NBC was upgraded from the position of the attached facilities of Yangon General Hospital to an independent organization.

After completion of the project, NHL became able to conduct not only molecular diagnosis of gonorrhea and chlamydial infection,³² but also molecular diagnosis of leptospirosis³³ and CD4 test³⁴ of HIV by utilizing the PCR laboratory³⁵, which was established with the support of this project. Utilizing the knowledge and experience in NEQA gained from the project, at the time of the ex-post evaluation NHL is carrying out NEQA for CD4 s and virus load tests³⁶ in addition to that for HIV and syphilis.

As mentioned above, as a result of the implementation of this project, among the measures for strengthening of capacity of NAP, which was aimed at by Project Purpose, the project focused on improvements in prevention of HIV infection by donated blood, expansion of external quality control of laboratory tests, improvement of data management capacity, and these were realized as expected in general. The overall goal was largely attained, because prevalence of HIV of donated blood was maintained at the expected level, and HIV prevalence among the adult population is showing a decreasing tendency. There was an improvement in prevalence of syphilis of donated blood at NBC and the six major general hospitals, which was the Project Purpose, at the time of ex-post evaluation as compared with that at the completion of the project. There was also an impact of strengthening functions of NBC and NHL. In this way, the project created the expected effect; therefore, effectiveness and impact of this component are high.

³² Sexually transmitted disease caused by pathogen of *Chlamydia trachomatis*.

³³ A bacterial infection for humans and animals caused by infection of pathogenic *Leptospira*.

³⁴ Test of CD4 positive cells (a kind of lymphocyte and immune cells that protect them against pathogens such as bacteria and viruses).

³⁵ A laboratory for genetic testing using the PCR method. The PCR is a test method for amplifying genes for detection, which produces highly accurate results in a shorter time than the virus separation method, which increases viruses with solvent cells and others.

³⁶ Inspection to measure the amount of HIV in the blood.

3.3 Efficiency 【Common for all 3 components】 (Rating : ②)

3.3.1 Inputs

Table 4 and Table 5 show planned and actual inputs of the project for the 3 components.³⁷

Table 4 Planned and Actual Inputs – Phase 1

Inputs	Plan	Actual		
		Originally planned period	Period of extension	Total
(1) Experts	No information	9 long-term 44 short-term 53 in total	2 long-term 10 short-term 12 in total	11 long-term 54 short-term 65 in total
(2) Equipment ³⁸	No information	266 million yen (USD2,938,000)	14 million yen (USD171,000)	280 million yen (USD3,109,000)
(3) Training in Japan	Around 5 persons every year	25 persons	0 persons	25 persons
(4) Training in the third party countries	No information for number of participants	46 persons	6 persons	52 persons
Japanese side project cost in total	850 million yen (for the first 5 years) ³⁹	850 million yen	390 million yen	1,240 million yen
Myanmar side project cost in total	Amount is unknown. There was input, such as project offices and cost of electricity, telephone, and water supply for the offices.	Amount is unknown. There was input, such as project offices and cost of electricity, telephone and water supply for the offices.		

³⁷ Source of information about the planned inputs are documents provided by JICA; those for actual are the terminal evaluation reports for the two phases.

³⁸ Actual cost for the equipment provided was calculated by converting the US Dollar amount into Japanese yen. The exchange rate used for the conversion was the IMF average mid-term exchange rates of the last month of each year during the relevant project period (Source: IMF International Finance Statistics Database). It was 1USD=90.65JPY for the originally planned period, 1USD=79.27JPY for the period of extension and 1USD=118.31JPY for the Phase 2.

³⁹ Planned project cost for the period of extension is not known as there is no relevant document.

Table 5 Planned and Actual Inputs – Phase 2

Inputs	Plan	Actual
(1) Experts	No information about the number of long-term (180MM) 6 – 9 for short-term	6 long-term 18 short-term 24 in total
(2) Training in Japan	6 persons	No
(3) Training in the third-party countries	15 persons	10 persons
(4) Equipment	No information	157 million yen (USD1,326,112)
Japanese side project cost in total	574 million yen	689 million yen
Myanmar side project cost in total	Amount is unknown. There were inputs, such as project offices and cost of electricity, telephone and water supply for the offices.	Amount is unknown. There were inputs, such as project offices ⁴⁰ , cost of electricity, telephone and water supply for the offices, cost for training, test equipment, test reagent and consumables for tests.

3.3.1.1 Elements of Inputs

The actual elements of inputs, such as experts, training, equipment provision, etc. cannot be quantitatively compared with the plan, because some quantities are not described at the time of planning. However, the elements of input were generally the same as planned. The main equipment provided by the project is shown in Table 6. Major inputs of the Myanmar side were assignment of the counterpart officers, provision of project offices, transportation expenses of officials of Myanmar at the time of the surveys and others. It was generally as planned.

Table 6 Main Equipment Provided by the Project (Phases 1 and 2)

HIV/AIDS	Test equipment, test kits/ consumables, refrigerator for blood bank and renovation of a training room
TB	X-ray machines / projectors, microscopes, fluorescence microscopes, consumables, and computers
Malaria	Malaria test kits, micro pipettes, malaria treatment drugs, long-lasting insecticidal nets, computers, GIS software and renovation of an entomology laboratory.

3.3.1.2 Project Cost

The actual project cost of Phase 1 exceeded the plan (146%); however, it cannot be measured whether the increase of inputs was corresponding to the increase of outputs, because the planned amount of project cost for the extension period is unknown. The actual amount of project cost

⁴⁰ The project office for HIV/AIDS control components was bared by Japanese side.

exceeded the planned amount for the Phase 2 (120%). From this, it was evaluated that the project cost exceeded the plan.

3.3.1.3 Project Period

Table 7 shows the planned and actual project period.

Table 7 Planned and Actual Project Period

Phases	Planned period calculated at the time of project planning	Actual		
		Originally planned period	Period of extension	Total
Phase 1	January 2005 - January 2010 (5 years)	January 2005 – January 2010 (5 years)	January 2010 – January 2012 (2 years)	January 2005 – January 2012 (7 years)
Phase 2	February 2010 – February 2015 (5 years)	March 2012 – March 2015 (3 years)		

In this ex-post evaluation, it was not concluded that the project period "exceeded the plan" from the fact that the Phase 1 has been extended for two years. It was concluded "as planned (100%)", by comparing the total period expected for the two phases, which were calculated at the time of planning for each phase, i.e. "10 years = 5 years (Phase 1) + 5 years (Phase 2)", with the actual period of both phases, i.e. "10 years = 7 years (Phase 1 + Phase 1 extension) + 3 years (Phase 2)". The reasons for this conclusion are as follows:

- The expected period of Phase 1 was 5 years at the time of planning. The initial project purpose of Phase 1 was almost achieved as a whole around the end of the project period of five years. However, at the end of the 5-year implementation period of Phase 1 (before phase 1 extension), it was planned to carry out Phase 2 for 5 years because further strengthening of the implementing agencies' capacity was necessary. From this, it was found that the total of the planned periods calculated at the time of planning of each phase was "10 years = 5 years + 5 years".
- However, there was a possibility that the procedures for the start of Phase 2 would be delayed, due to the general election scheduled in the country at that time. Therefore, in order to implement uninterrupted cooperation, Phase 1 was extended for two years and the project activities were continued. After that, Phase 2 was carried out for three years from 2012 after the general election. Thus, the extension of Phase 1 was a measure to implement uninterrupted cooperation in consideration of the change in the political situation of the country at the time; it is considered that the extension of Phase 1 (2 years) was pre-engagement of the portion of the planned Phase 2 (5 years).
- The project expanded the planned outputs during the extension of Phase 1, which can be a lead to Phase 2. Phase 2 planned higher targets compared to those for Phase 1.

In light of the above, although the project period was within the plan, the project cost exceeded the plan. Therefore, efficiency of the project (for the 3 components as a whole) is fair.

3.4 Sustainability (Rating: ③)

Among the measures for strengthening NAP, the sustainability of the main effects of the project, such as prevention of HIV and syphilis infection by donated blood and NEQA of HIV and syphilis tests, were analyzed as follows.

3.4.1 Policy and Political Commitment for the Sustainability of Project Effects

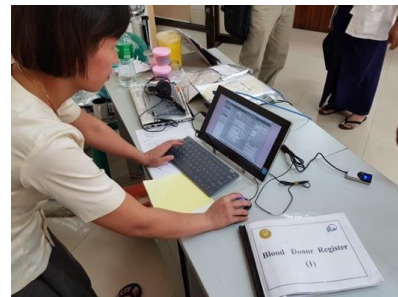
At the time of the ex-post evaluation, the country has formulated the *HIV/AIDS National Strategic Plan (2016 - 2020)*, which has a policy to further strengthen and continue countermeasures for HIV/AIDS. NAP conducts data management and monitoring of activities in accordance with national and regional monitoring plans. The measures introduced by the project, such as the blood donor registration and screening systems by questionnaire, have been continued even after the project. NEQA for HIV and syphilis test has also been conducted twice a year, and its reports were published continuously. The number of laboratories participating in NEQA has also increased. All of these systems are established, and they are most likely to be continued in the future. In this way, the policy system and political commitment necessary for sustaining the effect of the project is in place.

3.4.2 Institutional Aspect for the Sustainability of Project Effects

The organizational structures of NAP, NBC and NHL are the same as those at the time of planning. NAP is located under the Infectious Disease Control Division of the Department of Public Health in the Ministry of Health and Sports, and is responsible for planning, monitoring, evaluation, management, technical enhancement, and others of HIV/AIDS control. There are AIDS/STD (sexually transmitted diseases) teams in major townships throughout the country, which are conducting countermeasures for AIDS and STD in the townships. The responsible organizations for blood safety are the NBC located in Yangon, and a total of 152 (as of 2016) transfusion service units established in the hospitals in the country, which have 200 or more number of beds. NHL is responsible for implementation, evaluation, and reporting of NEQA of HIV, syphilis and other tests. Each of these institutions has clear roles and responsibilities.

According to explanations from responsible persons of NAP, NBC and NHL, there are vacancies in the staff allocation, and there is a shortage of staff; however, with regard to the activities related to blood safety and NEQA, which were introduced in the project, there were no delays as a result of staff shortage.

Of the 34 blood transfusion units (BTUs) where the computerized blood donor registration system was introduced by the project, only NBC and the BTU of Mandalay General Hospital are using the system for the purpose of screening blood donors (see photo). The other 32 BTUs are using the system only for summarizing data and reporting. These BTUs are located in the laboratories of each hospital, and staff



members allocated for the laboratory are conducting blood transfusion services when needed. This is to say there are no dedicated staff for the blood transfusion service, and there is a shortage of capacity for undertaking data input work at the reception of blood donation. This is the background behind the fact that the system has not been fully-utilized. At the time of the ex-post evaluation, the government of Myanmar was considering a plan to strengthen the organizational structure for the management of the blood transfusion service, including allocating persons in-charge of the service at each hospital. It can be expected that safety of the donated blood would be further increased by utilizing the above-mentioned system, when this plan is realized.

Thus, there is room for improvement in the organizational structure of the management of the blood transfusion service; however, the institutional arrangements necessary for sustaining the effect of the project has been established in general.

3.4.3 Technical Aspects for the Sustainability of Project Effects

NAP has sufficient technical skills to analyze data collected from all over the country, and develop strategies by referring to these data and monitoring results of the activities conducted; there seem to be no technical problems.

There were no technical problems concerning the registration system and implementation of the screening of blood donors by ways of questionnaire and HIV and syphilis tests, which are conducted at NBC and the BTUs in all over the country. NBC has techniques necessary for utilizing the outcome of this project expansively. For example, at the time of the ex-post evaluation, NBC constructed a database in the computerized blood donor registration system introduced in this project, identified a low-risk group of HIV and syphilis infection, and implemented activities for creating motivation and promoting recruitment to obtain volunteer donors from the group, for the purpose of improving safety of the donated blood. In addition, in 2018 NBC issued a second edition of blood transfusion service guidelines, which were originally issued with assistance from the project, by adding matters concerning clinical use of blood products.

NHL has the technical skills necessary to continue and expand the outcome of this project. The test equipment provided by the project and the practical training room, which was renovated with support from the project, is frequently used. Status of maintenance of this equipment and training room is also good. As described in "3.2.2.2 Other Positive and Negative Impacts", NHL became able to conduct several new tests by using the PCR laboratory established by the project. The

types of tests for NEQA was also increased. As a result of guidance from NHL, the false result rate in NEQA for HIV test has decreased in recent years.

As stated in "3.2.2. Impact", the percentage of laboratories that did not reach the target score in syphilis NEQA for both qualitative and quantitative tests did not show a stable improvement. This is mainly due to insufficient technical training to laboratories newly participating in NEQA.⁴¹

In this way, although there is a need to continue and strengthen training for technical improvement of syphilis tests, NAP, NBC and NHL are generally equipped with the necessary techniques for sustaining the effect created by the project.

3.4.4 Financial Aspect for the Sustainability of Project Effects

The total expenditure of NAP in 2016/17⁴² was 16,689 million yen (109 million USD), and the breakdown of contribution was 2,450 million yen (16 million USD) from the government budget, 10,871 million yen (71 million USD from the Global Fund to Fight AIDS, Tuberculosis and Malaria (hereinafter referred to as "GF")⁴³, and 3,368 million yen (22 million USD) from other multilateral and bilateral donor agencies.⁴⁴ Until 2017/18, both the government budget and donor assistance tended to increase year by year. Assistance of GF, the biggest donor, has been committed until 2020⁴⁵; and therefore, there will be no impact on the sustainability of the effect of the project, even though some reduction in amount is anticipated in the future.

Since 2013, HIV test kits were procured by the government budget; there was no shortage in numbers. The budget allocation for the syphilis test kits had been suspended for a time; however, the budget has been increased since fiscal year 2016, and the number of kits procured has also increased. As described in "3.2.2.1 Achievement of Overall Goal", a survey on prevalence of syphilis in the adult population has not been conducted. NAP has been negotiating with the Ministry of Health and Sports to increase the budget and conduct the survey.

All the operations of NBC are covered by the government budget, and there was no financial problem. The participating laboratories for NHL and NEQA spend the general budget given to

⁴¹ Some laboratories do not have rotators used for quantitative testing. It is more difficult to ensure accuracy when the tests are conducted by manual stirring.

⁴² The fiscal year of Myanmar is from April to March of the following year. In this report, for example, the fiscal year from April 2016 to March 2017 is indicated as 2016/17.

⁴³ It is a global fund established in 2002 with the aim of providing financial support necessary for measures against HIV, TB and malaria. Assistance to Myanmar was temporarily suspended for political reasons in 2005 and resumed in 2011. The contribution of GF is distributed to government agencies including NAP, NTP and NMCP, NGOs and international organizations in the country.

⁴⁴ Source: Document provided by NAP. The US dollar amount described in the document was converted into yen at the IMF rate (1 USD = 135.11 yen) of March 2017.

⁴⁵ The UNOPS (United Nations Office for Project Services) and Save the Children, the principal receiving agencies of GF in Myanmar, and GF had already signed an agreement on financial assistance for three diseases for the period from 2018 to 2020. (Source : <https://pr-myanmar.org/en/news/global-fund-nfm-2-grant-agreements-2018-2020-signed>, accessed on May 23rd, 2018.) Allocation of GF is disbursed to the Ministry of Health and Sports of Myanmar through UNOPS.

the laboratories for the expenses related to NEQA; there was no major problems so far. In this way, the financial resources necessary for sustaining the effects created by the project are secured.

No major problems have been observed in the policy background and the organizational, technical, and financial aspects. Therefore, sustainability of this component is high.

4. Result of Evaluation of the Tuberculosis Control Component

In the TB control component, capacity enhancement of the central-level staff, improvement of sputum smear microscopy⁴⁶, operational research⁴⁷ of community-based TB care (hereinafter referred to as "TBCBC") and drug seller referral (hereinafter referred to as "DSR"⁴⁸) and others were conducted to improve the TB control program in Yangon and Mandalay regions.

It was evaluated that the indicators of Project Purpose were partly achieved or expected to be achieved in the terminal evaluation of the Phase 2. In addition to this, it was concluded that the TB control program was strengthened and the Project Purpose was achieved, because the target figures for an increase in the number of examinations conducted for suspected TB patients, that for the reduction of Case Detection Rate (hereinafter referred to as "CDR"), and that for Treatment Success Rate (hereinafter referred to as "TSR") were achieved, according to the statistics of the target area up to 2013.⁴⁹ It was concluded that the number of TB patients, to be changed from increasing to decreasing trends, which was the Overall Goal, needs further observation.

4.1 Relevance (Rating : ③)

4.1.1 Consistency with the Development Plan of Myanmar

Control of TB was regarded as one of the most important national priorities in the National Health Plans of the country during the periods of planning and completion of both Phases 1 and

⁴⁶ Sputum TB microscopy test is a test in which sputum (sputum from the mouth) is stained red by Ziehl-Neelsen method for confirming existence of acid-fast bacteria with a microscope. A patient who shows positive by this test is called a smear positive patient, a negative patient is called a smear negative patient.

⁴⁷ In the project, operational research was defined as "research activities conducted for formulating and introducing appropriate countermeasures for certain tasks" (Source: *Terminal Evaluation Report at the end of Phase 1* (before the extension), p11).

⁴⁸ Drug sellers referral (DSR) means referral by drug stores or pharmacies.

⁴⁹ CDR is the ratio of the patients detected out of the estimated number of TB patients in the country. Estimated number of TB patients is calculated based on existing surveys and statistics and announced annually by WHO.

TSR is the percentage of the patients who completed treatment and was sputum smear positive at the end of the initial intensive treatment but was smear-negative for 0 or 1 times during the maintenance treatment period and have no smear result at the end of the treatment. In the past, CR (cure rate) was used as a statistical indicator for measuring the success of treatment. CR is the percentage of the patients, who was initially smear-positive and completed the treatment and was smear-negative at least twice during the maintenance treatment period, of which one should be the result at the end of the treatment. In this way, CR is a statistic that defines cure based on the results of sputum TB microscopy test during treatment and completion of treatment, whereas TSR is a statistic that includes those who are considered to be cured, regardless of the result of sputum microscopy test. Therefore, in recent years, instead of CR, TSR, which is a statistic covering wider range of patients, has been used.

Phase 2, and national programs were carried out. Therefore, the project was consistent with the development policy of the country.

4.1.2 Consistency with the Development Needs of Myanmar

Throughout the period from planning of Phase 1 and 2, to the completion of the Phase 2, Myanmar was listed as one of the 22 high-burden TB countries in the world by WHO. Also, during the period of planning of Phase 1 and 2, TB was the fourth leading cause of death in the country.⁵⁰ At the time of planning the Phase 1, the operation and management function of TB control measures at the Ministry of Health and Sports and the state/region level was insufficient, and it was necessary to improve the implementation method of DOTS⁵¹ and to strengthen quality assessment of TB testing continuously. At the time of planning Phase 2, it was highly necessary to improve patient's access to the tests, and promote early detection of TB patients with cooperation from the community. On completion of Phase 2, TB prevalence in the whole country was on a downward trend; however, the mortality rate had not decreased and there was still a need for assistance.⁵²

In this way, the contents of assistance of this component was consistent with the development needs of the country throughout the period from planning of Phase 1 to completion of Phase 2.

4.1.3 Consistency with Japan's ODA Policy

See "3.1.3 Consistency with Japan's ODA Policy".

This component was highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

4.2 Effectiveness and Impact (Rating : ②)

4.2.1 Effectiveness

【Phase 1】

The planned outputs of the project, such as capacity enhancement of central-level staff through joint implementation of National TB Prevalence Survey and implementation of operational research (Output 1), improvement of sputum smear microscopy by introducing NEQA by using

⁵⁰ Sources: *Annual Hospital Statistics Report 2004*, Ministry of Health, Myanmar, for the information of the planning of Phase 1, and *Health in Myanmar 2013*, Ministry of Health, Myanmar, for the information for the completion of Phase 1 and planning of Phase 2.

⁵¹ DOTS is the abbreviation for Directly Observed Treatment with Short-course Chemotherapy. It is a treatment method for patients to take anti-tuberculosis drugs in front of health staff and to confirm taking the medicine, which is the most important measure for the strategy for TB control which is promoted by WHO globally. At the time of Phase 1 planning, there was a problem with patients taking anti-tuberculous drugs not being able to be observed continuously in implementation of DOTS in Myanmar; it was necessary to continuously confirm patients taking the drugs and guide them to successful treatment.

⁵² Source: Mid-term Review Report of the Phase 1, pi.

the Lot Quality Assurance System (hereinafter referred to as "LQAS")⁵³ (Output2), strengthening TB control program by holding regular meetings and implementing training for counseling method for staff members (Outcome 3), promotion of patient referrals from private medical institutions (Output 4), and promotion of communication and advocacy activities through creation of educational materials (Output 5), were realized almost as expected.

These results led to improvements in the TB control program, and, as shown in Table 8, at the time of completion of Phase 1, CDR, which was one of the indicators of the Project Purpose, reached equal or more than 70% in both Yangon and Mandalay regions. However, CR (see footnote 49), which was another indicator of the Project Purpose, almost reached the target figure but decreased in 2012 in Yangon and CR in Mandalay did not reach the target.⁵⁴

Table 8 Achievement of Project Purpose – TB Control Component Phase 1

Project Purpose	Indicator	Status of Achievement
TB control in Yangon and Mandalay regions is improved.	By 2012, CDR>70% and CR>85% will be sustained in Yangon and Mandalay regions. [Partly achieved]	<ul style="list-style-type: none"> • CDR reached the target figure in Yangon and Mandalay. • CR almost reached the target figure in Yangon, however, this decreased in 2012. CR did not reach the target figure in Mandalay.

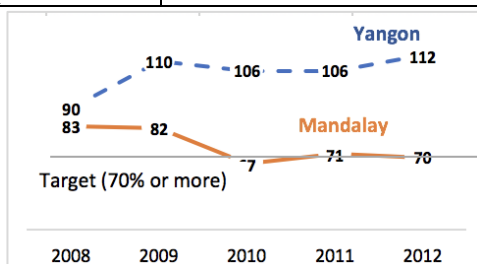


Figure 2 CDR

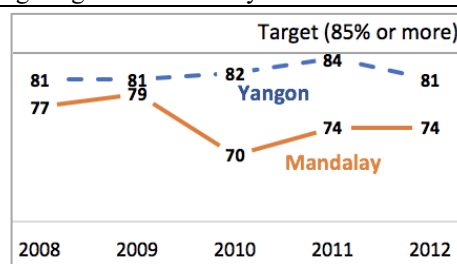


Figure 3 CR

Source: Document provided by NTP

As mentioned above, improvement in the TB control program expected by the project was almost realized; however, problems relating to CR remained, and the degree of achievement of

⁵³ Laboratories in the country participating NEQA for the sputum microscopy test used to submit all positive samples and 10% negative samples to the NEQA center. However, as the number of tests increased year by year, the workload of NEQA also increased, and the burden on participating laboratories and NEQA centers increased. Therefore, it was proposed with leadership from the project to conduct the NEQA using a new sampling method, i.e. LQAS. This method scientifically extracts only 10% of positive and negative samples and submits them to the supervising laboratory. As a result, the work burden was reduced while keeping the functionality in the quality control.

⁵⁴ The main reason why CR did not reach the target was that there were more places where people had difficulty in accessing test services and medical facilities in the vast area of Mandalay region; a lot of HIV-TB complicated patients, which are difficult to cure, were staying in the region since HIV treatment facilities were opened in the region in 2007; and there was a large migrant population seeking jobs, who tend to move to other areas during treatment. (The treatment period of TB can be as long as at least 6 months, and it is important to definitely take anti-tuberculous drugs for complete recovery. Due to side effects that may occur, such as liver dysfunction or allergic reactions, in order to complete the treatment, it is necessary to ensure continuous treatment with consultation with a doctor.)

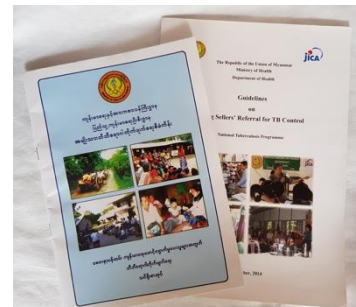
Project Purpose of Phase 1, and level of achievement of strengthening of NTP aimed at in Phase 1, is moderate.

【Phase 2】

The National TB Prevalence Survey carried out from 2009 to 2010 found that CDR was low and TB prevalence rate was high in areas where people had difficulty in accessing hospitals and where awareness of TB among the people was not created sufficiently; there were many people who visited a drug store, instead of a public medical institution, when they have a chronic cough. In response to this, in Phase 2 operational research on CBTBC and DSR was conducted in 6 townships in total, to promote finding cases and treatment. In addition, the project introduced sputum smear microscopy at five station hospitals.⁵⁵

CBTBC is a system for trained volunteers to encourage suspected TB patients in the area to have tests and support treatment. At that time, CBTBC was implemented by NGOs and others in the country; however, there was no uniform guidelines for the method of implementation and reporting. NTP was identifying a need to verify the effect of CBTBC and position CBTBC as one of the national TB control measures, and therefore, worked on this task in the project. DSR was the first attempt in the country where drug stores referred TB suspects to health facilities. CBTBC was conducted at two townships and DSR conducted at five townships (both were conducted at one townships).

Based on the result of CBTBC conducted by the project and opinions of the NGOs and others, who were implementing CBTBC, NTP developed CBTBC training guidelines for NGOs in 2013 (left one of the photos). These guidelines provided guidance for implementation, monitoring and reporting of CBTBC in the country. In this project, a DSR guideline was also developed as planned (right one of the photos)



As Table 9 shows, there were some townships where project activities were conducted that did not achieve the expected effect; therefore, some indicators of Project Purpose were only partially achieved.

However, it was clarified that these programs were effective in identifying cases, because all the indicators show that the numbers of suspected TB cases, tests conducted, smear positive patients, and all forms of TB patients detected increased after implementation of CBTBC and DSR compared with the numbers before the implementation. The aim of the operational research carried out in this project was to show the effectiveness of the two programs and to develop guidelines; therefore, the purpose of the researches was fulfilled.

⁵⁵ Health facilities in the country are, from largest to smallest, General Hospitals, Regional Hospitals, District Hospitals, Township Hospitals, Station Hospitals, Rural Health Centers and Sub Rural Health Centers.

Table 9 Achievement of Project Purpose – TB Control Component Phase 2

Project Purpose	Indicator	Status of Achievement
TB control in Yangon and Mandalay is improved.	(1) More than 70% in CDR and more than 85% in TSR are achieved or sustained in implementing Townships by year 2015 [Largely achieved]	Instead of CDR "Increase in the number of new smear positive patients after CBTBC or DSR introduction" was used as an indicator. ⁵⁶ It was expected to increase at 6 townships, where CBTBC or DSR was introduced, and it increased at 5 townships. The TSR was expected to become 85% or more at the 11 townships where project activities were conducted (6 townships where CBTBC and/or DSR was introduced; and 5 townships where sputum smear microscopy was introduced in station hospitals). Among them, TSR of 8 townships were 85% or more.
	(2) CDR in implementing Township by DSR is increased by 3.2% [Partly achieved]	Instead of CDR, "All forms of TB patients detected" ⁵⁷ was used as an indicator. It was expected to be increased by 3.2% or more at the 5 townships where DSR was introduced. It increased by 3% or more in 3 townships out of the 5.
	(3) Case detection in implementing townships by CBTBC is increased by 3.2% [Partly achieved]	Instead of CDR, "All forms of TB patients detected" was used as an indicator. There was an increase of 4.3% and 6.1% in 2 townships respectively where CBTBC was introduced.
	(4) Examination of TB suspected cases in implementing Townships in Yangon and Mandalay Regions is increased by 10%. [Partly achieved]	It was expected to be increased by 10% at the 6 townships, where DSR or CBTBC was conducted. 2 townships had an increase of 10% or more.

⁵⁶ At the time of the termination evaluation, it was concluded that there was a problem with using the CDR as an indicator of the Project Purpose due to the following reasons: (a) It is inappropriate to use CDR, which uses national prevalence common to the entire country for calculation, for analysis and comparison of the current situation in each region; (b) When the prevalence is greatly revised as a result of national prevalence surveys and others, CDR will be greatly increased or decreased due to the influence of the result. In other words, since CDR may increase or decrease irrespective of the progress of TB control program, they are not adequate for monitoring and evaluation of the program. NTP calculates and uses CNR (Case Notification Rate) instead of CDR as an indicator of case findings after 2016, according to instructions of WHO.

⁵⁷ "All forms of TB patients" are those who were confirmed as bacteriological positive. Bacteriological positive is confirmed by through the Gene Expert Test. The result of this test is available within 2 hours; it takes around 1 day to obtain results from sputum smear microscopy, which can confirm resistance to rifampicin, an anti-TB drug, as well as TB bacterium. Because of these advantages, the Gene Expert Test has been recommended by WHO in recent years. As of March 2018, the test is available in 74 medical institutions in Myanmar.

<An Example of introduction of sputum smear microscopy to station hospitals >

There was an important activity in Phase 2 in addition to CBTBC and DSR. The project introduced sputum smear microscopy at the peripheral medical facility to identify cases and encourage treatment by improving patient access to TB test services. The project introduced sputum smear microscopy at five station hospitals. The following example is from Khathiya Station Hospital (photo) in the Yangon Region, which the external evaluator visited during her site visit in the ex-post evaluation.



Previously, the hospital could not carry out sputum smear microscopy, and medical officers at the hospital asked suspected TB patients to undergo tests at the nearest townships hospital. This was 50 km away, and the road was bad and difficult to travel along. Therefore, some patients did not go for the tests even if they were asked to. TB patients needed to be examined regularly even during treatment, and the patients found it difficult to get to the hospital because it was far away.

To reduce the above problems, improve identification of cases and encourage treatment, sputum smear microscopy was introduced to the hospital with support from the project in 2011. Since there was no laboratory technician assigned to the hospital, a public health service officer was appointed and trained as staff in-charge of the sputum smear microscopy. It was decided to use the microscope owned by the hospital.

According to the record of testing in 2013, 10 to 20 tests were conducted every month, and 1 or 2 new TB positive patients were detected. At that time, the hospital had never issued major errors in NEQA. It is clear that the hospital conducted highly accurate examinations and contributed to the identifying cases and treatment of TB patients.

This project showed the effectiveness of CBTBC and DSR; and the guidelines, which were developed by the project, denoted future direction of the both programs. Improved patient access to test services was also realized as expected by introducing sputum smear microscopy with high accuracy to the peripheral medical facilities.

On the other hand, as stated at the beginning of this chapter, the terminal evaluation concluded that the TB control program in these regions had improved, because the number of suspected TB cases had increased and the figure of TSR had met the target, according to the statistics of the target area up to 2013.⁵⁸ This verification method was used because the Project Purpose of the project was "TB control in Yangon and Mandalay is improved" although the indicators of the Project Purpose were related only to CBTBC and DSR. Therefore, in the ex-post evaluation, to verify whether the TB control program in these regions had improved, the number of TB suspects who underwent tests and figures of TSR were studied up to the time of project completion (2015). As a result, it was found that the number of suspected cases who underwent tests has decreased

⁵⁸ In the terminal evaluation, the trend of CDR was also considered for evaluation. However, it was not considered in the ex-post evaluation because it was concluded in the terminal evaluation that using CDR for an indicator for Project Purpose is inappropriate, as explained in footnote 56.

in 2014 and 2015 after increasing in 2013; the TSR was 83% in 2015, which has not reached the target value.

Based on this, the degree of achievement of the Project Purpose of Phase 2 is evaluated to be moderate.

4.2.2 Impact

In order to verify the status of contribution of this project for achieving the Overall Goal, the CDR of Yangon and Mandalay Regions (target of this project was 70% or more), TSR (WHO's target is 85% or more), which was used on behalf of CR, were studied at the time of the ex-post evaluation.

Although CDRs remained the same or were declining in both regions until 2014; this increased greatly in 2015 as a result of promoting activities to identify patients by dispatching mobile medical teams⁵⁹ to villages, and others.⁶⁰ TSR was more than 85% continuously and met the target in Yangon recently; however, it was 83% and did not meet the target in 2015 and 2016. TSR in Mandalay has been in the range from 83% to 85% with some fluctuation. In this manner, the results in both regions are not far from the target; however, it cannot be said that they have achieved the target stable goals consistently. According to the explanation of the officer responsible for NTP, there was no remarkable improvement in the indicator mainly because it is difficult to provide treatment to the migratory labor population and MDR TB patients.⁶¹

CBTBC was conducted at 221 townships nationwide by NGOs at the time of ex-post evaluation. The Myanmar Health Assistant Association (hereinafter referred to as "MHAA"), a local NGO, which the external evaluator visited during her visit to the country in the ex-post evaluation, utilized the CBTBC training guidelines, which had been developed with assistance from the project, provided training on CBTBC to volunteers, and carried out monitoring and reporting of the activities based on the guidelines. It was apparent from the achievement of MHAA that CBTBC plays an important role in identifying cases.⁶² At the time of the ex-post evaluation, Population Service International (PSI), an international NGO, was implementing DSR in 34 townships throughout the country; and the guidelines developed by the project was utilized for training of volunteers. The NTP was implementing monitoring and impact measurement of CBTBC and DSR and shares relevant information among the stakeholders at regular meetings.

⁵⁹ The mobile medical teams consist of medical staff including physicians and visit villages by vehicles loaded with test equipment such as microscopes and X-rays to find and diagnose patients.

⁶⁰ Since 2016, Myanmar uses CNR without using CDR. CNR in 2016 was 504 and 187 in Yangon and Mandalay respectively, which met the target figure of 450 and 175 respectively.

⁶¹ MDR is an abbreviation for Multi Drug Resistance. This refers to patients who are infected with multi drug-resistant TB, which is resistant to rifampicin and isoniazid anti-TB drugs that are used for standard treatment of TB and have the strongest anti-TB effect.

⁶² In the area of activity of MHAA, the total number of confirmed TB patients referred by CBTBC accounts for 38% of the total number of such patients detected in the area.

In this way, the outputs of this project were utilized and contributed to expanding its area of implementation at the time of the ex-post evaluation.

4.2.2.1 Achievement of Overall Goal

Status of achievement of Overall Goals of the two phases are shown in Table 10.

Table 10 Status of achievement of Overall Goals – TB control component Phases 1 and 2

Overall Goals	Indicators	Status at the time of the ex-post evaluation ⁶³
【Phase 1】 New TB infection is controlled in Yangon and Mandalay regions	(1) No. of new smear positive TB detected reaches a plateau. [Partly achieved]	Although it was in a stable status in Mandalay after 2009; however, in Yangon, it was in a decreasing trend, and rapidly increasing in 2016 and cannot be considered having been in a stable status. The rapid increase was because the case finding was promoted as a result of dispatch of mobile medical teams and others.
	(2) Increasing notification rate of new smear positive TB slows down. [Partly achieved]	It was in a decreasing trend on and after 2010 in Yangon, and almost no change in 2014 and 2015, and was greatly increased in 2016. It was not considered to have been on a decreasing trend. It was maintained at almost same level in Mandalay.
【Phase 2】 To halt and reverse the TB incidence by the year of 2015. ⁶⁴	(1) New smear positive TB detected is maintained. [Partly achieved]	See Indicator (1) of Phase 1.
	(2) Case notification rate (all forms of TB) is increased up to 2015 and shows a downward trend. [Partly achieved]	It was slightly on a downward trend in Mandalay. It was maintained at almost same level in Yangon. (Figure 4)

Year	Yangon	Mandalay
2009	391	172
2010	386	177
2011	377	173
2012	364	178
2013	333	163
2014	360	161
2015	343	156
2016	354	146

⁶³ Source of the information at the time of the ex-post evaluation is the document provided by NTP.

⁶⁴ The project aimed to increase the number of patients in Project Purpose and aimed at the number turning to a decrease in Overall Goal in Phase 2. This was because the project expected the number of patients to be increased due to activities to identify cases and improved access to medical facilities, and, thereafter, expected the number to start decreasing as a result of effect of prevention of infection.

The country has a policy to include not only sputum smear positive patients, but also all forms of TB patients as an important group for provision of treatment in recent years.⁶⁵ Therefore, among the three indicators of the Overall Goal shown in Table 10, the most relevant indicator for measuring change in the number of patients is "Case notification rate of all forms of TB". As shown in the table, notification rate of all forms of TB was maintained almost at the same level in Yangon and was on a downward trend in Mandalay. It was not "increased up to 2015 and shows a downward trend" as expected.⁶⁶ From this result, level of achievement of Overall Goal is evaluated as fair.

4.2.2.2 Other Positive and Negative Impacts

There were no other impacts.

As described in "4.2.1 Effectiveness", the project enhanced the TB control program in various aspects; however, in both Phases 1 and 2, the level of achievement for improving the TB control program in Yangon and Mandalay regions, which was the Project Purpose, was moderate. The number of TB patients in the two regions, which was the Overall Goal, was not changing in the expected manner, i.e. increased up to 2015 and thereafter started decreasing. Therefore, the impact that the project had given to Overall Goal was somewhat limited. Therefore, effectiveness and impact of this component was evaluated as fair.

4.3 Efficiency (Rating : ②)

Efficiency was evaluated for the 3 components together. See "3.3 Efficiency".

4.4 Sustainability (Rating : ③)

Among the strengthening of NTP, sustainability of the main effects of the project, such as NEQA for sputum smear microscopy, CBTBC, DSR and sputum smear microscopy at station hospitals, were analyzed as follows.

⁶⁵ Previously, TB control emphasized treating patients who were found to be positive by sputum smear microscopy until they become negative. Although it is still important to find, test and treat the patients who were positive in sputum smear microscopy, in view of the situation that the number of TB patients has not drastically decreased by this activity alone in recent years, it became a mainstream policy that patients who were diagnosed with TB from the findings of chest x-rays or results of tuberculosis bacterium PCR test (these are referred to as "all forms of TB patients") should also be identified, tested and treated without prejudice. Therefore, in recent years WHO does not use the number of new smear positive patients and the case notification rate of new smear positive patients as indicators, and uses the number of all forms of TB patients and its notification rate as indicators of identification of cases.

⁶⁶ According to an explanation from the person in charge of NTP, the notification rates in these regions did not dramatically decrease because of the influence of social factors, such as being densely populated, lack of drastic improvement in housing and living conditions, and inflow of labor population, which includes TB patients, to these regions due to the boom in construction.

4.4.1 Policy and Political Commitment for the Sustainability of Project Effects

At the time of the ex-post evaluation, the country has formulated the *National Tuberculosis Strategic Plan (2016-2020)* which has a policy to strengthen and continue control measures in the future, too. It is planned to strengthen and continue control measures; and one of the specific targets in the plan is to reduce the TB prevalence per 100,000 population (all forms of TB) to 348 by 2020. CBTBC, for which the project supported the formulation of guidelines, is positioned as an essential program in the said plan.⁶⁷ The measures introduced by the project, such as the sputum smear microscopy by LQAS, CBTBC, DSR, and sputum smear microscopy at station hospitals, have been continued and expanded. It is highly likely that these systems will continue in the future.

4.4.2 Institutional Aspect for the Sustainability of Project Effects

At the time of the ex-post evaluation, NTP is located under the Disease Control Division of the Department of Public Health, Ministry of Health and Sports. This includes the Lower Myanmar TB Center and the Upper Myanmar TB Center in Yangon and Mandalay respectively.

Below that, there are tuberculosis officers in the Health Department at the state /regional level. Below these, there are TB team leaders in each district and TB medical officers at township level, who are engaging in TB control and prevention while working on other diseases at the same time. For TB testing, there is a NEQA management unit for sputum smear microscopy in the National Tuberculosis Reference Laboratory, which is designated under NTP and affiliated with Yangon General Hospital.

Although vacancies for central and regional NTP staff are being filled, the status of fulfillment of technical staff is still low. However, in this project, DSR, CBTBC and other programs were introduced to encourage identification of cases through private partnerships based on the fact that NTP has a staff shortage. At the time of the ex-post evaluation, these programs were implemented by NGOs and others, and there were no institutional problems.

With regard to TB testing, too, the project assisted training of public health service staff so that they can conduct sputum smear microscopy at station hospitals where there is no allocation for a laboratory technician, taking the problem of staff shortage into consideration. At the time of the ex-post evaluation, the tests were being conducted at 70 of the 94 station hospitals in the country (as of 2016). However, out of the five places the project assisted the introduction of the tests, only two hospitals were conducting the testing service at the time of the ex-post evaluation. Testing service in the other three hospitals had been suspended after the trained staff were transferred, and either there was no handing over of the duty to their successors or the staff vacancies were not filled. The National Tuberculosis Reference Laboratory and NTP are aware of this problem and are encouraging townships medical officers who supervise the station hospitals where the testing service was suspended to resume the services.

⁶⁷ Source: *National Strategic Plan for Tuberculosis 2016-2020*, NTP, p94

4.4.3 Technical Aspect for the Sustainability of Project Effects

At the time of the ex-post evaluation, NTP continuously monitors and analyzes the results and effects of CBTBC and DSR implemented in the country. NTP incorporates the result at the time of policy development. There is no technical problem in this regard.

Figure 5 shows performance of the NEQA sputum smear microscopy, which was introduced by the project, in all the TB laboratories in the country. The percentage of TB laboratories that produced major errors in NEQA has been on a downward trend, which shows an improvement.

Even after completion of this project, the National TB Reference Laboratory continues training for staff in charge of TB testing services, and they conducted 4 training programs for newly assigned staff and those already in-service respectively in fiscal year 2017. Because there are transfers and new appointments of persons in charge of the tests, the Laboratory needs to conduct the training regularly and continuously for maintaining and improving the test accuracy. After completion of the project, the Laboratory added the test procedure of the fluorescent dyeing method⁶⁸ to the LQAS guideline that was originally prepared with the assistance of the project, and issued it as the second edition.

As described above, NTP and TB laboratories are equipped with the technique necessary to sustain the effects of the project.

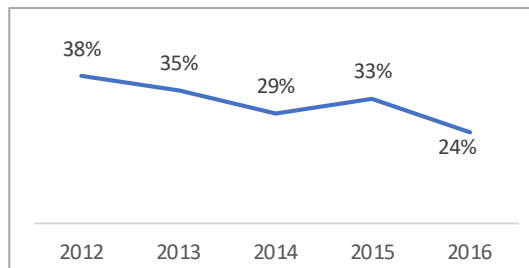


Figure 5 Ratio of TB laboratories that produced major errors in NEQA for sputum smear microscopy among all the laboratories in the country (%)

Source: National TB Reference Laboratory

4.4.4 Financial Aspect for the Sustainability of Project Effects

The government budget for NTP in 2016/17 was 5,568 million kyat (about 4 million USD). The assistance from international organizations to NTP in 2016 were 25 million USD from GF and 10 million USD from other multilateral and bilateral donor agencies.⁶⁹ In recent years, both the government budget and donor assistance had been on an increasing trend. The GF, the largest donor, has committed its assistance to the country until 2020. It seems that there will be no impact on sustainability of the effects of the project, although some reduction of amount will be expected in future. Anti-TB drugs that had been procured with the support of the project and others were procured by the budget of the Ministry of Health and Sports from the financial year 2013, and there was no shortage with the drugs.

For implementation of CBTBC and DSR, funds were also provided by GF at the time of the ex-post evaluation. According to the explanations from NTP officials and MHAA, it is expected

⁶⁸ The fluorescent dyeing method is one method for dyeing sputum spread on a glass slide.

⁶⁹ Source: Document provided by NTP.

that funds will be provided for the programs from GF in the future, too, although there would be some reduction in amount.

In light of the above, no major problems have been observed in the policy background and the organizational, technical, and financial aspects. Therefore, sustainability of the effects of this component is high.

5. Result of Evaluation of the Malaria Control Component

The project introduced a community-based malaria control program for the purpose of strengthening measures against malaria in the East and West Bago region in Phase 1. During Phase 1 extension period, Magway region and Lakhain state were added to the project area, and the project implemented and expanded the community-based malaria control program by utilizing the supplies and equipment for malaria control procured through Grant Assistance Project. In Phase 2, to strengthen malaria control activities in the areas that are difficult to reach by basic health staff (hard-to-reach areas), the project developed a model whereby villagers implement activities as volunteers. At the terminal evaluation of Phase 2, it was confirmed that the project purpose was achieved; a decrease in the number of malaria deaths, the Overall Goal, has already been realized.

5.1 Relevance (Rating : ③)

5.1.1 Consistency with the Development Plan of Myanmar

Control of malaria was regarded as one of the most important national priorities in the National Health Plans of the country during the periods of planning and completion of both Phases 1 and 2, and national programs were carried out. Therefore, the project was consistent with the development policy of the country.

5.1.2 Consistency with the Development Needs of Myanmar

At the time of planning of Phase 1, malaria was the number one cause of death in the country⁷⁰, and it was necessary to develop a model for early diagnosis and prompt treatment. At the time of completion of Phase 1 and planning of Phase 2, malaria was in ninth place of cause of death in the country⁷¹, and the need for control measures remained high. Although the situation was improving at the completion of Phase 2, continued prevention and management was necessary to eradicate malaria by the national target of 2030, and the need for assistance was still high. In this way, the content of assistance of the project was consistent with the development needs of the country from planning of Phase 1 to completion of Phase 2.

⁷⁰ Source: *Annual Hospital Statistics Report 2004*, Ministry of Health, Myanmar.

⁷¹ Source: *Health in Myanmar 2013*, Ministry of Health, Myanmar (statistics of 2011 and published in 2013).

5.1.3 Consistency with Japan's ODA Policy

See "3.1.3 Consistency with Japan's ODA Policy".

In this way, the contents of assistance of this component were consistent with the development needs of the country throughout the period from planning of Phase 1 to completion of Phase 2.

5.2 Effectiveness and Impact (Rating : ③)

5.2.1 Effectiveness

【Phase 1】

In Phase 1, the project developed a community-based malaria control program (see the following column) that carries out comprehensive intervention at each stage of malaria control activities.

The project implemented the package, which includes pull-type goods supply management system⁷², microstratification maps using GIS and others, firstly in the pilot area to confirm the effect, and then implemented it in the four states/ regions during the phase 1 extension period by utilizing Grant Assistance, which is described below.

The effect of the package was recognized and was adopted in the control measures and plans of the national policy, facilitated finding of suspected malaria patients and improved patients' access to health facilities, and identifying malaria patients. Early diagnosis and prompt treatment also promoted prevention of infection, and contributed to a reduction in the number of malaria in-patients, serious and complicated cases and the number of malaria deaths.

As shown in Table 11, the Project Purpose was also achieved; and strengthening of NMCP aimed at this project has been realized.

<Community-based malaria control program>

The main contents of the community-based malaria control program introduced in the project are as follows.

(1) Enhancement of malaria control by basic health staff

The station hospitals, where doctors are assigned, were the center of diagnosis and treatment of malaria at the time of starting the project. However, when the project analyzed medical records of the hospitals, it was found that in many cases patients were brought into hospital too late.

Therefore, the project concluded that it was essential for basic health staff, working in Rural Health Centers and Sub-Rural Health Centers that are closer to where villagers live than hospitals, to conduct early diagnosis and prompt treatment of malaria. In order to realize this, the project provided training on malaria control to the basic health staff working at the centers and introduced the pull-type goods supply management system at the centers, so that stocks such as rapid diagnostic

⁷² Demand-based goods supply system. While the traditional push system distributes goods to every center, such as Rural Health Centers, uniformly; in this system, staff of the centers request goods to the relevant malaria control office of the TS periodically according to inventory status and needs, and visit the office to receive them.

kits and anti-malaria drugs would not become scarce.

(2) Measures for forest workers

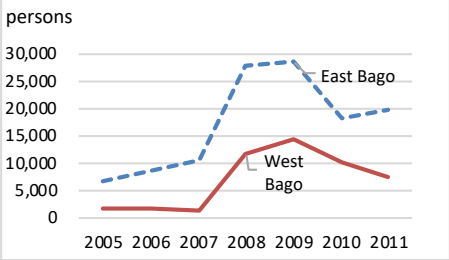
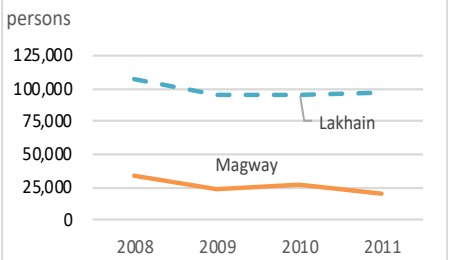
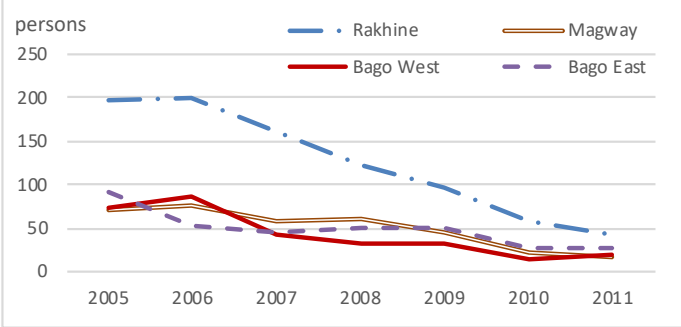
As a result of operational research conducted by the project, many malaria patients in the project target area were found to be adult male forest workers. Therefore, the project provided training programs to forest inspectors in cooperation with the Forest Department of the country; and provided necessary material for malaria control, so that they can provide malaria diagnosis and treatment services to the forest workers.

(3) Promotion of malaria control measures at township level

The project introduced implementation plans and the management system of malaria control to the townships for effective implementation of malaria control measures. For example, it promoted utilization of microstratification maps, which show areas of malaria epidemics in the townships in different colors, so that distribution of inputs, such as mosquito nets and others, is conducted effectively, and information management using databases.

Table 11 Achievement of Project Purpose – malaria Control Component Phase 1

Project Purpose	Indicators	Status of Achievement
NMCP is strengthened.	(1) No of evidence and findings from outputs utilized to improve NMCP. [Achieved]	Community-based malaria control program introduced by the project was utilized in national level policies and guidelines. For example, the pull-type goods supply management system was adopted as a "Standard Operation Procedure Manual on Drug Supply management for National Malaria Control Program". Microstratification maps were firstly adopted by the United Nations Children's Fund (UNICEF) and then adopted by the national program <i>Myanmar National Malaria Prevention Strategic Plan 2010 - 2016</i> . These programs were utilized nationwide for improving NMCP.
	(2) Malaria morbidity and mortality in project site. [Improved and achieved]	The number of malaria patients decreased after the peak of 2009 in East and West Bago regions, where the project carried out interventions intensively (Figure 6). This shows that the number of patients increased because detection of patients was promoted by implementation of the community-based malaria control program, and thereafter the number decreased as a result of the effect of interventions for prevention of infection. The number of patients in Rakhine state and Magway Region, added as the project target area since the Phase 1 extension period, has been almost flat (Figure 7). This suggests that detection of malaria patients and infection prevention were progressing in parallel. The number of malaria deaths decreased remarkably in all state/regions. This shows the effect of early diagnosis, prompt treatment, and infection prevention. (Figure 8).

Project Purpose	Indicators	Status of Achievement
	<p>persons</p>  <p>Figure 6 No. of Malaria Patients (East and West Bago Regions)</p>	<p>persons</p>  <p>Figure 7 No. of Malaria Patients (Magway Region and Lakhain State)</p>
	 <p>Figure 8 No. of Malaria Deaths</p>	

<Collaboration with Grant Aid Project>

During implementation of Phase 1, a Grant Aid Project "The Project for Malaria Control in Myanmar" was implemented in the four target areas in 2008, and malaria rapid diagnostic kits, anti-malaria drugs, mosquito nets, insecticide, etc. were procured. At that time, the supply of malaria control goods was insufficient due to the influence of suspension of assistance from GF. Therefore, the procurement carried out by the grant assistance project was important. These supplies and equipment were distributed, managed, and monitored by the pull system and databases introduced by the project, and were effectively utilized for control activities. In addition to this, the project assisted effective utilization of goods and equipment procured through the projects of Grant Assistance for Grassroots Human Security, which were proposed by the malaria control teams in the target area. In this way, effective implementation of the grant assistance projects⁷³, which fully utilized the outcome of the project, contributed to the achievement of the Project Purpose of the project.

⁷³ The Ministry of Foreign Affairs of Japan implemented a total of 6 projects of Grant Assistance for Grassroots Human Security on malaria control and hospital facility improvement in the target area of the project from 2005 to 2013.



Figure 9 Rapid Diagnosis Kits and Anti-malaria Drugs Procured for Malaria Control by the Grant Aid Project

Source: Report of Malaria Control Plan

【Phase 2】

In Phase 1, the project introduced and expanded the community-based malaria control program conducted by the basic health staff. In Phase 2, the project developed this program and introduced a system for village volunteers to carry out malaria control activities in areas where it is difficult for the basic health staff to reach, and the threat of Artemisinin-resistant malaria is high. The project confirmed the effectiveness of the malarial control activity by village health volunteers (hereinafter referred to as "CHW"⁷⁴) in the pilot area, then gradually expanded the activity area, and at the completion of Phase 2 the project implemented malaria control by CHW in eleven townships in Bago regions as planned.

In addition, report preparation and data analysis using microstratification maps were conducted nationwide, four types of databases for improvement of monitoring, reporting and management were developed and used, and the program management capacity of NMCP was enhanced nationwide. These outcomes were shared and used with development partners. As shown in Table 12, the indicator of Project Purpose was achieved, too.

Table 12 Achievement of Project Purpose – Malaria Control Component Phase 2

Project Purpose	Indicator	Status of Achievement
Implementation/monitoring capability of NMCP are strengthened in the project area.	Full-scale implementation of community-based malaria control program in hard-to-reach areas developed by the Project has commenced. [Achieved]	Malaria control activities by CHW, including identifying cases, diagnosis, treatment and monitoring of malaria patients, and the pull-type goods supply management were implemented in the hard-to-reach areas. At the time of project completion, full-scale implementation of the community-based malaria control program had been started in hard-to-reach areas, as planned. In addition, VBDC's management and monitoring capacity of malaria-control activities had been improved by utilizing CHW training

⁷⁴ At the time of ex-post evaluation, NMCP also calls CHW as VHW (Village Health Workers), However, CHW, which was used during the implementation of the project, is used in this report.

Project Purpose	Indicator	Status of Achievement
		tools, inventory management and epidemiological information report formats, and various databases developed by the project.

<Malaria Control by CHW>

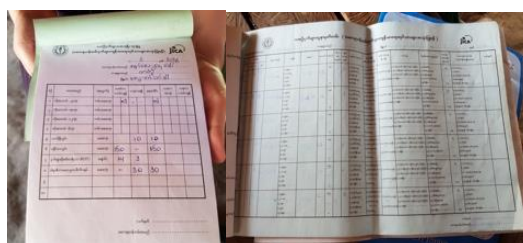
It was in 2012 that villagers re-settled in Pao (HpaO) village in the East Bago region. At that time the road to the village had not been built, and when the villagers were sick they either had to spend a whole day walking to a pharmacy in the nearest town to buy medicine, or be treated with medicinal herbs. The villagers did not go to hospital because they were not familiar with the hospitals and had a strong sense of resistance. However, there were malaria deaths near the village, and malaria was a threat to the villagers.

In 2013, a village woman participated in a malaria control training of this project and started working as a volunteer. Since the volunteer was able to diagnose and treat, the villagers contacted the volunteer when they had a fever, received a rapid test for malaria and got medicine on the spot if it was positive. They also learned the importance of using mosquito nets and early diagnosis, and getting prompt treatment through volunteers.

Such prevention, early diagnosis and prompt treatment have been successful, and there has been no case of malaria in the village in recent years. However, the volunteer continues preventive and diagnostic activities, and was careful about symptom of re-establishment of malaria. She mentioned that she would like to continue the activities in the future, too, because the villagers appreciate her work, and it is only a small amount of extra work that can be done while looking after a house and bringing up children, and she enjoys doing this work.



The malaria volunteer in Pao village (left)



The drug inventory management book (left) and patient record book (right) maintained by the volunteer

5.2.2 Impact

The program for finding and treating malaria patients by CHW was conducted in most of the hard-to-reach areas throughout the country at the time of the ex-post evaluation. There were around 9,000 CHW. The databases developed in the project were utilized in the townships nationwide where the CHW program is implemented. NMCP improved the formats of the databases after project completion, so that they can input data more accurately and conduct more complicated analysis.

All the townships were developing microstratification maps using GIS for analyzing priority area for input. The pull-system distribution and management of supplies for malaria control, which was introduced by the project, was also continuing throughout the country. In this

way, the outcome of the project was continuing even after project completion, and contributing to achievement of the Overall Goal.

5.2.2.1 Achievement of Overall Goal

As shown in Table 13, the number of malaria patients who were diagnosed and treated at health facilities increased as a result of usage of the facilities being promoted, and thereafter turned to a decrease as a result of progress with prevention of infection. The number of malaria inpatients, serious and complicated patients, and malaria deaths were continuously decreasing nationwide. These were the result of strengthening the malaria control program of NMCP. Therefore, the Overall Goal was achieved.

Table 13 Status of Achievement of Overall Goals – Malaria control component Phases 1 and 2

Overall Goals	Indicators	Status at the time of the ex-post evaluation
【Phase 1】 Malaria control is strengthened beyond the project sites due to increasing utilization of health services.	(1) No. of malaria patients diagnosed and treated at health facilities shows upward trend [Achieved]	Number of malaria patients (outpatient + inpatient), who were diagnosed and treated at health facilities in the country increased as a result of identifying cases at the time of Phase 1 (from 2004 to 2010); however, it continued to decrease from 2012 onwards.
	(2) No. of malaria inpatients, severe and complicated cases and malaria deaths is reduced. [Achieved]	The number of malaria inpatients, serious and complicated patients, and malaria deaths were continuously decreasing in the country.
【Phase 2】 NMCP is strengthened.	(1) No. of malaria patients examined and treated at health facilities shows upwards trend. [Achieved]	See the description of indicator (1) of Phase 1. At the time of the start of Phase 2, it was expected that the number of patients who were diagnosed and treated would increase as a result of improved access to health facilities. However, the numbers turned to decreasing from 2012 onwards, as a result of prevention of infection being promoted more than expected.
	(2) Declining trend in number of malaria deaths continues. [Achieved]	See the description of indicator (2) of Phase 1.

5.2.2.2 Other Positive and Negative Impacts

Learning from malaria control, NAP and NTP adopted analysis using GIS mapping. Thereafter, the technique was used for enhancement of these programs. This was a result that the local staff of the JICA expert team for malaria control conducted training for local staff in NAP and NTP.

As a result of implementation of the project, strengthening of NMCP, which was set as Project Purpose, was realized. The decrease in the number of malaria inpatients, serious and complicated

patients, and malaria deaths, which is the Overall Goal, was also realized. In this manner, the expected effect was created, and therefore, effectiveness and impact of this component are high.

5.3 Efficiency (Rating : ②)

Efficiency was evaluated for the 3 components together. See “3.3 Efficiency”.

5.4 Sustainability (Rating : ③)

Among the measures for strengthening of NMCP, sustainability of the main effects of the project, such as community-based malaria control program by basic health staff and CHW, analysis by microstratification maps using GIS, distribution and management of supplies for malaria control by the pull system, were analyzed as follows:

5.4.1 Policy and Political Commitment for the Sustainability of Project Effects

The country's strategic plan for malaria control at the time of the ex-post evaluation has a policy for further enhancing malaria control with the aim of eradicating malaria by 2030 and reducing the incidence of malaria to less than 1 case per thousand population at risk⁷⁵ in all states/ regions by 2020. This policy is facilitating sustainability of the effect of the project.

The community-based malaria control program by basic health staff and CHW, distribution and management of supplies for malaria control by the pull system, usage of the databases for volunteers and patients and analysis by microstratification maps using GIS, were conducted at the time of ex-post evaluation. It is highly likely these programs will continue in the future, too, since they were established as a system.

5.4.2 Institutional Aspect for the Sustainability of Project Effects

VBDC is located under the Disease Control Division, Department of Public Health in the Ministry of Health and Sports. The deputy director in charge of malaria, who is responsible for VBDC, is also responsible for NMCP.

The central VBDC office is in charge of planning, monitoring, management, and human resource development for control of vector-borne infectious diseases including malaria and others. The regional/ state VBDC teams are facilitating implementation of malaria control programs, supply of goods and technical support to townships. Staff of townships, Rural Health Centers, and Sub Health Centers and CHW are implementing prevention, diagnosis and treatment of malaria.

There are staff shortages in both central and regional offices. However, there was no problem of discontinuation of activities and systems introduced by the project due to staff shortages. This is because the project established a system for basic health staff and CHW to engage in prevention and treatment, so that they can be conducted in spite of staff shortages.

⁷⁵ “National Plan for Malaria Elimination in Myanmar” identified the population at risk in each stratum according to the result of micro-stratification analysis. Source: *National Plan for Malaria Elimination in Myanmar 2016 – 2030*, NMCP (p5, Table 1).

5.4.3 Technical Aspects for the Sustainability of Project Effects

The project did not introduce advanced techniques, but introduced those acquirable and continuable even by health staff working in peripheral areas. NMCP continues training programs for usage of databases and others for basic health staff and CHW. NMCP continues to plan, monitor, and implement the malaria control program, and carried out improvements of these when necessary even after the project completion. There is no problem in their technical capabilities.

Therefore, concerning various systems introduced in this project, problems such as delay in implementation and continuity due to technical problems have not occurred.

5.4.4 Financial Aspect for the Sustainability of Project Effects

The government budget for VBDC in 2016/17 was 185 million kyat (around 130 thousand USD), and the assistance from international organizations to NMCP in 2016 was 55 million USD from GF and 16 million USD from other multilateral and bilateral donor agencies⁷⁶. In recent years, both the government budget and donor assistance had been on an increasing trend. The GF, the largest donor, has committed its assistance to the country until 2020. It seems that there will be no impact on sustainability of the effects of the project, although some reduction of amount will be expected in the future.

Anti-malaria drugs, rapid diagnostic kits, mosquito nets, insecticides, etc., which had been procured with support from the project and the Grant Assistance Projects are procured with the budget of the Ministry of Health and Sports and GF; there were no problems for activities for prevention and treatment. There has been no problem due to financial issues, such as interruption or discontinuation, with regard to the various systems introduced by the project.

No major problems have been observed in the policy background and the organizational, technical and financial aspects. Therefore, sustainability of the effect of this component is high.

<Role and Contribution of JICA>

JICA formulated and started assisting the project, which was urgent and necessary in humanitarian aspects, under circumstances whereby overseas assistance to Myanmar was limited.

The project was implemented in a highly effective and sustainable manner, continuing the assistance seamlessly in responding to political changes in the country, such as the general election and changes of government; assisting operational research necessary for improvement of national programs; introducing and expanding the models for controlling infectious diseases based on the results of the research; developing various guidelines; and nationwide expansion and establishment of the various programs through technical training programs. Behind this achievement, there was a great contribution by experts and other stakeholders of JICA working for the project, including harmonious communication with the implementing agency; appropriate judgment corresponding to changes in the local environment; accurate analysis of problems and needs; and strong commitment to improvement.

⁷⁶ Source: Document provided by VBDC.

6. Overall Evaluation Result of the Project (Rating: A⁷⁷)

Relevance is high for all three components. Effectiveness and impact are high for HIV/AIDS and malaria components, and fair for the TB component. Therefore, effectiveness and impact of the project as a whole are high. Efficiency is evaluated for the three components together and is fair. Sustainability is high for all three components. In light of the above, this project is evaluated to be highly satisfactory.

7. Conclusion, Lessons Learned and Recommendations

7.1 Conclusion

This project supported control measures against major infectious diseases such as HIV/AIDS, TB and malaria in Myanmar.

Throughout the project implementation period, HIV/AIDS, tuberculosis and malaria control were priority issues of the country, and the need to strengthen measures for the control was high; the project was consistent with Myanmar's development policies and development needs. Implementation of the project was urgent and duly consistent with Japan's ODA assistance policy to the country, which was promoting assistance for truly humanitarian needs. Therefore, the relevance of this project is high.

With regard to the HIV/AIDS control component, the project engaged mainly in preventing HIV infection from donated blood, expanding external quality control of HIV and syphilis tests, and improving data management capability; these were among the measures for capacity enhancement of the NAP, which was the Project Purpose of the component and created expected outputs at large. The HIV prevalence of donated blood, which was one of the indicators of Overall Goal, was maintained at the expected level, and the prevalence of HIV among the adult population showed a decreasing trend. From this, effectiveness and impact are evaluated as high. There is no problem in sustaining the effects of the project in political, institutional, technical, and financial aspects; therefore, its sustainability is high.

With regard to the TB control component, the project engaged in strengthening TB control in various aspects. However, the level of achievement of the Project Purpose, improvement of TB control measures in Yangon and Mandalay Regions, was moderate in both Phases 1 and 2 of the project. The decrease in the number of TB patients in both regions, which was the Overall Goal of the project, was not realized in the expected manner. Therefore, effectiveness and impact of the component was evaluated as fair. There is no problem in sustaining the effects of the project in political, institutional, technical and financial aspects; therefore, its sustainability is high.

With regard to the malaria control component, strengthening the NMCP, which was the Project Purpose, was realized. Reduction of numbers of malaria in-patients, serious and complicated patients, and malaria deaths, which were the Overall Goal, was realized. The effectiveness and impact of the component is evaluated as high because the planned effect was realized in this

⁷⁷ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

manner. There is no problem in sustaining the effects of the project in political, institutional, technical, and financial aspects; therefore, its sustainability is high.

Efficiency was evaluated for the three components together. Although the project period was as planned, the project cost exceeded the plan. Therefore, efficiency of the project is fair.

From the above results, this project was evaluated as “highly satisfactory”.

7.2 Recommendations

7.2.1 Recommendations to the Implementing Agency

7.2.1.1 <HIV/AIDS Control Component> Further improvement of blood safety by enhancing institutions for blood transfusion service (Ministry of Health and Sports)

The computerized blood donor registration system was introduced by the project at 34 locations throughout the country. At the time of ex-post evaluation, NBC and the BTUs of Mandalay General Hospital utilize the system, screening volunteer blood donors by checking their past records of donation in the system when they visit the center. NBC also utilizes the database built in the system to identify those who provided safe blood in the past; and also, regularly contact them to encourage blood donation.

These are important efforts to further improve the safety of donated blood. On the other hand, 32 other BTUs only use the system for summarizing data and reporting at the time of ex-post evaluation as described in this report. The main reason for this is that there are no dedicated staff for blood transfusion service at these centers. To further improve blood safety, it is important to enhance screening and secure safe volunteer donors using the computerized blood donor registration system introduced by the project. Therefore, it is recommended that the Ministry of Health and Sports actively consider enhancing institutions for blood transfusion services, such as assigning dedicated staff at major BTUs.

7.2.1.2 <HIV/AIDS Control Component> Improvement of accuracy of syphilis test by regular and more frequent technical guidance (Ministry of Health and Sports)

As mentioned in this report, there was no stable improvement in the percentage of laboratories that did not reach the target score in NEQA for syphilis testing. This is mainly due to insufficient technical guidance to laboratories newly joining NEQA and newly-appointed laboratory technicians. NHL is aware of the need to improve the accuracy of the tests, including syphilis. However, due to budget constraints, training for in-service staff can be conducted about twice a year, and monitoring visits can be conducted once a year or two years. NHL believes that this should be done at least four times a year and twice a year, respectively.

Improving test accuracy is important for infection prevention and treatment, too. Regular and more frequent training and monitoring visits should be conducted in order to improve the accuracy of the tests, because laboratory technicians in laboratories across the country are often replaced due to relocation or change in career. Therefore, the Ministry of Health and Sports is recommended to make necessary budget allocation for this.

7.2.1.3 <TB Control Component> Secure placement of staff in-charge of sputum smear microscopy at station hospitals and technology transfer (NTP)

Based on the lack of laboratory technicians, the project supported training for public health service staff working at station hospitals, and made sputum smear microscopy available at health facilities closer to the local residents. In the ex-post evaluation, it was confirmed that the test system has been continued and expanded, contributing to finding TB cases. However, some medical facilities did not continue the tests, because of staff shortages and insufficient handing-over of the duty. NTP is recommended to facilitate more positively medical officers working at hospitals where the test is not functioning, and township medical officers to which the hospitals belong, so that they can re-establish the function by appointing staff in-charge of the test and give them opportunities to participate in the training for new staff.

7.2.2 Recommendation to JICA

None.

7.3 Lessons Learned

The program introduced by the project was disseminated nationwide as a result of showing its versatility and incorporating it in policies and systems.

In the malaria control component of this project, based on the fact that there were many malaria deaths, and in many cases, it was too late when patients were brought in hospitals, the project implemented the community-based malaria control program by health staff working at peripheral health institutions in order to speedily and reliably deliver preventive, diagnostic and treatment services to patients firstly in the pilot area, and showed its effectiveness. The project then implemented the program in other areas, and showed the Myanmar government and other development partners, that the program can be widely used in actual field operations, not only under the special environment of the pilot area.

Furthermore, the project positively shared information on the result of the program implementation and its effectiveness with the Myanmar government and other development partners, through presentations at seminars and distribution of reports, aiming at nationwide dissemination of the program. As a result, these institutions recognized effectiveness of the program and incorporated the program in their policies and systems, and then, the program became expansively implemented nationwide. The program was integrated as a part of policies and systems of malaria control of the country, and was implemented nationwide at the time of the ex-post evaluation, too.

When a project aims at geographical expansion of a program developed in pilot areas, it is important to show its versatility by implementing it in areas other than the pilot areas. In addition, if the project aims at nationwide expansion of the program, it is useful to positively share the result of the program implementation and its effectiveness with the implementing agency of the project and other development partners, let them recognize effect of the program, and encourage them to incorporate it to their policies and systems.

Status of Achievement of Outputs

HIV/AIDS Control Component

【Phase 1】⁷⁸

Output 1: Blood safety for HIV and TTI is enhanced.

Indicators [Status of Achievement]	Status as of Terminal Evaluation or Completion of the Project
1.1 Number of blood centers adopting blood donor deferral. [Increased]	The number of BTUs that introduced donor screening system increased every year and reached 160 locations in 2011. This was about 40% of all 422 BTUs in the country at the time of completion
1.2 The development of SOP. [Developed, approved, and distributed]	An SOP (Standard Implementation Procedure) for blood safety was completed in 2011, approved by the Ministry of Health and Sports, and 1,000 copies were printed. It was distributed all over the country to medical institutions that were carrying out blood transfusion services.
1.3 Number of training sessions and trainees. [Conducted continuously]	Training on blood donor screening was conducted continuously. For example, during the extension period a training module based on SOP was developed, and training of trainers (TOT) was conducted for pathologists and doctors at 22 hospitals in 16 state/ regions; 58 people participated. After that, the TOT participants conducted a total of 10 training sessions.
1.4 Number of reporting transfusion services. [Improving]	Comparing the test results of HIV prevalence of donated blood among the NEQA participating laboratories in 2010 and 2011, the number of laboratories that were "accurate and regular" increased from 21 to 28, and "not submitted /inaccurate but irregular" decreased from 65 to 32. Therefore, it was improving.
1.5 Number of meetings [Conducted periodically]	Meetings with stakeholders on blood safety, such as pathologists working for hospitals and NBC staff, were regularly carried out. The following meetings are examples of those held during the extension period: July 2010: 28 people participated from 28 hospitals in 14 state/ regions February 2011: 32 people participated from 29 hospitals in 14 state/ regions
1.6 Productions for TV spot [Achieved]	Two TV spots were created and aired. In addition, many leaflets, videos, brochures, calendars, posters, etc. were created and distributed.

Output 2 Quality Assurance of HIV tests and other TTIs are improved.

Indicators	Status as of Terminal Evaluation or Completion of the Project
2.1 Number of laboratories under external quality assurance programme [Achieved]	According to the recommendation of the mid-term evaluation, NEQA expanded to include at least 30 or more numbers of institutions every year. In 2011, 328 out of 422 laboratories across the country were participating in NEQA (78% coverage).
2.2 Number and quality of supervisory visits. [Conducted periodically and effectively]	106 laboratories received monitoring visits. Many laboratories improved their performance as a result of monitoring. Therefore, the monitoring visits were effective. Refresher training and additional monitoring visits were carried out to laboratories that were considered to have problems.
2.3. Number of training sessions and trainers [Conducted continuously and in accordance with the guidelines]	NHL continuously conducted training for NEQA for laboratory technicians. For example, training sessions were conducted in August 2005 (66 participants), July 2006 (69), July 2007 (31), March 2009 (20), September 2010 (for 32 laboratories in 31 hospitals).

⁷⁸ In this "Status of Achievement of Outputs", unless otherwise noted, the sources of the status of achievement are the terminal evaluation reports and project completion report of this project. Level of achievement could not be measured for some indicators for which target values were not specified. These indicators were considered to have met the target if the results showed continuation, expansion and improvement of activities and status, and were considered to have contributed to the achievement of the Outputs.

Indicators	Status as of Terminal Evaluation or Completion of the Project
2.4 Number of copies of guideline distributed. [Developed, approved, distributed, and used]	NEQA guidelines for HIV testing were developed, approved by the Ministry of Health, printed in 1,000 copies, distributed to all hospitals, AIDS/ STD teams, international NGOs, and international organizations participating in NEQA. 300 or more numbers of hospitals were using the guidelines at the time of the terminal evaluation. The NEQAS guidelines for syphilis testing were also completed, printed, and distributed to laboratories nationwide before completion of the project.

Output 3 Capacity of National AIDS Program is strengthened.

Indicators	Status as of Terminal Evaluation or Completion of the Project
3.1 Cases of improved routine work and performance. [There were such cases]	Examples of improved routine work include the national annual review meetings, the annual review meetings of this project, the HIV testing kit coordination meetings, the technical and strategy group meetings ⁷⁹ , and the exhibition of this project at the World AIDS Day ceremony.
3.2 Number of training sessions and trainees. [Conducted continuously]	Training sessions for NAP staff were carried out continuously. The major training program conducted before the extension period were the induction training course (two times and 29 participants), and a team leader training in Thailand (3 times and 46 participants). The major training program after the extension includes the induction training course (once and 15 participants), data management training course (once and 41 participants), and STI syndromic management training course (2 times and 116 trainees). Four people from the AIDS teams and two staff of the Ministry of Health participated in the management capacity building training at Mahidol University in Thailand.
3.3 Number of proposed projects [13 were proposed and one was approved]	A total of 13 small projects for HIV/AIDS care were proposed by the AIDS / STD team, one of which was approved by the Ministry of Health and implemented.
3.4 Number of M&E visits [Conducted]	During the extension period, M & E officers conducted inspections in the Ayeyarwady and Sagaing regions.
3.5 Number of TV spots on-air [2 times]	Two TV spots were aired.

[Phase 2]**Output 1 Safe blood donation is enhanced.**

Indicators	Status as of Terminal Evaluation or Completion of the Project
1.1 Number of BT units adopting SOP on blood safety guidelines will increase from 160 in 2011 to 280 in 2015. [Achieved]	Upon completion, 304 BTUs had adopted the SOP for HIV testing; this number exceeded the target.

Output 2 Quality of screening of HIV and syphilis is ensured

Indicators	Status as of Terminal Evaluation or Completion of the Project
2.1 Number of laboratories under NEQAS. [Achieved]	Upon completion, 366 laboratories participated in NEQA for HIV testing. The NEQA for syphilis testing started in 2012; at the time of completion 71 laboratories participated in the NEQA. At that time, there were 422 BTUs in the country. The laboratories participating in NEQA for both HIV and syphilis covered the whole country geographically.
2.2 False results of screening test (false	Note: PDM 2nd version mentioned 5% to 10% as an example of a low level.

⁷⁹ Technical and Strategy Group - a group set up to discuss technical and strategic matters for each disease in the country.

Indicators	Status as of Terminal Evaluation or Completion of the Project
positive or negative rates) of NEQAS on HIV and syphilis will be maintained at low level. [Partly achieved]	The percentage of laboratories produced errors in HIV testing was maintained at a low level (10% or below) from 2011 to 2014, and 7.9% at completion. The percentage of laboratories produced errors for the qualitative test in syphilis testing was maintained at the low level of 7% from the latter half of 2013 to 2014. However, for the quantitative test there was a variation in percentages, and even in 2014 it was 24% to 28% and did not reach a low level.

Output 3 Capacity of data management and analysis on HIV/AIDS control activities is improved.

Indicators	Status as of Terminal Evaluation or Completion of the Project
3.1 Annual reports on blood safety for HIV control are published. [Achieved]	A system has been established for NBC to manage nationwide data on blood safety, and the 2012, 2013 and 2014 editions of the "Blood Safety Annual Report" were published.
3.2 Annual reports which compile data of testing quality assurance on HIV and syphilis are published. [Achieved]	NHL published the annual report "NEQA system on HIV and syphilis test", which summarized data on HIV and syphilis NEQA in 2012 and 2014. At the time of the ex-post evaluation it was confirmed that, in addition to the annual report, NHL prints reports on the results of every NEQA conducted twice a year, and sends these to all participating laboratories as feedback.

Tuberculosis Control Component**【Phase 1】****Output 1 Capacity for program management and epidemiological data management for TB control is strengthened at central level.**

Indicators	Status as of Terminal Evaluation or Completion of the Project
1.1 Results of National Prevalence Survey are authorized by MOH and international organizations and published. [Achieved]	The national tuberculosis prevalence survey conducted by JICA, NTP, WHO, GF and JATA was conducted from 2009 to 2010. The results were approved and published by the Ministry of Health and international organizations.
1.2 NTP activities are presented at international conferences at least once a year. [Partly achieved]	NTP staff presented the results of operational research at the 41 st Conference of International Union Against Tuberculosis and Lung Disease Asia Pacific Region held in Berlin in November 2010. There was no record of whether it was presented once a year.

Output 2 TB laboratory services are improved

Indicators	Status as of Terminal Evaluation or Completion of the Project												
2.1 No of skilled laboratory technicians [Increased]	In-service training and monitoring visits were conducted on LQAS and NEQA of TB testing. The number of trained laboratory technicians increased from 184 (2009) to 237 (2010) and 253 (2011).												
2.2 % of microscopy centers with major errors [Achieved]	The percentage of laboratories that made major errors was 56.9% (2010) and 55.7% (2011) in Yangon, and 55.4% (2010) and 43.4% (2011) in Mandalay. It was improving in both regions.												
2.3 No of TB suspects in selected areas increases compared to the number in 2009. [Achieved]	The number of suspected TB cases increased from 2009 to 2011 as shown in the table below. (Source: Document provided by NTP at the time of the ex-post evaluation) <table border="1" data-bbox="619 1742 1310 1845"> <thead> <tr> <th></th> <th>2009</th> <th>2010</th> <th>2011</th> </tr> </thead> <tbody> <tr> <td>Yangon Region (persons)</td> <td>38,582</td> <td>40,503</td> <td>45,264</td> </tr> <tr> <td>Mandalay Region (persons)</td> <td>16,790</td> <td>18,200</td> <td>26,666</td> </tr> </tbody> </table>		2009	2010	2011	Yangon Region (persons)	38,582	40,503	45,264	Mandalay Region (persons)	16,790	18,200	26,666
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Output 3 Capacity for TB control is strengthened in Yangon and Mandalay Divisions in accordance with Stop TB strategy.

Indicators	Status as of Terminal Evaluation or Completion of the Project																																																																								
<p>3.1 Performance indicators are maintained at 2009 indicators (CDR, CR&TSR). [Achieved]</p> <p>(Reference) CDR> 70% and CR> 85% was the target of Project Purpose. The international target value of TSR set by WHO was 85%.</p>	<p>TB performance indicators were maintained at a nearly constant level as shown in the tables below. However, the number of estimated TB patients, which is the denominator of CDR, has changed several times as a result of the national TB prevalence survey and others. Therefore, it is difficult to evaluate yearly changes.</p> <p>Performance indicators (Unit: %)⁸⁰</p> <table border="1"> <thead> <tr> <th></th> <th>2004</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> <th>2009</th> <th>2010</th> <th>2011</th> </tr> </thead> <tbody> <tr> <td>CDR</td> <td>156</td> <td>158</td> <td>70</td> <td>81</td> <td>90</td> <td>110</td> <td>106</td> <td>106</td> </tr> <tr> <td>CR</td> <td>67</td> <td>73</td> <td>78</td> <td>78</td> <td>81</td> <td>81</td> <td>82</td> <td>84</td> </tr> <tr> <td>TSR</td> <td>76</td> <td>82</td> <td>84</td> <td>85</td> <td>87</td> <td>87</td> <td>88</td> <td>87</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th></th> <th>2004</th> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> <th>2009</th> <th>2010</th> <th>2011</th> </tr> </thead> <tbody> <tr> <td>CDR</td> <td>65</td> <td>67</td> <td>65</td> <td>66</td> <td>83</td> <td>82</td> <td>67</td> <td>71</td> </tr> <tr> <td>CR</td> <td>83</td> <td>77</td> <td>75</td> <td>79</td> <td>77</td> <td>79</td> <td>70</td> <td>74</td> </tr> <tr> <td>TSR</td> <td>89</td> <td>87</td> <td>86</td> <td>86</td> <td>87</td> <td>86</td> <td>83</td> <td>83</td> </tr> </tbody> </table>		2004	2005	2006	2007	2008	2009	2010	2011	CDR	156	158	70	81	90	110	106	106	CR	67	73	78	78	81	81	82	84	TSR	76	82	84	85	87	87	88	87		2004	2005	2006	2007	2008	2009	2010	2011	CDR	65	67	65	66	83	82	67	71	CR	83	77	75	79	77	79	70	74	TSR	89	87	86	86	87	86	83	83
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TSR	89	87	86	86	87	86	83	83																																																																	
3.2 No of training sessions and quality evaluation in CXR [Conducted. Level of achievement is not known]	In July 2010, the project evaluated the quality of 3,110 TB chest X-ray examination films. In addition, in January 2011 the project conducted training sessions on X-ray film interpretation for 33 laboratory staff. Since the target value has not been set, the achievement level of the indicator is unknown.																																																																								
3.3 No of cross-referrals between TB and HIV [Conducted. Level of achievement is not known]	According to NTP's explanation at the time of the ex-post evaluation, cross-referral was implemented during the project period; however, there was no information on the number referred. Therefore, the degree of achievement of the indicator is unknown.																																																																								
3.4 No of family contacts screened, and patients detected [Conducted. Level of achievement is not known]	To screen and find TB patients among family members who have contact with TB patients at home, the project conducted home visits and carried out sputum collection activities in Yangon and Mandalay regions. 112 sputum examinations were conducted; of these, 1 person was positive. Since the target value has not been set, the achievement level of the indicator is unknown.																																																																								

Output 4 Public Private Partnership is enhanced.

Indicators	Status as of Terminal Evaluation or Completion of the Project
4.1 No of partners' meetings held regularly at each level. [Conducted. Level of achievement is not known]	In order to strengthen PPP at the state/ region and township levels, meetings on PPP were held with the participation of 282 people from six locations from August 2010 to February 2011. According to a document provided by NTP at the time of the ex-post evaluation, the number of suspected TB patients and the number of TB patients referred in the target area of the project increased from 2008 to 2011. Therefore, this indicates that PPP was promoted.

Output 5 Communication and advocacy for TB control is promoted.

Indicators	Status as of Terminal Evaluation or Completion of the Project
5.1 No of IEC materials produced/ reprinted and	Many textbooks, pamphlets, DVDs, posters, T-shirts, hats, etc. were created and distributed to medical staff and patients of TB to create awareness on the importance

⁸⁰ Source: Document provided by NTP at the time of the ex-post evaluation. Note) The following points should be noted regarding the actual figure of CDR. (a) The CDR of Yangon in 2004 and 2005 exceeds 100%. This was because the estimated number of TB patients up to 2005 was too low. (b) The CDR of Yangon declined in 2006 because the estimated number of TB patients in Yangon was revised in 2006. (c) The CDR of Mandalay decreased dramatically in 2010, because the estimated number of TB patients in Mandalay was revised and increased in the same year.

Indicators	Status as of Terminal Evaluation or Completion of the Project
distributed for World TB day and other TB control activities. [Conducted. Level of achievement is not known]	and necessity of TB control. They were distributed on World Tuberculosis Days and at other TB control activities. It is difficult to identify total number of copies and kinds of materials distributed, as there were many. A TV spot to create awareness was also aired.
5.2 No of journalists who attended advocacy meetings [Unknown]	A journalist was scheduled to attend the meeting held in the second half of 2011. It is not known whether they attended as there is no information.

【Phase 2】

Output 1 Capacity for program management and data management for TB control is strengthened. 。

Indicators	Status as of Terminal Evaluation or Completion of the Project
1.1 10 Townships utilizing developed guidelines of either CBTBC or drug sellers' referral to expand the related activities. [Achieved to a medium extent]	NTP created training guidelines for CBTBC utilizing the results of operational research on CBTBC conducted by the project. These guidelines were explained and distributed to implementation agencies such as NGOs as guidelines for future CBTBC activities. DSR guidelines were also developed. It is not known whether these guidelines were utilized to expand activities during the project implementation period because there are no records.
1.2 90% of laboratories with no major errors on a quarterly basis ⁸¹ through utilizing EQA annual report in Yangon and Mandalay Regions. [Achieved to a large extent]	The percentage of laboratories that did not make major errors in TB NEQA on a quarterly basis exceeded 90% in Yangon from the second quarter of 2013 until the third quarter of 2014. In Mandalay, it was 84% in the third quarter of 2014, but improved and was 90% or more in the first and second quarter of 2014. NTP published the Tuberculosis NEQA Annual Report in 2013; this resulted from analysis of test results collected from the whole country. This preparatory work for the annual report helped to improve NTP's program data management, analysis, and evaluation capabilities.

Output 2 Capacity for TB control is strengthened in Yangon and Mandalay Regions in accordance with Stop TB Strategy.

Indicators	Status as of Terminal Evaluation or Completion of the Project
2.1 90% of laboratories with no major errors on a quarterly basis through utilizing EQA annual report in Station Hospitals. [Achieved]	The NEQA results from all five station hospitals that received project assistance to open a TB test laboratory were without major errors on a quarterly basis at the time of terminal evaluation (second quarter of 2014).
2.2 Examination of suspected TB cases by drug sellers' reference in the project area is increased by 10%. ⁸² [Partly achieved]	The number of suspected TB patients referred by drug stores continued increasing in one of the 5 townships that carried out DSR in this project; however, a large number of patients were referred at the beginning of introduction of DSR, and then the number decreased in the other 4 townships. Over the years, many patients did not visit TS hospitals in these four TS - these were referred to the hospitals as soon as DSR was introduced.
2.3 Examination of suspected TB cases by community volunteers' reference in the project	Among the 2 townships in which CBTBC was conducted in this project, the number of suspected TB cases in Pyinmana township nearly doubled in the second year compared to the first year, which was immediately after introduction of CBTBC. The number of TB suspects in Hling township increased in the first year but decreased

⁸¹ "On a quarterly basis" means the proportion of laboratories without major errors in NEQA conducted every quarter (not the percentage of laboratories without major errors throughout the year). This is the same for indicator 2.1.

⁸² The aim of this indicator seems to be to increase the number of suspected TB cases referred by drug stores by 10% every year.

Indicators	Status as of Terminal Evaluation or Completion of the Project
area is increased by 5%. [Partly achieved]	thereafter. An officer in-charge of TB control was assigned to Pynmana township, and the local government also became involved in activities. It was considered that the enhancement of institutional arrangements for supporting CBTBC facilitated increasing numbers.
2.4 Case detection by drug sellers in the project areas is increased by 5% [Partly achieved]	With regard to detection of cases by DSR, there was a similar trend to the number of suspected TB cases mentioned in 2.2. The number of patients detected continued to increase in one of the 5 townships in which DSR was implemented; however, in other townships many patients were detected at the start of DSR, and then the number decreased. This is because patients are found among the suspected cases, and therefore the increase and decrease of the two have been almost proportional.
2.5 Case detection by community volunteers in the project area is increased by 5% [Partly achieved]	Regarding case detection by CBTBC, there was a trend similar to the number of suspected TB cases mentioned in 2.3. One of the 2 townships showed a 14% increase over the previous year, while in the other many patients were detected at the start of CBTBC, then the number decreased. This is because patients are found among the suspected cases, and the increase and decrease of these two have been almost proportional.

Malaria Control Component

【Phase 1】

Output 1 Capacity of health personnel on malaria control (reporting, supply, planning and epidemiological analysis) at Division/ State, T/S levels is strengthened.

Indicators	Status as of Terminal Evaluation or Completion of the Project
1.1 Percentage of townships submitting monthly report regularly to State and Division. [Achieved]	All townships within the project target area submitted monthly reports to the VBDC official in the states/ regions regularly. (100%).
1.2 Percentage of health facilities submitting monthly report to townships. [Achieved]	All health centers in the project target area submitted monthly reports to the township VBDC officer. (100%) regularly.
1.3 Percentage of priority (targeted) townships submitting malaria control micro plans. [Achieved]	At the time of planning, it was expected that 14 townships in East and West Bago regions would submit malaria control micro-plans. The external evaluator learned from NMCP that all townships had submitted micro-plans to the VBDC official in Bago regions upon completion of the project. (100%).

Output 2 The community-based malaria control program package is effectively implemented in target areas.

Indicators	Status as of Terminal Evaluation or Completion of the Project
2.1 RBM ⁸³ Core indicators (indicators for early diagnosis and prompt treatment ⁸⁴ , bed-net usage) [Partly achieved]	The actual results in the target area of early diagnosis and prompt treatment were 30% before the project extension period (2008) and 38% after the extension (2010). The actual result at the completion of the project is unknown because there is no record. The actual results of bud-net usage in the four target areas in 2011 were positive in general. It was from 89% to 100% for "sleeping in the bud-net at all times" and from 70% to 100% for "sleeping in a bud-net last night". ⁸⁵

⁸³ RBM are the measures against malaria declared by WHO in 1998. They aim to halve the mortality and morbidity rates of malaria by 2010 and halve them further by 2015.

⁸⁴ To have diagnosis and treatment within 24 hours after malaria symptoms develop.

⁸⁵ Source: P13-14, Community-based Survey on Knowledge, Attitude and Practice on malaria 2011 (Document provided by NMCP)

Indicators	Status as of Terminal Evaluation or Completion of the Project
2.2 No. of malaria suspected patients accessing health facilities. [Improved, therefore, achieved]	<p>As shown in the figure below, the number of suspected patients and number of patients diagnosed as positive in the East and West Bago regions continued to increase until 2009. This indicates that as a result of the promotion of findings of suspected patients by the community-based malaria control program, the number of suspected patients accessing health facilities had improved. Thereafter, although there was some variation, it was on a downward trend. This indicates that there was an effective intervention for preventing infection.⁸⁶ In Rakhine state and Magway region, which were included in the project target areas after the extension, the number of patients peaked in 2011 and 2008 respectively, and then decreased.</p> <p style="text-align: center;">Number of suspected and positive patients in the target area⁸⁷</p>
2.3 No. of malaria patients, severe and complicated cases, and deaths at the hospitals.	See the status of achievement of indicator 2 of the Project Purpose as these indicators have the same meaning. They are macro indexes, which are more appropriate as indicators of the Project Purpose.

Output 3 System for prediction and management of epidemics is utilized in target areas.

Indicators	Status as of Terminal Evaluation or Completion of the Project
3.1 No. of townships developed and utilizing early warning system. ⁸⁸ [Achieved]	This system, developed by the project, was introduced to all townships (total of 70 townships) in the target area, utilized for inventory monitoring, and functioned as an early warning system at the time of a malaria outbreak.

Output 4 Collaborative activities with other partners and sectors are strengthened.

Indicators	Status as of Terminal Evaluation or Completion of the Project
4.1 No. of meetings with collaborative sectors and partners. [Achieved]	Information sharing among VBDC staff in the project activity area and collaboration with other donors were promoted through various training programs and conferences. Furthermore, the JICA experts and VBDC staff had discussions, exchanged

⁸⁶ As the number of serious and complicated patients and malaria deaths declined at the same time, the decrease in the number of suspected / positive patients was not due to the fact that those who should be examined ceased to access health facilities and tests, but it was a decrease in the number of suspected and positive patients, and it is considered that the situation was improved as a result of prevention of infection.

⁸⁷ Document provided by NMCP at the time of the ex-post evaluation. The number of suspected patients refers to the number of patients who underwent rapid diagnostic tests or microscopic examination.

⁸⁸ The early warning system is a system that monitors the possibility of an outbreak of malaria by measuring the increase or decrease in the stock of malaria drugs.

Indicators	Status as of Terminal Evaluation or Completion of the Project
	information and opinions, and shared experience of the activities of this project with development partners such as WHO, 3MDGF ⁸⁹ , UNICEF, GF and others. (The external evaluator tried to identify the number of these meetings at the time of the ex-post evaluation; however, there were too many and it was not possible to do so.). Such exchange of information and opinions served as opportunities for NMCP and development partners to incorporate the mechanisms introduced by the project in their policies and programs. For example, in 2006, UNICEF focused on the microstratification map, which was developed by this project in their project proposal in 2006. ⁹⁰

【Phase 2】**Output 1 Myanmar Artemisinin Resistance Containment (MARC) Project is strengthened in the MARC area.**

Indicators	Status as of Terminal Evaluation or Completion of the Project
1.1 11 townships among 51 townships embracing MARC Tier 1 and 2 ⁹¹ implement malaria control program with CHW System in hard-to-reach areas in Bago Region and Kayin State. [Achieved]	Upon project completion, the malaria control program with CHW system was implemented in hard-to-reach areas in 10 townships in total, that were 8 townships in East Bago region and 2 townships in Kayin state, out of 52 townships for MARC. Shwegyin township, where many institutions were implementing malaria control activities, was excluded from the area of application of the CHW system.

Output 2 Community based malaria control is effectively conducted in Bago Region.

Indicators	Status as of Terminal Evaluation or Completion of the Project
2.1 All 8 townships eligible for ordinary malaria control program implemented program with CHW System in west part of Bago region. [Achieved]	The CHW system was implemented in 11 townships in Bago region. It was carried out beyond the original target of 8 townships as a result of the supply of goods, such as anti-malarial drugs, by VBDC being increased.

Output 3 Capacity of program management in different levels of malaria and other vector-borne diseases is strengthened.

Indicators	Status as of Terminal Evaluation or Completion of the Project
3.1 All regions/ States utilize GIS for documentation and data analysis. [Achieved]	All the states/regions used GIS maps for annual reports, and analyzed data using GIS.
3.2 4 newly developed databases are utilized for program improvement. [Achieved]	Four types of databases, "CHW Activity Monitoring Database", "CHW Personal Information Database", "Health Facilities and Basic Health Staff Database", and "Dengue Weekly Report Database" were developed and used for improving programs.

⁸⁹ The Three Millennium Development Goal Fund.

⁹⁰ P17, "Project Proposal, Prevention and Control of Malaria in Myanmar – though malaria risk micro-stratification and integrated service delivery", UNICEF (April 2006 – March 2007).

⁹¹ MARC designated 21 TSs with strong evidence of suspected artemisinin drug-resistant malaria as tier 1. 31 townships with unclear evidence or those at the border of the tier 1 townships were designated as tier 2 (Source: P 36, National Strategic Plan Malaria Prevention and Control 2010-2016).

Output 4 Outcomes from the project are effectively utilized among the partners for further strengthening of NMCP.

Indicators	Status as of Terminal Evaluation or Completion of the Project
4.1 Quantity of the project outcomes shared, published and utilized among the partners [Achieved]	<p>JICA Experts and NMCP officials actively participated in coordination meetings with development partners and MARC related international conferences and made 35 presentations at a total of 88 meetings. Some of the major outcomes of the project shared, published and used among the development partners are as follows:</p> <ul style="list-style-type: none"> • Completion report on malaria control program in Bago, and Magway regions and Rakhine state (2010, 2011 and 2012) • Mapping of Population Migration and Malaria in the South Eastern Region of Myanmar (2013) • Guidelines on the Prevention and Control of Malaria in Myanmar (2013, in collaboration with IOM, WHO, Department of Health)