

The Socialist Republic of Viet Nam

Ex-Post Evaluation of Japanese ODA Loan Project
Regional and Provincial Hospital Development Project

External Evaluator: Masami Tomita, Sanshu Engineering Consultant

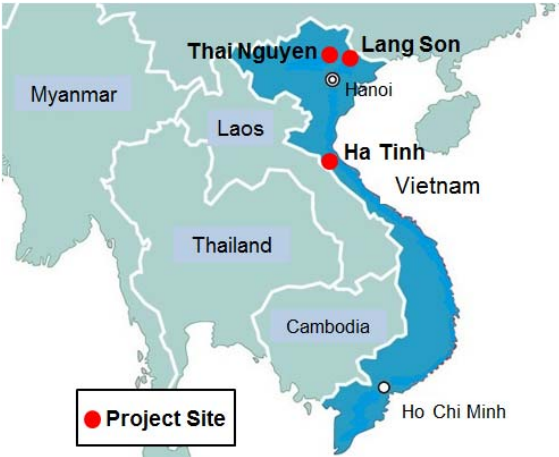
0. Summary

This project aimed at strengthening the referral system and improving the level of healthcare services of the regional core hospitals in Thai Nguyen, Lang Son, and Ha Tinh Provinces, which are located in northern areas in Vietnam, by providing (procuring) medical equipment and trainings to these hospitals.

Relevance of this project is high, as the project is consistent with priority areas of Vietnam’s development plans and Japan’s ODA policy, and moreover development needs for the project are high. All medical equipment procured under the project are effectively utilized except for some equipment that are currently out of order, and results of the beneficiary survey revealed that knowledge and technical skills of participants were advanced due to trainings provided under the project. Moreover, hospital mortality rate and the number of cases of nosocomial infection in three hospitals have largely decreased since the time of project appraisal, and the number of operations, outpatients, and patients referred from lower level hospitals have largely increased since the time of appraisal. Thus, effectiveness and impact of the project are high. Efficiency of the project is fair, as actual project period largely exceeded planned period, while actual project cost was within the planned cost. Sustainability of the project is high, as no major problem has been observed in institutional, technical and financial aspects of operation and maintenance.

In light of the above, this project is evaluated to be highly satisfactory.

1. Project Description



Project Locations



CT Scanner

1.1 Background

Healthcare delivery system in Vietnam is classified as follows: 1) large urban hospitals that are

expected to provide advanced medical treatment (tertiary institutions), 2) a) provincial general hospitals under the jurisdiction of each provincial government that are expected to function as a central core hospital in each province and b) regional hospitals under the jurisdiction of the Ministry of Health that are expected to function as an intermediary hospital (cross-provincial) between secondary and tertiary institutions (secondary institutions), and 3) commune¹ health centers and district hospitals that are expected to provide basic healthcare in rural areas (primary institutions)². However, at the time of project appraisal, the division of roles among different levels of medical institutions was not clearly defined and medical skills and services provided by primary and secondary institutions were not trusted by patients, and thus, patients with minor ailments received medical treatment in tertiary institutions in large cities and a referral system, in which patients are transferred to different levels of institutions according to the extent of diseases, was not functioning properly³. This tendency was evident in northern Vietnam, which is the target area of this project, as each level of medical institutions could not function adequately due to deteriorated medical equipment and a lack of medical skills and managerial abilities, and patients were concentrated in tertiary institutions in the country's capital (Bach Mai Hospital in Hanoi, etc.), and hence it was urgently needed to establish the referral system and improve healthcare services by strengthening functions of secondary institutions⁴. In light of these situations, this project selected provincial general hospitals in Lang Son and Ha Tinh provinces and Thai Nguyen Central General Hospital from provincial hospitals (secondary institutions) in northern areas, based on criteria such as 1) hospitals that have not received and have no plan to receive assistance from other donors, 2) hospitals where renovation of buildings are not needed for installing equipment, and 3) hospitals that urgently need to strengthen their functions as secondary institutions, as they are located far from Bach Mai Hospital⁵.

1.2 Project Outline

The objective of this project is to strengthen the referral system and improve the level of healthcare services of the regional core hospitals in Thai Nguyen, Lang Son, and Ha Tinh Provinces in northern areas of Vietnam, by providing (procuring) medical equipment and trainings to these hospitals, thereby contributing to better health of local residents.

Loan Approved Amount/ Disbursed Amount	1,805 million yen / 1,611 million yen	
Exchange of Notes Date/ Loan Agreement Signing Date	March, 2006 / March, 2006	
Terms and Conditions	Interest Rate	1.3%

¹ Commune is a local administrative unit following a province and a district.
² Source: JICA appraisal document
³ Source: same as above
⁴ Source: same as above
⁵ Source: same as above

	Repayment Period (Grace Period) Conditions for Procurement:	30 years (10 years) General Untied
Borrower / Executing Agency(ies)	Government of the Socialist Republic of Viet Nam/ Ministry of Health	
Final Disbursement Date	August, 2011	
Main Contractor (Over 1 billion yen)	-	
Main Consultant (Over 100 million yen)	System Science Consultants (Japan)	
Feasibility Studies, etc.	F/S: Pilot Study for Project Formulation for Health Service Improvement (2005)	
Related Projects	The Bach Mai Hospital Project for Strengthening Training Capacity for Provincial Hospitals (2006-2009)	

2. Outline of the Evaluation Study

2.1 External Evaluator

Masami Tomita, Sanshu Engineering Consultant

2.2 Duration of Evaluation Study

Duration of the Study: October, 2013 –September, 2014

Duration of the Field Study: December 7– December 28, 2013 / March 16–April 6, 2014

3. Results of the Evaluation (Overall Rating: A⁶)

3.1 Relevance (Rating: ③⁷)

3.1.1 Relevance to the Development Plan of Vietnam

At the time of project appraisal, reducing population growth rate, increasing average life expectancy and improving nutrition conditions were the health sector's targets for social and economic development of Vietnam as stated in "Strategy for Socio-Economic Development 2001-2010". In order to achieve the targets, improvement of quality of medical and healthcare services was necessary, and 1) improvement of regional core hospitals, 2) construction and strengthening of advanced medical centers, and 3) capacity building of medical staff in remote areas were pursued⁸. In particular,

⁶ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁷ ③: High, ② Fair, ① Low

⁸ Source: JICA appraisal document

improvement of regional core hospitals and strengthening of regional healthcare were promoted⁹. Moreover, “National Health Strategy 2001-2010” and “Hospital Network Development Plan 2002-2010” were formulated as specific policies, in which policy reforms including healthcare expenses, promotion of voluntary insurance, modernization of medical facilities and equipment, improvement of regional core hospitals, and assignment of medical staff according to actual needs were stipulated¹⁰.

On the other hand, at the time of ex-post evaluation, dissemination of health insurance among impoverished people and workers in agricultural, fishery and forestry sectors, provision of preventive healthcare to prevent contracting infectious diseases, malnutrition and chronic diseases, and comprehensive renovation of the policy on hospital fees and the mechanism on public health services are emphasized in “Socio-Economic Development Plan for 2011-2015”¹¹. Moreover, proactive preventive medicine, early detect and timely cure of diseases, reducing patient overload in central-level hospitals, upgrading medical infrastructures in communal or ward medical stations, and speeding up human resource development for healthcare sector are emphasized in “Sustainable Development Strategy for 2011-2020” as priority issues of the health sector¹².

Therefore, provision of comprehensive and high-quality healthcare service to nationals through strengthening of regional healthcare and reducing patient overload in higher level medical institutions is emphasized in Vietnam’s national development plans both at the time of project appraisal and ex-post evaluation, which is consistent with the project objective.

3.1.2 Relevance to the Development Needs of Vietnam

At the time of project appraisal, with Vietnamese government’s efforts to expand basic healthcare services and immunization programs, the percentage of patients with infectious diseases was largely declining, however, non-infectious maladies such as injuries, accident victims, stroke and heart failure were increasing. In particular, injuries from traffic accidents were increasing, however, there were not enough hospitals in rural areas that could perform operations required for such injuries¹³. As explained above, the referral system in Vietnam was not functioning properly, and particularly in northern Vietnam, which is the target area of this project, deterioration of medical equipment and a lack of medical skills and managerial abilities were in a serious situation due to the weaker economy of the region and unstable hospital revenues, and thus medical institutions at each level could not function adequately. Therefore, patients were concentrated in high-level hospitals in the country’s capital (Bach Mai Hospital in Hanoi, etc.), and urgent intervention was needed¹⁴.

At the time of ex-post evaluation, major reasons for hospitalization in the hospitals targeted by the project are non-infectious maladies such as injuries from traffic accidents, cancers, diabetes,

⁹ Source: JICA appraisal document

¹⁰ Source: same as above

¹¹ Vietnamese government HP (<http://www.vietnam.gov.vn/>)

¹² Source: same as above

¹³ Source: JICA appraisal document

¹⁴ Source: same as above

hypertension and heart failures, while infectious diseases such as pneumonia and septicaemia are still seen, and thus advanced medical equipment and trainings provided under the project are needed¹⁵. According to the project-targeted hospitals, there are certain numbers of relatively wealthy patients with minor ailments who prefer to be treated in tertiary institutions in large cities even at the time of ex-post evaluation. Thus, it cannot be said that the referral system in Vietnam is perfectly functioning yet. As explained below, this project is considered to have contributed to the improvement of the referral system to a certain extent, and medical equipment and trainings provided under the project are necessary for further improvement of the referral system, and thus needs for the project are still high.

Therefore, advanced medical equipment and trainings are required in the project-targeted hospitals both at the time of project appraisal and ex-post evaluation, and this project is consistent with development needs of Vietnam.

3.1.3 Relevance to Japan's ODA Policy

The assistance policy in Japan's Country Assistance Policy for Vietnam (2004) states that "for enhancing the functions of medical institutions, given that it is necessary to establish a "referral system" whereby cooperation and division of roles are allocated among the primary (commune), secondary (provincial) and tertiary (state) levels, priority for assistance is given to policy areas, as well as the development of facilities and installation of equipment, human resources development and management support at the tertiary (state) level and at the secondary (provincial) level in model provinces"¹⁶. Moreover, Medium-Term Strategy for Overseas Economic Cooperation Operations of JICA (2005) states that redressing regional disparities, poverty reduction and enhancing the quality of life are priority areas for economic cooperation in Vietnam and assistance for human resource development is emphasized, and this project was to expand healthcare services to impoverished areas and support human resource development, which was consistent with JICA's strategy¹⁷.

Therefore, this project was consistent with Japan's ODA policy at the time of project appraisal.

This project has been highly relevant to Vietnam's development plan, development needs, as well as Japan's ODA policy. Therefore its relevance is high.

3.2 Effectiveness¹⁸ (Rating: ③)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

3.2.1.1 Hospital Mortality

Baseline data of hospital mortality in each hospital at the time of project appraisal and target figures and actual figures after project completion are shown in Table 1.

¹⁵ Source: answers to the questionnaire

¹⁶ Source: JICA appraisal document

¹⁷ Source: same as above

¹⁸ Sub-rating for Effectiveness is to be put with consideration of Impact.

Table 1: Hospital Mortality Rate

(Unit: %)

	Baseline (2004)	Target (2012/3years after completion)	Actual (2013/2years after completion) ¹⁹	Increase/Decrease Rate from Baseline
Thai Nguyen	1.2	10% Decrease	0.14	88% Decrease
Lang Son	0.7		0.12	83% Decrease
Ha Tinh	1.1		0.43	61% Decrease

Source: Baseline and target: JICA appraisal document, actual: answers to the questionnaire

Note: While a basis for calculation of baseline data is not mentioned in the appraisal document and hence unknown, actual figures are calculated as follows: hospital mortality rate = the number of deceased patients / the number of inpatients x 100.

Hospital mortality rate has largely decreased in all hospitals and its reasons are; 1) ability of these hospitals to examine and treat patients was improved due to many medical equipment and trainings provided by the project as well as by the Vietnamese government; and 2) previously, the cause of illness was often not identified due to a lack of equipment and skills of medical staff and consequently many patients died in these hospitals without proper diagnosis, however, advanced medical equipment and trainings provided under the project enabled proper diagnosis and patients who have an advanced stage and cannot be treated in these hospitals are now referred to higher level hospitals and terminal patients are advised to have home treatment²⁰. This indicates an improvement from the previous situation in which many patients died without the cause of illness being identified, as proper diagnosis can now be provided. In addition, infant ventilators and incubators provided under the project have contributed to a reduction of infant mortality rate and hemodialysis apparatus is also effective in this regard²¹.

3.2.1.2 Average Length of Stay of Patients

Baseline data of average length of stay of patients in each hospital at the time of project appraisal and target figures and actual figures after project completion are shown in Table 2.

Table 2: Average Length of Stay of Patients

(Unit: day)

	Baseline (2004)	Target (2012/3years after completion)	Actual (2013/2years after completion)	Increase/Decrease Rate from Baseline
Thai Nguyen	9.6	20% Decrease	7.7	20% Decrease
Lang Son	6.2		6.7	8% Increase
Ha Tinh	9.0		6.8	24% Decrease

Source: Baseline and target: JICA appraisal document, actual: answers to the questionnaire

¹⁹ At the time of project appraisal, the project was planned to be completed in 2009, and target figures were set for 2012, which is 3 years after project completion. However, the project was actually completed in 2011, and thus actual figures in 2013, which is 2 years after project completion, are used for comparison (this is applied to all the tables in this report).

²⁰ Source: interviews with each hospital

²¹ Source: same as above

Actual figures have decreased in Thai Nguyen and Ha Tinh, as medical treatment became faster due to many medical equipment and trainings provided by the project as well as by the Vietnamese government, and procurement of medicine became easier than before²². On the other hand, the actual figure slightly increased in Lang Son due to following reasons; 1) recently the oncology department and the rehabilitation department have been newly established in the hospital, and treatment in these departments usually takes longer compared with other types of illness; and 2) the number of beds approximately doubled compared with the number at the time of project appraisal (approximately 300 beds), and the number of inpatients largely increased while the number of equipment and medical staff cannot be changed drastically²³. Taking into account these reasons, while the actual figure increased by 8%, the average length of stay of patients in the hospital is almost the same as that of other hospitals and actual figure is not so high.

3.2.1.3 Number of Referrals to Higher Level Hospitals

Baseline data of the number of referrals from each hospital to higher level hospitals at the time of project appraisal and target figures and actual figures after project completion are shown in Table 3.

Table 3: Number of Referrals to Higher Level Hospitals

(Unit: case)

	Baseline (2004)	Target (2012/3years after completion)	Actual (2013/2years after completion)	Increase/Decrease Rate from Baseline
Thai Nguyen	1,760	20% Decrease	2,220	26% Increase
Lang Son	1,033		3,883	276% Increase
Ha Tinh	7,658		4,429	42% Decrease

Source: Baseline and target: JICA appraisal document, actual: answers to the questionnaire

Note: the baseline data of Thai Nguyen written in JICA appraisal document was 76, however, the correct baseline data was 1,760, and the baseline data of Ha Tinh written in the appraisal document was 658, however, the correct baseline data was 7,658, according to the executing agency.

The number of referrals to higher level hospitals has decreased largely in Ha Tinh, however, it increased in Thai Nguyen and Lang Son. While various factors influence the changes of the number of referrals to higher level hospitals, major reasons of the increase in Thai Nguyen and Lang Son are; 1) the level of diagnosis and treatment has become improved in these hospitals due to advanced medical equipment and trainings provided under the project, consequently the number of patients has largely increased; 2) related to 1) above, patients with more serious medical conditions have come to visit these hospitals; 3) previously patients did not trust clinical skills of these hospitals and used to visit higher level hospitals directly, however, the health insurance policy was revised recently in which patients who visit higher level hospitals without being referred from lower level hospitals are now charged 70% of medical service fee, and patients who are referred from lower level hospitals to higher level hospitals are charged 20% only of medical service fee. Consequently, the number of patients who

²² Source: interviews with each hospital

²³ Source: same as above

visit lower level hospitals has increased; 4) particularly in Lang Son, which has a border with China, the amount of businesses between Lang Son province and China has recently increased and a population that moved from other provinces to Lang Son province has temporarily increased. Consequently, the number of patients in the province has also increased; and 5) related to 4) above, there are many patients who ask the hospital to refer to hospitals in their hometown when they finish their work and go home²⁴. On the other hand, major reasons of the decrease in Ha Tinh are; 1) a necessity to refer patients to higher level hospitals has decreased, as the hospital can now provide proper diagnosis and treatment of various illness due to advanced medical equipment and trainings provided under the project; 2) while road conditions between Thai Nguyen / Lang Son and Hanoi, where higher level hospitals are located, have been improved recently and transfer of patients has become easier than before, moving from Ha Tinh to Hanoi is not so easy (hence it would be more difficult for the hospital to refer patients to hospitals in Hanoi and even if being referred, patients might not be able to go to Hanoi themselves, compared with Thai Nguyen and Lang Son); and 3) while a population in Thai Nguyen and Lang Son has increased accompanying a recent development of mining businesses in Thai Nguyen and exports and imports of goods from/to China in Lang Son, such change is not seen in Ha Tinh and a population has been constant in the province before and after the project implementation²⁵.

3.2.1.4 Number of Operations

Baseline data of the number of operations in each hospital at the time of project appraisal and target figures and actual figures after project completion are shown in Table 4.

Table 4: Number of Operations

(Unit: case)

	Baseline (2004)	Target (2012/3years after completion)	Actual (2013/2years after completion)	Increase/Decrease Rate from Baseline
Thai Nguyen	5,057	10% Increase	12,566	148% Increase
Lang Son	2,470		6,345	157% Increase
Ha Tinh	2,898		8,280	186% Increase

Source: Baseline and target: JICA appraisal document, actual: answers to the questionnaire

The number of operations has largely increased in all hospitals. This is because various kinds of operations can now be conducted, as many medical equipment and trainings were provided under the project and medical staff’s skills were improved²⁶.

3.2.1.5 Number of Cases of Non-Identified Cause of Deaths

At the time of project appraisal, the number of cases of non-identified cause of deaths was 7 in

²⁴ Source: interviews with each hospital
²⁵ Source: same as above
²⁶ Source: same as above

Thai Nguyen, 0 in Lang Son, and 15 in Ha Tinh, which was expected to decrease by 10% in the target year. However, actual figures after project completion are unknown as none of the hospitals has such data.

3.2.1.6 Number of Cases of Nosocomial Infection

Baseline data of the number of cases of nosocomial infection in each hospital at the time of project appraisal and target figures and actual figures after project completion are shown in Table 5.

Table 5: Number of Cases of Nosocomial Infection

(Unit: case)

	Baseline (2004)	Target (2012/3years after completion)	Actual (2013/2years after completion)	Increase/Decrease Rate from Baseline
Thai Nguyen	N/A	10% Decrease	2.8%	N/A
Lang Son	141		21	85% Decrease
Ha Tinh	186		11	94% Decrease

Source: Baseline and target: JICA appraisal document, actual: answers to the questionnaire

Note: the figure in Thai Nguyen is not the number of cases but a ratio of nosocomial infection (infected patients / total inpatients x 100). The ratio cannot be calculated for Lang Son and Ha Tinh, as data on the number of infected patients and total inpatients in these hospitals was not collected.

The number of cases of nosocomial infection has largely decreased in Lang Son and Ha Tinh. Reasons of this are; 1) necessary equipment such as high-pressure steam sterilizer were provided under the project; 2) disposable medical instruments are now used; and 3) the nosocomial department has been established within the hospitals and internal environment has been improved²⁷.

3.2.1.7 Number of Outpatients

Baseline data of the number of outpatients in each hospital at the time of project appraisal and actual figures after project completion are shown in Table 6.

Table 6: Number of Outpatients

(Unit: person)

	Baseline (2004)	Target (2012/3years after completion)	Actual (2013/2years after completion)	Increase/Decrease Rate from Baseline
Thai Nguyen	6,730	None	39,117	481% Increase
Lang Son	N/A		16,558	N/A
Ha Tinh	29,994		41,794	39% Increase

Source: answers to the questionnaire (no target set at the time of project appraisal)

The number of outpatients has increased to certain extent in Ha Tinh and largely in Thai Nguyen. Reasons of this are; 1) various examinations such as X-ray, endoscopic and clinical examinations can

²⁷ Source: interviews with each hospital

now be conducted due to advanced medical equipment and trainings provided under the project; 2) the number of people who have health insurance has increased; and 3) some diseases which previously required hospitalization can now be treated on an outpatient basis²⁸.

3.2.1.8 Bed Occupancy Rate

Baseline data of bed occupancy rate in each hospital at the time of project appraisal and actual figures after project completion are shown in Table 7.

Table 7: Bed Occupancy Rate

(Unit: %)

	Baseline (2004)	Target (2012/3years after completion)	Actual (2013/2years after completion)	Increase/Decrease Rate from Baseline
Thai Nguyen	N/A	None	93	N/A
Lang Son	100		103	3% Increase
Ha Tinh	113		132	17% Increase

Source: answers to the questionnaire (no target set at the time of project appraisal)

Reasons for bed occupancy rate being remained at almost 100% in Thai Nguyen and Lang Son despite that the numbers of operations and patients have largely increased in these hospitals are; 1) the number of beds has largely been increased in these hospitals recently²⁹; and 2) particularly in Thai Nguyen, 4 hospitals have been established in the neighbourhood within the last 2 years³⁰.

3.2.1.9 Number of Referrals from Lower Level Hospitals

Baseline data of the number of referrals from lower level hospitals to each hospital at the time of project appraisal and actual figures after project completion are shown in Table 8.

Table 8: Number of Referrals from Lower Level Hospitals

(Unit: case)

	Baseline (2004)	Target (2012/3years after completion)	Actual (2013/2years after completion)	Increase/Decrease Rate from Baseline
Thai Nguyen	22,400	None	25,657	15% Increase
Lang Son	35,050		61,100	74% Increase
Ha Tinh	17,178		30,136	75% Increase

Source: answers to the questionnaire (no target set at the time of project appraisal)

The number of referrals from lower level hospitals has increased in all hospitals. It increased as

²⁸ Source: interviews with each hospital

²⁹ According to interviews with hospitals, the number of beds increased from approximately 700 (at the time of project appraisal) to over 1,000 in Thai Nguyen and it increased from approximately 300 (at the time of project appraisal) to approximately 600 in Lang Son.

³⁰ Source: interviews with each hospital

various examinations and treatment can now be provided due to many medical equipment and trainings provided under the project and the skills of medical staff having been improved³¹.

3.2.2 Qualitative Effects

At the time of project appraisal, target figures were set for the operation and effect indicators explained above only, however, various factors other than this project, such as revision of healthcare policies and changes in population growth rate and geographical conditions in project-targeted areas, are considered to influence on achieving these target figures and thus, to understand more direct effects of this project is necessary. Therefore, surveys were conducted in the ex-post evaluation on utilization of medical equipment procured under the project and whether the knowledge and skills of participants were advanced after attending trainings provided under the project, through interviews with each hospital and a beneficiary survey.

3.2.2.1 Utilization of Medical Equipment Procured under the Project

According to answers to the questionnaire provided by each hospital and interviews with representatives of each hospital, all medical equipment procured under the project are utilized except for some equipment that are currently out of order. In particular, equipment for diagnostic imaging, laboratory testing, surgery, emergency resuscitation, hemodialysis apparatus, extracorporeal shock wave lithotripter, phaco emulsifier system etc. are beneficial and highly utilized.

Moreover, following results were seen from the beneficiary survey³².

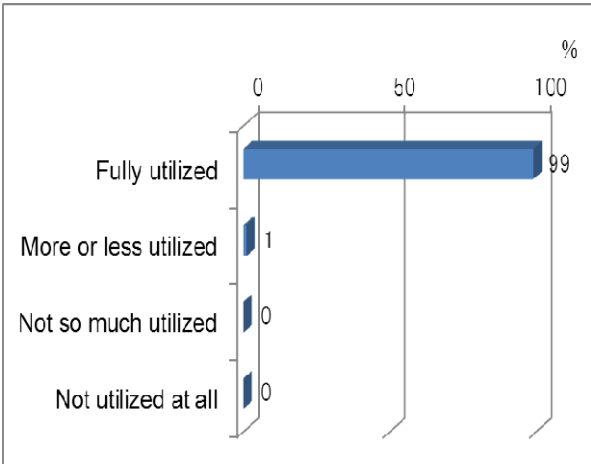


Figure 1: Utilization of Procured Equipment

Answer	Persons
Ultrasound Scanner	88
Patient Monitor	84
Gastro and Colono Videoscope	80
X-ray Apparatus, Fluoroscopy	74
Automatic Hematology Analyzer	74
Suction Unit	72
Hemodialysis Apparatus	70
Automatic Urine Analyzer	68
Electrocardiograph	67
Infant Incubator	66
Infusion Pump	66

Table 9: Examples of Most Frequently Used Equipment (multiple answers)

As shown in Figure 1, 99% of beneficiaries answered that equipment procured under the project are “fully utilized” and 1% answered that these are “more or less utilized”. Table 9 shows a list of equipment that are highly utilized among those procured under the project, and when a surveyor asked

³¹ Source: interviews with each hospital

³² The beneficiary survey was conducted in the following manner. Time: January 2014, the number of samples: 105 in total (35 from each hospital, of which 15 doctors, 10 nurses and 10 technicians), method: questionnaire survey

how frequently these equipment are used, 99% answered that they are used almost everyday and 1% answered that they are used several times a week. On the other hand, according to the survey results, equipment that are not so frequently used are ironing machine, traction frame, tube washer, needle destroyer, semi-automatic blood analyser, and ultrafiltration system etc. (frequency of use is several times per month or per several months). Reasons of this are that fuel cost is large (for ironing machine), that these equipment are not so related to beneficiaries' own tasks and that they are not so frequently needed in beneficiaries' departments etc. However, the results of the beneficiary survey indicate that most of equipment procured under the project are effectively utilized except for some equipment.

3.2.2.2 Changes of the Amount of Knowledge of Beneficiaries after Attending Trainings

According to answers to the questionnaire provided by each hospital and interviews with representatives of each hospital, approximately 300 medical staff from each hospital attended trainings provided under the project, and the amount of their knowledge has increased and their skills of examination, surgery and treatment have been improved. For example, their knowledge and skills on hemodialysis, extracorporeal shock wave lithotripsy, various surgeries such as neurosurgery, vascular surgery and phaco surgery, endoscopy, and cares for preterm birth and premature neonate etc. have advanced.

Moreover, following results were seen from the beneficiary survey.

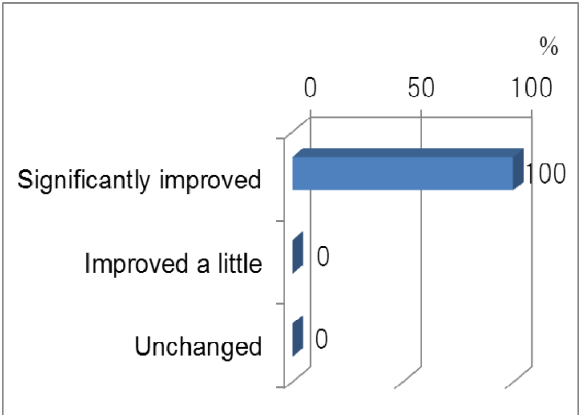


Figure 2: Changes of Knowledge and Skills of Participants after Attending Trainings

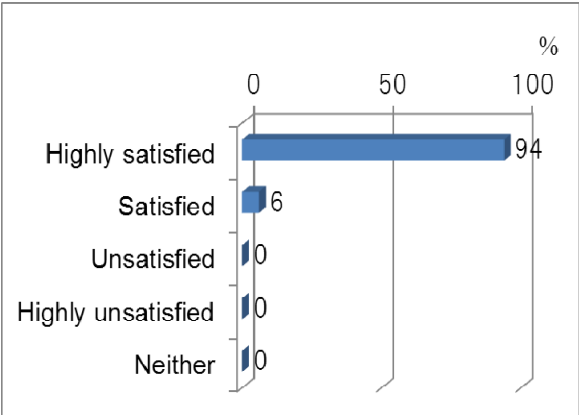


Figure 3: The Level of Satisfaction with Contents of Trainings

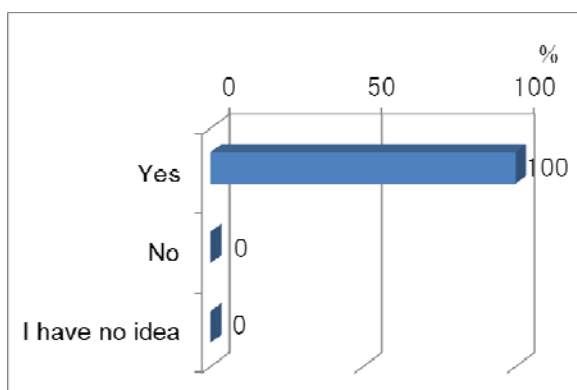


Figure 4: Whether the Level of Medical Services Have Been Improved after the Project

Regarding Figure 3, reasons for satisfaction with trainings are because participants' skills were improved, their amount of knowledge increased, and training programs were consistent with their actual needs etc. Regarding Figure 4, reasons for why participants think that the level of medical services have been improved are because many new examinations and treatment can now be provided, patients' satisfaction were improved, and rapid diagnosis of disease became materialized etc. Thus, the results of the beneficiary survey suggest that knowledge and skills of participants have been advanced after attending trainings and consequently the level of medical services provided in the hospitals have been improved. However, according to interviews with representatives of each hospital, there were some cases in which trainings on how to use medical equipment were not provided for a long time after these equipment were delivered due to a delay of contract procedures. Trainings need to be completed before procurement of equipment.

3.3 Impact

3.3.1 Intended Impacts

3.3.1.1 Benefits on Target Areas and Local Residents

Changes on infant mortality rate in provinces covered by the project are shown in Table 10.

Table 10: Infant Mortality Rate in 3 Provinces (less than one year old)

(Unit: %)

	At the Time of Appraisal (2005)	After Project Completion (2012)
Thai Nguyen Province	4.4	3.6
Lang Son Province	2.2	1.2
Ha Tinh Province	5.1	3.9

Source: answers to the questionnaire

Infant mortality rate has decreased after project completion in all the above provinces, and according to interviews with the hospitals targeted by the project, this is because, 1) in addition to this project, Vietnamese government and other donors provided medical equipment to other hospitals in

these provinces and 2) patient transportation became faster than before due to improvement of roads etc. As the hospitals targeted by the project explained that equipment procured under the project contributed to the reduction of infant mortality rate in these hospitals, this project is considered to have contributed to the reduction of the rate in these provinces to a certain extent.

3.3.2 Other Impacts

3.3.2.1 Impacts on the Natural Environment

At the time of project appraisal, as negative impact on environment that might be caused by this project was considered minimal, a preparation of an environmental impact assessment (EIA) report was not legally required³³. On the other hand, among the medical wastes that were expected to increase due to the project, solid medical wastes were to be incinerated in the hospitals, and liquid medical wastes were to be disposed in drains after being treated to meet waste standards by heat sterilization and microbiological treatment equipment³⁴. Wastes from radiation therapy were to be collected and disposed by the government³⁵. Moreover, in addition to monitoring by departments specialized in medical waste disposal at each hospital, there were to be regular inspections by the provincial and central governments to monitor water quality and medical wastes³⁶.

At the time of ex-post evaluation, these medical wastes are processed properly as planned in the project appraisal and monitoring on water quality and medical wastes is conducted³⁷.

3.3.2.2 Land Acquisition and Resettlement

There was no land acquisition or resettlement of residents under this project³⁸.

This project has largely achieved its objectives. Therefore its effectiveness and impact is high.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

Outputs of this project are provision (procurement) of medical equipment and trainings, and as types and quantities of equipment are enormous, planned and actual quantities of major component only (equipment whose unit cost is over 5 million yen) are shown below.

Table 11: Procured Equipment (Planned and Actual)

Hospital	Equipment	Planned	Actual
Thai Nguyen	High-Pressure Steam Sterilizer	4	1
	C-arm TV System for Surgical Use	1	1
	X-ray Angiography System	1	1
	Polygraph	1	1

³³ Source: JICA appraisal document

³⁴ Source: same as above

³⁵ Source: same as above

³⁶ Source: same as above

³⁷ Source: answers to the questionnaire

³⁸ Source: same as above

	Automatic Injector	1	0
	Virtual Training Machine	1	0
	Extracorporeal Shock Wave Lithotripter	1	1
	Hemodialysis Apparatus	5	5
	Incinerator	1	0
	Ultrasound Scanner, Color Doppler	2	1
	Electroencephalograph	1	1
	Automatic Biochemistry Analyzer	1	1
	Semi-automatic Hematology Analyzer	1	1*
	X-ray Mammography Unit	1	0
	Infant Ventilator for Neonate	2	5
	Gastro Fiberscope (Videoscope)	3	2
	Colono Fiberscope (Videoscope)	1	1
	X-ray Apparatus, Fluoroscopy	0	1
	CT Simulator for Radiotherapy with Phantom	0	1
	Types of Equipment in Total	161	90
Lang Son	High-Pressure Steam Sterilizer	5	5
	C-arm TV System for Surgical Use	1	1
	Automatic Biochemistry Analyzer	1	1
	X-ray Apparatus, Fluoroscopy	1	1
	X-ray Mammography Unit	1	1
	Ultrasound Scanner, Color Doppler	1	2
	Whole Body CT Scanner	1	1
	Electric Power Generator	1	1
	Medical Gas System	1	1
	Incinerator	1	0
	Hemodialysis Apparatus	5	11
	Semi-automatic Hematology Analyzer	1	1*
	Infant Ventilator for Neonate	2	1
	Automatic Immune Assay Analyzer	0	1
	Phaco Emulsifier System	0	1
	Oxygen Tank	0	1
Types of Equipment in Total	172	164	
Ha Tinh	High-Pressure Steam Sterilizer	5	5
	C-arm TV System for Surgical Use	1	1
	Hemodialysis Apparatus	10	13
	Continuous Slow Hemofiltration System	1	1
	Blood Gas Analyzer	1	2
	Automatic Biochemistry Analyzer	1	1
	X-ray Apparatus, Fluoroscopy	1	1
	Ultrasound Scanner, Color Doppler	1	2
	Medical Gas System	1	1
	Phaco Emulsifier System	1	1
	Incinerator	1	0
	Colono Fiberscope (Videoscope)	2	2
	Broncho Fiberscope	1	1
	Urono Fiberscope System with TV	0	1
	Ironing Machine	1	1
	Lithotripter System	0	1
Automatic Immune Assay Analyzer	0	1	
Types of Equipment in Total	184	178	

Source: planned: JICA appraisal document, actual: JICA internal document and interviews with each hospital

*: For hematology analyzer, while it was planned to purchase semi-automatic one, actually procured was automatic.

Regarding types and quantities of medical equipment, consultants conducted surveys and

interviews in detail on actual situations and needs in each hospital after consulting service started, and these equipment were procured based on the result of the surveys, and thus planned and actual types and quantities of equipment turned out to be different³⁹.



X-ray Apparatus, Fluoroscopy



Ultrasound Scanner, Color Doppler

In order to achieve the project objective, which is to improve the level of healthcare services of the hospitals, advancement of examination and treatment techniques using procured equipment is necessary, and thus trainings were planned to be provided for the contents below.

Table 12: Contents of Trainings Planned during Project Appraisal

Content	Period
General and Emergency Operation Technique	1 month
Infectious Disease Control (including avian flu)	1 week
Maternal and Newborn Care	1 month
Hospital Management	2 weeks (in Japan)
Patient Records Management	2 weeks
Medical Equipment Management and Use	2 weeks
Maintenance of Medical Equipment	2 weeks
(Thai Nguyen only) Diagnosis and Treatment Technique on Circulatory Disease and Cancer	2 weeks (in Japan) / 3 months (in Vietnam)

Source: JICA appraisal document

Above trainings were planned to be implemented making the maximum use of and improving further the training schemes of the Vietnamese government such as DOHA activities⁴⁰ conducted by Bach Mai hospital with assistance from JICA, and advanced trainings that were unable to be provided by DOHA (trainings on hospital management and surgeries) were planned to be provided by medical and research institutions in Japan⁴¹.

Contents of trainings actually implemented under the project are shown below.

³⁹ Source: interviews with the executing agency

⁴⁰ DOHA stands for Direction Office for Healthcare Activities. Bach Mai hospital in Hanoi provides technical guidance to secondary institutions through DOHA.

⁴¹ Source: JICA appraisal document

Table 13: Actual Training Contents

Hospital	Content	Number of Trainees	Period
Thai Nguyen	Hospital Management Related	7	2 weeks (in Japan/ 2 doctors) – 1 month
	Operation and Maintenance of Medical Equipment	3	1 month
	Maternal and Newborn Care	37	3 weeks – 3 months
	Operation Technique Related (Neuro-Surgery, thoracic surgery, endoscopic surgery, phaco surgery, technical coronary arteries stenting, anaesthetized technique etc.)	32	2 weeks – 6 months
	Aggressive Treatment	86	3 weeks – 4.5 months
	Emergency Care	51	1 – 3 months
	Medical Examination and Analysis Related	11	2 weeks (in Japan/ 1 doctor) – 1 month
	Cardiovascular Disease	6	1 – 7 months
	Digestive Disease	31	1 month
	Other (Cancer, radiation therapy, lithotripsy technique, trauma and orthopedic, internal medicine, etc.)	9	2 weeks (in Japan/ 3 doctors) – 2 months
	Total	273	
Lang Son	Hospital Management Related	8	2 weeks (in Japan/ 2 doctors) – 1 month
	Operation and Maintenance of Medical Equipment	3	1 month
	Maternal and Newborn Care	24	1 month
	Operation Technique Related (Neuro-Surgery, thoracic surgery, cranial surgery, endoscopic surgery, phaco surgery, anaesthetized technique etc.)	81	1 week – 9 months
	Aggressive Treatment	4	1 month
	Emergency Care	8	1 month
	Medical Examination and Analysis Related	34	1 week – 2.5 months
	Patient Care	117	1 – 2 weeks
	Other (Cardiovascular disease, digestive disease, hemodialysis, rehabilitation techniques etc.)	15	1 – 2 months
	Total	294	
	Ha Tinh	Hospital Management Related	7
Operation and Maintenance of Medical Equipment		113	1 week – 1 month
Maternal and Newborn Care		37	2 weeks – 1.5 months
Operation Technique Related (Neuro-Surgery, thoracic surgery, endoscopic surgery, surgery to replace the femoral head, cranial, and spinal, vascular surgery, throat surgery, phaco surgery, anaesthetized technique etc.)		45	2 weeks – 3 months
Aggressive Treatment		13	1 month
Emergency Care		10	1 month
Medical Examination and Analysis Related		31	2 weeks – 1.5 months
Cardiovascular Disease		16	2 – 3 weeks
Other (Lithotripsy technique, hemodialysis, physical therapy, technical stretching lumbar spine and neck, digestive disease etc.)		65	2 weeks – 3 months
Total		337	

Source: answers to the questionnaire

Contents and periods of trainings were studied and planned in detail after the project was started and changed from a plan according to actual needs of each hospital⁴². Moreover, some trainings on operation techniques, aggressive treatment, medical examination and analysis, and emergency care etc. were implemented utilizing DOHA activities conducted by Bach Mai hospital⁴³.

Planned and actual contents of consulting services (CS) for the project are shown below.

Table 14: Consulting Service (Planned and Actual)

Planned	Actual
<ul style="list-style-type: none"> • Assistance for selection of suppliers/ Supervision of delivery and installation of equipment • Assistance for trainings implementation • Feasibility study for the next phase (10 hospitals) • Facilitation of the implementation of national guidelines for referral system • Monitoring of the development of Health Care Fund for the Poor etc. • Foreign CS: 38M/M, Local CS: 49M/M 	<ul style="list-style-type: none"> • Assistance for selection of suppliers/ Supervision of delivery and installation of equipment • Assistance for trainings implementation • Feasibility study for the next phase (20 hospitals) • Facilitation of the implementation of national guidelines for referral system • Monitoring of the development of Health Care Fund for the Poor etc. • Foreign CS: 39M/M, Local CS: 46M/M

Source: planned: JICA appraisal document, actual: JICA internal document and answers to the questionnaire

The period of consulting services was extended accompanying the delay of project implementation, however, planned and actual mans-months are almost the same, as consultants worked for necessary hours only during the contract period⁴⁴.

3.4.2 Project Inputs

3.4.2.1 Project Cost

The planned project cost at the time of project appraisal was 2,124 million yen (foreign currency: 1,014 million yen, local currency: 1,110 million yen), of which Japanese ODA loan portion was 1,805 million yen⁴⁵. On the other hand, the actual project cost was 1,873 million yen (foreign currency: 439 million yen, local currency: 1,434 million yen), of which Japanese ODA loan portion was 1,611 million yen⁴⁶, and it was lower than planned (88% against the plan). The exchange rate fluctuated a lot during the project implementation, and while the actual project cost exceeds the planned cost by approximately 30% in terms of VND (Vietnamese dong), the actual cost is lower than the planned cost

⁴² Source: interviews with the executing agency
⁴³ For trainings implemented utilizing DOHA activities, 36 in total of doctors, nurses and technicians from Thai Nguyen hospital, 40 in total of doctors, nurses and technicians from Lang Son hospital, and 165 in total of doctors, nurses and technicians from Ha Tinh hospital attended in 2010 (source: answers to the questionnaire).
⁴⁴ Source: interviews with the executing agency
⁴⁵ Source: JICA appraisal document
⁴⁶ According to the executing agency, all the cost except for administration cost and tax and duties was covered by Japanese ODA loan, and thus the total project cost was calculated by using the amount provided by JICA for equipment, trainings, consulting service and interest and converting the amount in VND provided by the executing agency for administration cost and tax and duties using the average exchange rate of 1 yen = 176.64VND of the loan disbursement period.

in terms of Japanese yen. Changes of types and quantities of medical equipment are also considered to have affected this difference.

3.4.2.2 Project Period

The planned project period at the time of project appraisal was 34 months in total from March 2006 (signing of the loan agreement) to December 2008 (completion of provision (procurement) of equipment and trainings)⁴⁷. On the other hand, the actual project period was 65 months in total from March 2006 (signing of the loan agreement) to July 2011 (completion of provision (procurement) of equipment and trainings)⁴⁸, and it was significantly longer than planned (191% against the plan). The reasons for the actual project period significantly exceeding the planned period were; 1) a selection of consultants was overly delayed and another 6 months was required before actual commencement of consulting service after signing a contract in April 2008; 2) bidding documents needed to be submitted to JICA for concurrence through the Ministry of Health and provincial People's Committees, which required a long time; 3) in addition to the types of equipment procured being enormous, the number of procurement packages for equipment was changed (10 packages were planned at first, which was changed to 13 packages after the project started), and 3 more packages were added (16 packages in total), and its procurement procedures required a long time; and 4) each hospital needed to contract with 9 institutions for trainings and thus, a contract procedure and management became complicated and arrangements among stakeholders were prolonged⁴⁹. In the beginning, the procurement procedure for trainings were planned to be the same as for consulting service, however, it was simplified (each hospital became able to contract with training institutions directly without concurrence from JICA) in order to avoid a further delay, based on a condition that trainings must be implemented for contents and periods agreed between the Vietnamese side and JICA in advance⁵⁰.

⁴⁷ Source: JICA appraisal document

⁴⁸ Source: answers to the questionnaire

⁴⁹ Source: JICA internal document and answers to the questionnaire

⁵⁰ Source: JICA internal document

Table 15: Comparison of Project Period

Content	Planned	Actual
Selection of Consultant	June 2006 – November 2006 (6 months)	July 2007 – April 2008 (10 months)
Consulting Service	December 2006 – December 2008 (25 months)	May 2008 – June 2011 (38 months)
Selection of Suppliers	December 2006 – December 2007 (13 months)	Thai Nguyen: March 2010 – March 2011 (13 months) Lang Son: March 2009 – March 2010 (13 months) Ha Tinh: June 2009 – April 2011 (23 months)
Delivery and Installation Works	January 2008 – September 2008 (9 months)	Thai Nguyen: June 2010 – June 2011 (13 months) Lang Son: January 2010 – June 2011 (18 months) Ha Tinh: September 2009 – June 2011 (22 months)
Trainings	January 2007 – December 2008 (24 months)	February 2009 – July 2011 (30 months)

Source: planned: JICA appraisal document, actual: answers to the questionnaire

3.4.3 Results of Calculations of Internal Rates of Return (Reference only)

IRR was not calculated at the time of project appraisal, and thus it is not re-calculated at the time of ex-post evaluation.

While actual project outputs were changed from the plan, this change was necessitated as a result of the detailed surveys and interviews conducted by consultants to check actual situations in each hospital, and thus the change is considered to be reasonable. Although the project cost was within the plan, the project period exceeded the plan⁵¹. Therefore efficiency of the project is fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance (O&M)

At the time of project appraisal, each hospital was to operate and maintain equipment procured under the project, and a maintenance department existed and maintenance engineers were assigned in these hospitals⁵². At the time of ex-post evaluation, each hospital operates and maintains equipment procured under the project as assumed at the time of appraisal.

The number of maintenance staff at the time of both project appraisal and ex-post evaluation is shown below.

⁵¹ It is not possible to reflect the change of all the project outputs in the analysis of project cost, as the types of equipment procured under the project are over hundreds and the actual unit cost of all the procured equipment was unavailable.

⁵² Source: JICA appraisal document

Table 16: The Number of Maintenance Staff in Each Hospital

(Unit: person)

Hospital	At the Time of Project Appraisal	At the Time of Ex-Post Evaluation
Thai Nguyen	11	12 (Total Number of Staff: 992)
Lang Son	5	10 (Total Number of Staff: 670)
Ha Tinh	10	12 (Total Number of Staff: 653)

Source: at the time of project appraisal: JICA internal document, at the time of ex-post evaluation: answers to the questionnaire

The current number of maintenance staff increased slightly compared with that at the time of project appraisal, and all hospitals explained that the number of these staff is sufficient to maintain medical equipment, and thus no major problem is seen regarding institutional aspects of O&M.

3.5.2 Technical Aspects of Operation and Maintenance

As explained above, trainings provided under the project include O&M of medical equipment, and 3 staff each from Thai Nguyen and Lang Son hospitals attended the trainings for 1 month and 113 staff from Ha Tinh hospital attended the trainings for 1 week to 1 month.

12 maintenance staff in Thai Nguyen hospital is comprised of 3 engineers, 7 technicians and 2 others, and they have work experience of 7 to 18 years⁵³. Among them, 7 staff attended training on equipment maintenance for 3 months in Italy in 2012, with assistance from the Italian government⁵⁴.

10 maintenance staff in Lang Son hospital is comprised of 1 engineer, 7 technicians and 2 others, and they have work experience of 2 to 20 years⁵⁵. Among them, 2 technicians attended training on maintenance of equipment for emergency care for 1 month in University of Occupation and Repair of Equipment, which is a subordinate institution of Ministry of Health in 2012⁵⁶.

12 maintenance staff in Ha Tinh hospital is comprised of 4 engineers, 7 technicians and 1 other, and they have work experience of 5 to 20 years⁵⁷. According to the hospital, external trainings have not been conducted since project completion, however, staff receive guidance on maintenance from equipment providers according to their necessity if they have any problems.

According to these hospitals, there is no problem regarding technical capacity of maintenance staff, trainings are provided, and manuals for equipment maintenance are in place. Therefore, no major problem is seen regarding technical aspects of O&M.

3.5.3 Financial Aspects of Operation and Maintenance

At the time of project appraisal, in principle, each hospital was to secure budget for O&M of equipment, and in case these hospitals were unable to secure sufficient budget, either Ministry of Health (Thai Nguyen) or Department of Health in the provincial government (Lang Son and Ha Tinh)

⁵³ Source: answers to the questionnaire

⁵⁴ Source: same as above

⁵⁵ Source: same as above

⁵⁶ Source: same as above

⁵⁷ Source: same as above

was to provide a budget necessary for O&M⁵⁸. Revenues (from insurance fee and hospital fee) of each hospital at the time of project appraisal were 19,417 million VND in Thai Nguyen, 7,691 million VND in Lang Son, and 15,603 million VND in Ha Tinh⁵⁹.

Revenues and expenditures of each hospital in recent 3 years are shown below.

Table 17: Revenues and Expenditures of Thai Nguyen Hospital

(Unit: million VND)

Item	2011	2012	2013
Revenue			
Government Budget	33,441	35,977	60,830
Insurance Fee	36,894	79,277	119,000
Hospital Fee	63,527	44,601	52,270
Socialization Services	0	0	0
Other	6,166	6,082	6,836
Total	140,028	165,937	238,936
Expenditure			
Salary and Bonus	49,279	63,678	93,697
Administrative Fee	8,290	8,198	11,913
Equipment Maintenance and Repair Fee	1,381	1,493	2,166
Equipment Purchasing Fee	0	408	1,500
Drugs and Consumables Fee	74,212	86,820	118,622
Career Development Fee	6,467	5,000	10,490
Other	399	340	548
Total	140,028	165,937	238,936
Balance	0	0	0

Source: answers to the questionnaire

Note: "Socialization Services" is revenue from activities providing healthcare services for people who do not have health insurance, in cooperation with companies and/or organizations.

⁵⁸ Source: JICA appraisal document

⁵⁹ Source: same as above

Table 18: Revenues and Expenditures of Lang Son Hospital

(Unit: million VND)

Item	2011	2012	2013
Revenue			
Government Budget	31,901	39,033	55,443
Insurance Fee	45,165	52,352	71,490
Hospital Fee	15,717	18,164	23,241
Socialization Services	4,312	6,346	8,289
Other	1,064	1,347	1,495
Total	98,159	117,242	159,958
Expenditure			
Salary and Bonus	33,445	48,644	59,925
Administrative Fee	6,958	8,758	12,061
Equipment Maintenance and Repair Fee	2,647	2,801	2,705
Equipment Purchasing Fee	528	460	2,332
Drugs and Consumables Fee	45,377	45,186	44,438
Career Development Fee	5,144	4,301	7,102
Other	4,060	7,092	19,395
Total	98,159	117,242	147,958
Balance	0	0	12,000

Source: answers to the questionnaire

Table 19: Revenues and Expenditures of Ha Tinh Hospital

(Unit: million VND)

Item	2011	2012	2013
Revenue			
Government Budget	30,472	33,921	48,244
Insurance Fee	47,948	72,101	76,311
Hospital Fee	11,128	28,293	27,260
Socialization Services	2,557	4,294	5,290
Other	1,077	0	326
Total	93,182	138,609	157,431
Expenditure			
Salary and Bonus	29,931	45,279	60,640
Administrative Fee	7,994	10,394	12,014
Equipment Maintenance and Repair Fee	1,307	1,727	2,189
Equipment Purchasing Fee	692	2,151	1,627
Drugs and Consumables Fee	46,245	71,402	75,764
Career Development Fee	6,162	4,000	2,034
Other	35	2,036	3,058
Total	92,366	136,989	157,326
Balance	816	1,620	105

Source: answers to the questionnaire

At the time of ex-post evaluation, revenues of all hospitals have largely increased compared with those at the time of project appraisal and revenues and expenditures are almost balanced. In all hospitals revenues from government budget and insurance fee have largely increased, and this is due

to an increase of the number of beds and patients, wage growth of hospital staff and an increase of hospital fee following the policy of the Vietnamese government in recent years⁶⁰. None of these hospitals has problems in securing enough budget for usual O&M, and while they sometimes face difficulties in securing budget for a major repair of equipment that needs to be conducted by equipment suppliers, and in such case they request the government to allocate budget for such repair and the repair is conducted with budget provided in the next year⁶¹. As explained below, no case was observed in which equipment are not used for a long time due to a lack of maintenance budget, and thus there seems to be no major problem regarding securing budget.

3.5.4 Current Status of Operation and Maintenance

All hospitals have an equipment maintenance plan and regular maintenance is conducted based on the plan, and they also have using logs and incident reports.

Among equipment provided under the project, below are out of use currently.

Table 20: List of Equipment Not Used Currently

Hospital	Equipment	Current Situation
Thai Nguyen	<ul style="list-style-type: none"> • 2 endoscopes • 1 extracorporeal shock wave lithotripter 	Out of use for 1 – 3 months, and both equipment are to be repaired with budget allocated by Ministry of Health this year.
Lang Son	<ul style="list-style-type: none"> • 1 out of 5 anesthesia apparatus 	Out of use for 7 months, and currently waiting for a delivery of parts from British supplier.
Ha Tinh	<ul style="list-style-type: none"> • 1 general X-ray diagnosis unit • 1 ironing machine 	General X-ray diagnosis unit: out of use for 2 months, and currently waiting for a delivery of parts from a supplier. Ironing machine: Never been used, as it was not needed for the size of the hospital so far. However, hospital buildings were expanded at the end of 2013 and this will be used from 2014.

Source: interviews with each hospital

As shown above, there are some equipment that are not used currently, however, each hospital is dealing with a repair of equipment and procurement of necessary parts in an appropriate manner, and thus no major problem is seen regarding the current status of O&M.

No major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system. Therefore sustainability of the project effect is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed at strengthening the referral system and improving the level of healthcare services of the regional core hospitals in Thai Nguyen, Lang Son, and Ha Tinh Provinces, which are located in

⁶⁰ Source: interviews with each hospital

⁶¹ Source: same as above

northern areas in Vietnam, by providing (procuring) medical equipment and trainings to these hospitals.

Relevance of this project is high, as the project is consistent with priority areas of Vietnam's development plans and Japan's ODA policy, and moreover development needs for the project are high. All medical equipment procured under the project are effectively utilized except for some equipment that are currently out of order, and results of the beneficiary survey revealed that knowledge and technical skills of participants were advanced due to trainings provided under the project. Moreover, hospital mortality rate and the number of cases of nosocomial infection in three hospitals have largely decreased since the time of project appraisal, and the number of operations, outpatients, and patients referred from lower level hospitals have largely increased since the time of appraisal. Thus, effectiveness and impact of the project are high. Efficiency of the project is fair, as actual project period largely exceeded planned period, while actual project cost was within the planned cost. Sustainability of the project is high, as no major problem has been observed in institutional, technical and financial aspects of operation and maintenance.

In light of the above, this project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

None

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

4.3.1 Necessity to Manage Risks When Providing Japanese ODA Loans to an Executing Agency for the First Time

Actual project period largely exceeded the planned period, resulting from the selection of consultants being overly delayed. According to the executing agency, this project was their first Japanese ODA loan project and domestic approval procedures for procurement required a long time. A realistic implementation schedule should be planned taking into account procurement procedures in the borrower's country and JICA should consider how to deal with these problems during project appraisal if there is a risk of delay because executing agencies are unfamiliar with Japanese ODA Loan procedures. For example, the World Bank prepares a procurement assessment report for a new project during appraisal based on the country procurement assessment report, and the Bank assesses executing agencies' capabilities and risks related to procurement and formulates a detailed project implementation plan based on the report, which could be one of the options.

4.3.2 Necessity to Set Appropriate Operation and Effect Indicators

The project objective is stated as strengthening the referral system and improving the level of healthcare services in target areas and 6 indicators including hospital mortality, average length of stay of patients, number of referrals to higher level hospitals, number of operations, number of cases of non-identified cause of deaths, and number of cases of nosocomial infection are selected as operation and effect indicators in the appraisal document. However, project output is a provision of medical equipment and trainings, and thus, there is a gap between the project objective and output. Based on the project output, a project objective should be improvement of healthcare services in three hospitals, and whether procured equipment are properly utilized and whether knowledge and skills of participants were advanced after attending the trainings etc. should be selected as indicators to examine direct effect of the project. When planning a similar type of a project in future, a project objective should be defined specifically relating to the project output and appropriate indicators should be selected.

4.3.3 Necessity to Review Timings of Providing Trainings Effectively

According to hospitals covered by this project, there were some cases in which trainings on how to use medical equipment were not provided for a long time after these equipment were provided. Trainings should be planned well so that they can be completed before procurement of equipment, in order to materialize project effects as early as possible.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs	Procurement of medical equipment Provision of medical trainings (See "3.4.1 Output" for details)	Procurement of medical equipment Provision of medical trainings (See "3.4.1 Output" for details)
2. Project Period	March 2006 – December 2008 (34 months)	March 2006 – July 2011 (65 months)
3. Project Cost		
Amount paid in Foreign currency	1,014million yen	439million yen
Amount paid in Local currency	1,110million yen (157,897 million VND)	1,434million yen (253,301 million VND)
Total	2,124million yen	1,873million yen
Japanese ODA loan portion	1,805million yen	1,611million yen
Exchange rate	1 yen = 142.25VND (As of October 2005)	1 yen = 176.64VND (Average between March, 2006 and August, 2011)