

Kingdom of Cambodia

FY2018 Ex-Post Evaluation of Japanese Grant Aid Project
“The Project for Improvement of Sihanouk Province Referral Hospital”

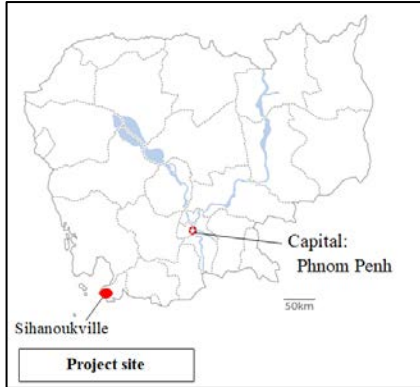
External Evaluators: Masumi Shimamura, Mamiko Yano
Mitsubishi UFJ Research and Consulting Co., Ltd.

0. Summary

This project aims to improve the referral system and medical service in Preah Sihanouk Province by improving the facility and equipment of Sihanouk Province Referral Hospital (hereinafter referred to as “the provincial hospital”) that can provide medical service as a top referral hospital, thereby contributing to the health of residents of Preah Sihanouk Province. The project is highly relevant with Cambodia's development policy which places the health sector as a priority, and also relevant with development needs and Japan's ODA policy. Therefore its relevance is high. In terms of project implementation, although the project cost was lower than planned, the project period exceeded the plan. Therefore the efficiency is fair. Regarding the effectiveness, the number of patients who receive medical services such as inspection and treatment using the facilities and equipment developed in this project is increasing, and patients who could not be dealt with up to the project can be also accepted. Therefore, it can be said that this project has enabled the provincial hospital to provide appropriate services as a top referral hospital. In addition, users of the provincial hospital also feel that access to health services has improved after the project completion, so that it can be said that this project contributes to the health of the provincial residents to a certain extent. With regard to medical staff training, because of the external factor, rapid increase in investment from China which could not have been foreseen at the time of planning of this project, it cannot be said that this project sufficiently contributes to it. However, other impacts such as poverty reduction promotion and social development promotion, and contribution to Small and Medium Enterprises (SME's) overseas expansion support were also confirmed. From the above, this project has largely achieved its planned effects, and effectiveness and impacts of the project are high. With regard to the operation and maintenance of this project, medical specialists and other human resources are lacking, the necessary budget for maintenance and management costs have not been secured, and it is difficult to domestically procure some equipment. Therefore, some minor problems have been observed in terms of the institutional/organizational aspect, financial aspect, and current status. Therefore sustainability of the project effects is fair.

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

1. Project Description



Project Location



Sihanouk Provincial Hospital
(Administrative Building)

1.1 Background

In Cambodia, the number of health workers dropped sharply, the medical equipment and facilities were destroyed, and the entire health system was devastated by the influence of the civil war from the 1970s. Since the end of the civil war, lots of donors have supported the health sector and preventive care for specific diseases has been intensively implemented. However, the health service delivery system of hospitals was still weak, and especially in rural areas, basic medical equipment, etc. have not been prepared in hospitals.

The population increase rate of Preah Sihanouk Province, where Sihanouk Provincial Hospital is located, was 7.5% (average from 2009 to 2011), with the country's only deep-water Sihanoukville Port and special economic zone which have been developed by assistance from Japan. The urban area near the special zone recorded a population increase of 5.8%. The provincial hospital, which is the target of this project, is the top referral hospital in the province with a population of approximately 190,000 (number of beds: 100, annual number of outpatients: 20,110 (results in 2011)). It was the only hospital that could be used for emergency transport. However, the hospital, which was established in 1964, suffered severe deterioration of medical equipment as well as facilities such as rain leaks and floor damage, making it difficult to provide appropriate health services. In addition, the bed occupancy rate of the emergency ward exceeded 176% at the time of planning, and in 2010 the referral rate from other medical institutions rose to 128% over the previous year, and the utilization rate has increased rapidly. While population inflow has been expected in the future, it was necessary to establish a system for providing appropriate health services including hospital maintenance.¹

¹ From the ex-ante evaluation report.

1.2 Project Outline

The objective of this project is to improve the referral system and medical service in Preah Sihanouk Province by improving the facility and equipment of the provincial hospital that can provide medical service as a top referral hospital, thereby contributing to the health of residents of Preah Sihanouk Province.

Grant Limit/Actual Grant Amount	1,554 million yen/1,098 million yen
Exchange of Notes Date /Grant Agreement Date	March 2013/March 2013
Revised Exchange of Notes Date /Revised Grant Agreement Date	December 2013/December 2013
Executing Agencies	Ministry of Health Department of Health of Preah Sihanouk Province Sihanouk Provincial Hospital
Project Completion	November 2015
Target Area	Preah Sihanouk Province
Main Consultants	Azusa Sekkei Co., Ltd./INTEM Consulting, Inc. (JV)
Procurement Agency	—
Main Contractors	Saitagumi CO., LTD./Matsuyama Kensetsu CO., LTD. (JV)
Equipment Procurement	Sirius Corporation
Preparatory Survey	July 2012 - March 2013
Related Projects	[Technical Cooperation] <ul style="list-style-type: none"> • Project on Promotion of Medical Equipment Management System (2006-2008) • The Project for Human Resource Development of Co-medicals (2003-2008) • The Project on Strengthening of Medical Equipment Management in Referral Hospitals (2009-2014) • Project for Strengthening Human Resources Development System of Co-medicals (2010-2015) • The project for development of social

	<p>health insurance for the informal sector (2016-2018)</p> <p>[Grant Aid Project]</p> <ul style="list-style-type: none"> • The Project for Expansion of National Maternal and Child Health Center (2014-2017) • The Project for Improvement of Medical Equipment in National, Municipal and Provincial Referral Hospitals (2012-2014)
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2. Outline of the Evaluation Study

2.1 External Evaluators

Masumi Shimamura, Mamiko Yano, Mitsubishi UFJ Research and Consulting Co., Ltd.

2.2 Duration of Evaluation Study

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

Duration of the Study: August 2018 - September 2019

Duration of the Field Study: November 1-16, 2018

3. Results of the Evaluation (Overall Rating: B²)

3.1 Relevance(Rating: ③³)

3.1.1 Consistency with the Development Plan of Cambodia

At the time of planning, the government of Cambodia positioned “capacity building and human resource development” including improvement of health and medical services as one of four key areas for poverty reduction in *the National Strategic Development Plan 2006-2010* (hereinafter referred to as "NSDP 2006-2010"). The strengthening of the health system (specifically the following five areas; health service supply, securing of financial resources, health human resources, health information, and governance) was the subject of strategic interventions in *the Second Health Strategic Plan 2008-2015* (hereinafter referred to as "HSP2"). This was one of the implementation plans of the NSDP 2006-2010 and as a high level plan in Cambodia’s health sector, HSP2 contributed to the mission of the Ministry of Health, “to achieve the highest level of health and welfare for all people.”

At the time of the ex-post evaluation, the Cambodian government announced the *Third*

² A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

³ ③:High, ②:Fair ①:Low

*Rectangular Strategy*⁴ in September 2013, and formulated the NSDP 2014-2018 as an action plan to achieve the *Rectangular Strategy*. “Capacity building and human resource development” continues to be positioned as one of the significant issues, among which “promotion of health and nutrition” is listed as one of the priority issues. *The Third Health Strategy Plan (HSP3,2016-2020)*, which is the implementation plan of the NSDP 2014-2018, makes strengthening of health system as one of the priority areas, and covers the content of health infrastructure development, medical equipment supply, medical cost coverage expansion, and strengthening of management skills. *The Fourth Rectangular Strategy (2019-2023)* announced in September 2018 also calls for strengthening public health and nutrition under "human resources development" which is one of the main pillars of the strategy. From the above, this project has been in line with the development policy of the Cambodian government at the time of planning and ex-post evaluation.

3.1.2 Consistency with the Development Needs of Cambodia

At the time of planning, as shown in “background of the project”, Cambodia's health indicators still had room for improvement compared with neighboring countries. In particular, the provision of health services at hospitals in rural areas was said to be weak due to the lack of medical workers, facilities, and equipment. Even at the time of the ex-post evaluation, according to the Ministry of Health and provincial hospitals, the capacity of hospitals such as the number of medical personnel, medical level and equipment status in Cambodia as a whole is still low compared to neighboring countries such as Thailand and Vietnam. In addition, there is still a gap between urban and rural areas. In Sihanoukville, as the amount of investment from China has soared, the number of economic activities as well as labors from China and Cambodia are increasing. All of these have led to the rapid increase in population. It is said that population growth is expected to continue by economic activity becoming more active in the future. According to the demographics of Sihanouk Province provided by the Provincial Health Department (hereinafter referred to as "PHD"), the population has been increasing gradually every year since 2012 in Sihanouk province, although it does not seem to be a sharp increase (Table 1). Therefore, the number of patients in the provincial hospital and the number of referrals are expected to increase in the future. The provincial hospital is the only top referral hospital providing emergency care in Preah Sihanouk that is if a natural disaster or accident occurs, patients would be transported to this hospital. However, the bed occupancy rate of the emergency ward is usually high at 93% to 121% even after the

⁴ *Rectangular Strategy* is the top national development strategy document in Cambodia. *The First and Second Rectangular Strategies* have been successfully completed, and using that structure, Cambodia announced its *Third Rectangular Strategy* after the July 2013 general election and presented socioeconomic policy issues. It presents four strategic goals and four implementation guidelines (agricultural sector development, hard infrastructure development, private sector development and employment, capacity building and human resources development).

completion of the project in 2015, and although it has been improved since the time of planning, the number of beds have been not enough. Although the referral rate has not risen, the number of patients and referrals are on the rise (Table 2). As such, there is a continuing need to the provincial hospital as a top referral hospital, and the utilization rate is rapidly increasing. From the above, this project is in line with the development needs of Cambodia at the time of planning and ex-post evaluation.

Table 1: Transition of Sihanouk Province Population

District	Population (people) (Year/year growth rate %)						
	2012	2013	2014	2015	2016	2017	2018
Preah Sihanouk Province	196,698 100.5%	199,423 101.4%	205,263 102.9%	209,915 102.3%	210,454 100.3%	209,019 99.3%	209,320 100.1%
Preah Sihanoukville	71,995	73,229	77,392	78,519	75,335	75,309	75,309
Stung Hav	16,360	17,676	16,301	17,659	17,741	17,530	17,530
Prey Nob	45,221	92,852	95,308	97,668	101,006	100,159	100,159
Kampong Seila	15,483	15,666	15,767	16,069	16,021	16,021	16,021

Source: Questionnaire response from PHD

Table 2: Trends in Referrer Rates

	2012	2013	2014	2015	2016	2017	2018
1. Total number of patients (people)	3,977	4,851	3,717	4,338	5,450	8,271	11,766
2. Number of referral patients from health center (people)	529	539	412	273	254	973	986
3. Number of referral patients from other private clinic (people)	N/A	N/A	4	25	0	26	20
Rate of referral patient ((2+3)/1)	13.3%	11.1%	11.2%	6.9%	4.7%	12.1%	8.6%

Source: Questionnaires response from the provincial hospital

3.1.3 Consistency with Japan's ODA Policy

The health sector falls under the “promotion of social development” priority area of assistance in Japan's Country Assistance Policy for Cambodia (April 2012). In addition Japan has set up “Health System Strengthening Program” to support for the strengthening of the whole health system in the development issue of "enhancement of health care.”

This project aims to improve the referral system and medical services in Preah Sihanouk Province by developing facilities and equipment that can provide medical services to the provincial hospital as top referral hospitals. It is in line with the "Health System Strengthening Program" and is in line with Japan's ODA policy.

From the above, this project has been highly relevant to the country's development plan and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

This project is to improve the facilities and equipment of provincial hospitals for the improvement of the referral system and medical services in the project area. Tables 3 and 4 show the outputs of major facilities and equipment.

Table 3: Outputs of Facilities

Building	Detailed structure	Facility	Total Area
ER, Imagery, & Operation Building	Reinforced Concrete, One-story building	ER/Outpatient Department, Imagery Department, Operation Department, Central Sterilization Department, etc.	1,106.19 m ²
Administration Building	Reinforced Concrete, Two-story building	Administration Department, Pharmacy, etc.	1,035.18 m ²
OB/GY & Pediatric Building	Reinforced Concrete, One-story building	OB/GY Building (Delivery Room, Labor Room, Bed Rooms, Treatment Room, etc.) Pediatric Building (NCU, Bed Rooms, Consultation Room, etc.), etc.	1,335.69 m ²
General Medicine & Surgery Ward Building	Reinforced Concrete, One-story building	General Medicine Building (Bed Rooms, Consultation room, Nurse Station, etc.) Surgery Ward Building (Bed Rooms, Treatment Room, Nurse Station, etc.), etc.	968.49 m ²
Service Building	Reinforced Concrete, One-story building	Water Tank Room, Pump Room, Electric Room, Generator Room, etc.	179.79 m ²
Elevated Water Tank, Outside Corridor	Reinforced Concrete,	Elevated Water Tank, Outside Corridor	559.83 m ²
Total			5,185.17 m ²

Table 4: Major Equipment Quantity (Actual) and Purpose of Use

Division	Name of Equipment	Purpose	Quantity
Equipment for ER and Surgery	Defibrillator	Cardiac arrest and treatment of ventricular fibrillation	2
	Electro Surgical Set	Incision, hemostasis during surgery	1
	Patient Monitor	Biological information monitoring critically ill patients	3
	Anesthesia Machine	Pain removal at the time of surgery operation	1
	Operating Table	Patient table at the time of surgery operation	2
	Operating Light	Lighting of the operative field during Surgery	2
	Respirator Set	Respiratory support in patients with respiratory problems	1
Equipment for X-ray room	X-ray Diagnostic System	Radiation diagnostics for disease	1
	Computed Radiography (CR) system	Obtain digital X-ray image information	1
	C-arm	Status confirmation of the affected area during surgery	1
Equipment for OB/GY Department	Delivery bed	Patient bed during delivery	2
	Delivery Monitoring Device	Diagnostics of fetus and monitoring of fetus condition during delivery	1
	Examination Table for OB/GY	Examination table for OB/GY	1
Equipment for General Patient Ward	Patient Bed	Bed for adult patient	91
	Infant Incubator	Daycare of prematurity	1
Equipment for Central Sterilization Department	High-pressure Steam Sterilizer	Sterilization of equipment for surgery	1
Equipment for Dental Department	Dental X-ray unit	Diagnostics for dental care	1
Equipment for Clinical Laboratory	Hematology Analyzer	Blood cell counting	1
	Spectrophotometer	Sample density measurement	1

There were minor changes of outline design (O/D) such as the addition of a waist wall and steel louver on the outdoor corridor. However, it was confirmed through the on-site inspection and interview to the executing agency that all of the initially planned outputs have been implemented (Tables 3 and 4).

As a significant change, the shape of the retaining wall along the site boundary line of the back of the emergency, imagery, and operation building was changed from Detailed Design (hereinafter referred to as "D/D"). According to the implementation consultant, the project's retaining wall was planned to be built in front of the low gray wall (inside the hospital site) that had already been built by the residents at the time of the preparation survey (July 2012-March 2013). However, after the preliminary qualification screening of the bid, when the implementation consultant conducted a field survey at the end of January 2014, the provincial hospital had built a yellow wall at the planned retaining wall site to prevent illegal

housing construction by nearby residents within the hospital site. Nevertheless, the yellow wall was not strong enough to withstand the soil pressure by the project. Therefore, it was inevitable to change the initial schedule and the retaining wall of this project was built inside of the yellow wall. Hence, it can be said that the plan change was appropriate.

Shooting Aug. 31, 2013



Gray low wall built by residents

Shooting Feb. 3rd, 2014



Yellow wall built by the provincial hospital

Source: materials provided by implementation consultant



Retaining wall shape at the time of ex-post evaluation

Back side: yellow wall built by the provincial hospital

In front: retaining wall constructed by plan change in this project

Source: picture by ex-post evaluator

The implementation contents of the capacity building program (soft component) are as follows (Table 5). According to the implementation consultant and the provincial hospital, each item of the soft component items were implemented as planned without problems.

Table 5: Soft Component Implementation

Content	<ul style="list-style-type: none"> • Guidance of operation and maintenance techniques, digital process techniques, and development of operational system for CR system (component of general X-ray machine) • Guidance of operation and maintenance techniques, and development of operational system for Central sterilization equipment • Training of clinical techniques for emergency operation: OB/GY, abdominal surgery, orthopedic surgery, anesthesiology, and paramedical fields
Period	June - December 2015

Source: Project Completion Report, page 8

The following was planned as responsibilities of the Cambodian government (Table 6), and it was confirmed by the Ministry of Health, the provincial hospital, implementation consultants, and on-site inspection that the responsibility was implemented without problems.

Table 6: Responsibility by the Cambodian Government (Plan)

Related procedure	<ol style="list-style-type: none"> 1) Land acquisition 2) Tax exemption 3) Arrangements for equipment/materials imported from Japan or third countries 4) Acquisition of land use permission 5) Banking arrangement and issuance of authorization to pay
Work burden by the Cambodian Side	<ol style="list-style-type: none"> 1) Clearance of obstacles and land development at the project site 2) Infrastructure improvement 3) External works (planting) 4) Relocation of existing equipment and furniture

Source: Materials provided by JICA

3.2.2 Project Inputs

In the middle of the project, there was a concern that yen would be depreciated significantly due to fluctuations in exchange rates, and the construction of the administration building could not be completed due to the lack of project costs. Therefore, about 1.5 billion yen of revised grant agreement was signed to provide additional funding for the administration building. The construction of the administration building is indispensable in this project, and it can be said that the conclusion of the revised grant agreement was appropriate. As a result, the project cost and project period at the time of the conclusion of

the revised grant agreement were considered as a plan and they were compared with the actual results for the input (project cost and project period) analysis of this ex-post evaluation.

3.2.2.1 Project Cost

The project cost was planned to be 1,575 million yen among which 1,554 million yen was for Japanese side and 21 million yen was for Cambodian side. Regarding the actual cost of Japanese side, during the implementation of this project, due to the Japanese government's support for the expansion of SMEs overseas, the bidding standards were eased and the number of bidding companies increased. Therefore, price competition occurred, and the price was reduced to 1,098 million yen. Actual cost by Cambodian side was tried to be confirmed but the amount could not be specified. As the project cost on the Cambodian side is less than 2% of the total even in the plan, comparison between the plan and actual cost was made only with Japanese side. As a result, the actual project cost was within 92% of the plan. The maximum amount before the amendment was 1,321 million yen, and the maximum after the amendment was 1,554 million yen. It was confirmed by the provincial hospital and the implementation consultant that the difference of 233 million yen was the shortfall due to the weak yen (approximately the same as the construction cost of the facility of administration building). The administration building is a symbolic building for the provincial hospital, and it was planned to set up a pharmacy and accounting to make a flow for patients to receive medicine and pay the fees at the end of the examination. The flow was necessary for the smooth operation of the hospital, and its function was essential in planning for the purpose of the project to improve medical services. On-site inspection confirmed that the administration building is a symbolic building located at the center of the front of the provincial hospital. A space and benches were also set up for many patients and their families to wait for accounting procedures inside, enabling smooth administrative procedures. It also contributes to the improvement of medical services which is the purpose of this project, and it can be assessed that the construction of the administration building is essential in this project and the conclusion of the revised grant agreement was appropriate.

3.2.2.2 Project Period

The implementation period of this project was planned to be 29 months from April 2013 to August 2015.⁵ However, the actual project duration was extended to 3 months

⁵ In the plan the starting date of the project period was a date of start of detail design, and this report added 6 months

from April 2013 to November 2015⁶ and the total became 32 months (110% of the plan).

According to the provincial hospital director, the Ministry of Health, and the implementation consultant, it took time to discuss whether to construct the administrative building due to exchange rate fluctuations, and it took six months to conclude the revised grant agreement. Detailed design and bidding operations were carried out in the planned period. The planned construction period for the main work was 16 months. However, it was delayed for 19 months due to the following reasons: 1) the amount of rainfall in 2014 was large and the rainy season was also long, 2) the construction work had been stopped until the completion of the procedure for changing the retaining wall, and 3) it was difficult to secure workers due to the construction rush in Cambodia.

As mentioned above, although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness and Impacts⁷ (Rating:③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects

Among the planned quantitative effects, the actual results of “the number of outpatients and emergency patients”, and “the emergency/ICU bed occupancy rate” in 2018 were less than 100%⁸. All other six indicators have achieved their target values. In particular, the numbers of operations, blood tests, biochemical tests, and X-ray tests exceeded the target values by 218%, 3,908%, 1,062%, and 652%, respectively. In 2012, the number of deliveries was close to the target value, and the number of X-ray examinations had already exceeded the target value. According to the provincial hospital, the Cambodian government has banned traditional methods of giving birth at home. A local NGO (Buddhism for Health (BFH)), which at the time operated the Health Equity Fund (hereinafter referred to as "HEF"),⁹ visited villages, etc. to explain birth risk and persuaded them to give birth at a hospital. As a result, the number of deliveries at hospitals increased. As for X-ray examinations, the number of X-ray examinations increased sharply, as the hospital received a free grant of mobile X-ray equipment from

required to conclude the revised grant agreement.

⁶ The definition of project completion is the start of operation in November 2015.

⁷ Sub-rating for Effectiveness is to be put with consideration of Impacts.

⁸ Because the index of emergency/ICU bed occupancy is an index aimed at alleviating congestion, the target value was set lower than the standard value. Therefore, the ratio of how much the achievement rate was below the base value was calculated from the following formula.

(Base value-2018 results) / (base value-target value) = 40% (rounded off after the decimal point)

⁹ The purpose is to promote the use of medical services for the poor (preparatory survey report, page 1-9).

General Electric Company (GE) and other donors before 2012. Since the government's policy changes and other donors' movements were difficult to be predicted at the time of planning, it can be said that the target values were set appropriately. It cannot be said that these effects are only by the effect of this project because there were external factors. However, considering that the number of deliveries has increased 1.7 times and the number of X-ray examinations has increased 3.7 times from 2015, the year of the completion of this project to 2018, three years after the completion, the contribution of the project is significant. The cause of the rapid increase in the number of blood tests and biochemical tests could not be confirmed.

Table 7 summarizes the reference values, target values, and actual values for 2015-2018 for each indicator. Since the project starting date was November 2015, which is a definition of project completion, the target year to be compared is 2018, which was three years after the completion of the project.

Table 7: Quantitative Effects of the Project

Indicators	Base value (2011)	Target (2018)	Actual							Achievement rate
		3 Years After Completion	2012	2013	2014	2015 Completion Year	2016 1 Year After Completion	2017 2 Years After Completion	2018 3 Years After Completion	
Number of hospitalized patients (person/year)	6,010	7,060	3,977	4,851	3,717	4,338	5,450	8,271	11,766	167%
Number of outpatient and emergency patient (person/year)	19,563	26,712	9,645	12,668	8,228	7,446	13,508	19,464	25,215	94%
Number of operation (per year)	388	448	322	399	433	531	716	776	974	218%
Number of delivery (per year)	1,170	1,487	1,350	2,094	1,692	1,667	2,079	2,020	2,828	190%
Number of blood test (per year)	2,144	2,927	2,829	2,527	8,142	11,653	23,714	34,632	114,377	3908%
Number of biochemical examination (per year)	760	1,038	632	640	2,278	4,133	8,304	12,949	11,027	1062%
Number of X-ray inspection (per year)	482	658	781	1,066	1,274	1,161	1,738	3,047	4,293	652%
Emergency/ICU bed occupancy rate (%)	136	82	97	96	89	94	121	93	114	40%

Source: Questionnaires response from the provincial hospitals

3.3.1.2 Qualitative Effects (Other Effects)

At the time of planning, the following effects were expected in this project: (1) Contribute to the optimization of the referral system as a top referral hospital, such as the improvement of medical services in the Sihanouk Provincial Hospital, which makes it possible to accept patients that could not be dealt with in the past. (2) Safety will be improved by installing an X-ray radiography room protected by reinforced concrete at the Sihanouk Provincial Hospital where X-ray protection has not been made. (3) The possibility of hiring highly specialized medical personnel is increased.

Regarding (1), at the time of the ex-post evaluation, through interviews with the provincial hospital medical staffs and patient, and on-site inspection, it was confirmed that gynecological and orthopedic equipment are effectively used, so that medical services are improved, and thereby this project has contributed to the appropriateness of the referral system. According to the provincial hospital, more complicated operations can be performed after this project and lots of medium-level operations can be performed.

The Sihanouk Provincial Hospital, which is the target of this project, is a referral hospital (CPA¹⁰3). Then, this project intended to strengthen the referral system and improve medical services in the province region by developing the hospital to meet the CPA3 standard, and thereby contribute to the health of the residents of the province. Therefore, as a policy of ex-post evaluation, the viewpoint was focused on how the development of provincial hospitals contributed to strengthening the referral system in the province, and tried to assess the function of provincial hospitals using CPA3 standard as a top referral hospital. According to interviews with the provincial hospital and PHD, though the provincial hospital does not confirm or monitor and does not know exactly how much they achieved CPA standard, they have not accomplished 100%. Also, there was an opinion that the CPA standard itself was an effort target in Cambodia and meeting the standard was not realistic. The table compared with CPA3 standards based on a response from the provincial hospital is as follows. Although the number of clinical technologist, radiographer, motion therapist, medical facility, and equipment engineer does not satisfy CPA3 standard, other points meet the standard, so that there seems no particular problem.

¹⁰ CPA stands for Complementary Package of Activities. State hospitals are classified into three stages, CPA1, CPA2, and CPA3 according to the scale, and guidelines for specifying medical services and equipment to be provided by hospitals of each classification (at the time of ex-post evaluation, the 2014 version is the latest version). The provincial hospitals covered by this project fall under CPA3, but those that fall under CPA3 will provide the highest level of medical services in the province. Preparatory Survey Report, page 1-6.

Table 8: Comparison of Services which a Referral Hospital Must Provide and the Provincial Hospital

	CPA3	The Provincial Hospital
Number of Bed	100-250	103
Number of Doctor	23-35	32
Dentist and Dental hygienist	2-3	7
Nurse	78-103	70
Midwife	15-20	49
Pharmacist	3-4	6
Clinical technologist	6-8	5
Radiographer	3	1
Motion Therapist	3-4	2
Medical Facility and Equipment Engineer	5-7	2
Needed Diagnosis and Treatment Department and Relevant Services		
Emergency Services	<input type="radio"/>	<input type="radio"/>
General Medicine Department	<input type="radio"/>	<input type="radio"/>
Surgery Department	<input type="radio"/>	<input type="radio"/>
OB/GY	<input type="radio"/>	<input type="radio"/>
Pediatric Department	<input type="radio"/>	<input type="radio"/>
Tuberculosis	<input type="radio"/>	<input type="radio"/>
Referral Outpatient and Motion Therapy	<input type="radio"/>	<input type="radio"/>
Operation Department and ICU	<input type="radio"/>	<input type="radio"/>
Dentistry and Oral Medicine	<input type="radio"/>	<input type="radio"/>
Infection Disease: HIV/AIDS, Malaria	<input type="radio"/>	<input type="radio"/>
Otolaryngology and Ophthalmology	<input type="radio"/>	<input type="radio"/>
Clinical Examination Department	<input type="radio"/>	<input type="radio"/>
Imagery Department	<input type="radio"/>	<input type="radio"/>
Blood Bank	<input type="radio"/>	<input type="radio"/>
Pharmacy	<input type="radio"/>	<input type="radio"/>

Source: Preparatory survey report, pages 1-6 and questionnaires response from the provincial hospital

In light of the above, it is difficult to say that the provincial hospital accomplishes

100% of CPA 3 standard, but it was judged that this would not reduce the qualitative effect (1). As for (2), it is difficult to judge the direct effect on safety correctly, so that the degree of contribution of this project to safety improvement was analyzed as another impact. (See "Other Impacts" below.)

Regarding (3), according to the implementation consultant, it was the logic that the provincial hospital fosters highly specialized medical staffs by accepting student training and the students find a job after graduation. And, it was also the logic that highly specialized medical workers would seek a job of the provincial hospital by developing appropriate facilities and equipment of the hospital as CPA3.

According to the provincial hospital, the number of medical specialists is still not enough. However, since the government pays the public servants, the provincial hospital cannot recruit and increase their own personnel. Although the hospital has requested additional personnel to the Ministry of Health, this has not been dealt with. There are seven doctors as volunteer staffs, but specialists are not enough, and the effect about (3) could not be confirmed. However, the right to decide on staffing has not changed since before the planning stage of this project, and it was possible to predict at the time of project planning that specialists would be difficult to be replenished. As a lesson from this, it can be said that it is necessary to formulate a project plan in consideration of such circumstances in future projects.

3.3.2. Impacts

3.3.2.1 Intended Impacts

In this project, (1) improvement of access to health services by residents and contribution to health and (2) contribution to training for medical workers were expected as impacts.¹¹ The appearance of these impacts at the time of ex-post evaluation is as follows.

(1) Improvement of access to health services by residents and contribution to health

According to the five provincial hospital users,¹² positive answers were given to the contribution to the improvement of access to health services (ease of use, comfort,

¹¹ Regarding (2), although it was described in the preparatory survey report, it was not described in ex-ante evaluation paper. This item was taken into consideration in this ex-post evaluation because it was said that the implementation consultant did not receive from JICA the indication that it was particularly inappropriate as an indicator.

¹² About the selection of five people, it was decided by the selection of the provincial hospital side after having informed the provincial hospital that there should be no bias in gender balance, age, department to receive medical examination, and hospital usage frequency. The breakdown is as follows (age is estimation): male (in 40's, accompanied by wife's delivery), female (in 40s, accompanied by daughter's delivery), female (in 30s, after delivery by cesarean section), male (in 40s, after surgery), and male (in teens, hospitalized by motorbike accident).

safety), saying "the charge is not high, but the doctor's skill and treatment level are high, and facilities and services are improved," and "we are now using it from the poor to the rich." As for the service, there were some negative responses due to the large number of patients. The charges did not change before and after the project. From the above, although there are some problems with the services, it can be said that this project has a certain impact on the improvement of access to health services by residents and the contribution to their health.

(2) Contribution to training for medical workers

According to the interviews with apprentices (desired nurses)¹³ at the provincial hospital and staffs of Kampot Regional Training Center (hereinafter referred to as "RTC")¹⁴ and the provincial hospital, RTC has dispatched students wishing to become nurses to the provincial hospital. As the provincial hospital was completed by this project, more practical training was able to be performed, and thus the provincial hospital gained popularity among the apprentices. Before 2015, 18 to 25 apprentices were dispatched annually. However, after completion of this project, from 2015 to 2017 there were also years when up to 50 apprentices were dispatched annually. However, due to the rapid increase of investment from China, prices in the province increased, causing security problems and soaring food costs and accommodation rents. As a result, the popularity of the provincial hospital is now gone, and the number of trainees who wish to be dispatched to the provincial hospital has returned to the level before 2015. In addition, because the Ministry of Health decides the assignment destination of those who passed a civil service examination after the practical training, the hospital does not know if there is a former apprentice who got a job at the provincial hospital after completing the practical training at the provincial hospital. Among the former apprentices, there were about 20 nurses employed as contract workers at the provincial hospital in 2018.¹⁵ Excluding the impact of the increase in Chinese investment, this project accepts apprentices as a place to provide more practical training, contributing to an increase in the number of contract nurses who have acquired higher skills in practical training. It can be said that the training

¹³ At the time of on-site inspection, the provincial hospital accepted two trainees of doctor aspirations and 10 trainees of nurse aspirations.

¹⁴ It is a public training center that trains nurses and midwives, and is set up at four locations nationwide.

¹⁵ In order to become a nurse in Cambodia, there is a way to study at a four-year university and a way to study at a three-year school, and it is necessary to pass the national graduation examination at graduation. In order to work as a government employee in the provincial hospital, it is necessary to pass a civil service examination, but even nurses who have not passed the civil service examination may be directly employed as a contract staff by the provincial hospital. JICA "Information Collection and Confirmation Survey Report on Health Human Resources and Health Facilities in Cambodia" 2017. CCN, How nurses can ensure their legal professional status through registration, http://cambodiancouncilofnurse.com/wp-content/uploads/2017/03/How-nurses-can-ensure-their-legal-professional-status-through-registration_Eng_final.pdf, accessed June 19th 2019.

of medical workers had a certain impact.

3.3.2.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

This project was classified as a category C under the “Japan International Cooperation Agency Guidelines for Environmental and Social Considerations” (established in April 2010) because it was judged that the adverse environmental impact was minimal. According to the interviews with the implementation consultants, the provincial hospital, and surrounding residents, there was no negative impact on the natural environment during the construction. No complaints from patients, etc. have occurred during construction. The contractor did not have a construction that generates noise at night, and was considered to be completely unaffected. There were no reports of accidents during construction or digging back and causing soil contamination. There was no noise or environmental damage during the construction.

(2) Resettlement and Land Acquisition

According to the interviews with the provincial hospital, implementation consultants, and surrounding residents, resettlement and land acquisition have not been implemented in this project.

(3) Other Impact

According to the interviews with the provincial hospital, CHO¹⁶ staff, the Ministry of Health, and the implementation consultant, the provincial hospital accepts patients regardless of their income level, and they can receive free treatment if they present ID Poor card.¹⁷ As a result, the completion of this project has made it possible for the poor to receive high-quality medical services at the provincial hospital, and this project has made a certain contribution to the promotion of poverty reduction.

On the other hand, in view of the change in the HEF burden, after completion of the project, the number and proportion of patients on the burden of HEF did not increase due to the constraints of financial resources of HEF. Hence quantitative impact on poverty reduction could not be confirmed (Table 9).

¹⁶ Community Health Organization. At the provincial hospital, BFH operated HEF at the time of ex-ante evaluation. However, BFH ended its activity around 2016. Currently, CHO receives an order from the Ministry of Health for the operation of HEF, and is assigned to national hospitals all over the country, and conducts registration of ID poor.

¹⁷ Poor household recognition system covered by HEF budget. Free medical services, meals, and transportation expenses are provided at designated medical institutions. In principle, ID poor card holders must first visit the health center to obtain a letter of introduction and then visit a provincial hospital.

**Table 9: Changes in the Number of Patients and the Increase and Decrease
in the Burden of HEF**

	2012	2013	2014	2015	2016	2017	2018
Number of hospitalized patients (person/year)	3,977	4,851	3,717	4,338	5,450	8,271	11,766
Number of hospitalized patient self-paid	1,167	1,913	702	338	2,402	4,843	7,537
Number of hospitalized patient NSSF ^a paid	-	-	-	1	61	441	1,412
Number of hospitalized patient Insurance paid	-	-	-	-	25	30	59
Number of hospitalized patient HEF paid	2,618	2,802	2,946	3,214	2,574	2,226	2,187
Number of hospitalized patient HEF paid (%)	66%	58%	79%	74%	47%	27%	19%
Number of hospitalized patient Exempted ^b	192	136	69	785	388	731	571
Number of outpatient and emergency patient (person/year)	9,645	12,668	8,228	7,446	13,508	19,464	25,215
Number of outpatient and emergency patient self-paid	8,810	11,752	6,969	5,081	8,654	9,867	12,608
Number of outpatient and emergency patient NSSF paid	-	-	-	-	12	1,706	5,202
Number of outpatient and emergency patient Insurance paid	-	-	-	-	43	75	139
Number of outpatient and emergency patient HEF paid	519	620	1,054	1,798	1,384	1,945	2,502
Number of outpatient and emergency patient HEF paid (%)	5%	5%	13%	24%	10%	10%	10%
Number of delivery patient Exempted	316	296	205	567	3,415	5,871	4,764
Number of delivery patient self-paid	1,350	2,094	1,692	1,667	2,079	2,020	2,828
Number of delivery patient self-paid	683	1,216	974	1,068	1,575	1,524	2,157
Number of delivery patient NSSF paid	-	-	-	-	-	114	406
Number of delivery patient Insurance paid	-	-	-	-	-	2	7
Number of delivery patient HEF paid	631	847	714	590	467	311	220
Number of delivery patient HEF paid (%)	47%	40%	42%	35%	22%	15%	8%
Number of delivery patient Exempted	36	31	4	9	37	69	38
Number of Paraclinical check	5,314	9,065	2,512	2,291	3,065	5,211	6,886

Number of patients paraclinical check self-paid	4,978	8,773	2,362	2,248	2,976	5,020	6,422
Number of patients paraclinical check NSSF paid	-	-	-	-	-	51	291
Number of patients paraclinical check Insurance paid	-	-	-	-	2	13	35
Number of patients paraclinical check HEF paid	240	187	99	26	42	73	95
Number of patients paraclinical check HEF paid (%)	5%	2%	4%	1%	1%	1%	1%
Number of patients paraclinical check Exempted	96	105	51	17	45	54	43

Source: Questionnaires response from the provincial hospital

Note: a) The National Social Security Fund (NSSF) system, which was recently launched. It is a social insurance system for workers, not for the poor.

b) The exempt patients are those to whom HEF cannot bear the cost for the time when, for example, the provision of the HEF is suspended due to the restriction of the HEF resources and the change in the operating NGOs. For such patients, the provincial hospital bears the cost.

In consideration of the convenience to the disabled, the stairs to the operation room and the delivery room are sloped, and the rest are basically designed without steps. According to the Provincial Hospital On-site Prosthetic Foot Center, there is a room for improvement, with the opinion that the slopes are high and difficult to use, and that toilets for disabled people are not enough. Nevertheless still it can be said that the accessibility of wheelchairs and disabled people to the hospital has been improved by this project, and thus this project has certain impact on promotion of social development.

In this project, based on the Japanese government's policy to support SMEs' overseas expansion, the criteria for bidding became less strict during the implementation of this project, and the experience of the overseas business was removed from the requirements. As a result, small and medium-sized enterprises with little experience in overseas business made a successful bid as a Contractor. From this, there has been a certain impact in the sense that opportunities for new businesses among SMEs in Japan have expanded. On the other hand, the SMEs who are the Contractors of this project had little experience with JICA grant aid projects, so that several problems were pointed out by the implementing consultant and JICA experts in terms of quality, process, and safety management. However, the Contractors solved the issues each time and moved to the

next construction phase. As a result, the problem has no particular negative impact on the output.

Prior to the implementation of this project, the X-ray room of the provincial hospital had wooden door and no X-ray protection. Therefore, it was expected that the safety would be improved by installing an X-ray radiography room protected by reinforced concrete by this project. In fact, it was confirmed that the implementation of this project contributed to the improvement of safety because the X-ray imaging room protected by reinforced concrete was installed in the provincial hospital.

From the above, the number of patients who receive medical services such as examinations and treatments using facilities and equipment developed in this project at the provincial hospital has increased, and patients to whom the hospital could not provide proper treatment have come to be accepted. From this, it can be said that this project has enabled the provincial hospital to provide appropriate services as a top referral hospital. In addition, provincial hospital users also feel that access to health services has improved after the project completion, and it can be said that they contribute to the health of the provincial residents to a certain extent. Because an external factor, a sharp increase in investment from China which could not have been foreseen at the time of planning of this project, it cannot be said that this project has sufficiently contributed to health care worker training. Nevertheless, other impacts such as poverty reduction promotion, social development promotion, and contribution to support for overseas expansion of SMEs were also confirmed.

As a result, this project has largely achieved its objectives. Therefore effectiveness and impacts of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional/Organizational Aspect of Operation and Maintenance

Regarding the operation and maintenance system of the provincial hospital, the personnel system of the provincial hospital at the time of the ex-post evaluation is as follows (Table 10).

Table 10: List of Personnel by Departments of the Provincial Hospital (as of the End of March 2019)

Department	Doctor	Bachelor Pharmacist	Master Dentist	Secondary Pharmacist	Secondary Physician	Secondary Nurse	Secondary Midwife	X-ray engineer	Motion Therapist	X-ray	Dental Nurse	Associate Nurse	Associate Midwife	No certificate	Total
Government Officials															
Administration	3					6						3		2	14
Tuberculous						1	1					1	1		4
General Disease	4					5	3								12
Operation	3					5						1	1		10
GB/GY	1				2		14								17
Emergency	4					9	3					1	1		18
Surgery	1					5	3								9
X-ray/Endoscopy	2					2				1					5
Pediatric	3					5	2					2			12
Pharmaceutical Stock		3				2	1								6
Laboratory	1	3				1		5							10
Oral-Dental Disease			5			1					2				8
Motion Therapy									2						2
Hope Center Building	2					3	2								7
Test - AIDS						1									1
Family Clinic						2	3					1			6

Ophthalmology	1					3									4	
Total	25		5		2	51	32	5	2	1	2	9	3	2	145	
Non-Government Officials																
Contracted staff (Note)															15	15
Hired Staff	7				1	10	14								5	37
Total	7				1	10	14								20	52
Grand Total	32	6	5		3	61	46	5	2	1	2	9	3	22	197	

Source: Questionnaires response from the provincial hospital

Note: Mainly management and operational staffs except national servants

According to the table 10, there are currently 197 employees, of which 52 are directly employed by the provincial hospital, except for national servants. The overall problem is the shortage of specialist doctors and other human resources due to the rapid increase in the number of patients. According to the provincial hospital, there are three orthopedic surgeons, but they have little experience and complicated surgery is difficult. There is no specialist in otolaryngology. Since the Ministry of Health pays for civil servants and has the right to decide personnel, the provincial hospital cannot increase the number of employees freely. Therefore, when there is a shortage of human resources, the provincial hospital directly hires staff other than national servants, but due to budget constraints, it cannot be hired sufficiently. According to the provincial hospital, a referral hospital will be built in Prey nob adjacent to the east of Sihanouk Province, and medical staffs will be needed for the new hospital in Prey nob. From this, it is expected that the current situation will be continued, since no increase in the number of personnel at the provincial hospital can be expected. Although there were not enough cleaning workers, there seemed no problems with hygiene because of daily cleaning at 5 am and 3 pm and cleaning activities by all staff on every Tuesday.

The Ministry of Health visits the provincial hospital once every three months, and if there is a problem with operation and maintenance, meetings including PHD are frequently held, such as three-party discussions. From the above, it can be said that the Ministry of Health, PHD, and the provincial hospital are coordinated well. Each month, the provincial hospital holds a communication meeting with health post and health center, and there is no problem with coordination among national hospitals, the provincial hospitals, and health centers.

As mentioned above, there are some problems in institutional/organizational aspect of operation and maintenance.

3.4.2 Technical Aspect of Operation and Maintenance

According to the provincial hospital, thanks to thorough implementation of the 5S movement¹⁸ by the Japan Overseas Cooperation Volunteers (hereinafter called “JOCV”) (nurse), the cleaning staffs have been able to distinguish between the infected and non-infected, and distinguish needles and dangerous items, thus improving hygiene and safety. After the completion of the project, the instruction on how to use the equipment was provided by the implementing consultant, but it was short-term and the staffs of the provincial hospital could not sufficiently learn. At first, it was said that they struggled with how to use some of the equipment. However, maintenance and operation staffs received training on medical equipment in Japan by JICA in 2018, and their skills have been greatly

¹⁸ 5S means activities to improve the work environment derived from the Japanese acronym “S” for “*Seiri* (organize),” “*Seiton* (tidy),” “*Seisou* (cleaning),” “*Seiketsu* (cleanliness),” and “*Shitsuke* (discipline).”

improved. As a result most of the equipment is now being used without problems. According to the provincial hospital, techniques for emergency surgeries in the abdominal surgery, orthopedics, as well as obstetrics and gynecology areas taught by the clinical technology training as one of soft components have been used. For example, with regard to the development of the operation system, digital processing technology, and technical guidance on maintenance and operation, for the CR system, which is a component of a general-purpose X-ray imaging apparatus, the CR system has subsequently failed, but the provincial hospital could repair by itself. In addition, development of operation system for central sterilization equipment and technical guidance on maintenance and operation are utilized for equipment maintenance and operation after the project completion.

From the above, no particular problems have been observed in technical aspect of operation and maintenance.

3.4.3 Financial Aspect of Operation and Maintenance

The financial condition of the provincial hospital as a whole is a profit before tax every year (Table 11).

Table 11: Financial Status of the Sihanouk Provincial Hospital

(Unit: Riel)

	2012	2013	2014	2015	2016	2017	2018
Allocation from Ministry of Health	86,120,000	2,236,832,486	2,373,992,000	2,534,424,900	4,099,018,000	4,269,118,000	4,210,118,000
From direct patient	160,381,500	263,923,000	278,680,000	332,856,500	930,670,500	1,407,483,000	1,480,970,500
From HEF Support	566,546,000	591,986,000	552,071,000	630,254,000	564,130,400	410,656,000	394,230,000
Total Income	813,047,500	3,092,741,486	3,204,743,000	3,497,535,400	5,593,818,900	6,087,257,000	6,085,318,500
Salary	433,923,504	1,796,806,486	2,107,872,600	2,430,321,046	3,468,782,540	3,068,134,400	4,470,685,800
Medicine Expense	49,373,788	111,674,600	108,581,400	47,096,000	448,950,200	422,069,000	83,957,000
Food Stuff Expense	10,000,000	85,372,500	90,000,000	88,600,000	98,500,000	98,000,000	170,000,000
Medical Equipment Expense	24,167,392	95,096,600	57,941,500	80,347,100	108,935,300	136,056,300	91,398,500
Maintenance Expense for ME	7,462,000	11,948,000	54,960,000	50,971,000	35,631,500	32,958,000	29,420,000
Building Maintenance	34,765,500	547,170,500	362,593,000	252,472,000	346,869,300	54,510,800	61,260,350
Electricity and Water Supply	44,809,731	64,770,580	227,688,800	283,780,565	558,263,245	658,276,430	660,752,305
Hospital Management Expense	184,489,453	168,539,913	140,785,593	247,078,293	527,856,604	1,616,880,289	479,098,419
Total Expenses	788,991,368	2,881,379,179	3,150,422,893	3,480,666,004	5,593,788,689	6,086,885,219	6,046,572,374
Operating Income	24,056,132	8,716,307	237,607	17,805,396	30,211	371,781	38,746,126
Non-operating Income	-	-	-	-	-	-	-
Extraordinary Income	-	-	-	-	-	-	-
Income before Income Tax	24,056,132	8,716,307	237,607	17,805,396	30,211	371,781	38,746,126
Income Tax	NA	NA	NA	NA	NA	NA	NA
Net Income	NA	NA	NA	NA	NA	NA	NA

Source: Questionnaires response from the provincial hospital

On the other hand, the necessary budget has not been secured for maintenance and operation costs. In addition, spare parts cannot be procured domestically for some of the equipment as described later, so that they are procured outside the country depending on the situation. However, the cost of transportation is high, which is a problem due to cost constraints (Table 12).

From the above, there are some problems with financial aspect of operation and maintenance.

Table 12: Maintenance Cost (Planned and Actual)

(Unit: Riel)

	2015	2016	2017	2018
The total budget	6,410,300,000	8,889,700,000	9,823,300,000	9,559,800,000
Actual Budget/ Allocation	3,498,471,400	5,593,818,900	6,087,257,000	6,085,318,500
Actual Expense	3,480,666,004	5,593,788,689	6,086,885,219	6,046,572,374

Source: Questionnaires response from the provincial hospital

3.4.4 Status of Operation and Maintenance

The contractor and the consultant made operation and maintenance manuals for the equipment, though they have not been updated by the provincial hospital. In addition, since the manuals mainly relate to how to use the equipment and there is no description of how to repair it, a new repair manual is required. The maintenance staff received training on the development of maintenance plans, such as the development of monthly check and daily check lists in the training by JICA in Japan. However, the maintenance plan has not been fully implemented because the site is also busy. For daily maintenance check, it is necessary to obtain the approval from the superior and to check all the equipment. However, it is not currently implemented because the administrative burden is excessive. Therefore, institutional improvement is also necessary. Nevertheless, when a problem occurred, the maintenance staffs immediately responded, and no particular problem was observed with such a post-procedure.

However, it was confirmed that some of the equipment that was difficult to procure in Cambodia, such as oxygen equipment (oxygen bottles) and fuses for surgical lights, were not fully functioning. According to the implementation consultant, the most parts of the equipment provided by the project are not produced in Cambodia and it is difficult to procure in the country. Therefore, the consultant had passed an agent list to the provincial hospital director, and it should be able to contact an appropriate agent by referring to the list.

Although the cost is more expensive than domestic procurement, it was agreed that the Cambodian government would secure the budget. However, according to the provincial hospital, while they contacted the agencies in the list, standards of the parts did not match, or, while they applied for a budget to the government of Cambodia, it had not approved. At the time of the ex-post evaluation, since overseas procurement of equipment that is difficult to procure domestically is expensive and the provincial hospital does not have a budget from the Ministry of Health, the hospital procures the equipment only when the maintenance staff has the opportunity to travel to Japan or Singapore. For this reason, oxygen equipment is not sufficient at present, and a substitute product is used for the fuse of the operation light, so that it is a situation where the operation light is not fully functioning. Other parts can be procured domestically and has been used without problems.

Not only in Preah Sihanouk Province where the project is located in, but also in Cambodia, power shortages have become a problem throughout the country, including the capital Phnom Penh, and blackouts have been seen as a problem for this project as well. At present, there is no report of equipment failures due to power outages. However, it is necessary to take measures such as thorough maintenance of equipment after power outages and promotion of the use of in-house power generation in case of frequent blackout. Maintenance of the air conditioner is carried out twice a month. The awareness of the hospital users has been improved, and sanitation on the premise has been maintained by enlightening activities of the provincial hospital cooperated by the JOCV regarding how to dispose trash and use toilets. Related to the hygiene management in the hospital, there is not enough space for eating and drinking in the hospital, then problems that many family members of patients eat and drink in the ward and it smells, so that it is necessary to make areas for eating and drinking. Every Tuesday, all staff members carry out cleaning activities and they are useful for hospital hygiene. Even in the on-site inspection, the wards, corridors, walkways, toilets, etc. in the hospital appeared clean and tidy. In the ward, the shoes were taken off and placed in the shoe box, and the trash was thoroughly sorted, and no messy appearance was seen. The situation in the hospital is as shown in the photo below.

As above, the maintenance plan has not been sufficiently developed and regular maintenance has not been implemented. Some equipment cannot be procured in Cambodia, and there are restrictions on procurement in foreign countries. Taking measures, such as thorough maintenance of equipment after power failure and promotion of in-house power generation, is necessary. Considering such situation, some problems are observed in the status of operation and maintenance.



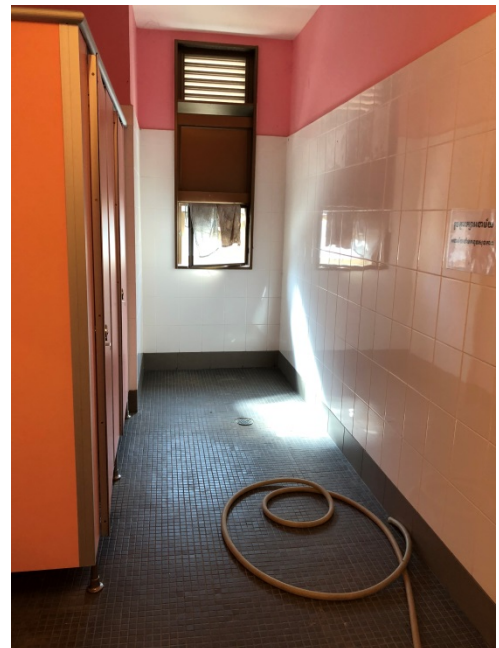
Shoes storage beside the entrance of
OB/GY & Pediatric Building



Outside Corridor
ER, Imagery, & Operation Building



Garbage separation (Thorough 5S movement)
ER, Imagery, & Operation Building



Inside the women's bathroom
OB/GY & Pediatric Building

As mentioned above, some minor problems have been observed in terms of the institutional/organizational aspect, financial aspect, and current status. Therefore sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aims to improve the referral system and medical service in Preah Sihanouk Province by improving the facility and equipment of the provincial hospital that can provide medical service as a top referral hospital, thereby contributing to the health of residents of Preah Sihanouk Province. The project is highly relevant with Cambodia's development policy which places the health sector as a priority, and also relevant with development needs and Japan's ODA policy. Therefore its relevance is high. In terms of project implementation, although the project cost was lower than planned, the project period exceeded the plan. Therefore the efficiency is fair. Regarding the effectiveness, the number of patients who receive medical services such as inspection and treatment using the facilities and equipment developed in this project is increasing, and patients who could not be dealt with up to the project can be also accepted. Therefore, it can be said that this project has enabled the provincial hospital to provide appropriate services as a top referral hospital. In addition, users of the provincial hospital also feel that access to health services has improved after the project completion, so that it can be said that this project contributes to the health of the provincial residents to a certain extent. With regard to medical staff training, because of the external factor, rapid increase in investment from China which could not have been foreseen at the time of planning of this project, it cannot be said that this project sufficiently contributes to it. However, other impacts such as poverty reduction promotion and social development promotion, and contribution to SME's overseas expansion support were also confirmed. From the above, this project has largely achieved its planned effects, and effectiveness and impacts of the project are high. With regard to the operation and maintenance of this project, medical specialists and other human resources are lacking, the necessary budget for maintenance and management costs have not been secured, and it is difficult to domestically procure some equipment. Therefore, some minor problems have been observed in terms of the institutional/organizational aspect, financial aspect, and current status. Therefore sustainability of the project effects is fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Solving power shortage problem

Due to the power shortage in the Sihanouk region, there is a risk of equipment failure. Therefore, thorough maintenance checks after a power failure are important. In addition, it is necessary to strengthen self-powered generators. Since it is the rule that the Ministry of Health procures equipment more than 500 USD, the Ministry of Health should review its

budget allocation.

Strengthening the referral system

The bed occupancy rate of the emergency ward has been high at 93% to 121% since the completion of the project in 2015, and although improvements have been seen since the project implementation, there is still room for improvement. In addition, the occupancy rate of patients in wards is high and the number of beds are not enough. The background is that the provincial hospital is currently open to anyone without a letter of introduction. If there is no letter of introduction, there is a response that no transportation allowances are issued. However, in order to establish the referral system and solve the problem of hospital congestion, it is necessary to develop the referral system by requiring a letter of introduction from the health center necessarily, setting up a high consultation fee if there is no letter of referral, etc. in addition to the response of translation allowances. For this purpose, the Ministry of Health should first investigate what kind of referral system other countries are establishing, and consider a system design that can be tackled in Cambodia.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

Importance of cooperation with the JOCV project in the hospital development project

In this project, it was pointed out by the defect inspection (conducted about one year after the completion of this project) that the ward was not thoroughly cleaned and that the first aid room and equipment were messed up.¹⁹ After the implementation of this project, a nurse from JOCV was dispatched to the provincial hospital to thoroughly practice the 5S movement for the hospital staff, and the ward was cleansed at the time of the ex-post evaluation. Medical instruments were organized, no messy appearance was seen, and hygiene conditions were improved. As a result, the ease of use of the hospital for patients was also improved. It seems that it contributed to the improvement of the effect of this project, as it seems to have further contributed to the improvement of access to health services of residents and their health. It is said that cooperation with JOCV is important in the development project of medical facilities since it brings synergetic effects.

Confirmation of personnel assignment decision right

According to the provincial hospital, although there is still a shortage of specialist doctors,

¹⁹ Based on materials provided by JICA.

the Ministry of Health has the right to decide on staffing. Therefore, even if the provincial hospital requests the Ministry of Health to respond, the qualitative effect of "high possibility of hiring highly specialized medical personnel" cannot be confirmed, and personnel planning have not been achieved. It is possible to know who has the right to decide on staffing prior to the implementation of this project, and it was possible to predict in advance that it would be difficult to replace specialist doctors. In future project preparation and project implementation, it is important to formulate a project plan such as effect indicators and staffing plans after fully confirming the presence or absence of the authority of the implementing agency and the actual condition of the hospital in the field.

End