

Kingdom of Cambodia

FY2020 Ex-Post Evaluation Report of Grant Aid Project

“The Project for Improvement of Svay Rieng Provincial Referral Hospital”

External Evaluator: Nobuyuki Kobayashi / Koichi Sato, OPMAC Corporation

## **0. Summary**

With the aim of improving the functions of Svay Rieng Provincial Referral Hospital, including their obstetrics / gynecology department and emergency outpatient services, and thereby contributing to the improvement of the quality of health care services in Svay Rieng Province, the project implemented the construction of hospital facilities and procurement and installation of medical equipment. Building facilities and supplying equipment in this way is fully consistent with Cambodia’s development needs and policies, which aimed to improve the quality of health services through the development of health infrastructure, including health facilities. It was also in line with Japan’s ODA policies. Therefore, its relevance is high. On project cost and project period, the project cost was within the plan, but the project period exceeded the plan. Therefore, efficiency of the project is fair. Regarding the effectiveness of the project, Svay Rieng Provincial Hospital has been able to meet the growing needs of health care services in the province by utilizing the new facilities and equipment procured in the project, and its functionality as a top referral hospital has been improved. This also led to the improvement of the quality of health care services provided by Svay Rieng Provincial Hospital and the strengthening of the referral system in Svay Rieng Province. Furthermore, the project contributed to universal health coverage<sup>1</sup> by providing health care services to the poor and made a positive impact on the hospital’s response to novel coronavirus infections (COVID-19). As described above, this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high. The hospital has secured most of the necessary medical personnel, and they have the skills to provide health care services, as well as operate and maintain the facilities and equipment. Although repairs of low-priority equipment tend to be slow, hospital revenue and expenditures are stable, and the facilities and provided equipment are in a usable state. Therefore, sustainability of the project effects is high.

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

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<sup>1</sup> When all people have access to appropriate health care services including preventative, curative, and rehabilitative care, at an affordable cost.

## 1. Project Description



Project Location



Hospital Built by the Project

### 1.1 Background

As a result of civil conflicts in Cambodia since the 1970s, the country's health care system was devastated; the number of medical personnel was drastically reduced and medical equipment and facilities were destroyed. Since the end of these civil conflicts, health indicators such as the maternal mortality rate was improved through support provided by a number of development partners in the health sector. However, the system for providing health care services remained weak, especially in rural hospitals, where even basic medical equipment was not available.

At the time of planning the project, Svay Rieng Province's health indicators (number of hospital beds per 10,000 people, under-five mortality rate, and maternal mortality rate) were lower than the Cambodian average, and there was much room for improvement, especially in maternal and child health indicators. In addition, since the province had 11 special economic zones, further economic development and population growth was expected, as was a corresponding increase in health needs. In addition, with the construction of the Southern Economic Corridor, which runs from the Thai border in northwestern Cambodia to Vietnam via National Highways 5 and 1, and the opening of the Neak Loeung Bridge, both traffic and traffic accident victims were expected to increase. However, the hospital was not functioning well as a top referral hospital due to insufficient facilities and equipment, and had suffered age-related deterioration. Therefore, making these improvements was an urgent issue.

### 1.2 Project Outline

The objective of this project is to improve the functions of Svay Rieng Provincial Referral Hospital, including their obstetrics / gynecology department and emergency outpatient services, by construction of hospital facilities and procurement and installation of medical equipment, thereby contributing to the improvement of the quality of health care services across Svay Rieng Province.

Grant Limit / Actual Grant Amount	1,077 million yen / 1,009 million yen
Exchange of Notes Date / Grant Agreement Date	March 2015 / March 2015
Executing Agency(ies)	Ministry of Health Svay Rieng Provincial Health Department Svay Rieng Provincial Hospital
Project Completion	June 2017
Target Area	Svay Rieng Province
Main Contractor(s)	Building: Tobishima Corporation Equipment: Nissei Trading Co., Ltd.
Main Consultant(s)	Azusa Sekkei Co., Ltd. / INTEM Consulting, Inc. (JV)
Preparatory Survey	July 2014 - March 2015
Related Projects	[Technical Cooperation] <ul style="list-style-type: none"> <li>- “Project on Strengthening of Medical Equipment Management in Referral Hospitals” (2009 - 2014)</li> <li>- “Project for Strengthening Human Resources Development System of Co-medicals” (2010 - 2015)</li> <li>- “Project for Improving Maternal and Newborn Care through Midwifery Capacity Development” (2010 - 2015)</li> <li>- “Project for improving continuum of care with focus on intrapartum and neonatal” (2016 - 2022)</li> </ul>

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Nobuyuki Kobayashi / Koichi Sato, OPMAC Corporation

### 2.2 Duration of Evaluation Study

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

Duration of the Study: October 2020 – January 2022

Duration of the Field Study: Not implemented

### 2.3 Constraints during the Evaluation Study

#### 2.3.1 Information Collected and Quality of the Data

For this ex-post evaluation, due to the global pandemic caused by COVID-19 the external evaluators were not able to conduct a field survey. Due to the spread of infections in Cambodia and taking safety issues into consideration, the field survey assistant was also unable to conduct an on-site inspection of the hospital. As a result, information and data collection methods were limited to questionnaires and interviews via online conferencing systems. Therefore, there were no opportunities to hear directly from the beneficiaries, and the information and data in the evaluation may thus not fully reflect the actual on-site situation.

### 3. Results of the Evaluation (Overall Rating: A<sup>2</sup>)

#### 3.1 Relevance (Rating: ③<sup>3</sup>)

##### 3.1.1 Consistency with the Development Plan of Cambodia

At the time of the planning the Government of Cambodia designated “improving equitable access to quality health services” as one of the priority themes in the health sector in its *National Strategic Development Plan* (2014 - 2018). It aimed to improve health infrastructure by building hospitals and health centers, improve asset management of medical equipment and facilities, and promote investment in advanced medical equipment and technology. In addition, *the Second Health Sector Strategic Plan* (2008 - 2015), which was formulated in conjunction with the above plan and Millennium Development Goals, set maternal and child health (i.e., health of pregnant women, infants, and young children) as one of three priorities and defined five strategic areas for implementation (i.e., health service delivery, health care financing, human resources for health, health information system, and health system governance).

At the time of the ex-post evaluation, *the National Strategic Development Plan* (2019 - 2023) identified “human resources development” as one of its priorities, and addressed the promotion of public health and nutrition. Specifically, it refers to the further implementation and revision of *the Third Health Sector Strategic Plan* (2016 - 2020), increased investment in health facilities and emergency medical services, and improved management capacity for the periodic inspection of public and private health facilities. With the goal of providing “high-quality, effective, and equitable health services,” *the Third Health Sector Strategic Plan* (2016 - 2020) identifies one of its two priorities as improving the quality of health services (by maintaining or further improving access and coverage). It outlines a strategy for implementation in seven areas: health service delivery, health system financing, health workforce development, essential support systems, health infrastructure development, health information system, and health system governance.

Based on the above, the project was consistent with the development policies of the Government of Cambodia at the time of both planning and ex-post evaluation.

##### 3.1.2 Consistency with the Development Needs of Cambodia

At the time of the planning of the project, Svay Rieng Province’s health indicators were lower than the Cambodian average. The under-five mortality rate in Svay Rieng Province was 93 per 1,000 live births (Cambodian average: 54, from the Cambodia Demographic and Health Survey 2010); the maternal mortality rate was 559 per 100,000 live births (Cambodian average: 461, from the General Population Census of Cambodia 2008); and the number of hospital beds per

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<sup>2</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>3</sup> ③: High, ②: Fair, ①: Low

10,000 people was 3.5 (Cambodian average 6.7, from the National Health Statistic Report 2011). Therefore, it was necessary to improve the system for providing health care services.

At the time of the ex-post evaluation, the average annual population growth rate from 2008 to 2019 in Svay Rieng Province was 0.8% (General Population Census of Cambodia 2019), which shows a moderate growth trend. Furthermore, according to Svay Rieng Provincial Hospital, the number of outpatients in the four basic departments (surgery, internal medicine, pediatrics, and obstetrics and gynecology) at the hospital increased from 14,941 in 2014 to 30,771 in 2020, more than doubling during this period. In addition, a level of 700 or more annual referrals from lower-tier hospitals to Svay Rieng Provincial Hospital has been maintained since 2018, the year after the completion of the project, compared to 670 in 2014, the year before the project started. At the time of the ex-post evaluation, the hospital is functioning as a top referral hospital and there is a strong need for the health care services it provides.

Based on the above, the project was consistent with the development needs of Cambodia at the time of both planning and ex-post evaluation.

### 3.1.3 Consistency with Japan's ODA Policy

In *the Country Assistance Policy for Cambodia* (April 2012), the health sector falls under the priority area of the “promotion of social development,” with a policy to support the strengthening of the health system as a whole under the development issue of “enhancing health and medical care.” The JICA Country Analysis Paper for Cambodia also pointed out that “the improvement of services at hospitals and health facilities in rural areas” is an important issue.

By the provision of the facilities and equipment of Svay Rieng Provincial Hospital as a top referral hospital, this project aimed to enhance its functionality and, then, to improve health care services in the province. Thus, this project was in line with Japan's ODA policies.

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

#### (1) Facilities and Equipment

The project aimed to improve the quality of health care services in Svay Rieng Province by upgrading the facilities and equipment of Svay Rieng Provincial Hospital, and the output was produced as planned. The planned and actual output was shown in the following table.

Table 1: Planned and Actual Outputs

Item	Planned	Actual
Facilities	Newly constructed slope and three-story building, which houses general outpatient, emergency room, medical imagery, surgery, obstetrics and gynecology, and administrative departments (total area: 3,147.95 m <sup>2</sup> )	As planned
Equipment	94 items, including obstetrics and gynecology examination beds, ultrasound diagnostic apparatus, and operating tables	As planned

Source: Preparatory Survey Report and questionnaire responses from the Consultant

When equipment was purchased for the project, the contract between the Ministry of Health and the contractor who procured the equipment included maintenance services for three years after project completion. In addition, consulting services were provided for project implementation, which included the detailed design, supervision of construction and procurement, and technical guidance. The Consultant also monitored the maintenance status of major equipment (18 items) for three years after completion of the project. Due to fluctuations in the exchange rate and local materials costs, it was necessary to lower the construction cost and this resulted in some changes from the basic design for the facilities (see table below).

Table 2: Changes from the Basic Design

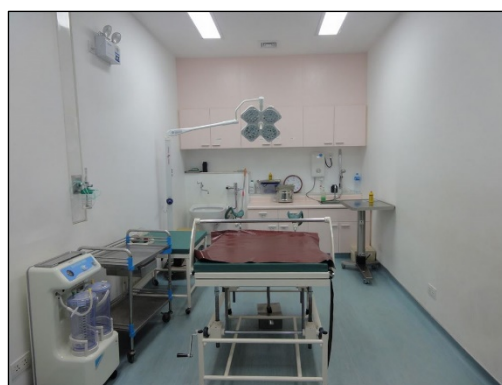
No.	Changes
1	Parking area cancelled
2	Balconies on the side of the main building cancelled
3	Shape of slope changed and volume of building frame reduced
4	Changes to the specifications of the balcony handrail in the main building, from perforated brick blocks to aluminum
5	Addition of concrete paving for parking area

Source: Questionnaire responses from the Consultant

According to interviews with the Consultant, the impact of the above-mentioned specification changes to the hospital building was minor, and there were no problems in terms of building safety. Therefore, the changes to the specifications noted above are considered appropriate.



Operating Room



Labor and Delivery Room

## (2) Technical Guidance

As a soft component of the project, technical guidance was provided for equipment that had not been used before and that was necessary for hospital operations (see table below). According to the Consultant and Svay Rieng Provincial Hospital, each of the technical guidance tasks was implemented as planned.

Table 3: Implemented Soft Components

<b>Implemented content</b>	<ol style="list-style-type: none"><li>1. Development of an operational system and provision of guidance on digital processing techniques and maintenance of the CR System (system that digitally processes transmitted x-ray images), which is a component of the general-purpose x-ray equipment.</li><li>2. Development of an operational system and provision of technical guidance on the maintenance and management of central sterilization equipment.</li><li>3. Clinical skills guidance for emergency surgery in obstetrics and gynecology, surgery, and co-medical fields.</li></ol>
<b>Implementation period</b>	April – December 2017

Source: JICA-provided materials, Preparatory Survey Report, and questionnaire responses from Svay Rieng Provincial Hospital and the Consultant

## (3) Responsibilities of the Cambodian Side

At the time of planning the project, the following responsibilities were to be borne by the Government of Cambodia (see table below). Based on questionnaire responses from the Consultant and executing agency, as well as interviews, the responsibilities of the Cambodian side were as planned.

Table4: Responsibilities of the Government of Cambodia

<b>Procedural matters</b>	Tax exemptions, facilitation for materials and equipment imported from Japan or third countries, acquisition of land use permits, banking arrangements, and issuance of payment authorizations
<b>Undertakings of the Cambodian side</b>	Removal of obstructions and clearing of the planned construction site, arrangements for facilities related to electricity, water supply, drainage, and medical gas for the new facility, renovation and change of usage of existing buildings, exterior work (tree clearing), and relocation of existing equipment and furniture

Source: Preparatory Survey Report and questionnaire responses from Svay Rieng Provincial Hospital and the Consultant

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

The planned project cost was 1,086 million yen (1,077 million yen for the Japanese side and 9 million yen<sup>4</sup> for Cambodian side) and the actual cost was 1,014 million yen (1,009 million yen for Japanese side and 5 million yen for Cambodian side). As a result, the actual project cost was within the plan (93% of the plan).

<sup>4</sup> The planned figures included bank charges, but the actual bank charges were not available for comparison. For a proper comparison, this cost was excluded when comparing the planned and actual figures.

The planned and actual project costs for the Japanese side are shown in the following table. The actual cost was about 68 million yen below the planned cost. According to the Consultant, during the detailed design stage, the project cost was kept within the plan by changing the specifications of the facilities, in order to cope with fluctuations in the exchange rate and the cost of local materials.

Table 5: Breakdown of Project Costs on the Japanese Side

Unit: million yen

Item	Planned	Actual
Construction	720	655
Equipment	196	190
Design and supervision	151	151
Maintenance contract (3 years)	10	13
<b>Total</b>	<b>1,077</b>	<b>1,009</b>

Source: Project Completion Report, JICA-provided materials, and questionnaire responses from the Consultant

The actual project cost on the Cambodian side was 55% of the plan. Svay Rieng Provincial Hospital cited the following as the reasons for the lower project costs: 1) lower labor costs for the removal of existing facilities<sup>5</sup>, 2) smaller scale of infrastructure lead-in and connection work, and 3) amount of equipment and furniture relocation and procurement was reduced to an amount that could be covered by the hospital budget. According to interviews with the hospital, the above changes had no impact on hospital operations.

Table 6: Breakdown of Project Costs on the Cambodian Side

Unit: thousand yen

Item	Planned	Actual
Removal of existing facilities	3,121	1,521
Backfilling and leveling	577	517
Infrastructure lead-in and connection work	869	340
Existing facility renovations	1,535	1,497
Relocation and procurement of equipment, furniture, etc.	2,880	905
Tree clearing	391	334
<b>Total</b>	<b>9,373</b>	<b>5,114</b>

Source: Ex-ante Evaluation, Preparatory Survey Report, and questionnaire responses from Svay Rieng Provincial Hospital

### 3.2.2.2 Project Period

The project period was planned from March 2015 to January 2017 (23 months) and the actual period was from March 2015 to June 2017 (28 months); therefore, the actual project period exceeded the plan (122% of the plan). The reasons for the extended period were 1) delay in the

<sup>5</sup> According to interviews with Svay Rieng Provincial Hospital, the contracted amount for removal work was sufficient to pay the minimum wage.



starting month of the detailed design<sup>6</sup>, 2) prolonged detailed design work and extension of the construction period due to specification changes, and 3) extension of the construction period caused by the replacement of contractor.

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 Impacts<sup>7</sup> (Rating: ③)

#### 3.3.1 Effectiveness

##### 3.3.1.1 Quantitative Effects

Of the five indicators set to measure the quantitative effects of the project at the time of planning, data that would enable a determination of the degree of target achievement was collected for four indicators (total number of hospitalized days for obstetrics and gynecology, the number of emergency patients, number of deliveries, and number of outpatients in the four basic departments). The number of surgical operations was not reflected in this evaluation result because the data obtained was not limited to the fields affected by the project, making it difficult to determine the degree of target achievement. For three of the indicators, not including the number of emergency patients, the actual results for the target year (2020) exceeded the targets (see table below). However, the actual number of emergency patients in 2020 was only 92% of the target. Svay Rieng Provincial Hospital indicated that the reason for this was that at the time of the ex-post evaluation, all district hospitals in Svay Rieng Province had established emergency departments, which meant there were more places for emergency patients to be seen. This reason was also confirmed by the responses to the questionnaire given to the provincial health department. Based on the above, of the four indicators that can be used to determine the degree of target achievement, three indicators were 100% achieved and one indicator was 92% achieved, resulting in an average achievement of 98%.

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<sup>6</sup> According to the Consultant, the plan assumed a transfer of ownership contract and a consultant contract to be signed in the same month, but the transfer of ownership contract was delayed to the end of the month, causing a delay in the start of detailed design.

<sup>7</sup> Sub-rating for Effectiveness is to be put with consideration of Impacts.

Table 7: Quantitative Effects of the Project

	Baseline	Target values	Actual values			
	2013	2020	2017	2018	2019	2020
		3 years after project completion	Year of project completion	1 year after project completion	2 years after project completion	3 years after project completion
Total number of OB / GYN hospitalization days (person-days / year)	8,899	14,281	10,355	15,000	15,681	16,060
No. of emergency patients (persons / year)*	1,138	1,374	1,438	1,544	1,734	1,270
No. of deliveries (births / year)**	2,304	3,037	3,241	3,679	3,878	4,115
No. of outpatients in 4 basic departments (persons / year)	9,736	15,994	23,020	30,702	30,897	30,771

Source: Ex-ante Evaluation, Preparatory Survey Report, and questionnaire responses from Svay Rieng Provincial Hospital

Note 1: \* The baseline figure for the number of emergency patients is the actual number of patients in 2014. Since comparable data was not available, the target was reset by applying the growth rate at the time of planning to the hospital data.

Note 2: \*\* The number of deliveries excludes cesarean sections.

In order to further scrutinize the functional improvement of Svay Rieng Provincial Hospital, in addition to the above indicators, data for the indicators shown in the following table were also collected, and the results from FY 2014 and FY 2020 were compared. Results found increasing trends in the number of ultrasound examinations, radiographs, and high-risk deliveries in recent years. This demonstrates the improved functionality of the hospital as a top referral hospital and suggests that it is playing an important role in satisfying the growing need for health care services. However, the high level of bed occupancy in the four basic departments also suggests that the use of additional beds outside of regulations and the use of beds by multiple patients are common. In order to meet the increasing needs of health care services in the province, it seems desirable to expand the capacity of hospital facilities.

Table 8: Supplementary Indicators for the Project

	Actual values				
	2014	2017	2018	2019	2020
	Year before project start	Year of project completion	1 year after project completion	2 years after project completion	3 years after project completion
Average length of stay (days / person)	3.89	3.46	3.85	3.71	3.58
Bed occupancy rate of 4 basic departments (%)	122.75	129.61	173.60	188.75	168.14
No. of gynecological surgeries (cases / year)	579	1,154	665	766	709
No. of prenatal and postnatal checkups (persons / year)	895	1,521	966	1,448	1,784
No. of ultrasound examinations (cases / year)	4,908	6,502	8,154	9,079	10,353
No. of X-rays taken (cases / year)	1,512	4,603	4,820	5,227	5,459
No. of cesarean sections (cases / year)	358	526	439	555	571
No. of high-risk deliveries* (cases / year)	575	624	948	974	974

Source: Preparatory Survey Report and questionnaire responses from Svay Rieng Provincial Hospital

Note: \* High-risk delivery refers to the use of suction or forceps, etc.

### 3.3.1.2 Qualitative Effects (Other Effects)

When the project was being planned, the qualitative effects were assumed to be providing quality medical services and strengthening the referral system in the province. With regard to quality medical services, specific individual improvements at the hospital are noted in this section, and the resulting changes in treatment outcomes are described in section 3.3.2.1 Intended Impacts. In addition, the strengthening of the referral system within the province is also analyzed in section 3.3.2.1 Intended Impacts, as the project effects will be realized across a broader area.

According to questionnaire responses from Svay Rieng Provincial Hospital, the project has provided clean, safe, and well-equipped facilities and equipment, which has made it possible to 1) reduce surgery times, 2) reduce the unnecessary use of antibiotics due to the shortened surgery times, and 3) provide joint medical services (examination, consultation, and treatment) between obstetricians and pediatricians for pregnant women. Based on the above, it is believed that after the project completion, the hospital became able to provide comprehensive medical services focusing on growth, as well as surgeries with less burden on the body, suggesting the realization of the project's qualitative effects.

## 3.3.2 Impacts

### 3.3.2.1 Intended Impacts

The impact of the project was set as improving the quality of health care services in Svay Rieng Province. Based on the scope of the project, the following two effects were expected: (1) provision of high-quality health care services in obstetrics and gynecology, emergency medicine, and surgery, etc. at Svay Rieng Provincial Hospital, and (2) strengthening of the

referral system in the province. The intended impacts of the project at the time of the ex-post evaluation are as follows.

- (1) Provision of high-quality health care services in obstetrics and gynecology, emergency medicine, and surgery, etc.

To quantitatively verify the impacts, the following table shows the health indicators for Svay Rieng Provincial Hospital, which are: 1) maternal deaths, 2) neonatal deaths, 3) under-five deaths, 4) deaths from non-communicable diseases among young people, 5) deaths within 48 hours of emergency transport, and 6) deaths due to sepsis.

Table 9: Health Indicators for Svay Rieng Provincial Hospital

Indicator	2014	2015	2016	2017	2018	2019	2020
Number of maternal deaths (persons / year)	2	2	5	0	0	1	1
- Percentage of total deliveries (%)	0.07	0.06	0.15	0	0	0.02	0.02
Number of neonatal deaths (persons / year)	40	63	47	45	49	39	52
- Percentage of total deliveries (%)	1.33	1.82	1.41	1.19	1.19	0.88	1.11
Number of deaths of children under 5 (persons / year)	4	27	13	14	16	8	11
Number of deaths among young people from non-communicable diseases (persons / year)	0	0	0	2	0	0	0
Number of deaths within 48 hours of emergency transport (persons / year)	134	106	128	152	101	101	81
Number of deaths due to sepsis (persons / year)	0	0	0	0	0	0	0

Source: Questionnaire responses from Svay Rieng Provincial Hospital

Of the six indicators, three indicators (maternal deaths, neonatal deaths, and under-five deaths) have repeatedly increased or decreased between 2014 and 2020. Since the number of deliveries increased significantly during the above period, the number of maternal and neonatal deaths as a percentage of the number of deliveries decreased slightly in comparison of before and after the project. For two indicators (number of deaths of young people due to non-communicable diseases and number of deaths due to sepsis), the number of cases was close to zero from 2014 to 2020. As for the number of deaths within 48 hours of emergency transport, there was an upward trend from 2015 to 2017, but this has been declining since the year after the project was completed (2018). However, the improvement of the emergency medical system in Svay Rieng Province may have contributed to the lowered number for this indicator by reducing the number of critical patients transported. From the above, it can be concluded that the project has contributed to an improvement in the quality of health care services at the top referral hospital in Svay Rieng Province.

## (2) Strengthening of the referral system within the province

The percentage of outpatients who are referral patients from lower-tier hospitals has decreased compared to 2014, the year before the commencement of the project (see the following table). However, analyzing the details, it can be concluded that the main reason for this is the rapid increase in the number of outpatients received by Svay Rieng Provincial Hospital. One factor in this increase is the heightened demand for medical services in the province due to the progress of universal health coverage, which will be discussed later (3.3.2.2 Other Positive and Negative Impacts). The number of referral patients from lower-tier hospitals to Svay Rieng Provincial Hospital has remained high, at over 700 since 2018. The number of referrals for high-risk deliveries has also been at a higher level since 2017 than it was before. One reason for the increase in the number of referrals to a higher-tier hospital is that patients who would have previously been diagnosed at other higher-tier hospitals in the country or in Vietnam tended to visit Svay Rieng Provincial Hospital first and receive their first diagnosis there. Although other factors may have contributed to the increase, the project seems to have, to a certain extent, contributed to the strengthening of the referral system in the province.

Table 10: Referrals within the Province

Indicator	2014	2015	2016	2017	2018	2019	2020
Number of referral patients (persons / year) from other facilities (lower-tier hospitals)	670	352	945	420	700	731	704
Percentage of outpatients who are referrals (%)*	4.62	2.49	5.73	1.81	2.28	2.37	2.29
Number of referrals for high-risk deliveries (persons / year)	37	48	07	118	60	73	84
Number of referrals to top hospitals (persons / year)	669	813	62	1,070	1,169	1,297	1,330

Source: Questionnaire responses from Svay Rieng Provincial Hospital

Note: \* Calculated by dividing the number of outpatients (persons / year) by the number of referral patients (persons / year) from other facilities (lower-tier hospitals).

### 3.3.2.2 Other Positive and Negative Impacts

#### (1) Impacts on the Natural Environment

The project was judged to have minimal adverse impacts on the environment and was classified as Category C under the Japan International Cooperation Agency Guidelines for Environmental and Social Considerations (issued in April 2010). According to questionnaire responses received from the Consultant and Svay Rieng Provincial Hospital, the project did not have any negative impact on the natural environment. Svay Rieng Provincial Hospital remained in operation while the project was underway, and construction work was not carried out at night, in consideration of the impact on hospitalized patients. No particular problems were found in the disposal of waste materials and surplus soil during the construction. According to an

interview with Svay Rieng Provincial Hospital, at the time of the ex-post evaluation, medical waste was being disposed of in accordance with the regulations in Cambodia.

(2) Resettlement and Land Acquisition

According to interviews with Svay Rieng Provincial Hospital and the Consultant, no resettlement or land acquisition was taken place under the project.

(3) Unintended Positive / Negative Impacts

● Contribution to SDG Target 3.8: universal health coverage

Even before the commencement of the project, Svay Rieng Provincial Hospital was accepting patients who were struggling financially. In Cambodia, the Health Equity Fund and Community-based Health Insurance have been established to enable such patients to receive health care services. The number of patients receiving health care services at Svay Rieng Provincial Hospital using these systems has been on the rise since 2017, the year the project was completed (see table below). This indicates that the project is contributing to the SDG Target 3.8: universal health coverage.

Table 11: Number of Patients Using the Health Equity Fund and Community-Based Health Insurance

Item	Year	2015	2016	2017	2018	2019	2020
No. of patients using the Health Equity Fund (persons)		7,713	4,973	6,970	9,399	7,663	8,576
No. of patients using Community-based Health Insurance (persons)		0	0	2,772	7,697	16,989	19,274

Source: Preparatory Survey Report and questionnaire responses from Svay Rieng Provincial Hospital

● Contribution to novel coronavirus (COVID-19) response

As the top referral hospital in the province, Svay Rieng Provincial Hospital is engaged in the isolation, diagnosis, and treatment of novel coronavirus (COVID-19) patients. The hospital isolates and tests suspected COVID-19 patients who also have diseases that cannot be treated by district hospitals. These patients are then transferred to other hospitals once their condition is stabilized. According to interviews with the hospital, from the beginning of 2021 to early July of the same year, 209 patients suspected of having coronavirus were isolated, and 53 of them tested positive for the virus. Of the 53 patients who tested positive, 26 were pregnant women who had undergone C-sections, eight had undergone other surgeries, and 19 had other serious diseases. In addition, according to interviews with Svay Rieng Provincial Hospital, if the new hospital building had not been constructed by this project, it would have been difficult to isolate the patients on the scale described above. It is thus thought that the project contributed

to the treatment of novel coronavirus disease in Svay Rieng through the construction of the hospital building.

- Cooperation and synergy with other projects of donor agencies including JICA

At Svay Rieng Provincial Hospital, various organizations have provided support in the health care sector. Based on the responses to questionnaires and interviews with Svay Rieng Provincial Hospital, the areas of synergy with the project and for which equipment procured in the project is used include obstetrics, gynecology, and pediatrics (JICA Technical Cooperation Project: Project for Improving Continuum of Care with Focus on Intrapartum and Neonatal Care), ophthalmology (Eye Care Foundation supported by the Government of The Netherlands), diabetes and hypertension treatment (German Agency for International Cooperation and Novo Nordisk), and the treatment of HIV / AIDS and tuberculosis (Cambodia Health Committee, a local NGO). In addition, training on 5S guidelines<sup>8</sup> and general hygiene guidance (e.g., hospital-acquired infection control, etc.) was provided by Japan Overseas Cooperation Volunteers (JOCV) at Svay Rieng Provincial Hospital (see section 3.4.2 Technical Aspects of Operation and Maintenance for details).

As described above, Svay Rieng Provincial Hospital has appropriately responded to the growing needs of health care services in the province by utilizing the facilities and equipment provided under the project, and its functionality as a top referral hospital has been improved. This has led to improvement in the quality of health care services provided by Svay Rieng Provincial Hospital and the strengthening of the referral system in Svay Rieng Province. In addition, the project has contributed to universal health coverage by providing health care services to the poor, and an impact in the treatment of novel coronavirus has been confirmed. Thus, this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high.

### 3.4 Sustainability (Rating: ③)

#### 3.4.1 Institutional / Organizational Aspects of Operation and Maintenance

##### (1) Institutions and organization for the operation of health care services

At the time of the ex-post evaluation, the number of medical personnel involved in the operation and maintenance of Svay Rieng Provincial Hospital is as shown in the following table. In order to quantitatively verify the degree of over- and under-staffing, the number of staff at the time of the ex-post evaluation was compared with the number of staff that should be assigned to CPA3 hospitals, as stipulated in the CPA Guidelines.<sup>9</sup>

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<sup>8</sup> 5S is a method of workplace environment improvement and quality control developed by Japanese industry. 5S is named after the first letters of the five steps: Sort, Set in order, Shine, Standardize, and Sustain.

<sup>9</sup> CPA stands for Complementary Package of Activities, and the CPA Guidelines are issued by the Cambodian government to classify provincial hospitals into three levels (CPA1 to CPA3) according to their size, and to specify the

Table 12: Number of Staff that Should be Assigned to CPA3 Hospitals vs. Number of Staff at the Time of the Ex-post Evaluation

Item	Number of staff that should be assigned to CPA3 hospitals	Number of staff at the time of ex-post evaluation
Doctor	23 - 40	27
Dentist	2 - 3	1
Pharmacist	6 - 8	2
Secondary Doctor (Medical Assistant)	2 - 3	3
Secondary Dentist (Dentist Assistant)	2 - 3	0
Nurses	50 - 80	50
Midwives	12 - 14	19
Assistant Nurse	14 - 20	21
Assistant Midwife	2 - 4	5
Physiotherapist	3 - 4	2
Accounting staff	2 - 4	2
Others	79 - 166	110
<b>Total</b>	<b>179 - 276</b>	<b>242</b>

Source: Preparatory Survey Report and questionnaire responses from Svay Rieng Provincial Hospital

First, regarding the overall number of staff, Svay Rieng Provincial Hospital had 242 medical personnel at the time of the ex-post evaluation, which is within the level required by CPA Guidelines (i.e., 179 - 276 people). However, the numbers of dentists and co-medical staff (pharmacists, dental assistants, and physiotherapists) were lower than the numbers of staff required by those guidelines. According to the hospital, the reason for the low number of dentists is that dental patients tend to visit private dental clinics, and one dentist is able to handle the number of patients who come to the hospital. In Cambodia, there are few licensed co-medical personnel in general, and it is difficult to hire new ones. The hospital employs six contract nurses to provide support the pharmacists and the dentist, mainly doing administrative work. In addition, since the hospital does not have a clinical laboratory technician, doctors, nurses, and other medical personnel are handling these tasks.

(2) Institutions and organizations for operation and maintenance of facilities and equipment

Based on the responses to questionnaires and interviews with the Consultant and Svay Rieng Provincial Hospital, a medical equipment management team led by the anesthesiologist has been established to maintain and manage the medical equipment. If there is any equipment failure or malfunction, each department reports to the anesthesiologist, who then, together with the team, prioritizes the equipment and deals with the failure or malfunction, if it is within the hospital budget. If the hospital budget cannot cover the equipment problem, the hospital will apply for

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necessary health care services and equipment for each level. CPA3 refers to the largest hospitals with specialized departments such as ophthalmology and otolaryngology, and Svay Rieng Provincial Hospital is classified as CPA3.



budget from the provincial health department. For maintenance of the building, a building manager has been appointed in the administrative unit. The responsibilities of operation and maintenance for the project's facilities and equipment are thus clearly defined.

From the above, it is concluded that there are no particular problems with the institutional and organizational aspects of operation and maintenance.

#### 3.4.2 Technical Aspects of Operation and Maintenance

According to Svay Rieng Provincial Hospital, medical personnel are able to participate regularly in internal and external training programs. For example, within the hospital, clinical case studies are presented every two weeks, and technical training based on the specialties of each department is provided. Outside the hospital, they participate in training and conferences held on a national and provincial level. In addition, Svay Rieng Provincial Hospital commented that the Japan Overseas Cooperation Volunteers (JOCV) contributed to the promotion of 5S. Specifically, in addition to the training on the 5S guidelines, general hygiene guidance such as hospital-acquired infection control was conducted and information on 5S was provided to patients and their families. JICA volunteers prepared activity plans together with the head nurse, and were in charge of training hospital staff and monitoring the activities.

According to Svay Rieng Provincial Hospital, medical personnel have the opportunity to regularly participate in internal and external training programs to acquire relevant skills and knowledge in the operation and maintenance of the facilities and equipment. At the time of the ex-post evaluation, it was difficult for local suppliers to visit the hospital directly due to the coronavirus pandemic. However, the hospital has been able to consult with these local suppliers by phone or e-mail about repairing equipment and purchasing spare parts or reagents.

From the above, it is concluded that there are no particular problems with the technical aspects of operation and maintenance.

#### 3.4.3 Financial Aspects of Operation and Maintenance

The income and expenditure of Svay Rieng Provincial Hospital shows an increase in revenue from 2018 to 2020, with a surplus every year (see table below). The hospital is expected to continue to post a surplus in 2021, indicating that the hospital's operations are financially stable. However, the hospital pointed out that renovation and maintenance of the facility and equipment repairs tend to be delayed due to the time needed for payment from the Health Equity Fund and Community-based Health Insurance. In cases where medical equipment problems hinder diagnosis and treatment, they work with private clinics to address the issue. The Consultant also commented that due to budget constraints in the hospital, the repair of equipment that is used less frequently and has a lower priority is sometimes delayed. However, as described in section 3.3.1 Effectiveness, the hospital is responding to the increasing needs of health care services,

and it is presumed that the aforementioned issues do not have a serious impact on hospital operations.

From the above, it is concluded that there are no particular problems with the financial aspects of operation and maintenance.

Table 13: Financial Status of Svay Rieng Provincial Hospital

Unit: Riel

Item	Year	2018	2019	2020	2021 (planned)
Revenue:					
Budget from MOH		6,115,859,159	6,576,429,982	6,360,487,625	6,678,512,060
Budget from Province		4,023,349,489	4,368,838,736	4,762,530,110	5,143,532,518
User fee		3,289,487,900	3,789,688,100	3,714,546,500	4,086,001,200
<b>Total</b>		<b>13,428,696,548</b>	<b>14,734,956,818</b>	<b>14,837,564,235</b>	<b>15,908,045,778</b>
Expenses:					
Salary		2,542,329,100	2,717,756,600	3,301,890,960	3,466,985,508
Bonus		1,973,692,740	2,273,812,860	2,228,727,900	2,451,600,720
Medical supply		3,471,100,313	3,761,656,950	3,654,915,564	3,947,308,808
Materials		1,577,772,870	1,709,844,068	1,661,325,256	1,794,231,277
Medical equipment		1,294,760,596	1,367,875,254	1,329,060,205	1,435,385,021
O&M for equipment		23,960,845	32,037,300	41,147,000	50,376,400
O&M for facility		270,495,624	400,272,700	146,015,800	160,617,380
Electricity / Water supply		407,910,400	415,643,936	456,003,050	501,603,355
Gas		246,865,200	467,078,100	413,675,700	455,043,270
Administration		119,302,450	143,397,425	155,418,950	177,960,845
Others		1,144,914,158	1,133,369,012	1,197,592,401	1,233,520,173
Payment to government		16,049,979	17,434,741	16,975,195	18,801,205
Travel		111,784,000	110,378,000	110,099,000	121,108,900
<b>Total</b>		<b>13,200,938,275</b>	<b>14,550,556,946</b>	<b>14,712,846,981</b>	<b>15,814,542,862</b>
<b>Balance</b>		<b>227,758,273</b>	<b>184,399,872</b>	<b>124,717,254</b>	<b>93,502,916</b>

Source: Preparatory Survey Report and questionnaire responses from Svay Rieng Provincial Hospital

#### 3.4.4 Status of Operation and Maintenance

As described in section 2.3 Constraints during the Evaluation Study, it was not possible to visit Svay Rieng Provincial Hospital to inspect the facilities and equipment (94 items) procured in the project. According to the Consultant, who visited the hospital in December 2020, at that time, there were no problems with the equipment for which maintenance contracts have been signed (18 items) under the project. According to questionnaire responses received from the hospital, of the equipment procured in the project, the oxygen system had malfunctioned at the time of the ex-post evaluation. Due to the COVID-19 pandemic, it is delayed to obtain spare parts for this equipment for the time being. However, the hospital continues to provide treatment to patients using oxygen cylinders.

From the above, it is concluded that there are no particular problems with the status of operation and maintenance.

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

## **4. Conclusion, Lessons Learned and Recommendations**

### 4.1 Conclusion

With the aim of improving the functions of Svay Rieng Provincial Referral Hospital, including their obstetrics / gynecology department and emergency outpatient services, and thereby contributing to the improvement of the quality of health care services in Svay Rieng Province, the project implemented the construction of hospital facilities and procurement and installation of medical equipment. Building facilities and supplying equipment in this way is fully consistent with Cambodia's development needs and policies, which aimed to improve the quality of health services through the development of health infrastructure, including health facilities. It was also in line with Japan's ODA policies. Therefore, its relevance is high. On project cost and project period, the project cost was within the plan, but the project period exceeded the plan. Therefore, efficiency of the project is fair. Regarding the effectiveness of the project, Svay Rieng Provincial Hospital has been able to meet the growing needs of health care services in the province by utilizing the new facilities and equipment procured in the project, and its functionality as a top referral hospital has been improved. This also led to the improvement of the quality of health care services provided by Svay Rieng Provincial Hospital and the strengthening of the referral system in Svay Rieng Province. Furthermore, the project contributed to universal health coverage by providing health care services to the poor and made a positive impact on the hospital's response to novel coronavirus infections (COVID-19). As described above, this project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high. The hospital has secured most of the necessary medical personnel, and they have the skills to provide health care services, as well as operate and maintain the facilities and equipment. Although repairs of low-priority equipment tend to be slow, hospital revenue and expenditures are stable, and the facilities and provided equipment are in a usable state. Therefore, sustainability of the project effects is high.

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

### 4.2 Recommendations

#### 4.2.1 Recommendations to the Executing Agency

##### Furthering the effective usage of the project

At the time of the ex-post evaluation, there were emergency departments established at all of the district hospitals in Svay Rieng Province. Svay Rieng Provincial Hospital has been providing emergency medical services since before implementation of the project and has accumulated

knowledge in this field, so it is possible for them to transfer medical technology to the newly established emergency departments in the district hospitals. Svay Rieng Provincial Hospital provides technical guidance to district hospitals in all medical fields, so it is desirable that they continue to provide this guidance with more emphasis on emergency medicine, in order to improve the emergency medical care provided at the district hospitals.

#### 4.2.2 Recommendations to JICA

None

### 4.3 Lessons Learned

#### Equipment maintenance after project completion

When equipment was purchased for the project, the contract between the Ministry of Health and the contractor who procured the equipment included maintenance services for three years after project completion. Based on this clause, the local suppliers of the equipment visited the hospitals to conduct periodic inspections and provided on-call support. In addition, a system was established so that the Consultant would monitor the maintenance status of major equipment after project completion. According to the Consultant, this maintenance work led to the proper maintenance of the equipment for three years after completion of the project. Additionally, through the monitoring of maintenance conditions, advice was given on how to identify reasons for equipment failure and how to prevent it. Based on this, it is recommended that a clause for maintenance work, including periodic inspections, be added to contracts for equipment procured by the Japanese side, and that a system for monitoring its maintenance status be established so that the equipment can be properly maintained after the completion of future projects in the health sector.

#### Collecting outcome indicators

At the time of planning, outcome indicators were set to recognize the quantitative effects of this project. These indicators to be measured were set in a stringent manner so that the effects of the project could be properly assessed. However, they were different from the indicators that were regularly compiled by Svay Rieng Provincial Hospital. For example, the number of surgical operations covers only the fields affected by the project, measuring the sum of limb and abdominal surgeries. In contrast, the hospital collected data on all surgical procedures, but did not collect separate data covering only the aforementioned types of surgeries. Therefore, it was difficult to determine the achievement level of this indicator. When setting precise outcome indicators in order to properly assess the effects of a project, staff of the executing agency should be given a deeper understanding of the definition of the indicators at the time of project planning.

The data collection system should also be checked on a regular basis while the project is underway to ensure that the system has been properly established.