Republic of Vanuatu

FY2017 Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for the Redevelopment of Vila Central Hospital"

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0. Summary

Vila Central Hospital (hereinafter referred to as "VCH") is the principal hospital providing specialized medical treatments and is the top referral hospital for the whole of Vanuatu. Under this project, which aimed to improve medical services at VCH and strengthen its capacity as an educational facility for medical/health workers, new medical facilities were constructed and medical equipment was procured and installed.

This project was consistent with the development policy and needs of Vanuatu as well as Japan's ODA policy; therefore, the relevance of the project is high. With regard to implementation, the project components were carried out mostly as planned, and the project cost and period were within the plan. Consequently, the efficiency is also high. The quantitative indicators to assess the effectiveness of this project , 'number of operations' and 'number of referrals' were largely achieved, and other indicators (number of emergency outpatients, clinical examination and X-ray pictures taken) were greatly increased (improved). Moreover, the project contributed towards enhancing post graduate training for doctors and nurses and strengthened the capacity of medical workers and staff members within the Maintenance Unit. Patient satisfaction levels were high with regard to the facilities provided by the project and the medical services delivered at VCH; therefore, it was possible to confirm that some positive effects were emerging. Furthermore, significant impacts could be seen as a result of the project, as it has been achieving the overall goal of, 'medical services in quality and quantity in Vanuatu are improved.' Also, resilience to natural disasters was strengthened, as demonstrated by the new building making it possible to resume medical activities, immediately after a super cyclone hit Vanuatu. Therefore, overall effectiveness and impact are assessed as high. With regards to sustainability, there remains a need to further strengthen institutional and technical aspects and major challenges were identified concerning financial aspects, such as, with regard to the excessively long duration required to procure necessary spare parts. This meant that the sustainability of the project was assessed as low.

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

1. Project Description

Project Location

New Hospital Constructed in the project

1.1. Background

Vila Central Hospital (hereinafter referred to as "VCH") has been the main hospital for SHEFA province, which is the most populated province in Vanuatu, as well as the top referral hospital[1] within the referral system for the whole of Vanuatu. VCH also serves as an educational facility; it is a post-graduate training resource for doctors and also acts as an intern training facility for graduates of the Vanuatu College of Nursing Education.

However, the VCH was badly suffering from aging-related degradation, as little refurbishment had been carried out since its foundation in 1974 funded by the British Government. It was also affected by other major problems such as; a lack of emergency care rooms, an insufficient number of operation theaters, damaged buildings (ceiling, floors, etc.), failure of medical equipment, and insanitary conditions. In addition, VCH had a problem with the scattered layout of its buildings, and was struggling to provide a level of medical services appropriate for a principal referral hospital. VCH urgently required improvement of facilities for outpatients and consultations.

In Vanuatu, about 80% of the government budget for the Health Sector was allocated to personnel expenses and operating costs. There had been further increases in expenditure in recent years, which were compensated for by assistance from overseas donors; however, funding remained insufficient to meet the cost of renovation of facilities and renewal of medical equipment. Therefore, the Government of Vanuatu requested Japan to provide Grant Aid to construct new hospital facilities and procure additional medical equipment.

[1] Top referral hospital is the highest referral hospital that patients can be referred to domestically, since it is the hospital which has most advanced medical facilities in Vanuatu.

1.2. Project Outline

The objective of the project is to strengthening medical services at VCH by constructing new medical facilities including new outpatient and laboratories and replacing medical equipment, thereby contributing to improved medical services in the whole of Vanuatu.

Grant Limit / Actual Grant Amount		65 million yen / 62 million yen (Detailed Design) 1,399 million yen / 1,371 million yen (Construction)
Exchange of Notes Date / Grant Agreement Date		January 2012 / January 2012 (Detailed Design) May 2012 / June 2012 (Construction)
Executing Agency		Ministry of Health
Project Completion Date		June 2014
Contractors	Main Contractors	Construction: Dai Nippon Construction Procurement: NBK Corporation
	Consultants	The Consortium of Nihon Sekkei International Inc., Nihon Sekkei, Inc. and EARL Consultants Incorporated
Preparatory Survey		February, 2011 – January, 2012
Related Projects		[Technical Cooperation] The Project for Strengthening the Need-Based In-Service Training for Community Health Nurses (2011 – 2014) Dispatch of Japanese Overseas Cooperation Volunteers to VCH (2006 – current) [Grant Aid] Project for the Improvement of Equipment for National Hospitals (1994 – 1995) The Project for Provision of Incinerator of Medical Waste for Vila Central Hospital (Grant Assistance for Grassroots Human Security Projects, 2006) Non-Project Grant Aid (2006, 2007, 2009, 2010): Procured medical supply with counterpart fund [Other international organizations and donors] Australia: Health sector direct funding (2014 – 2019, total: 6.9 million AUD), dispatch of doctors to VCH, provision of medical equipment, construction of oxygen plant

	France: Construction of Vanuatu College of Nursing Education (at VCH), provision of medical equipment, repairing Northern Provincial Hospital China: Dispatch of medical doctors to VCH and Northern Provincial Hospital, construction of dormitory for doctors (at VCH)

2. Outline of the Evaluation Study

2.1. External Evaluator

Atsuko Orimoto (Japan Economic Research Institute Inc.)[2]

2.2. Duration of Evaluation Study

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

Duration of the Study: October, 2017 – November, 2018

Duration of the Field Study: February 12, 2018 – February 24, 2018 and April 17, 2018 – April 25, 2018

2.3. Constraints during the Evaluation Study

The quantitative indicators to assess the effectiveness of the project, set at the time of planning, were considered to be inappropriate and unrealistic due to an insufficient understanding of the situation. The evaluator was unable to discover details of how the indicators were determined because, all the consultants who directly conducted the survey and administered the project on the Japanese side, as well as, the doctor who provided information to them for the establishment of the indicator regarding the number of colonoscopic examinations on the Vanuatu side, had previously resigned. Therefore, the initial indicators had to be used to assess the effectiveness without confirming its relevance and it could potentially result that the effectiveness of the project does not accurately reflect the reality of the project, thus additional quantitative and qualitative indicators were identified to examine and assess the effectiveness of the project from different angles.

Almost all managers at the Ministry of Health (MoH) and VCH as well as statistician staff members were replaced after the general election held in 2012. It was discovered that the definitions used for some statistical data issued since2013 differed from the base-line data taken in 2010. The evaluation results were assessed using data whose definitions were adjusted to match with those of the base-line as much as possible; nevertheless, some data may still have

[2] The consultant is from Japan Development Service Co., Ltd., who assisted Japan Economic Research Institute Inc. with this ex-post evaluation.

been examined with non-matching conditions, as some base-line data did not have clearly defined definitions.

3. Result of the Evaluation (Overall rating: B[3])

3.1. Relevance (Rating: ③[4])

3.1.1. Consistency with the Development Plan of Vanuatu

At the time of project planning, the health sector was one of six strategic priorities in the development plan of Vanuatu, 'Priority and Action Agenda (PAA) 2006 – 2015'. Moreover, in 'Vanuatu Health Sector Strategies (2010 – 2016)', it is stated that, to improve the health status of the population, it is necessary to enhance promoting health and medical services with all levels of medical services properly equipped and supplied.

'PAA 2006 – 2015' was updated in 2012, after commencement of the project. In the updated PAA, 'improve the quality of healthcare delivered at all levels' was stated as a Policy Objective. In addition, 'upgrade and equip health facilities at all levels of healthcare; from dispensaries, health centers, provincial hospitals and referral hospitals was also included in the aforementioned national strategic priorities.

In the current development plan, 'Vanuatu 2030 (The People's Plan)', 'Quality Health Care' is one of the Society Goals and policy objectives include '3.1 access to quality healthcare resourced and equipped' and '3.4 effective and efficient delivery of quality services'. Also, improving population access to health services (ensuring that the population of Vanuatu has equitable access to affordable, quality healthcare through the fair distribution of facilities that are suitably resourced and equipped) became one of three key strategic directions identified in the newest 'Health Sector Strategy (HSS) (2017 – 2020)', and quality healthcare is an important principle of the health policy in Vanuatu.

Therefore, this project is consistent with the development plans of Vanuatu, both at the time of planning and ex-post evaluation, and is also in conformity to the sector strategies.

3.1.2. Consistency with the Development Needs of Vanuatu

The VCH has been serving as the core hospital of SHEFA Province, which has the largest population in Vanuatu, (approx. 240,000[5] at the time of planning) since its establishment. At the same time, it has been acting as the top referral hospital as the only hospital which can provide specialized treatments for the country. As the principal hospital in Vanuatu, it aims to

[3] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[4] ③: High, ②:Fair, ①: Low
[5] URL address: https://data.worldbank.org/country/Vanuatu/ (accessed on 1 May 2018)

fulfil roles, such as: 1) provide acute phase medical services[6] by specialist doctors, 2) determine overseas referral of patients, 3) accredited post-graduate training facilities (for specialist doctors), and 4) clinical education training facilities for Vanuatu College of Nursing Education.

Nevertheless, at the time of planning, the hospital has been affected by age-related degradation, because little refurbishment has been carried out during the 37 years since its establishment. It has been struggling to provide appropriate medical services, due to the scattered layout of facilities and other problems, and urgently required improvement of the buildings and upgrading of medical equipment.

Table 1 shows the total number of outpatients and hospital outpatients for the whole of Vanuatu, together with the number of outpatients at VCH between 2014 and 2016. The number of outpatients of VCH appears to be decreasing[7]. This may be a result of some success with a policy to enhance Primary Health Care providers, which include: clinics, health centers and provincial hospitals. The MoH has been trying to reduce the number of general outpatients at VCH, because it aims for VCH to concentrate on its referral functions, such as providing specialized medical services, which other Primary Health Care[8] providers cannot offer. Although the number of outpatients at VCH seems to be decreasing, as the top referral hospital, it still receives the greatest patient numbers and provides the best medical services that the local population can access. In addition, it is essential to maintain a certain condition level at VCH so as to be able to treat large numbers of patients at once with high quality, since there are surges in patient numbers due to outbreaks of infectious diseases and/or natural disasters. Therefore, the need and importance of enhancing VCH was very high.

Table 1. Number of Outpatients at Medical Facilities within Vanuatu

	2014	2015	2016
Total number of domestic outpatients	506,833	459,378	495,322
Number of outpatients (hospital[9] total)	191,913	152,796	162,984
Number of outpatients (VCH)	118,728	86,422	82,799

Source: VCH

[6] Acute medical service (care) is a branch of health care where a patient receives active but short-term treatment for a severe injury or episode of illness, an urgent medical condition, or during recovery from surgery.
[7] The accuracy of data is questionable due to a very large scale cyclone directly hitting Port Vila, where VCH is located, in 2015.
[8] A basic level of health care that is provided in primary medical facilities such as clinics and health centers, where patients visit when they get injured or ill.
[9] Total outpatients numbers from five public hospitals including, VCH (VCH, Northern Provincial Hospital, Norsup Hospital, Lenakel Hospital and Lolowai Hospital).

Moreover, the new hospital built under the project has proved to be highly resistant to natural disaster. After a super cyclone hit Vanuatu in 2015 it was recognized that the project had enhanced resilience to natural disaster within the health sector. From this viewpoint, the importance of enhancing VCH was high.

Based on the above, this project has been consistent with the development needs of Vanuatu both at the time of planning and ex-post evaluation.

3.1.3. Consistency with Japan's ODA Policy

At the Fifth Pacific Islands Leaders Meeting held in 2009, aimed towards achieving the Millennium Development Goals (MDGs), the Leaders of Japan and the Pacific Islands Forum confirmed their mutual commitment and underlined the importance of promoting human security, with a particular focus on including capacity building to ensure greater access to health. As a basic principle of ODA for Vanuatu, the 'Islands Area Health and Medical Program'[10] was formulated with the aim of improving health and medical services through the refurbishment of VCH and capacity development of health/medical workers. Therefore, at the time of planning, this project was highly consistent with Japan's key cooperation areas for the Pacific and Vanuatu.

As described above, this project has been highly relevant to the development plans and needs of Vanuatu during the planning, as well as Japan's ODA policy at the time of planning. Therefore, its relevance of this project is high.

3.2. Efficiency (Rating: ③)

3.2.1. Project Outputs

The planned and actual project components are as follows:

[10] Japan's health sector assistant programme to the Pacific Island countries. It aims at strengthening capacity and improving health services by combining schemes, such as, technical cooperation projects, general grant projects, and volunteer and training programmes.

Original

Table 2: Planned Components of This Project

	Major Development
Facility (3,157.56m^2): Interior 2,623.50 m^2 (including ancillary facilities 121.62 m^2) + Exterior Common 534.06 m^2	Two story new OPD building (Operation Theater, Radiology Dept., Lab. Dept., Emergency Dept., Outpatients), Specialized Equipment (Rainwater Utilization System) One story RC structure (some S structure) Ancillary facilities (Elevated Water Tank, Pump Room, Transformer Room, Blower Room, Sewage Treatment Plant, Soak Pit)
Medical Equipment	Equipment necessary for the project facilities; Emergency Department, General Clinic of Outpatients' Department, Operation Theater, Radiology Department and Laboratory Department.

Source: Prepared based on the Preparatory Survey Report

Actual

Both construction of new building and provision of medical equipment were mostly carried out as planned; with the exception of the changes shown below.

Table 3: Changes from the Original Plan

	Description of Changes
Changes from the plan in the preparatory survey	1) Location and number of Hospital Entrances 2) Additional vents and high winds for natural lighting in Outpatient Dept. 3) Layout of the Operation Theatre 4) Area around entrance of Radiology Dept. and Laboratory Dept. 5) Location of Electrical Pipe Space[11]
Changes after the detailed design survey	1) Cancellation of rubble concrete[12] resulting from the building foundation ground survey 2) Synchronization of outside wall color with the old hospital building
Changes after contract (medical equipment)	1) Model of computed radiography (CR) console (a part of the general X-ray machine) 2) Maker of CR system (a part of the general X-ray machine)

Source: Information provided by JICA

As shown in Table 3, the changes were only minor and did not cause any inconvenience, according to the MoH.

With regard to the new building, few problems were found. However, steam from the autoclaves is not extracted to outside and remains in the sterilization chamber and there are wet patches around the drain funnels with the steam splashed back from the drain. It was also pointed out that the external stainless steel handrail and fence had become rusty. Although three autoclaves were provided to the Central Sterile Supplies Department (CSSD), staff

[11] Electrical Pipe Space is space to store electric and communication wirings.
[12] Rubble concrete is concrete in which large stones are added to the freshly placed concrete while it is still soft and plastic.

members cannot operate them all at the same time and have to time the sterilization cycle end in different timing, due to the sterilization chamber filling with steam which is released with great force at the end of the sterilization process. This results in a less efficient operation (it takes longer to sterilize any given amount of medical equipment and materials), and affects the daily operation of the VCH; therefore, it is necessary to improve ventilation and/or drainage to emit steam outside of the chamber. The problem was raised by the Maintenance Unit during the defect liability inspection, which was carried out one year after completion of the project; however, it was subsequently treated as a problem with the fire alarm, which was being set off by the build-up of steam in the sterilization chamber. After the inspection a consultant from a third country visited VCH to check medical equipment; however, it appears that the consultant only checked autoclaves visually and no repair or adjustment work was undertaken and no explanation provided to staff members of the Operation Theater or Maintenance Unit. Moreover, some doctors and nurses, who were interviewed during the study, considered that the reduction in the number of toilets (from two to one for males and females, in comparison with the old operation theatre) inconvenient, since the numbers of staff working, for preparing, cleaning and shift changing, around the theatre area could reach up to 25 to 30 persons. The shortage of a “clean area” for medical supplies was also observed around the operation theater. This was due to there being no anesthetic room allocated in the new building, although there had been one in the old operation theater, and therefore the original stocking room had been converted to an anesthetic room.

Major items of medical equipment, provided under this project, were checked during the study and it was observed that they were mostly utilized effectively. However, the laparoscopes were effectively unused, since no doctors could use the equipment, and the frequency of colonoscopy usage was low. Only two doctors could use the colonoscopy equipment, but there are not enough numbers of operation theatres and they are normally fully booked, and they did not have easy access to the operation theatres, which were always very busy.

In regards to soft components, technical guidance in the following fields was provided as planned for the capacity development of building facility and medical equipment maintenance.

1) Strengthening of daily facility maintenance and formulation of a sustainable maintenance system
2) Daily equipment maintenance
3) Development of a maintenance plan and necessary budgetary allocation

The obligations of the Vanuatu side included administration side support (application

and acquisition of necessary permits, logistic support for Japanese personnel, arrangement of tax exemption, and so on), pre-construction work (demolition of related facilities, construction of temporary road, temporary incoming telephone line wiring, etc.), work during construction (high voltage power supply, city mains water distribution to the site, dismantlement of the existing high voltage power supply, incoming telephone line and wiring route, transfer of IT line), and post-construction work (construction of roads outside the project site, fencing and gate, landscaping and planting, curtains and blinds, general furniture, removal and installation of existing equipment, etc.). All obligations for pre- during and post- construction period were fulfilled, although recovery work of the exterior took sometime after the 2015 cyclone.

3.2.2. Project Inputs

3.2.2.1. Project Cost

The cost of this project borne by Japan was planned to be approximately 1,469 million yen (155 million yen for the detailed survey and construction supervision and 1,314 million yen for construction), with another 33 million yen[13] planned as implementation expenses to be borne by Vanuatu.

Table 4 summarizes the actual costs contributed by Japan and Vanuatu.

Table 4: Actual Project Costs (Unit: million yen)

Country	Item	Cost
Japan	Detailed Survey	62
	Supervision	100
	Facility Construction	977
	Soft Component	138
	Provision of Equipment	157
	Sub-total	1,434
Vanuatu		19
TOTAL		1,453

Source: Prepared from information provided by JICA and MoH

The actual project cost was 1,434 million yen (Japanese side), which was confirmed as within the planned amount (approx. 98% of the plan). Conversely, the cost borne by Vanuatu was approx. 19 million[14], which was much less than the planned amount (approx. 58%). The MoH explained that this was due to the estimation being calculated on an, all the work to be out-sourced, basis but, to save its budget, VCH used their own labor force as much as possible, which was not included in the actual cost, and all work that was

[13] Exchange rate: 1 VUV = 0.90 JPY(As of April, 2011, at the time of planning)
[14] Exchange rate: 1 VUV = 0.99 JPY (As of April, 2018, at the time of ex-post evaluation)

out-sourced was tendered successfully. Therefore, the total cost of the project was 1,453 million yen, which was less than the planned amount (approx. 97%).

3.2.2.2. Project Period

The period of this project was expected to be 28 months, which included five months for a detailed design survey and four months for tendering. The signing date of the Exchange of Notes for the detailed survey was the 24th of January 2012; however, the project period starts with the detailed design and ends in the project completion date. Therefore, the actual project period was 28 months from March 2012 to June 2014, and the project was executed as planned (100%). As both the project costs and period were within the plan the efficiency of the project is high.

3.3. Effectiveness and Impacts[15] (Rating: ③)

3.3.1. Effectiveness

3.3.1.1. Quantitative Effects (Operation and Effect Indicators)

In this project, numbers of operations, outpatients attending general clinic, referrals to the hospital, and colonoscopic examinations, were selected to be the operation indicators and the targets were set as shown in Table 5, subject to fulfilment of pre-conditions.[16]

Unfortunately, the operation indicators, which had been determined at the time of planning, seemed to be inappropriate and unrealistic due to insufficient understanding of the actual situation.[17] Therefore, in this study three additional indicators, being; number

[15] Sub-rating for Effectiveness is to be put with consideration of Impact.

[16] Pre-conditions: number of operations and outpatients to general clinic: no significant shortage in medical supplies and medical staff happen, number of referrals to the hospital: there is no change in roles of VCH as the top referral hospital in the country, number of colonoscopic examinations: The medical specialist continues to be in place

[17] 1) Increase in numbers of operations: at the time of planning, it had been expected that minor operations would be carried out at the Emergency Department upon completion of the project, however, nurse practitioners have never been allocated at the Emergency Department, and no operations had taken place in the Emergency Department. Shortage of medical personnel had been recognised during the planning period, and, to plan and determine indicators, the project plan considered the availability of only existing staff members (not allowing for future expansion), therefore, the basis of increasing the number of operations was inconsistent to the situation. 2) Increase in numbers of outpatients to general clinic: the Government of Vanuatu is aiming to enhance access to basic primary health care for the rural population, and, through strengthening clinics, health centers and provincial hospitals which provide primary health care, general outpatients were encouraged to make their initial visit to primary health care providers. Therefore, a decrease in general outpatients attending the top referral hospital, VCH had been expected, and this indicator to target an increase in general outpatients was against the policy of the MoH and not policy sensitive. However, the number of emergency outpatients increased due to the enhancement of Emergency Department through facility improvement. 3) Increase in numbers of referrals: unofficial figures from VCH were used for the base-line, and these could differ dependent on the definition of referrals from other years: although the number of referrals was very large in 2010, it was treated as if smaller at the time of planning, thus, the target, 'to recover to the figure of the average of the last three years (2007 – 2009)', was set unrealistically high. At the same time, the situation of the provincial hospitals was improving, and referral of patients to the Northern Provincial Hospital from the three Northern provinces was encouraged (it was not policy sensitive during the planning). 4) 360 cases of colonoscopic examinations per year: the numbers of doctors who can utilize the equipment was extremely limited (medical specialists in endoscope have never been present at VCH, and the pre-condition was not fulfilled). It is possible that examining the feasibility of the colonoscopic examinations, such as securing the space for the examination and if

of emergency outpatients, clinical examinations and X-ray pictures taken, were examined. These were used to assess the effectiveness of the project as evidence directly affected by the new hospital building and the provision of medical equipment.

Table 5. Quantitative Indicators to Assess the Effectiveness of This Project

Indicators	Baseline	Target	Actual*1		
	2010	2017	2014	2016	2017
	Baseline Year	3 Years After Completion	Completion Year	2 years After Completion	3 Years After Completion
Number of operations	2,183	2,344*2	1,891	1,896	(1,945) 2,191*3
Number of outpatients to general clinic	61,770	82,000	29,111	44,710	(45,199) 56,773*4
Number of referrals to the hospital	351	480 (203)*5	301	149	227
Number of colonoscopic examinations	-	360	0	8	2

Source: Preparatory Survey Report, Data provided by MoH and VCH

*1: Due to missing data and credibility issues after the cyclone hit Vanuatu in 2015, statistical data from 2015, one year after completion, was not used in this report.
*2: Calculated result (2,344 operations) of the preparation study was used as the target.
*3: Numbers of general operations, cesarean, amputation and operations by visiting doctors were included in the base-line data (2010), therefore, the same types of operations were added to the official figure for the year 2017 (numbers of cesarean and operations by visiting doctors were not available for the year 2014 and 2016). The top line of year 2017 had the same condition of accounting as 2014 and 2016.
*4: General, emergency and pediatric outpatients were included in the base-line data (2010), however, pediatric outpatients and general outpatients were split and the number of pediatric outpatients has not been included in the official statistical data of 'number of outpatients' since 2014. The figure in 2010 cannot separate the pediatric outpatients from others, number of pediatric outpatients was added to the official figure for the year 2017 (the top line of year 2017 was the official figure for general and emergency outpatients only).
*5: In accordance to MoH 2009 Annual Report, the number of referrals to VCH from 2007 to 2009 were 180, 269 and 160 cases respectively, and the average of the past three year (2007 – 2009), as stated in the narrative target, was 203 cases.

doctors able to use it actually can conduct the examinations, was not sufficient during the period of planning and determining the indicator.

Table 6. Other Quantitative Indicators to Assess the Effectiveness of This Project

Indicators	2013	2014	2015	2016	2017
		Completion Year	1 Year After Completion	2 Years After Completion	3 Years After Completion
Number of Emergency Outpatients	Not Available	1,680[*1]	Not Available	Not Available	12,455
Numbers of Clinical Examinations	59,810[*2]	74,479[*2]	119,235	129,034	145,338
Numbers of X-ray pictures taken	17,994[*2]	25,660[*2]	26,400	26,693	28,921

Source: Data provided by VCH

*1: Numbers for emergency outpatients were included within general outpatients until 2014. The data for year 2014 includes the number of emergency outpatients after having moved to the new hospital in September 2014 for 3.5 months.

*2: Laboratories moved to a new building in the late half of year 2014, therefore, the figures for year 2013 were before the laboratories moved, and the numbers in year 2014 were a combined number for both old and new buildings.

The average number of planned operations is approx. 10 per day, and the number could reach 2,600 a year if all planned operations were carried out. However, extra, urgent patients, which normally need more time and care than planned operations, arrive at VCH every day, and many planned operations were cancelled/postponed depending on the level of the operation. Although the number of operations did not achieve the target, it reached over 80% and it was confirmed that the operation theatre was fully utilized (the occupancy rate of both theaters was very high).

The number of outpatients did not reach the level of the target, though it should be considered that this indicator ran against the direction of the Ministry's policy at the time of planning. However, the Emergency Department gained three rooms and six beds in contrast with only one bed within general outpatients in the old building. Table 6 shows that the number of emergency outpatients became eight times greater, compared with the period when it acted as part of general outpatients (pre-project period), and a direct positive effect in the Emergency Department was observed.

The number of referrals varies year to year due to natural disasters and outbreaks of infectious diseases in accordance to the past data.[18] Moreover, referrals from remote islands are very costly in Vanuatu because of airfares (tickets or charters depending on the urgency), and in fact, the vast majority of the referral budget is consumed by airfares.[19]

[18] Number of referral to VCH varies in each year: 67 (2005), 368 (2006), 180 (2007), 269 (2008), 160 (2009), 351 (2010, base-line), 319 (2011), 204 (2012), 265 (2013), 301 (2014, year of completion), 429 (2015, super size cyclone hit Vanuatu), 149 (2016), 227 (2017)

[19] The amount for the yearly referral budget (domestic/overseas) has been unchanged for some time and it is approx. 33 million vatu (approx. 33 million yen at the time of study). When the fund is exhausted, the Ministry of Health delays the payment to airline companies or starts using the budget for the next fiscal year.

The referral budget has not been sufficient and it is more economical to make referrals from northern provinces such as TORBA, MALAMPA and PENAMA to the Northern Provincial Hospital (NPH) in Esprit Santo Island rather than VCH in Efate Island which is located in the southern part of Vanuatu. Therefore, the Government of Vanuatu (MoH) has been enhancing the Northern Provincial Hospital (more specialist doctors making it possible to have more operations and widened area of consultation) to encourage sending patients to NPH from medical facilities within the northern provinces. In addition, there was a mistake in base-line data attained during planning[20], and the number of referrals in 2010 was treated as being high and thus unsuitable for use as an indicator. In accordance to the narrative part of the target, the target should be 'to recover to the level of the average for the past three years (2007 – 2009)', and, in that case, the actual target should be 203 cases and has been achieved.

There have never been colonoscopic specialists at VCH, and as a pre-condition for the indicator, the number of colonoscopic examinations could not be fulfilled. Therefore, this number was excluded as part of the evaluation. Remarkable effects were observed in the number of X-ray pictures taken and the number of clinical examinations. Filmless equipment was introduced and it has reduced the time necessary to obtain results. As shown in Table 6, the number of X-ray pictures is approx. 1.6 times greater than before the project. The number of clinical examinations increased by approx. 2.4 times. This outcome was not solely due to the updated equipment but also enhanced by the new building as all units were brought together in one place and the technicians find it considerably easier to handle specimens.

Waiting Area of Outpatients

Doctors Who Are Taking Training in Lab.

3.3.1.2. Qualitative Effects (Other Effects)

At the time of planning, the following qualitative effects were expected through the implementation of this project.

1) The project contributes to the improvement of performance of doctors and nurses

[20] Cf. '*5' of Table 5. Operation Indicators of This Project

2) The project contributes to the reduction of post-surgery infection risks
3) Efficiency in healthcare services is improved

With regard to "1)", it was confirmed that the majority of equipment provided under the project was being utilized for post-graduate training, and young doctors who had certified to be doctors and had returned from overseas expressed their gratitude for being able to continue improving their skills by using the equipment, which they had learnt to use during their medical education. However, regarding to the soft-component, many doctors and nurses had retired or were transferred after taking its training, and the degree of effect differed between sections. The staff members of the Maintenance Unit commented that the training held under the soft component of the project was considered to be somewhat effective, since it improved the way doctors and nurses handle equipment.

VCH has never recorded statistics regarding post-surgery infections, but theatre nurses and surgeons commented that they did not notice particular changes in post-surgery infections after moved to the new building. Therefore, it was not possible to assess if the project had contributed in a reduction of post-surgery infections described under "2)".

Regarding "3)", over 90% of staff members of VCH who answered the questionnaire or interview, stated that the efficiency of medical services had been improved. In particular, the Emergency Department facility was expanded and improved so that more patients could be accepted at any one time, and the total number of emergency outpatients throughout the year accepted at VCH increased dramatically. One of the objectives of the soft component of the project, "to acknowledge the significance of maintenance training for conducting routine, periodical maintenance activities by VCH staff", was more or less achieved and the efficiency of the medical service was improved as equipment was in usable condition when required, although the degree of achievement varied between each Department. Types (quality) and number (quantity) of clinical examinations had been increased in the Laboratory, and both quality and quantity of X-ray pictures were improved in the X-ray Unit. Moreover, all outpatients and their family members interviewed considered that the medical service of VCH was improved compared to before completion of the project and they were satisfied with the new facilities.

In addition to the above, an examination was made of any quality improvement in the acceptance of referrals at VCH. The majority of private clinics in Port Vila and provincial hospitals, which replied to the questionnaire, considered that not much change had occurred regarding how referrals were received. This may be because the number and capacity of staff members at the Emergency Department remained the same and little

change was noticeable in the speed of treatment and the allocation of patients to appropriate departments.

3.3.2. Impacts

3.3.2.1. Intended Impacts

At the time of project planning, the overall goal was set as "(considering that VCH is the nationwide referral hospital, a post graduate training facility for doctors and an intern training facility for graduates of Vanuatu College of Nursing Education for nurses), Medical services in quality and quantity in Vanuatu are improved." There was no particular indicator provided to assess the level of achievement of the overall goal. Therefore, it was decided to ascertain if any improvement had been made using major key health indicators for Vanuatu, such as: infant mortality rate, maternal mortality rate, number of health/medical specialists per population, and access rate to safe water.

Table 7. Key Health Indicators

	2013	2014	2015	2016
Under five year old infant mortality rate (per 1,000)	29.1	28.7	28.2	27.6
Maternal mortality rate (per 100,000)	84	81	78	unknown
Number of health/medical specialists (per 100,000)	unknown	unknown	14.6	17
Access rate to safe water (%)	unknown	92.1	93.3	94.5

Source: Materials provided by MoH and public data of World Bank[21]

Since there was only limited data available for the major key health indicators of Vanuatu and data maintenance at the MoH is not sufficient level, public data from the World Bank also was referenced, as shown in Table 7. Both the under five year old mortality rate and the maternal mortality rate showed a decreasing trend. Also, the number of health/medical specialists per 100,000 is increasing and access rate to safe water is improving. Since VCH has been consistently the sole top referral hospital in Vanuatu the period between planning and ex-post evaluation, and this project assisted with the enhancement of medical service to VCH, it may be inferred that the project has contributed and therefore achieved the overall goal of "Medical services in quality and quantity in Vanuatu are improved."

Of the VCH staff members (both medical workers and general administrative workers including members of the Maintenance Unit), who responded to the qualitative survey, more than 90% of respondents considered that the efficiency of medical service in VCH

[21] https://data.worldbank.org/country/Vanuatu/ (data extracted on the 1st of May, 2018)

was improved. However, only half of staff members confirmed that the project contributed indirectly towards the achievement of the overall goal; the another half stated that it could not say or did not know, since there were other factors (quality of medical and general staff members, management capacity of the Ministry and shortage of health budget, etc.) which needed to be considered.

3.3.2.2. Other Positive and Negative Impacts

1) Impacts on the Natural Environment

It was considered that this project would not cause any undesirable impacts on the natural environment as the project consisted of development of facilities and the procurement of equipment at the existing hospital. In actuality, this project had positive impacts on the natural environment. This was due to the introduction of the CR system that enabled VCH to get rid of waste chemical liquid such as developing fluid and fixing solution through the use of filmless X-ray.

2) Land Acquisition and Resettlement

Neither resident resettlement, nor land acquisition was required, as the components of this project required construction of facilities within the existing hospital premises (1/5 of the premises), and no problems were found.

3) Other Impacts

<u>Enhancement of resilience to natural disaster / Influence over Vanuatu regulatory policy (positive impact)</u>

A super-sized cyclone hit Port Vila where the VCH is situated, Vanuatu in 2015, but the new hospital and facilities built under this project was almost undamaged due to its robust structure. It would not have been possible to resume medical activities as quickly without the new hospital building. All interviewees, not only staff members of MoH and VCH, but also representatives from other Ministries, donors, neighboring clinics and outpatients, unanimously agreed that resilience to natural disaster had been strengthened by the project and evaluated this project highly. This project also influenced a strengthening of policy towards applying the Vanuatu building code to all medical facilities. As a result of the cyclone the necessity to have cyclone proof medical infrastructure was re-acknowledged and the MoH set a new policy that all medical buildings should be category 5 cyclone proof.

<u>Indirect economic effect (positive impact)</u>

Both New Zealand and Australia accept seasonal workers for fruit picking from

Vanuatu (NZ: 3,726, Australia: 1,198 in 2015), and this scheme has become an important source of foreign currency income (export industry) for Vanuatu. It is a requirement to submit an X-ray picture as part of the scheme's health check and the new filmless radiological equipment enables the production of clearer pictures quickly without conflicting with the requirement for X-ray pictures needed for the medical treatment of patients. The provision of the filmless X-ray machine has improved both the quality of X-ray pictures and efficiency, while additionally the project has indirectly contributed towards job creation and the export industry.

Certified improvement of clinical department by external audit (positive impact)

VCH Department of Pathology was audited by an external audit body, the Pacific Paramedic Training Centre[22], in November 2017. With the new facilities provided under this project, the level of clinical examinations and services were improved. VCH achieved a three star level and has the aim of achieving five stars by 2020.[23] Once five stars is achieved, the VCH will potentially qualify to receive intern doctors from Australia, New Zealand and Fiji. It was confirmed that this project contributed towards VCH becoming a recognized medical facility providing clinical examination at an accepted standard.

Increased electricity bill (negative impact)

At the time of planning, it was expected that the cost of electricity would increase by approx. 9 million vatu (approx. 8 million yen)[24], however, the actual increase was approx. 15 million vatu[25] (approx. 14 million yen) in 2017 as shown in Table 8.

One third of the operational budget of VCH is for electricity. To secure a maintenance budget for building, facilities and medical equipment, it will be essential to take action to reduce electricity expenses.

[22] The Pacific Paramedical Training Centre collaborating with WHO, promotes improvement of functions, services and performances of clinical laboratory's services of Pacific Island countries including those of South East Asia through external audit and guidance utilizing the tool called Stepwise Laboratory Improvement Process Towards Accreditation (SLIPTA), which was originally developed for African countries by WHO.

[23] This is a framework for countries in their efforts to strengthen national laboratory services through fulfilment of the requirements in the ISO 15189 standard, which the Japan Accreditation Board also adopted as an international standard. Full score is 2,580, 0 star: 0 – 1,429 points (55% or less), 3 star: 1,920 – 2,178 points (75% - 84%), and 5 stars: 2,440 – 2,580 points (95% or more)

[24] Exchange rate 1 VUV = 0.90 JPY (As of April, 2011, at the time of planning)

[25] Electricity consumption after 2014 is total electricity consumption and invoiced amount of old building and new building, therefore, electric usage (cost) for new building is estimated as total amount minus invoiced amount of 2013.

Table 8. VCH Power Consumption and Invoiced Amount of Electricity

	2010 Base-line	2013 Old hospital	2014 Moving to new hospital	2015 1st year after completion	2016 2nd year after completion	2017 3rd year after completion
Power Consumption (kWh)	501,368	465,286	621,372	777,992	852,711	838,328
Invoiced Amount (VUV)	22,816,186	22,913,631	29,928,034	36,022,534	35,514,346	37,931,083
Unit Price (VUV)	45.51	49.25	48.16	46.30	41.65	45.25

Source: Data provided by UNELCO ENGIE[26]

With regard to effectiveness, the consistency of statistical data was questionable, due to changes in management of VCH and MoH and many staff members in 2013 resulting from the 2012 general election. It is possible that this caused the indicators set during planning to be inappropriate. However, the 'number of operations' reached over 80% of the target and the 'number of referrals' (using the corrected data and re-calculation) also achieved its target. The indicator regarding 'number of outpatients' was not attained, as it ran contrary to the MoH policy of strengthening primary health care facilities such as; clinics, health centers and provincial hospitals. This policy aimed to reduce outpatient numbers at VCH so that it could better concentrate on emergency and referral functions as the top referral hospital. The result of 'Number of colonoscopic examinations' was excluded from the assessment of effectiveness as its pre-condition had been not fulfilled. However, there has been remarkable increases in 'number of emergency outpatients', 'number of clinical examinations' and 'number of X-ray pictures'. With regard to qualitative effects, improvements in the performance of doctors and nurses, and efficiency in healthcare service, could be confirmed. Although a reduction of post-surgery infection risk could not be confirmed. Therefore, it is considered that positive effects have been materializing.

As to the impact of the project, no land acquisition or resettlement cases have occurred, and many positive impacts were observed. However, there was one negative impact, that being an increase in electricity costs by an amount more than estimated. Positive impacts included: natural environment (less waste on X-ray films and chemical liquids), enhancement of resilience against natural disasters, positive influence over implementation of Vanuatu building code, indirect contribution towards economic effects, and recognition of laboratory improvement by external audit.

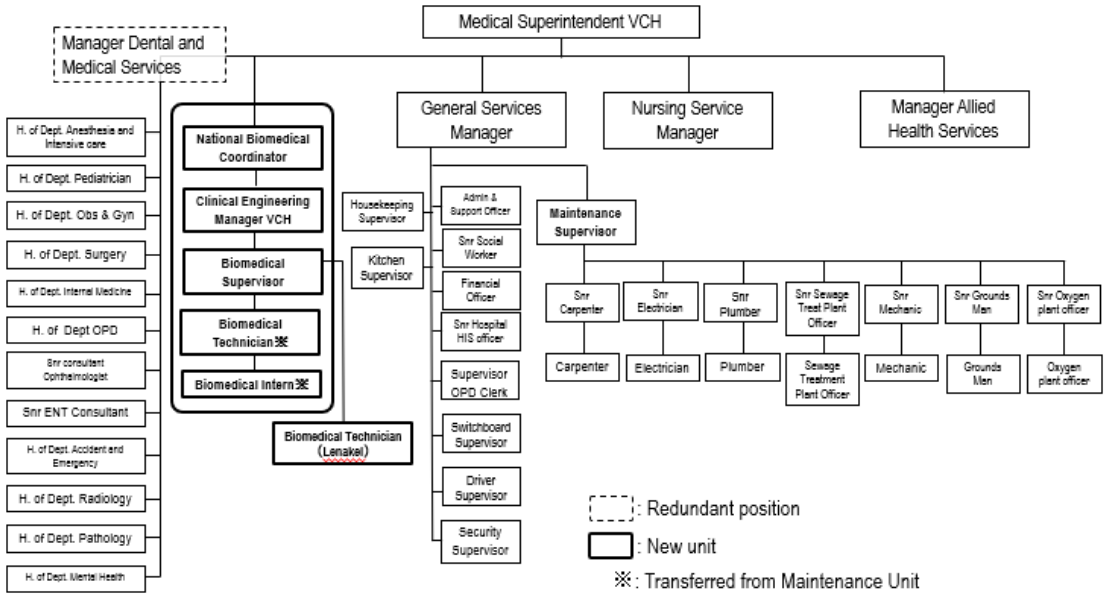
[26] UNELCO ENGIE is the largest French electric power company

This project has largely achieved its objectives. Therefore, effectiveness and impacts of the project are high.

3.4. Sustainability (Rating: ①)

3.4.1. Institutional Aspect of Operation and Maintenance

The implementation agency of this project was MoH, however, VCH, as the top referral hospital, has been handling operation and maintenance (major changes and problems regarding buildings and/or facilities within the VCH premises are managed directly by MoH (Asset Management Unit).



Source: Prepared based on Ministry of Health Structure (2017-2030)

Figure 1. Structure of VCH (2017)

As shown in Figure 1, a comprehensive structural reform took place in MoH in April 2017, and VCH, was in transition at the time of the ex-post evaluation. With regards to the Maintenance Unit, the Maintenance Supervisor position has not been filled since the former supervisor's retirement in 2010; currently the Senior Carpenter is serving as Acting Maintenance Supervisor. Due to an absence of leadership it can be difficult to confirm long-term plans and to negotiate with VCH management to secure a budget necessary to implement a systematic maintenance plan. Under the new structure, the Senior Carpenter is supposed to be confirmed as Maintenance Supervisor and the situation is then expected to improve. In addition, the Bio-med unit is supposed to become independent under the new structure; however, the Senior Electrician is formally assigned as Senior Bio-Medical

technician (concurrently holding both positions at this moment). New Senior Electrician) has not yet been confirmed.

As shown in Figure 1, the total number of positions within the Maintenance Unit is 15, out of which 11 positions are currently filled; plus a JOCV attachment, as of April 2018.

The Acting Maintenance Supervisor (Senior Carpenter) and Senior Electrician (Senior Bio-med technician) are undertaking leadership roles concerning daily maintenance and basic repair of medical equipment and building. Although the number of maintenance section staff has increased, the permanent position of Maintenance Supervisor has not been filled since 2010, and there remains space for improvement of institutional aspects within operation and maintenance.

3.4.2. Technical Aspect of Operation and Maintenance

According to VCH, the level of medical technicians, such as: doctors, nurses and clinical technicians, is sufficiently high to operate medical equipment and, with the soft component training provided under the project, these medical personnel routinely use/operate equipment without particular problems. However, after completing training, many doctors and nurses were transferred or retired without appropriate handing-over within their respective sections; therefore, it will be necessary that the Maintenance Unit act as a pipe-line for the transfer of knowledge.

Regarding the technical level of operation and maintenance, including inspection and repair, staff members of the Maintenance Unit have no problem conducting routine inspection and maintenance and repair of simple equipment utilizing manuals and checklists created during the soft component of the project. However, the technical skill level is insufficient to repair complicated specialist equipment. At the time of the ex-post evaluation, the Senior Bio-med Technician/Senior Electrician, who started work as an electrician in 2011, is not only looking after medical equipment, but also other electrical devices and facilities in addition to teaching new staff members in the unit.

Historically, New Zealand and JICA have sent bio-med volunteers to support the unit through OJT (On the Job Training). A Bio-med JICA volunteer arrived in April 2018, and this is expected to enhance operation and maintenance of medical equipment.

There are other activities aiming to enhance technical capacity in operation and maintenance. In the last three years, since 2015, JICA has provided one technical training course per year towards strengthening medical equipment technicians. Two technicians from VCH and one from NPH have participated in the training. Since 2012, annual meetings and training for Bio-meds had been held by the Fiji National University; however, the programme ended in 2016.

Therefore, in regard to technical aspects of operation and maintenance, there were no particular concerns regarding maintenance of general facilities; however, it will be necessary to further enhance capacity in order to maintain more complicated medical equipment.

3.4.3. Financial Aspect of Operation and Maintenance

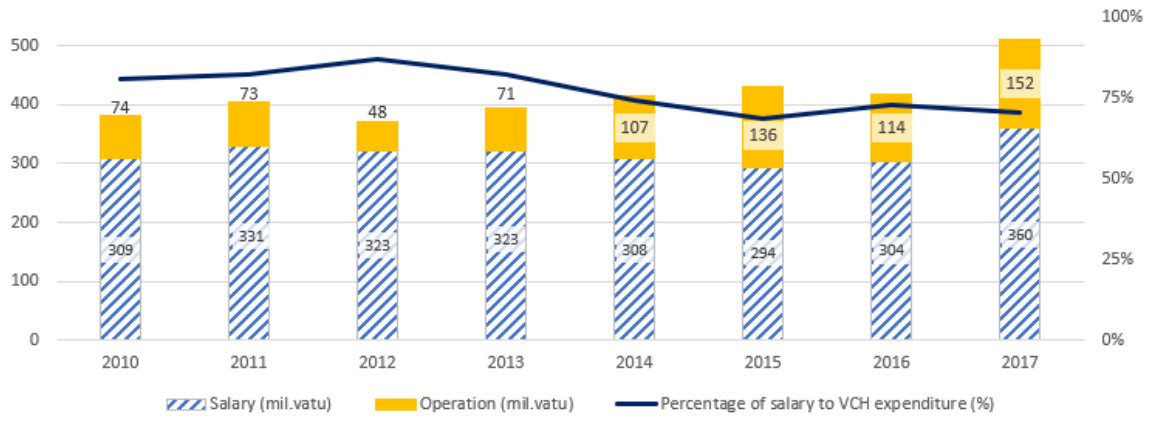
Both VCH's and the overall Health budget have tended to increase; however, the MoH budget as a proportion of the national budget has been getting smaller. While at the same time, the portion of VCH's budget within the Health budget has been getting larger.

Table 9. National Budget, Budget of MoH and VCH, Expenditure of VCH and its Breakdown

(Unit: million vatu)

	2010	2011	2012	2013	2014	2015	2016	2017
National Budget	16,061	15,661	16,183	16,726	17,523	18,175	21,449	23,670
Budget of MoH (% to national budget)	1,736 (10.8)	1,685 (10.8)	1,535 (9.5)	1,610 (9.6)	1,682 (9.6)	1,963 (9.3)	1,735 (8.1)	2,018 (8.6)
Budget of VCH (% to MoH budget)	355 (20.4)	382 (22.7)	337 (21.9)	394 (24.5)	411 (24.4)	432 (22.0)	421 (24.2)	509 (25.2)
Expenditure of VCH	383	404	371	394	415	430	418	512
- Salary and personal	309	331	323	323	308	294	304	360
- Operation	74	73	48	71	107	136	114	152
(Building)	(2.3)	(1.9)	(1.2)	(1.9)	(7.5)	(7.0)	(3.4)	(1.9)
(Equipment)	(10.5)	(2.8)	(1.2)	(2.4)	(3.9)	(17.2)	(9.9)	(9.4)
(Electricity)	(20.8)	(0.6)	(11.1)	(0.9)	(32.8)	(37.5)	(29.0)	(46.1)
(Other Maintenance)[27]	(4.8)	(6.7)	(4.5)	(6.6)	(7.2)	(9.3)	(7.1)	(8.0)

Source: Data provided by MoH



Source: Prepared from materials provided by MoH

Figure 2. Total Expenditure of VCH and Proportion of Salaries and Operation

[27] Other maintenance includes out-sourced cleaning fee, maintenance of accommodation and vehicles, and maintenance contracts.

Health Sector Programme, financial support by Australian Aid to partially cover operation and salaries, has been ongoing from 2014 to 2019 (Approx. 82.5 million JPY per year, Total: 6500 – 570 million JPY)[28]. It had originally been planned to run from 2011 to 2016. This financial support has helped to increase the budget of the MoH and boost the operational budget of VCH since 2014 (completion year of the project). However, the shortage of maintenance expenditure is serious, since salary and personal expenses constitute the vast majority of expenses, and with approximately one third of operation expenditure used to cover electricity usage. This has caused long delays in procurement and has made it impossible for VCH to practice 'preventive maintenance' through keeping an adequate stock of materials, equipment and parts which need regular replacement. Some equipment is so vital to the good operation of the hospital that it would be highly detrimental should the parts run out.

Due to the absence of a permanent Maintenance Supervisor and shortage of finance; one of the objectives of the soft component 'To establish and include the maintenance budgetary plan into the annual business plan' had, at the time of ex-post evaluation, not yet been achieved.

Since it has not been confirmed if Australian Aid will continue financial support to the Health Sector since 2019, there is a significant challenge with regards to sustainability in financial aspects of operation and maintenance.

3.4.4. Status of Operation and Maintenance

It was confirmed that all facilities and equipment, apart from colonoscopy and laparoscopes, were being utilized fully and contributed to VCH's medical operation. With regards to the built facilities; cracks on the walls, mended after the defect liability inspection, were visible again and there were problems with the autoclaves at CSSD[29]. Nonetheless all facilities were essentially well used and in good condition, cleaned daily, and with minor problems attended to by the Maintenance Unit.

In the event of problems with equipment, the concerned department should make a report to the Maintenance Unit. After investigation to determine the cause, Maintenance Unit staff members will make inquires to the equipment's agent(s) either in country and/or overseas. Overall, most equipment was being used in a correct manner. The Maintenance Unit conducts checks, cleaning and repair of facilities and equipment, either; every two weeks, one month or three months, in accordance with the maintenance plan and schedule created

[28] Interview from Team Leader of Australian Aid funded Vanuatu Health Resource Mechanism. Exchange rate: 1 AUD=81.41JPY (April 2018)
[29] cf.: page 8, line 3 - 9

under the guidance during the soft component training. In addition, materials created during the training, such as, a maintenance manual, equipment ledgers, lists, repair inquiry sheets, flow charts, and maintenance record forms (daily reports/monthly reports), were stored in the workshop of the Maintenance Unit, and utilized when necessary.

At the time of the ex-post evaluation, it was considered that the most significant difficulty was an insufficient operational (maintenance) budget for proper operation and maintenance. On completion of the soft component training, regarding to the technical facilities and equipment, it had been recommended that maintenance contracts with the suppliers/agents regionally should be signed. It was also recommended that two air blowers and a conductivity meter, necessary to measure the hardness of tap water[30], should be procured. However, none of these recommendations were carried out due to lacking of funding. The Maintenance Unit has been replacing medical equipment components as scheduled, but there is considerable concern over the inadequacy of purchasing/storage of spare parts for equipment originally provided under the project. For example, although not originally purchased under the project, procurement applications submitted in accordance with the maintenance plan for minimal materials and parts, that would directly affect the use of medical equipment, such as electrocardiograph paper rolls to record readings, could sometimes take up to one year until completed. On the other hand, where an air-conditioning supplier was selected on the basis that the company had an agent in Fiji, it was found to be quick and easy to undertake inquires and purchase spare parts. Such local/regional access to suppliers was evaluated as highly desirable by the Maintenance Unit and Management of VCH.

In regards to the status of operation and maintenance, there were no particular problems found with built facilities, however, with regard to equipment there were problems, which derived from an insufficient operational budget.

Major problems have been observed in terms of the financial aspect. Therefore, sustainability of the project effects is low.

4. Conclusion, Recommendations and Lessons Learned

4.1. Conclusion

VCH is the principal hospital providing specialized medical treatments and is the top referral hospital for the whole of Vanuatu. Under this project, which aimed to improve medical services at VCH and strengthen its capacity as an educational facility for medical/health workers, new medical facilities were constructed and medical equipment was procured and installed.

[30] Water provided by public water supply.

This project was consistent with the development policy and needs of Vanuatu as well as the priority areas of Japan's ODA policy regarding the effect of the project; therefore, the relevance of the project is high. With regard to implementation, the project components were carried out mostly as planned, and the project cost and period were within the plan. Consequently, the efficiency is also high. The quantitative indicators to assess the effectiveness of this project, 'number of operations' and 'number of referrals' were largely achieved, and other indicators (number of emergency outpatients, clinical examination and X-ray pictures taken) were greatly increased (improved). Moreover, the project contributed towards enhancing post graduate training for doctors and nurses and strengthened the capacity of medical workers and staff members within the Maintenance Unit. Patient satisfaction levels were high with regard to the facilities provided by the project and the medical services delivered at VCH; therefore, it was possible to confirm that some positive effects were emerging. Furthermore, significant impacts could be seen as a result of the project, as it has been achieving the overall goal of, 'medical services in quality and quantity in Vanuatu are improved.' Also, resilience to natural disasters was strengthened, as demonstrated by the new building making it possible to resume medical activities, immediately after a super cyclone hit Vanuatu. Therefore, overall effectiveness and impact are assessed as high. With regards to sustainability, there remains a need to further strengthen institutional and technical aspects and major challenges were identified concerning financial aspects, such as, with regard to the excessively long duration required to procure necessary spare parts. This meant that the sustainability of the project was assessed as low.

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

4.2. Recommendations

4.2.1. Recommendations to the Implementing Agency

Inclusion of CR unit cost in recurrent budget

Among the equipment provided under this project, the filmless X-ray machine (CR system) was evaluated extremely highly due to its quality and efficiency. This was reported not only by the implementing organization but also by private clinics. The CR unit is essential for operation of the filmless X-ray machine. To prevent this service ceasing, it will be necessary for the Ministry of Health to negotiate with the Department of Finance to purchase one unit within this year, and to include the cost within the recurrent budget every two years.

Inclusion of maintenance plan within the business plan of VCH

One of the objectives of the soft component 'To establish and include the maintenance budgetary plan into the annual business plan' has not yet been achieved due to an insufficient

budget. However, the Maintenance Unit do create a maintenance plan, including the costing of spare parts, which VCH management could incorporate within their budget.

Examine means to reduce electricity costs at VCH (energy saving / introduction of solar power generation)

The poor result found on sustainability for the project was due to the serious situation concerning the level of finance (an insufficient Health Budget). As shown in Table 9, salaries and personal expenses consume the vast majority of the VCH budget; however, approx. one third of the operation budget is taken up by power usage. The Northern Provincial Hospital has been saving electricity costs by using solar power and utilizes some of the savings to cover other operational costs. To help ease the pressure on the operation theatre and maintenance budgets, with the extension and improvement of the operation theatre and collaboration of electricity company, the introduction of alternative energy supplies (solar power generation, etc.) is recommended.

In addition to developing measures to cut the cost of electricity, although it is difficult to implement energy-saving in all departments in hospital setting, it would be advantageous to review power usage in both old and new buildings and promote adoption of energy-saving practices.

Capacity development for staff members for the collection of accurate and consistent data

Since 2013, and following the general election of 2012, many staff members of the MoH have been replaced. Due to these major changes in both management and staff members, problems with data missing, or being of questionable consistency, were found during statistics data collection for the ex-post evaluation. To understand the genuine health status in the country, it is important that the MoH should further confirm health statistics' definitions, standards, collection and data saving methods, etc. Using a more standardized system, it should be possible to secure consistency of data collection, utilizing the same conditions, even when staff members are replaced. At the same time, it will be necessary to strengthen capacity of staff members through holding workshops on a regular basis to share and update information regarding handling of health data and new standards.

4.2.2. Recommendations to JICA

Consideration of assisting in solving the problems in the operation theatre (CSSD)

In the sterilization chamber, steam from the autoclaves is not emitted to outside but returns into the room through the drain funnel, and this leaves the floor almost always flooded. Autoclaves are heavily used and essential equipment, and as all three autoclaves are

unable to operate at the same time, the efficiency of daily operations are negatively affected. It is recommended that assistance to make sure pressured steam be emitted outside through improving ventilation and/or drainage be considered. Especially, as the problem was first identified in January 2015, immediately after the operation theatre moved and began working within the new hospital building.

Consideration to assist with follow-up measures to be taken by the Vanuatu government towards reducing electricity costs

As one third of the VCH operation budget is taken up by electricity costs; it is recommended that assistance and follow-up to support Government of Vanuatu initiatives towards electricity bill reduction be considered on an as needed basis.

4.3. Lessons Learned

Careful examination, during the preparatory survey, of quantitative indicators to assess the effectiveness of the project

Among the operation indicators used to assess effectiveness of the project, and determined during planning stage, some were inappropriate and others had problems with mis-handled data. All indicators were found to have problems to some degree. While determining operation indicators, the section-in-charge of JICA should verify them with the utmost care. Attention should be taken to ensure that; there is no discrepancy with the partner country's policy, pre-conditions and definitions of data are clear, and/or that targets are not set based on the opinion of only a few people, etc. Ideally, before confirming indicators, it would be beneficial to obtain input from either, the evaluation section of JICA, or evaluation experts to examine what is effective and to check if the indicators are sufficiently logically sound to assess the effectiveness of the project reality. Moreover, to prevent simple mistakes in the handling of data and mistakes in typing numbers, consulting companies should be obliged to double check by the third person that; sources of data, reports and calculation results are written correctly during creating the survey report.

Easy maintenance as a procurement principle (good practice)

In this project, regarding to the procurement, the air-conditioner brand was chosen, based on availability of agent(s) within the region (Fiji) due to easy maintenance. This has allowed greater ease in the ordering of spare parts. Careful consideration of maintenance during procurement resulted in easier maintenance, and this was recognized and highly regarded. In future projects of a similar type, it will be beneficial to purchase more equipment from manufacturers that have agents within the country, or at least neighboring countries, in order to

obtain parts when it is necessary.

Building design which takes into account environmental conditions (good practice)

Large scale cyclones hit somewhere in Vanuatu every few years. Buildings with structures sufficient to withstand extreme natural disasters can create great impacts, and the project is highly commended. It is desirable to fully consider the natural environment during design, should there be plans to construct future hospital buildings in the countries vulnerable to natural disasters.

END//