Islamic Republic of Pakistan (Pakistan)

FY2019 Ex-Post Evaluation of Japanese Grant Aid Project

"Project for Improvement of Child Health Institute in Karachi"

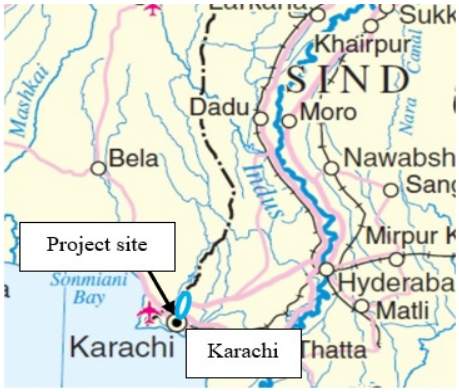
External Evaluator: Kenichi Inazawa, Miyuki Koga, Octavia Japan, Co., Ltd.

0. Summary

The Sindh Government Children Hospital (hereinafter referred to as SGCH) provides secondary medical services in Pakistan's largest city, Karachi. This project aimed to expand the hospital thereby improving the pediatric medical services of the city. The *Poverty Reduction Strategy Paper* formulated by the Government of Pakistan advocated the need to protect the poor and the vulnerable, while the *Heath Sector Strategy* formulated by the Government of Sindh recognized the priorities to be neonatal and pediatric health, nutrition, polio eradication, infection control, etc. There is a continued development need to expand and update medical facilities in the city. Considering that this project was also in line with Japan's ODA policy, its relevance is high. With respect to efficiency, although the outputs and the project costs were mostly as per the plan, the project period slightly exceeded the initial plan due to a deterioration in security in and around Karachi City. This affected progress at the time of the detailed design, after the project commenced. Therefore, efficiency of the project is fair. The quantitative effect indicators such as "number of inpatients", "number of Neonatal Care Unit (hereinafter referred to as NCU) inpatients", "number of biochemistry tests", exceeded the targets. In addition, although these are reference data, "number of surgeries and treatments using the operating rooms" and "usage of the diagnostic imaging device" significantly increased at this hospital, compared to the condition prior to this project, therefore the facility and equipment procured by this project are being utilized. The qualitative interviews confirmed the improvement in the hospital's medical services. Furthermore, it can be concluded that this project has also contributed to strengthening the referral system and improving the pediatric medical services of the city as a whole. Therefore, effectiveness and impact is high. With regard to sustainability, there are no major concerns in the institutional, technical and financial aspects of this hospital. There are no major problems in relation to the operation and maintenance status of the developed facilities or the procured equipment. Therefore, the sustainability of the effects achieved through the implementation of this project is considered to be high.

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

1. Project Description



Project Location


Inpatient Ward Developed by this Project

1.1 Background

Before this project began, Pakistan's national average infant mortality rate and under-five mortality rate were high compared with other South Asian nations and thus required improvement. In particular, the rates of Sindh Province, in which the SGCH is located, were worse than the national averages. This was due to the weak coordination (referral) system among the medical facilities. Although the SGCH was categorized as a secondary medical facility[1], it could only provide limited medical services due to a lack of facilities. There were many cases where patients who should have been treated at a secondary medical facility were transferred to the National Institute of Child Health (hereinafter referred to as NICH), a tertiary medical facility capable of providing high-level pediatric services. This prevented NICH from providing sufficient tertiary medical services to children, undermining its ability to offer high-level medical services to patients with serious conditions. It was therefore an urgent task to improve the facilities of the SGCH, a secondary medical facility.

1.2 Project Outline

The objective of this project is to expand the secondary medical services of the SGCH by improving the facilities of the hospital, thereby contributing to the improvement of the pediatric medical services in Karachi City.

[1] In Pakistan, secondary medical care services entail health promotion/disease prevention, treatment, inpatient, clinical departments (obstetrics and gynecology, pediatric, dermatology, general surgery, otolaryngology, ophthalmology, internal medicine, etc.), transportation and admission of patients. On the other hand, tertiary medical care services include more specialized clinical departments (orthopedics, urology, nephrology, neurology, cardiac surgery, oncology, kinesiology, etc.) and admission of transported patients. With respect to the referral system of medical service facilities, primary medical facilities only have outpatients, while secondary facilities have inpatients and outpatients and undertake surgeries of general kinds. Tertiary facilities provide high-level medical services and accept cases from the secondary and primary facilities. The SGCH provides medical services to children under 13 years old.

Grant Limit / Actual Grant Amount	1,423 million yen / 1,417 million yen
Exchange of Notes Date / Grant Agreement Date	December 2012 / December 2012
Executing Agency(ies)	Health Department, the Government of Sindh
Project Completion	March 2015
Main Contractor	Tobishima Corporation
Main Consultant	Yamashita Sekkei Inc./Binko International Ltd. (JV)
Procurement Agency	Mitsubishi Corporation
Basic Design/ Preparatory Survey	June 2011-May 2012 (preparatory survey)
Related Projects	[Grant Aid Projects] ・ "The Project for Provision of Medical Facilities for Al-Mustafa Medical Center in Karachi, Sindh" (Grant Assistance for Grassroots Human Security Project, 2009) [Technical Assistance] ・ "Expanded Programme of Immunization (EPI)/ Polio Control Project" (2006-2011)

2. Outline of the Evaluation Study

2.1 External Evaluator

Kenichi Inazawa, Miyuki Koga, Octavia Japan, Co., Ltd.

2.2 Duration of Evaluation Study

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

Duration of the Study: November 2019-December 2020

Duration of the Field Study: International travel was canceled. The field study was conducted remotely, using a local consultant.

2.3 Constraints during the Evaluation Study

(Remote Implementation of the Field Study by Utilizing a Local Consultant)

Due to the spread of COVID-19, external evaluators decided against international travel for this study. Utilizing a local consultant, the external evaluators remotely conducted site visits, information/data collection, and interviews with project-related personnel. The results were analyzed and used in the decision-making process by the external evaluators.

(Special Note on the Operational Status and the Sustainability of the SGCH after September 2020.)

In this evaluation, information/data collection, interviews, site surveys, etc., were conducted remotely using a field survey assistant, the results of which were summarized by June 2020. Based on the findings, the sub-rating in relation to sustainability was concluded to be ③(high). However, after September 2020, the Government of Sindh suffered a budget shortage attributed to COVID-19, and the SGCH, which depends on the provincial government for funding, could not secure funds. As a result, the hospital was forced to cease operation. It is necessary to carefully monitor the situation surrounding the provincial government and the management of the hospital going forward.

3. Results of the Evaluation (Overall Rating: A[2])

3.1 Relevance (Rating: ③[3])

3.1.1 Consistency with the Development Plan of Pakistan

The Government of Pakistan advocated the need to protect the poor and the vulnerable in the *Second Poverty Reduction Strategy Paper* (PRSP-II) formulated in 2009 before the project commenced. In addition, the *National Health Policy* approved by the Government in 2010 identified improving medical and health services for poor and socially vulnerable people as a priority. Furthermore, the Government of Sindh formulated a health policy in 2005, which listed improving pediatric medical services as a priority.

At the time of the ex-post evaluation, the Government of Pakistan has developed the *National Health Vision* (2016-2025) with an aim to improve access to quality medical services and to establish an advanced medical system, thereby promoting the health of its citizens, especially women and children. In addition, the Government of Sindh formulated the *Poverty Reduction*

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

[3] ③: High, ②: Fair, ①: Low

Strategy[4] in 2018, which places importance on its contribution to health and welfare, maintaining consistency with the framework of the Sustainable Development Goals (SDGs). In particular, the strategy recognizes health and hygiene as a basis for saving lives and securing basic living conditions. Furthermore, the provincial government has a comprehensive medical sector strategy as stipulated in the *Health Sector Strategy* (2012-2020). The strategy has identified issues such as neonatal and pediatric health, nutrition, polio eradication and controlling infectious diseases as priorities, while placing importance on measures to provide cost-effective quality medical services and to improve the health of the citizens. In addition to enhancing health systems in rural areas, the province also plans to focus on primary healthcare in cities, particularly for the least developed areas.

Based on the above, at the time of the ex-post evaluation the Federal Government of Pakistan as well as the Government of Sindh value healthcare measures including those for children. This project was implemented with a view to improving the secondary pediatric medical facilities at the SGCH. Therefore, this project is in line with national and sector plans in place at the time of the planning, as well as those in place at the time of the ex-post evaluation.

3.1.2 Consistency with the Development Needs of Pakistan

Before this project began, Pakistan's national average infant mortality rate was 70 per 1,000 live births and the under-five mortality rate was 87 per 1,000 live births (2009 data). These figures were higher than those in other South Asian counties. In Sindh Province in particular, the infant mortality rate was 78 and the under-five mortality rate was 100 in 2009, both of which were higher than the national averages. This could be explained by the poorly functioning coordination system (referral system) among medical facilities. Although the SGCH was the only secondary medical facility in the city, its medical services were limited due to lack of facilities. Some patients were transferred to the tertiary medical facility, NICH, capable of providing advanced pediatric treatments. This meant that adequate medical services could not be provided at the secondary level; while the referral system collapsed, NICH were unable to provide advanced medical services to patients with serious conditions. Therefore, there was an urgent need to improve the facilities of the SGCH.

At the time of the ex-post evaluation, the SGCH is still the only secondary medical facility in

[4] The Government of Pakistan has been gradually promoting measures for decentralization and delegation of authority since 2001. While it was the federal government that developed the poverty reduction paper at the time of the planning, it is each provincial government that develops its own paper at the time of the ex-post evaluation.

the city. As a result of the provision of medical equipment and construction of hospital buildings by the project, the secondary medical services have expanded, attracting many patients including ones transferred from primary medical facilities. The hospital continues to play an important role in the pediatric care in Karachi City. On the other hand, at the time of the ex-post evaluation, Pakistan's national average infant mortality rate is 57 (source: World Bank's 2018 data) and the under-five mortality rate is 69 (source: 2018 data from Statista.com), while for Sindh Province the infant mortality rate is 62 and the under-five mortality is 74 (source: 2018 data of the Redefining Primary Healthcare, a Pakistani NGO). All the figures above are per 1,000 live births. Whilst the rates have improved in Sindh Province, infant mortality rate and under-five mortality rate are still higher than the national averages and therefore require continued improvement. The hospital aims to further expand its secondary medical facilities so as to provide tertiary medical services in the future. To be more specific, an NGO called Poverty Eradication Initiative (hereinafter referred to as PEI) which has been managing the hospital since the end of 2016 through the Public Private Partnership (hereinafter referred to as PPP) is aiming to expand and update the facilities of the Palliative Care Unit (hereinafter referred to as PCU) and NCU that are currently operating at the secondary medical service level so that the hospital can eventually provide advanced tertiary medical care. Considering that NICH is still the only tertiary medical facility in the city at the time of the ex-post evaluation, such an upgrade is expected to further enhance the referral system, strengthening the pediatric medical system of the entire city, contributing to the reduction of infant mortality rates.

Based on the above, there is a continued need to expand and update the medical services and facilities of the SGCH at the time of the ex-post evaluation. Therefore, this project is consistent with the development needs at the time of the planning, as well as at the time of the ex-post evaluation.

3.1.3 Consistency with Japan's ODA Policy

The *Country Assistance Program for Pakistan* formulated by Japan's Ministry of Foreign Affairs in 2005, focused on human security and human development as a direction of the assistance strategy, claiming that Japan would work toward reducing disparities in basic healthcare. As a concrete policy, the document said it would be essential to secure primary healthcare services, to ensure links with secondary medical services and to develop human resources in the area of healthcare service administration. In addition, the *Rolling Plan for Pakistan* also recognized "securing primary healthcare services" as one of the development issues

under a priority area, “ensuring human security and human development.” This project aimed to expand secondary medical services through the improvement of the pediatric facilities. It was implemented to contribute to the improvement in pediatric services of Karachi City and therefore was in line with the ODA policy of Japan.

Based on the above, this project has been highly relevant to Pakistan’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

Table 1 shows the plan and actual outputs of this project, which were generally as per the initial plan.

Table 1: Project’s Output Plan and Actual Outputs at the Time of the Ex-Post Evaluation

At the Time of the Plan (2012)	Actual Outputs (2019-2020)
<Planned Inputs by the Japanese Side> [Civil Work, Equipment to be Procured] - Construction of new buildings (ward department, surgery department, specialized outpatient department, emergency department, diagnostic imaging department, etc.) (total approximately 4,600m^2) - Anesthesia apparatus, automatic biochemical analyzer, patient monitors for operating rooms, etc. (procurement of approximately 140 items in total)	<Actual Outputs by the Japanese Side> [Civil Work, Equipment Procured] <u>Implemented almost as planned.</u> - Construction of new buildings (ward department, surgery specialized outpatient department, emergency department, diagnostic imaging department, etc.) (total approximately 4,609m^2) - Anesthesia apparatus, automatic biochemical analyzer, patient monitors for operating rooms, etc. (procurement of 135 items in total)
<Planned Inputs by the Pakistani Side> - Construction-related matters (land preparation of the site, planting in the premises, acquisition of construction permit, infrastructure connection work, replacement of existing drainage pipeline, moving from existing facility to the targeted facility, renovation of the existing facilities) - Maintenance-related matters (maintenance of consumables and spare parts such as general furniture not covered by Japan) - Process-related matters (fees associated with banking arrangements and payments, costs related to notification of authorization to pay and amend authorization, processing building permit and other permits/authorizations, duty	<Actual Outputs by the Pakistani Side> <u>Implemented as planned.</u>

exemption, custom clearance, timely arrangement of inland transportation, processing tax free privileges for the involved Japanese companies and Japanese nationals, necessary arrangements for Japanese personnel entering and staying in Pakistan, all necessary expenses that are not covered by Japan, safety and security of the Japanese involved in this project.	

Source: JICA documents and answered questionnaire

In this project, the outputs were almost as planned. The number of procured items was slightly less than the plan (140 planned vs. 135 procured) mainly because it was proven at the time of the detailed design that these items did not need to be procured because they could be substituted with other items/methods. The five items were: blood warmer, baby cots (with tables), a rehabilitation chair, a nerve stimulator and a cycle (ergometer)[5]. The outputs by the Pakistani side were also as per the plan.

Photo 1: Procured X-Ray Recording Device (Right), X-Ray Device for Inpatients (Left)

Photo 2: Biochemical Testing Device

[5] According to the interview with the main consultant, “the plan was changed because it was agreed that a blood warmer could be substituted with a washbasin with warm water of body temperature, baby cots (with tables) and rehabilitation chairs with existing furniture, a nerve stimulator with existing equipment, a cycle (ergometer) with a physical exercise to train leg strength. The Pakistani side and the Japanese side were in agreement with the changes at the time of the detailed design, after the project commencement.” According to the SGCH staff, “the alternative tools/methods are being utilized without problems.” Based on such comments, it can be judged that the concerned parties made an appropriate change with a view to efficient procurement.

3.2.2 Project Inputs

3.2.2.1 Project Cost

With respect to the total cost of this project, the initial plan was approximately 1,442 million yen (of which the Japanese side was to contribute 1,423 million yen and the Pakistani side approximately 19 million yen). The actual total cost could not be captured, as detailed records of the amount covered by the Pakistani side were not available at the Health Department of the Government of Sindh or the SGCH. The actual cost borne by the Japanese side was approximately 1,417 million yen. As mentioned earlier, the outputs by the Pakistani side were almost as initially planned. Considering that the planned amount (about 19 million yen) was only approximately 1% of the total project cost, its impact on the planned and actual cost analysis would be minimal. Therefore, efficiency of the project cost was analyzed based on the comparison between the planned and actual amounts borne by the Japanese side. That is, while the plan was 1,423 million yen, the actual cost was 1,417 million yen, which was generally within the plan (approximately 100%).

3.2.2.2 Project Period

This project was planned to begin in February 2013 and end in January 2015 (24 months). The actual duration of the project was from February 2013 to March 2015 (26 months), which was slightly longer than planned (approximately 108% of the plan). The main factor accounting for this was security deterioration in Karachi City during the detailed design after this project began which affected commencement of the work. Following the deterioration in security, movement was restricted and the main consultant was unable to leave the hotel freely. This affected the consultant's ability to attend meetings with local partners and as a result delayed the progress of the project[6].

As stated above, the outputs and the cost of this project were generally as per the plan. However, the project duration was slightly longer than planned. This was mainly due to the deterioration in Karachi's security during the detailed design after the project commencement; this affected progress. In summary, although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

[6] Even before the detailed design began, JICA exchanged information with the main consultant concerning the security and its influence on the implementation and was fully aware of the progress of the project. Although the deterioration in security was unavoidable, necessary security measures were taken and both parties had an established communication and reporting system. This indicates that the project was properly managed.

3.3 Effectiveness and Impacts[7] (Rating: ③)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

Table 2 shows the quantitative effect indicators of this project (baseline, target, actual). In addition, the number of surgeries and treatments using the operating rooms, as well as the use of the diagnostic imaging device (baseline, actual) are shown in Table 3 as reference data to indicate the status of the secondary medical service provision at the SGCH.

Table 2: Operation and Effect Indicator of SGCH (Baseline, Target and Actual)

Indicator	Baseline 2011	Target 2017 Three Years after Completion	Actual				
			2015 Year of Completion	2016	2017	2018 Three Years after Completion[8]	2019
① Number of inpatients (excluding NCU) (Unit: person/year)	2,276	4,100	No data	No data	5,306	6,323	9,036
② Number of NCU inpatients (Unit: person/year)	0	190	No data	No data	754	783	806
③ Number of biochemistry tests (Unit: test/year)	851	1,490	No data	No data	43,818	45,075	73,293

Source: JICA document (baseline and target) and answers to the questionnaire (actual)

(Reference) Table 3: Number of Surgeries and Treatments Using the Operating Rooms, Usage of the Diagnostic Imaging Device

Indicator	2011 Before Project Commencement: Baseline	Actual		
		2017	2018	2019
① Number of surgeries and treatments using the operating rooms (Unit: number of surgeries/year)	50	1,788	2,110	2,295
② Usage of the diagnostic imaging device (Unit: number of times used/year)	X-ray: 200	X-ray: 11,508	X-ray: 11,382	X-ray: 12,747
	Ultrasound: 200	Ultrasound: 4,495	Ultrasound: 5,177	Ultrasound: 3,965

Source: Answers to the questionnaire and data from the SGCH

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

[8] At the time of the planning, this project was expected to complete in 2014, which meant 2017 was the target year, three years after its completion. However, as discussed in "3.2.2.2 Project Period", there was a delay and the actual completion was in 2015. Therefore, the actual and targeted figures are compared based on 2018, three years after the project's completion.

As shown in Table 2, actual figures in relation to all of the "①number of inpatients (excluding NCU)", "②number of NCU inpatients" and "③number of biochemistry tests" have increased up to the time of the ex-post evaluation (2019), largely exceeding the baselines (2011) and targets (2017). With respect to Table 3, the actual figures at the time of the ex-post evaluation in relation to "①number of surgeries and treatments using the operating rooms" and "②usage of the diagnostic imaging device" also greatly exceed the baselines (2011). The Health Department of the Government of Sindh and PEI gave the following reasons: 1) the hospital could only provide limited medical services, given the scale and the types of the facilities that existed before the project began. The facilities and equipment developed by this project are more advanced and therefore the hospital can provide a wide range of medical services and surgeries for the patients, 2) the PEI made a managerial effort and made registration and consultation (fee of which used to be collected), free of charge; this means that any pediatric patient in the area can access quality consultation and treatment without payment, 3) the PEI recruited pediatricians from external organizations so as to respond to more cases with a view to improving the level of satisfaction of the outpatients and inpatients[9]. Other than that, the actual figures in Tables 2 and 3 presumably increased because 4) Karachi City has a high population growth rate[10] (reference information: the population was approximately 12.6 million before the project began in 2010 and grew to approximately 16 million by 2020, the time of the ex-post evaluation). This population growth caused the increase in the number of patients requiring pediatric consultation and treatment. In addition, there is a relatively large proportion of poor families with many children living near the hospital. While the need for pediatric medical care already existed, as the hospital began offering better medical services, the hospital absorbed the potential need. While the "③number of biochemistry tests" in Table 2 greatly increased compared with the target, the "①number of surgeries and treatments using the operating rooms" and "②usage of the diagnostic imaging device" in Table 3 significantly increased compared to the baselines because the procured medical equipment played a role in expanding the medical services. In addition, the PEI upgraded the outpatient department (herein after referred to as OPD) emergency services (open 24 hours a day, 365 days a year) since 2017. Based on the above, this project is assumed to have achieved more results than expected. This is not only due to the development of facilities and procured medical

[9] The main consultant, when interviewed for reference information, commented, "At the design stage of this project, there was simply not enough space, equipment or human resources to respond to the medical needs. Through this project, the ward facilities were expanded and the hospital could increase the number of medical staff, which made it possible to respond to more cases."

[10] The source is the World Population Review cf. https://worldpopulationreview.com/world-cities/karachi-population/ (*Accessed on 22 June 2020).

equipment by this project, but also to the PEI's improvements of the medical services and system by accurately capturing the medical needs.

The "no data" (actual figures after 2016) in Table 2 is there because the facilities and equipment were not utilized immediately after the handover. Around the time of the detailed design, the Health Department of the Government of Sindh decided to transfer the management of the hospital to an NGO based on PPP[11]. The Japanese side and the Pakistani side had to confirm the management policy, and a significant amount of time was required for the Pakistani side to complete NGO selection and internal procedures. Management of the hospital by the NGO began in December 2016, more than one year after the project completion (March 2015). With regard to the commencement of the operation, the selected PEI signed an agreement on the management with Sindh Province, while an MOU was signed between the Health Department of the Government of Sindh and JICA (September 2016)[12]. It is not unusual for confirmation and processes associated with a change in a management policy to take time. In fact, the details should be reviewed carefully. Nevertheless, it is desirable that the side providing assistance evaluates the recipient's post-completion operation system and that the recipient (responsible for the actual operation), promptly decides on the operating system with a view to minimizing the loss of any project benefits.

3.3.1.2 Qualitative Effects

3.3.1.2.1 Improvement of the Medical Environment at the SGCH

At the time of the planning of this project, it was expected that unnecessary movement of staff would be reduced and that the medical environment would be improved as this project would arrange necessary rooms based on the flow lines of the medical staff. The achievement was confirmed through site inspections and interviews with medical staff at the SGCH. The medical environment is considered to have improved as per the results of the interviews and site inspections below:

- A biometric[13] system (see Photo 3) was introduced to the facilities through this project, which enabled proper management of the movement of medical staff and the smooth flow of staff. A mechanism has been established such that unnecessary movement of staff is minimized.

[11] The Government of Sindh decided to commission NGOs to manage the province's secondary medical facilities.
[12] It was confirmed through JICA's documents that JICA properly followed up on the introduction of PPP, coordinated with the Pakistani side, checked the required procedure and processes, and cooperated with the embassy of Japan in Pakistan.
[13] This refers to a technology/process of personal identification based on information related to physical and behavioral features. The data are collected and pre-registered, and compared with the information obtained through the sensors at

- This project has made it easier to manage cleanliness of the hospital as clean areas and contaminated areas are clearly separated. Waste from medical treatments are also properly sorted and treated (see Photo 4). In addition, the waste treatment stations are placed far from the wards, preventing transmission of contaminated sources. Furthermore, a cleaning checklist is placed at all relative locations such as wards and washrooms, while cleaning staff properly carry out their tasks based on the checklist. Inside the hospital, sanitizers are installed on the walls at essential places. It is assumed that this project is also contributing to the prevention of in-hospital infections.

Photo 3: Introduced Biometric System

Photo 4: Waste Sorting and Disposal

3.3.1.2.2 Strengthening the Treatment Capability of NCU at the SGCH

At the time of planning, it was expected that development and expansion of the SGCH would enable the treatment of patients in need of NCU. Through this project, eight incubators[14] were introduced to the SGCH as they were essential for the NCU treatments (see Photo 5). As the number of patients increased, the PEI purchased additional incubators using its own funds[15]. It can be stated that consequently the NCU treatment system has been enhanced and the medical services have expanded. In addition, as a part of the PEI's management policy, neonatologists with specialized training in neonatal care were recruited in order to provide highly specialized treatments. In other words, the introduction of the necessary incubators in the NCU by this project, together with the placement of specialized neonatologists by the PEI, resulted in the enhancement of the NCU's capability at this hospital.

the time of identification, for the purpose of authentication.

[14] Medical apparatus used to maintain environmental conditions suitable for a neonate. It is not only used for maintaining the optimal temperature and humidity, but also for oxygen therapy, observation, isolation and infection prevention.

[15] Eight incubators were procured through this project, and four were added after the completion, which made 12 in total.

Photo 5: Introduced Incubator

Photo 6: Treatment at the SGCH

3.3.2 Impacts

3.3.2.1 Intended Impacts

3.3.2.1.1 Contribution to the Improvement and Enhancement of the Pediatric Services and the Referral System Across Karachi City

In order to see the ways in which the results of this project are related to the improvement and enhancement of the pediatric services and referral system of the entire Karachi City, this survey looked into the number of patients and the proportion of patients transferred between the primary, secondary and tertiary medical facilities. In addition, interviews were conducted with the SGCH, the Health Department of the Government of Sindh, and NICH. Firstly, Table 4 shows the "① number of patients who were transferred from a primary medical facility inside Karachi City to the SGCH" as well as the "②number of patients who were transferred from the SGCH to NICH in Karachi" in the last three years. Following project completion, ① increased dramatically. In reality, the hospital had operated in such a limited capacity before the project that the department responsible for emergency surgery could only accept patients from 8:00 to 14:00 due to a shortage of medical equipment and human resources. With this project, the facilities were expanded and more medical equipment became available. On top of this, the PEI allocated necessary medical resources, which enabled the acceptance of patients 24 hours a day, 365 days a year. As a result, the hospital's operational aspect was upgraded and the number of patients transferred from primary medical facilities soared. Whilst no detailed data were available in relation to ②, according to the hospital the proportion of the transferred patients decreased from 80% to 30% in recent years. Secondly, positive comments were recorded during the interviews. "Before the project commencement, Karachi City's pediatric cares relied excessively on NICH, a tertiary

medical facility. Due to insufficient facilities, human resources, and medical equipment, the city could only offer limited medical services. However, through the implementation of this project, the latest and advanced medical equipment was introduced, and patients can now receive advanced emergency pediatric services." "Before (the project commencement), NICH received many patients who should have been treated at the secondary medical facility. The outpatient and inpatient buildings were always overcrowded. Now, the SGCH is offering pediatric services to patients who should indeed be treated at the secondary medical facility, enabling NICH to focus on the tertiary-level medical services." "The SGCH is increasingly motivated to provide care and services to its patients." Based on such comments, it is assumed that the environment surrounding the pediatric medical system of Karachi City including NICH, has been improved by this project, contributing to the improvement of the referral system in the city.

(Reference) Table 4: Number of Patients Transferred from Primary Medical Facilities in Karachi City to the SGCH,
Number of Patients Transferred from the SGCH to NICH
(past three years)

(Unit: Person)

	2017	2018	2019
① Number of patients transferred from primary medical facilities in Karachi City to the SGCH	60	240	2,500
② Number of patients transferred from the SGCH to NICH (proportion)	In recent years the proportion has decreased from 80% to 30%.		

Source: The SGCH
Note: There were no recorded data for 2016 or earlier.

3.3.2.1.2 Improvement of Maternal and Child Health Indicators for Pakistan Nationwide as well as for Sindh Province (Consideration on How They Relate to this Project)

Table 5 shows the comparisons of ①infant mortality rate and the ②under-five mortality rate of Pakistan nationwide and that of Sindh Province before the project commenced (2009) and after completion (2018). All figures are per 1,000 live births. The ①infant mortality rate and the ② under-five mortality rate of Sindh Province, in which Karachi City is located, are higher than the national averages in 2009 as well as in 2018. Whilst the numbers continued to drop until 2018, the rate of the decrease was slightly greater in Sindh Province. Given the scale of this project, conclusions regarding direct correlations and impact cannot be explicitly drawn. However, before this project began, the pediatric services of the SGCH were limited. Based on such a situation,

the hospital buildings were developed and medical equipment was procured for pediatric physiotherapy enabling comprehensive medical services through this project. As a result, the medical standard has risen[16]. The project is therefore presumed to have played a role in the reductions of ① and ②.

(Reference) Table 5: Infant Mortality Rate and Under-Five Mortality Rate
Comparisons of Pakistan Nationwide and Sindh Province
Before the Project Commencement (2009) and After Completion (2018)

(Unit: per 1,000 live births)

		2009	2018
① Infant Mortality Rate	Pakistan (nationwide)	70	57 (declined by 18.6%)
	Sindh Province	87	69 (declined by 20.7%)
② Under-Five Mortality Rate	Pakistan (nationwide)	78	62 (declined by 20.5%)
	Sindh Province	100	74 (declined by 26.9%)

Source: JICA document, the World Bank, Statista.com, Redefining Primary Healthcare (NGO) document

[16] Through the interviews with the SGCH and NICH, comments such as the following were received: "There are many congenital malformation and infantile paralysis cases in Pakistan. Physiotherapy is extremely important at a children's hospital." With the procurement of medical equipment for pediatric physiotherapy, the hospital is presumably responding to congenital malformation and infantile paralysis in a better manner compared to before the start of the project.

Box. (Reference) The SGCH's Response to COVID-19

At the time of the ex-post evaluation (as of the end of June 2020), COVID-19 is a critical issue for Pakistan. The SGCH is not a designated COVID-19 treatment facility intended to treat patients who test positive. Although no patients have been suspected to be positive for COVID-19 until today, the hospital has two isolation rooms with 10 beds in case suspected patients are identified. In addition, medical personnel are kept up to date with the information and the government's instructions concerning COVID-19 measures on a weekly basis, and are fully prepared to engage in medical work. The hospital also makes efforts to provide information to its patients (children 12 years old or younger) and their parents as needed. Many people are anxious about COVID-19 in Karachi City due to its large population. Moreover, with the economy slowing down, parents of the patients (children) are assumed to have reduced incomes. Therefore, the existence of the SGCH providing quality medical services for free is presumably comforting to patients who do not have to fear for their health and to parents who do not have to pay for quality treatment.

Photo 7: Medical Staff with COVID-19 Prevention Measures at the SGCH

3.3.2.2 Other Positive and Negative Impacts

1) Impact on the Natural Environment

This project was expected to have minimum undesirable influences on the environment based on the *JICA Guidelines for Environmental and Social Considerations* (adapted in April 2010). The Environmental Impact Assessment (EIA) was not necessary for a medical facility development such as this project, as it only applies to manufacturing facilities such as factories.

It has been confirmed through the questionnaire, interviews with the SGCH and site visits to

the areas surrounding the hospital, that there was no negative environmental impact (including noise, vibration and negative influence on the ecosystem) during the implementation of the project or after project completion. Similarly, there had been no complaints from the residents near the hospital.

With regard to the environmental monitoring system at the SGCH, the Quality Assurance Team and the Administration Department are responsible. The monitoring duties include managing medical waste, controlling infections, checking the status of cleaning and maintenance of the medical equipment. As for medical waste management, a waste management plan has been formulated, and as per the policy of the Waste Management Committee, waste is properly sorted and disposed of by the cleaning staff. The hospital has signed a service agreement with the Karachi Metropolitan Cooperation, according to which medical waste is collected, disposed of/burnt by the cooperation every other day. On the other hand, liquid medical waste and laboratory drainage are discharged directly to the sewage system[17]. According to the hospital, they have no treatment facility for liquid waste, and it would be very costly to contract an external company such as a medical waste liquid collection service provider. At the time of the ex-post evaluation, no problems have been reported in the proximity of the hospital. There have been no complaints from the neighbors nor has there been a negative impact on the ecosystem. Nevertheless, medical and laboratory waste needs sterilization and the issue requires immediate attention. According to the hospital and the city government of Karachi, a discussion has begun to establish an appropriate mechanism for treating medical and laboratory waste liquid (as of the end of June 2020). However, a concrete measure has to be examined.

2) Resettlement and Land Acquisition

This project did not require resettlement or land acquisition. As the project site is located within the premises of the SGCH, there was no need to acquire new land or to request resettlement.

< Effectiveness and Impact>

The quantitative effect indicators to measure effectiveness, such as “number of inpatients”, “number of NCU inpatients”, “number of biochemistry tests”, exceeded the targets. In addition, although they are reference indicators, “number of surgeries and treatments using the operating

[17] According to the SGCH and the Health Department of the Government of Sindh, there is no regulation in relation to medical wastewater in Karachi City and most medical facilities are discharging it into the sewage line directly. Whilst they say it almost meets the country’s standard, no data have been collected.

rooms" and "usage of the diagnostic imaging device" significantly increased compared to before the project. This indicates that the facility and equipment developed through this project are being utilized. The qualitative interviews confirmed the improvement of medical services in this hospital. In addition, it can be concluded that this project is contributing to the enhancement of the referral system as well as to the improvement of the pediatric services of Karachi City as a whole. Based on the above, effectiveness and impact of the project is evaluated as high.

3.4 Sustainability (Rating: ③)

3.4.1 Institutional/Organizational Aspects of Operation and Maintenance

The executing agency of this project is the Health Department of the Government of Sindh. The Government of Sindh decided to utilize PPP and the private sector's know-how to achieve efficient operation and solid cost management of the SGCH. As a result, the PEI took control of the management[18]. The PEI's organizational policy is "to provide cost-effective or free medical services using the latest facilities, and to reduce the burden of patients through the placement of highly qualified medical staff"[19]. According to the Health Department of the Government of Sindh and Karachi Health Office, there is no problem with the operation capability of the PEI[20].

Table 6 shows the plan and actual number of medical staff at the SGCH at the time of the planning, as well as at the time of the ex-post evaluation. There are more staff members at the time of the ex-post evaluation (2020) because the PEI has responded to the increasing number of patients, surgeries and treatments in a timely manner. The Health Department of the Government of Sindh and the PEI commented: "It is imperative to secure medical staff so that we can provide quality medical services that are needed. More staff will be needed as we continue to expand the inpatient department (hereinafter referred to as IPD) and OPD in the future. The hospital is

[18] The Government of Sindh and the PEI agreed that the PEI would manage the SGCH "for a period of 10 years from 2016". The selection criteria included relevant experiences and financial capability, based on which the PEI among a few others was selected after an evaluation by the Government of Sindh. A legal basis for the selection and management through PPP is the Government of Sindh PPP Act, 2010. The PPP management contract is extendable, subject to the evaluation of the operation status and performance. At the time of the ex-post evaluation, a decision has not yet been made regarding the operation arrangements after 2026, the end of the 10-year agreement.

[19] The PEI is a nonprofit organization working at a policy level as well as at a community level. Since its establishment in 2002, the organization has specialized in areas such as healthcare, health, education, nutrition, gender and poverty reduction, carrying out activities for social development of low-income communities. It often works with governmental organizations in different localities and has carried out a wide range of activities. (For more information, refer to its website: http://peipk.com/.)

[20] Both the Health Department of the Government of Sindh and Karachi Health Office supervise PEI's work. The PEI submits monthly reports, while these two governmental bodies inspect the hospital periodically to monitor the status of the operation and management. (The Health Department of the Government of Sindh is higher in the governmental structure than the Karachi Health Office. The former overseas the entire province, while the latter overseas the health issues of the entire city. As will be discussed in "3.4.3 Financial Aspects of Operation and Maintenance", the SGCH's operation and maintenance budgets are allocated by the Government of Sindh, while the supervision is carried out by both the provincial and city offices.)

considering increasing the number of staff for a more stable operation." In addition, it was confirmed through answers to the questionnaire, interviews with persons in charge, and the site inspections, that the right medical person is placed in the right place while the medical equipment was sufficiently utilized by the staff.

Table 6: Changes in Number of Medical Staff at the SGCH

	Prior to Project Commencement (2012)	At the Time of the Ex-Post Evaluation (2020)
Doctor	56	136
Paramedic / Nurse	55	245
Management	37	92
Total	148	473

Source: JICA document, answer to the questionnaire

With respect to the maintenance of the developed IPD, OPD and NCU facilities and the procured medical equipment, staff in charge of maintenance management (medical technologists) do the rounds and conduct preventive maintenance, diagnosis, operational status checks, and periodic inspections. However, matters that require specialist knowledge and cannot be attended to by these members of staff (as well as large-scale inspections and repairs) are outsourced to the manufacturers or the agents of medical equipment. Therefore, the maintenance system of the SGCH, including the outsourcing option, has been functioning. No problems have been reported in this regard.

Based on the above, it is assumed that there are no major problems in the systematic or organizational aspect of the operation and maintenance at the time of the ex-post evaluation.

3.4.2 Technical Aspects of Operation and Maintenance

The interviews with medical staff of the SGCH confirmed that the hospital's staff had ample medical work experience and were highly aware of the importance of medical equipment maintenance[21]. In fact, the right staff with extensive experience were placed at the right places. The interviews also confirmed that the staff were highly knowledgeable about and accustomed to outsourcing maintenance of medical equipment to manufacturers and agents. In addition, as

[21] Medical equipment is maintained based on the Standard Operating Procedures (SOP) developed by the Government of Sindh. It was checked that the manual relating to the operation and maintenance is placed in each department in the SGCH and is utilized as needed.

discussed in "3.3.1.1 Quantitative Effects (Operation and Effect Indicators)", the PEI has been recruiting pediatricians from outside in order to better satisfy the needs of outpatients and inpatients.

Training for the medical staff is held periodically. In 2019, for example, a wide range of themes were covered by the training, such as the response to infantile asthma, the role of cefotaxime sodium in community-acquired pneumonia, improving communication skills based on a patient's first concept, the role of genetics, the response to acute flaccid paralysis (AFP), chest X-ray diagnosis, the response to burns, vitamin D deficiency disease. Each training is attended by 20-40 staff members. In addition, on-the-job training is given to newly recruited staff, and information is shared with a view to improving the medical examination and treatment techniques.

Based on the above, it can be judged that there are no major problems in relation to the technical aspect of the operation and maintenance of this project

3.4.3 Financial Aspects of Operation and Maintenance

Table 7 shows the changes in SGCH's operation and maintenance budget in the last four years. The operation budget is used to cover costs related to administration, salaries, utilities and communication, while the maintenance budget is used to maintain the facilities and medical equipment[22]. The source of the fund is the Government of Sindh's budget.

Table 7: Changes in Operation and Maintenance Budget for SGCH

(Unit: Pakistani rupees)

Item	2016/17 *Note 1	2017/18	2018/19 *Note 2	2019/2020
Operation Budget	186,275,518	347,406,104	88,478,832	755,874,374
Maintenance Budget	8,080,757	5,437,870	2,862,905	4,147,200
Total	194,356,275	352,843,974	91,341,737	760,021,574

Source: The Health Department of the Government of Sindh

Note 1: The accounting year of Pakistan starts in July and ends in June. Budgets are prepared accordingly, thus the year is displayed this way.

Note 2: The actual numbers for the first half of 2019 (January-June 2019) is being audited at the time of the ex-post evaluation (March 2020), thus these numbers only reflect that of half a year (July-December 2018).

With respect to the changes in the operation and maintenance budgets in the past four years, the budget increased from 2016/2017 to 2017/2018 while it decreased in 2018/2019. This is because: ①the numbers shown in 2018/2019 only cover half a year (July-December 2018) as the

[22] The operation maintenance budgets discussed here are allocated budgets and not actual expenses. The data on expenses could not be obtained.

other half is being audited at the time of the ex-post evaluation (March 2020)[23], ②the allocation of July-December 2018 budget was delayed by the Government of Sindh, which resulted in a temporary confusion. According to the Health Department of Sindh Province, ② was a temporary problem and that budget will be allocated as per the need, taking into consideration the increasing number of hospital beds and patients. Further increases are likely considering that the number of OPD patients significantly increased from the previous year and the average occupation rate of the IPD is 95%. In reality, the budget for 2019/2020 is greater than the previous year or the year before that. A person in charge at the SGCH commented: "Every year, sufficient and necessary budgets are allocated for the operation and maintenance works. The hospital side requests the budgets, and the provincial government reviews it before determining the allocation. No maintenance work has been delayed due to a budget shortage." With respect to the decreasing maintenance budget from 2016/2017 to 2017/2018, the same person in charge commented: "As 2016/17 was right after the commencement of the works, we needed a large amount to manage the facilities. On the other hand, the necessary budget was allocated generally for 2017/2018." In addition, it was mentioned that the distinction between the operation budget and the maintenance budget was not clear at that time and that the numbers could not be compared to the previous year or the following year. At the time of the ex-post evaluation, maintenance works have not been delayed due to a budget shortage as mentioned above. Therefore, it is concluded that there are no major problems in the financial aspect of the operation and maintenance.

3.4.4 Status of Operation and Maintenance

At the time of the ex-post evaluation, it is the SGCH's staff who carry out preventive maintenance, diagnosis, operational status checks and periodic inspections of the medical equipment procured by this project. Large-scale inspections and repairs requiring specialist knowledge are being appropriately managed by outsourcing them to external manufacturers or agents. The hospital staff maintain facilities such as IPD, OPD and NCU. As mentioned earlier, large-scale maintenance and matters requiring specialist knowledge are outsourced to external construction companies. In principle, maintenance of medical equipment follows the Standard Operation Procedures (SOP) developed by the Government of Sindh. While frequency of maintenance depends on the type and service life of the item, based on the medical equipment ledger it was confirmed that periodic inspections and maintenance was being properly conducted.

[23] This means that the period January-June 2019 is being audited and not included in the figure.

The SGCH does not always procure or store medicine and spare parts of their medical equipment. In principle, they are not always stocked; private service agents visit the hospital regularly and replenish or replace items as needed.

During the field survey, no major problems were found in relation to the operational status of the facilities or the utilization status of the medical equipment. No items, including large pieces of equipment, were left unattended or unrepaired. In addition, it was also confirmed that all facilities such as IPD, OPD and NCU were kept clean.

Based on the above, no major problems have been observed in the institutional/organizational, technical and financial aspects or relating to the current status of the operation and maintenance system. Therefore, the sustainability of the project effects is high.

Photo 8: Inside the SGCH (Lobby)

Photo 9: Inside the IPD

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The SGCH provides secondary medical services in Pakistan's largest city, Karachi. This project aimed to expand the hospital thereby improving the pediatric medical services of the city. The *Poverty Reduction Strategy Paper* formulated by the Government of Pakistan advocated the need to protect the poor and the vulnerable, while the *Heath Sector Strategy* formulated by the Government of Sindh recognized the priorities to be neonatal and pediatric health, nutrition, polio eradication, infection control, etc. There is a continued development need to expand and update medical facilities in the city. Considering that this project was also in line with Japan's ODA policy, its relevance is high. With respect to efficiency, although the outputs and the project costs were mostly as per the plan, the project period slightly exceeded the initial plan due to a

deterioration in security in and around Karachi City. This affected progress at the time of the detailed design, after the project commenced. Therefore, efficiency of the project is fair. The quantitative effect indicators such as “number of inpatients”, “number of NCU inpatients”, “number of biochemistry tests”, exceeded the targets. In addition, although these are reference data, “number of surgeries and treatments using the operating rooms” and “usage of the diagnostic imaging device” significantly increased at this hospital, compared to the condition prior to this project; the facility and equipment procured by this project are being utilized. The qualitative interviews confirmed the improvement in the hospital’s medical services. Furthermore, it can be concluded that this project has also contributed to strengthening the referral system and improving the pediatric medical services of the city as a whole. Therefore, effectiveness and impact is high. With regard to sustainability, there are no major concerns in the institutional, technical and financial aspects of this hospital. There are no major problems in relation to the operation and maintenance status of the developed facilities or the procured equipment. Therefore, the sustainability of the effects achieved through the implementation of this project is considered to be high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

With respect to the treatment of liquid medical waste and laboratory drainage, while no major problems, complaints or negative influence on the ecosystem have been reported in the proximity of the hospital at the time of the ex-post evaluation, a risk to or influence on the natural environment is not completely ruled out. The SGCH needs to discuss this with Karachi City and the Health Department of Sindh Province to address the issue of treating liquid medical waste and laboratory drainage (including thorough disinfection) as soon as possible.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

(Necessity of Promptly Deciding on Management System After the Project Completion in order to Prevent Loss of the Project’s Benefits)

In the case of this project, the facilitiy and medical equipment were not utilized immediately

after the handover; the utilization finally began after the completion of the defect liability period (October 2016). It is because the Health Department of the Government of Sindh decided that an NGO would manage the hospital based on the PPP. It required considerable time for the Japanese side and the Pakistani side to check the management policy based on the PPP, as well as for the Pakistani NGO selection and internal procedures. It is usually the case that confirmation and procedures associated with a change in management policy take time. Whilst a careful response is needed, it is desirable that JICA identifies a post-completion management system for the recipient country and that the recipient country, as the party responsible for the actual management, promptly determines the post-completion management system to avoid losing the benefits of the project.