

The Republic of Mozambique

FY2019 Ex-Post Evaluation of Japanese Grant Aid Project

“The Project for Construction of Health Science Institute in Maputo”

External Evaluator: Katsunori Sawai, Global Group 21 Japan, Inc.

0. Summary

The project was implemented to newly construct the Health Science Institute in the Infulene district of Maputo City (*Instituto de Ciências de Saúde de Maputo*, hereinafter referred as “ICSI”) and to supply the necessary equipment, in addition to the existing institute in Maputo (hereinafter referred as “ICSM”), with the objective of improving the training circumstances for mid-level health care professionals, thereby contributing to improving the quality of health medical services through the expansion of health care professionals who have mastered the appropriate skills. In Mozambique which had serious problems regarding the shortage of health care professionals, the training of health care professionals was an important issue at the times of ex-ante as well as ex-post evaluation, so the project was highly consistent with the development policy and needs. It also corresponded to the Government of Japan’s aid policy at the time of planning, which emphasized support in the health sector. Therefore, the relevance of the project is high. The project scope was almost realized as planned and the cost and period were within the plan. Therefore, the project efficiency is high. As for the operation and effect indicators set in the plan, the number of graduates in 2019 from the odontology and the equipment maintenance courses achieved the target, and the number of classes per classroom in ICSI and ICSM was also improved very much. However, since the Ministry of Health (hereinafter referred as “MOH”) aims to decrease the number of operated classes and to organize 20 students per class based on a policy of “improving the quality of education”, the facilities designed on the assumption of 30 students per class are not fully utilized, and the overall number of graduates in ICSI and ICSM does not reach the target. Therefore, the project effectiveness and impacts are fair. As for the operation and maintenance, some problems can be partly recognized in each aspect of institution/organization, technique, finance and status. It is necessary to provide continuous training for the teachers, resolve the perennial budget shortages, secure teaching materials and consumables, install a well water sterilizer, connect to the internet and so on. Therefore, the project sustainability is fair. Considering the above, this project is evaluated to be satisfactory.

1. Project Description



Project Location



Auditorium & Water Tower

1.1 Background

The health and medical system in Mozambique was extremely weak and one of the reasons was a serious shortage of health care professionals. Since the early 1990s, after the end of civil war in Mozambique, the government had continuously promoted training of health care professionals. As a result, the number of health care professionals more than doubled during the 10 years from 2000 to 2010 and the number of doctors, nurses and midwives per 100,000 population became 46 in 2010 and was expected to be 65 in 2015.¹ However, it did not reach the level of 230 recommended by the World Health Organization (WHO). Therefore, the further expansion of health services and increase in the number of necessary health care professionals remained big issues in Mozambique.

The Health Science Institutes (*Instituto Ciências de Saúde*, hereinafter referred as “ICS”), which mainly train mid-level health care professionals, were located in four main cities, namely Maputo, Beira, Nampula and Quelimane, and ICSM was the largest one in the country. However, after the Higher Institute of Health Sciences (*Instituto Superior de Ciências de Saúde*, hereinafter referred as “ISCISA”) started to share the ICSM facility in 2004, ICSM could use only six classrooms, humanistic and multidisciplinary laboratories and one PC² room for more than 1,000 students. It meant that the facilities and equipment in ICSM were remarkably insufficient, so ICSM could not offer better education with emphasis on practical training and this affected the quality of education.³

Against the background mentioned above, the Government of Mozambique requested Japanese grant aid to newly construct ICSI and to supply the necessary equipment in order to improve and strengthen the training for mid-level health care professionals. Then, the project was implemented.

¹ See “Health Sector Review 2012”, MOH.

² The desktop computer.

³ See “Preparatory Study Report on The Project for Construction of Health Science Institute in Maputo” by JICA, January, 2014.

1.2 Project Outline

The objective of this project is to improve the training circumstances for mid-level health care professionals by newly constructing ICSI and supplying the necessary training equipment, thereby contributing to improving the quality of health medical services in Mozambique through the expansion of health care professionals who have mastered the appropriate skills.

Grant Limit / Actual Grant Amount	(Detailed Design) 84 million yen / 83 million yen (Project) 2,071 million yen / 2,069 million yen
Exchange of Notes (E/N) Date /Grant Agreement (G/A) Date	(Detailed Design) January 2014 / January 2014 (Project) June 2014 / June 2014 (Additional Grant) July 2015 / July 2015
Executing Agency	Ministry of Health
Project Completion	July, 2016
Target Area	Infulene district in Maputo
Main Contractor(s)	(Construction) Dai Nippon Construction (Equipment) Nissei Trading Co. Ltd.
Main Consultant(s)	Matsuda Consultants International Co. Ltd./ INTEM Consulting Inc. (JV)
Preparatory Survey	February 2013 – January 2014
Related Projects	<ul style="list-style-type: none"> ➤ The Project for Strengthening Pedagogical and Technical Skills of Teachers of Health Training Institute (2012–2016) ➤ The Project for Strengthening Pedagogical and Technical Skills of Health Personnel in Mozambique (ProFORSA II) (2016–2019) ➤ The Project for Improvement of Infrastructure and Equipment of Training Schools for Health Personnel (Grant Agreement in 2008) ➤ Japan Overseas Cooperation Volunteers (JOCV) (2013–)

2. Outline of the Evaluation Study

2.1 External Evaluator

Katsunori Sawai, Global Group 21 Japan, Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: September 2019 – November 2020

Duration of the Field Study: January 15, 2020 – February 6, 2020

2.3 Constraints during the Evaluation Study

As for “improving the quality of health and medical services” as the project impact, it might be integrated into “patients’ feeling of satisfaction”, so the evaluator tried to conduct interview survey of patients for the qualitative analysis. However, since it seemed that patients were more interested in clinical matters, significant interviews about the health and medical services in a broad sense were limited.⁴

3. Results of the Evaluation (Overall Rating: B⁵)

3.1 Relevance (Rating: ③⁶)

3.1.1 Consistency with the Development Plan of Mozambique

In *the National Development Plan* (2010-2014) of Mozambique, human and social development including the health sector was recognized as one of the main issues for comprehensive economic growth and poverty reduction. In addition, human development in the health sector was a priority policy in *the Strategic Plan in Health Sector (Plano Estrategico do Sector Saúde*, hereinafter referred as “PESS”) (2013-2017), while *the Human Resource Development Plan in Health Sector* (2008-2015) raised four pillars, namely 1) organization of services and regulatory framework, 2) management skills at different levels, 3) distribution, motivation and retention of health care professionals, and 4) capacity of the initial education network and continuous training. The construction plan of ICSI was included into activities related to initial education.

At the time of ex-post evaluation, priority No.2 in *the Five Year Program* (2015-2019) says “developing human and social capital”, while the strategic objectives include “expand access and improve the quality of health services” and “reduce various diseases”. For that, the national health services would be expanded by increasing health care professionals. This policy can be recognized in *the National Development Strategy* (2015-2035) as well. PESS (2014-2019) renewed under this superior policy raised “better health services” and “reform agenda (decentralization)” as important pillars to tackle the big issue of fragile health sector and set seven objectives such as “increase access and utilization”, “improve the quality and humanization”, “reduce inequalities”, etc. Furthermore, the revised *Human Resource Development Plan in Health Sector (Plano Nacional de Desenvolvimento dos Recursos Humanos Para a Saude*, hereinafter referred as “PNDRHS”) (2016-2025) stated the strategic objectives of: 1) increase the availability and equity of competent and committed health professionals, 2) retain the health professional field at the medium level and in the primary network, 3) raise the level of satisfaction, competence and commitment of health professionals and 4) support the

⁴ “Quality of Health and Medical Services” may be expected in a different way by each staff in charge of clinical matter and administration and by each patient. According to Tomita, it can be divided into “clinical quality” and “service quality”, and it can be considered that when the clinical quality is better the satisfaction of patients is higher. However, it should be noted that the needs of patients are various. (Kenji Tomita, “Medical Quality and Service Quality”, *The Doshisha Business Review* Vol. 63, No. 1&2, July 2011)

⁵ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁶ ③: High, ②: Fair, ①: Low

implementation of a renewed legal and institutional framework.

As mentioned above, the Government of Mozambique emphasized securing human resources in the health sector both qualitatively and quantitatively at the time of the project planning as well as the ex-post evaluation. Therefore, the project is consistent with the development policy in Mozambique.

3.1.2 Consistency with the Development Needs of Mozambique

As for the Millennium Development Goals (MDGs) No.4 (Reduce Child Mortality) and No.5 (Improve Maternal Health), the under-5 mortality rate was 87.2 per 1,000 live births in 2013 and 72.0 in 2017, and the maternal mortality ratio was 480 per 100,000 live births in 2013 and 489 in 2015 respectively in Mozambique. Those were at the lower level among neighbouring countries.⁷ The Sustainable Development Goals (SDGs), for which 2030 is the target year, establish the target No.3 “Good Health and Well-Being” and the issues of “Reduce Child Mortality” and “Improve Maternal Health” are continuously addressed. It also advocates increasing the recruitment, development, training and retention of the health workforce. It means that the project objective also corresponds to the SDGs.

The absolute shortage of health care professionals in Mozambique is, however, very serious. PNDRHS (2016-2025) set the indicators shown in Table 1 regarding human resource development in main areas of the health sector. According to those, although the demand for health care professionals is very big it is difficult to train the necessary number of professionals in each area due to the shortage of facilities, budget, teachers and the necessity to ensure quality of human resource. The same situation will continue in the future.

Table 1: Human Resource Development Plan in Health Sector

	Number of Necessary Staffs			Actual in 2015	Number Planned	
	2015	2020	2025		2020	2025
Mid-level Health Care Professional (Rate of Sufficiency)	47,725	57,654	68,638	15,714 (33%)	27,415 (48%)	38,986 (57%)
Nurse (per 100,000 People) (Rate of Sufficiency)	10,988	14,487	18,302	6,943 (27.0) (63%)	8,998 (30.7) (62%)	11,153 (33.6) (61%)
Midwife (per 100,000 People) (Rate of Sufficiency)	7,993	9,852	11,934	5,159 (48.3) (65%)	6,488 (54.1) (66%)	7,543 (56.3) (63%)
Pharmacist (Rate of Sufficiency)	3,639	4,398	5,284	1,831 (50%)	2,511 (57%)	3,325 (63%)
Dental Technician (Rate of Sufficiency)	2,536	2,913	3,260	467 (18%)	689 (24%)	926 (28%)

Source: PNDRHS (2016-2025)

⁷ See WHO Global Health Observatory 2015, 2019.

Currently, nine ICSs and nine training centers are operated as public institutes in Mozambique, and there are also 25 private training institutes. Owing to the fact that the facility of ICSI is the largest among them and has sufficient laboratory equipment, ICSI can take a core role in training mid-level health care professionals.

On the other hand, ICSM shares the building with ISCISA as it was. ICSM can use six classrooms now and another three classrooms are available out of building. When there were more classes, space was allotted from the Central Hospital, which is adjacent to ICSM. The laboratory is also shared with ISCISA.

Therefore, the training of health care professionals is urgently needed both qualitatively and quantitatively and it can be said that the project is consistent with the development needs in Mozambique.

3.1.3 Consistency with Japan's ODA Policy

In the Country Assistance Program for Mozambique in 2013, human development was one of key issues and assistance to the health sector was located in the basic health improvement program. Also, the Japanese government declared in TICAD V⁸ in June 2013 to offer 50 billion yen of support to health sector and to train 120,000 health workers. The project realized this commitment.⁹ Accordingly, the project corresponded to Japan's ODA policy for Mozambique in the planning stage.

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

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

The first tender for construction under Japanese aid was cancelled because the tender price was above the ceiling. In the process of preparation of re-tender, it was deemed appropriate to exclude the component of male dormitory to adjust the budget. However, due to the sudden change of exchange rate¹⁰ during rearrangement of the tender conditions, it was decided to exclude the components of teachers' house and the corridor not directly linked to the educational activities. At this point, since it was difficult procedurally to increase the amount of Japanese aid, these changes were inevitable. After that, since MOH was confronted with budgetary pressure due to heavy floods in early 2015 and could not find another financial source for construction of the male dormitory, MOH requested it to the Government of Japan again and the revised E/N and G/A were concluded to increase the amount of grant aid. Although minor

⁸ The 5th Tokyo International Conference on African Development

⁹ Press release "Exchange of Notes concerning Grant Aid to Mozambique", Ministry of Foreign Affairs, Japan, Jan.12, 2014.

¹⁰ Average monthly exchange rate was 1USD=108.07Yen in September 2014 and 1USD=117.20Yen in November 2014.

changes of design were applied during implementation, construction was completed as planned in the revised G/A.

JICA understood that the teachers' house and the corridor, which were excluded from the scope of Japanese aid, must be constructed under the responsibility of MOH. However, those components have not been realized. And there is no concrete schedule to do so in near future. The understandings of MOH at the time of ex-post evaluation was, "the teachers' house and the corridor would be constructed when the budget was available, and it was not required to

Table 2: Project Outputs (Plan and Actual)

Plan (Revised Grant Agreement on July, 2015) ¹¹	Actual (turnover on July, 2016)
<p>【Works by Japanese Side】</p> <ul style="list-style-type: none"> ➤ Total floor area : 8,903.40 m² ➤ 2 Buildings for Laboratory & Classroom (2,228.58 m²) ➤ Building for Teachers' room & Classroom (1,128.16 m²) ➤ Building for Library & Administration 1 (1,023.65 m²) ➤ 3 Toilet facilities (320.54 m²) ➤ Auditorium (514.95 m²) ➤ Cafeteria (649.25 m²) ➤ 2 Student dormitories (Male/Female, totally 2,790.48 m²) ➤ Car garage & Guardroom (totally 174.00 m²) ➤ Water tower (21.29 m²) ➤ Water tank, Electric room (52.50 m²), Flagpole, Septic tank 	<p>【Works by Japanese side】</p> <p>As planned.</p>
<p>【Works by Mozambican side】</p> <ul style="list-style-type: none"> ➤ Teachers' house (apartment house for 4 families, 481.60 m²) ➤ Corridor (386.25 m²) ➤ Clearance of existing facilities, trees, etc. in the site ➤ Construction of wall on border, ditch (along the road), gate ➤ Construction of access road ➤ Setting internet equipment & LAN facility ➤ Others (furniture, office materials, dishes, clothes, etc. 	<p>【Works by Mozambican side】</p> <ul style="list-style-type: none"> ➤ Clearance of existing facilities, trees, etc. in the site ➤ Construction of wall on border, drainage (along the road), gate ➤ Construction of access road ➤ Others (furniture, office materials, dishes, clothes, etc.
<p>【Equipment】</p> <ul style="list-style-type: none"> ➤ For a humanistic laboratory ➤ For a multidisciplinary laboratory ➤ For an odontological laboratory ➤ For a laboratory of equipment maintenance ➤ For the facility operations 	<p>【Equipment】</p> <p>As planned.</p>

Source: documents provided by JICA

¹¹ As for "Plan" to evaluate the project efficiency, it is obedient to JICA's policy that is "the project scope, cost and period of the time when additional grant aid extended shall be utilized as the project plan, because those are recognized as justifiable and reasonable changes by conclusion of the revised G/A.

complete them within the project period”. Since there was no confirmation letter about this changed scope between JICA and MOH, it seems that the communication between the two sides were hindered. Therefore, in this ex-post evaluation, it is considered that the teachers’ house and the corridor should be completely removed from the overall project scope. The fence works, gate works, and entrance paving road works, which were borne by MOH, were not finished at the time of project completion, but were implemented immediately after that. Connecting to the internet was not realized due to the budget shortage. As mentioned above, the works borne by MOH were mostly completed as planned although some components have still not been implemented.

As for the procurement of equipment, units or specifications were revised according to the design changes. Even after the detailed design, some items of equipment, such as projector and PC, etc., were subject to model changes due to suspension of production by the manufacturers. However, such changes are deemed to be very minor and the equipment was delivered without any changes from the plan of revised G/A.

3.2.2 Project Inputs

3.2.2.1 Project Cost

The first tender for construction borne by Japanese aid was cancelled because the tender price was above the ceiling, and the re-tender was conducted after removing the components of male dormitory, teachers’ house and corridor from the scope of Japanese aid. Thereafter, the construction of male dormitory was, as mentioned before, added in the project scope for Japanese aid and the revised E/N and G/A were concluded to increase the amount. As a result, the grant amount for construction borne by Japanese aid was changed from 1,635 million yen to 1,861 million yen, and the actual expenditure became 1,860 million yen, which was within the plan.

The cost to be borne by the Mozambican side was estimated as 326 million yen according to the JICA documents when the additional grant aid was decided for construction of the male dormitory. However, such an amount of 326 million yen including the teachers’ house and the corridor was not recognized by MOH. According to MOH, the actual expenditure by Mozambican side on the project completion was about 5 million Mt.¹² for clearance of structures in the project area before construction started and 19.8 million Mt. during the project period, but it did not include the amount of bank charge or tax exemptions. Therefore, the total project cost for construction is unknown. Meanwhile, the cost of detailed design, project supervision and equipment supply was not changed very much.

As mentioned above, the project cost should be evaluated only with the cost borne by Japanese side. It means that the cost was within the plan.

¹² Currency in Mozambique “Meticais”. The exchange rate at the time of ex-post evaluation in January 2020 is 1 Mt. = 1.748 Yen.

Table 3: Project Cost (unit: Million Japanese Yen)

	Plan (Revised Grant Agreement on July 2015)	Actual (turnover on July 2016)
Detailed Design	84	83
Work Supervision	76	76
Construction	1,861	1,860
Equipment	134	133
Cost in Japanese side	2,155	2,152
Cost in Mozambican side	326	unknown
Total	2,481	—

Source: documents provided by JICA

3.2.2.2 Project Period

The detailed design was commenced two months after the conclusion of G/A and the first tender for construction borne by Japanese aid was opened in September 2014. However, the tender was cancelled due to the excess budget and the re-tender was done in January 2015. Although it took a time to review the project scope and cost during the preparation of re-tender, the construction was commenced in January 2015 as planned. When the re-tender was done, the schedules for preparatory work and for inspection before the turnover was reviewed realistically and the entire project period was changed from 15 months to 18 months. Eventually, the construction contract was concluded to complete the work in July 2016.

This contract was changed in July 2015 to add construction of the male dormitory. Since the contractor which had already done the female dormitory knew the material procurement and the construction management, it was possible to complete the work within the period set in the contract. Therefore, the direct appointment for the additional component was appropriate. As a result, although some of components implemented by Mozambican side were left over, the project was completed and transferred to the Mozambican side in July 2016 as planned in the revised G/A.

As for the procurement of equipment, the contract was concluded in January 2015 and the equipment was supplied and installed according to the construction schedule. The procurement of equipment was also completed in July 2016.

There was a concern in Mozambican side about budgetary allocation for tax exemption measure in the project planning stage. Actually, the refunding procedure of tax exemption was not implemented smoothly. Therefore, the contractor transferred the project after receiving a letter from MOH, which confirmed that MOH refunded the tax at the time of project transfer. Thereafter, the refund was completed.

As described above, the project cost was within the plan and the project period was as

planned. Therefore, efficiency of the project is high.¹³

3.3 Effectiveness and Impacts¹⁴ (Rating: ②)

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

(1) Operation and effect indicators set in the plan

Table 4 shows a comparison between the plan and actual in terms of the operation and effect indicators that were set in the project planning stage. The number of graduates in 2019 from the courses of odontology and equipment maintenance was 50 against 48 in the plan and 26 against 24 in the plan, respectively. However, based on the project background and objective, since those indicators just explain a part of the project effectiveness, another analysis on the graduates from ICSI and ICSM must be done as described below.

The number of classes per classroom collectively in ICSI and ICSM was 2.0 in 2019, almost as planned. However, since ICSI and ICSM are operated independently, the analysis should be separately done. The findings are as follows;

- 15 classrooms are available in ICSI. Since 24 classes were operated in 2019, the number of classes per classroom was 1.6. ICSI applied a system of two shifts per day, so the number of classrooms in ICSI was enough in 2019. It is said that the classrooms were full in the morning session but six classrooms were not used in the afternoon.

Table 4: Operation and Effect Indicators

	Baseline	Target	Actual		
	2013	2019	2017	2018	2019
	(ICSM only)	3 Years After Completion	1 Year After Completion	2 Years After Completion	3 Years After Completion
No. of Yearly Graduates from Dental Technician Course in ICSI	(0)	48	0	0	50
No. of Yearly Graduates from Equipment Maintenance Course in ICSI	(0)	24	0	0	26
No. of Classes per Classroom at ICSI and ICSM	(6.7)	2.0	2.2	1.9	2.0
(Reference) ICSI only	—	—	(0.9)	(1.2)	(1.6)
(Reference) ICSM only	(6.7)	—	(5.3)	(3.5)	(2.8)

Source: documents provided JICA, ICSI and ICSM

¹³ Since the teachers' house and the corridor which were expected to be implemented by the Mozambican side were considered to be excluded from the overall Project scope, those components are not evaluated as the subjects which should be completed within the Project period.

¹⁴ Sub-rating for Effectiveness is to be put with consideration of Impacts.

- In ICSM, the six classrooms are available. Since 17 classes were operated in 2019, it was 2.8 classes per classroom¹⁵, which did not reach the target. Since the number of classes per classroom in ICSM was 6.7 before the project implementation, the situation was improved very much.

(2) Graduates from ICSI and ICSM

In light of the project objective to expand mid-level health care professionals, it is important to compare the planned and the actual number of graduates from both ICSI and ICSM. As shown in Table 5, although the entire number of graduates exceeded the plan in 2017 and in 2018, it was limited to about 70% of the target in 2019. Moreover, the contribution of ICSM was large. The respective numbers of graduates from ICSI and ICSM are different from the planned number, and the reasons for this are considered as follows;

- On the assumption that some of the courses operated in ICSM would be transferred completely from ICSM to ICSI, ICSI planned on receiving students learning in ICSM. However, only courses of public nurse (preventive medicine) and odontology were actually transferred from ICSM, while courses for nurses, midwives, medical technicians, laboratory technicians and pharmacists, etc. remained in ICSM. The reasons were that MOH decided to reduce the number of classes for improvement in the quality of education.
- Although ICSI planned to receive students from the 2nd semester starting in July 2016, the facilities were not completed in time for that. In addition, time was required to recruit the teachers, the staff members, etc. to prepare for opening the institute. Eventually, ICSI was opened from the 1st semester starting in February 2017.

Table 5: Number of Graduates and Completed Classes in ICSI and ICSM

		Plan			Actual		
		2017	2018	2019	2017	2018	2019
ICSI	No. of Graduates	258	464	413	/	229	161
	No. of Completed Classes	10	18	16		9	7
ICSM	No. of Graduates	103	77	77	468	337	175
	No. of Completed Classes	4	3	3	19	13	9
Total	No. of Graduates	361	541	490	468	566	336
	No. of Completed Classes	14	21	19	19	22	16

Source: documents provided by JICA, ICSI and ICSM

¹⁵ ICSM has secured another three classrooms in another building. When these are taken into account, the number of classes per classroom becomes 1.9 in 2019.

- Although the number of courses operated in ICSI was as planned, the number of classes and students in ICSI fell below the plan. On the other hand, classes and students in ICSM were more than planned. (See Table 6)

As mentioned in (3) below, if the numbers of students in ICSI and ICSM continue to decrease in the future, it may be difficult to achieve the target number of yearly graduates.

(3) Numbers of courses, classes and students in ICSI and ICSM

Table 6 shows the comparison between the plan and the actual in ICSI and ICSM concerning the numbers of courses, classes and students. ICSI planned to operate 27 to 29 classes under nine courses¹⁶ with more than 800 students in 2017 and 34 to 37 classes with more than 1,000 students in 2018. This was based on the assumption that some courses such as those for nurses, midwives, medical technicians, etc., would be transferred from ICSM to ICSI. The number of courses was actually as planned, but the numbers of classes and students were much lower than the plan. The reasons are, as mentioned before, that MOH holds down the number of classes operated in ICSI, and MOH, in PNDRHS (2016-2025), set the targets shown in Table 7 to emphasize on the improvement in the quality of education. Although this project was planned with 30 students per class (30 students × 15 classrooms × 2 shifts = 900 students), PNDRHS (2016-2025) expected 20 students per class in 2020 and 16 in 2025. According to this target, the number of students in ICSI may be 600 (= 20 students × 15 classes × 2 shifts). Actually, the change in the number of ICSI students shown in Table 6 is in line with this target. Furthermore, MOH intends to change the system of two shifts per day to one shift per day from 2020 in order to enrich self-learning by students and opportunities for practical training. If it is applied, the number of students would decrease even more.

Table 6: Number of Courses, Classes and Students in ICSI and ICSM

		Plan			Actual		
		2017	2018	2019	2017	2018	2019
ICSI	No. of Courses	9	9	unsettled	9	9	9
	No. of Classes	27~29	34~37		14	18	24
	No. of Students	810~870	1020~1110		414	541	594
ICSM	No. of Courses	8	5		16	10	10
	No. of Classes	9~13	7~12		32	21	17
	No. of Students	270~390	210~360		851	524	362

Source: documents provided by JICA, ICSI and ICSM

¹⁶ ICSI operates nine courses, namely 1) nurse, 2) midwife, 3) medical technician, 4) public nurse (preventive medicine), 5) laboratory technician, 6) pharmacist, 7) equipment maintenance, 8) odontology technician and 9) nutritionist.

Table 7: Standards of Number of Students per Class

	2015 (Basis)	2020	2025
No. of Students per Class	30	20	16

Source: PNDRHS (2016-2025)

The improvement in the quality of education must be a very important issue and such a course of action is considered right. However, it is also a fact that the demand for human resources in the health sector is very big in Mozambique. A difficult issue concerns how to promote the policy with a balance between quality and quantity. Even if ICSI tries to increase the number of classes, there is the difficulty of ensuring the number of competent teachers and the budget restrictions. Therefore, this situation mentioned above will continue for a while.

(4) Dormitory use in ICSI

The situation concerning dormitory use in ICSI is shown in Table 8. At the beginning, the construction of dormitory was recognized as a very necessary component to receive the students transferred from ICSM and from all over the country for the courses of odontology, equipment maintenance, etc. Although the male dormitory was removed once from the scope of Japanese grant aid due to the financial restriction, it was realized with the additional grant aid. Notwithstanding that, the dormitory is not utilized well. According to the explanation by Mozambican side, it is because no students moved from ICSM and the number of students is limited for improvement in the quality of education. In addition, it becomes unnecessary for the students living in the local area to come up to Maputo for the training since public or private training centers are recently available in the local area. It is also difficult for ICSI to increase the number of students living in the dormitory due to the budget restrictions since ICSI fully supports their living expenses including meals. Since the dormitory building may be deteriorated if it is not utilized, it is necessary to improve the utilization rate with some measures, for example, permission to use the dormitory for students living in Maputo who suffers from inconvenience in coming to the institute or a review of a board and lodging charges, etc.

Table 8: Dormitory Use in ICSI

	2017		2018		2019	
	Male	Female	Male	Female	Male	Female
No. of Students	51	19	51	22	18	37
Total	70		73		55	
Rate of Occupation	23%		24%		18%	

Source: documents provided by ICSI

3.3.1.2 Qualitative Effects (Other Effects)

The following improvements in the educational environment are recognized.

- Since lectures can be visualized with the projectors set in each classroom, this gives a good impact to the practical training since students can easily conduct image training. The teachers have sufficient space in four teacher's rooms to prepare the lectures.
- The students are also satisfied with the study environment because they have enough time and space for self-learning in the PC room or the library.
- The teachers and students are basically satisfied with the laboratory equipment, which is the latest in Mozambique. The practical training hours can be ensured according to the curriculums prepared for each course. It is also highly evaluated that the internship system at the hospital has been improved.

However, the internet system is not available yet. It is effective as a tool for teachers and students to obtain information broadly. The efficiency of office work is also expected with the internet. As the demands from teachers and students is strong, it is desired to realize the internet system soon. Although it is good for them to receive the practical training in ICSI with the latest ones, it is also heard that students may get confused after graduation because the medical equipment used in hospitals is never the latest models.

3.3.2 Impacts

3.3.2.1 Intended Impacts

The impact expected from this project is “improvement in the quality of health medical services”. Based on the idea that it should be concluded to “patient's satisfaction”, the interview survey was conducted at two hospitals where the ICSI graduates were working.

Most of patients responded that there was basically no complaint about the health service, although waiting time were long to spend about a half day at the hospital and receiving medicines, and stocks of specific medicines were sometimes not enough. They also said that the nurses and other mid-level health care professionals were very kind and communicated with them very well. Although it seemed the patient's satisfaction was relatively high, there were certain constraints for the interviews. (See 2.3 Constraints during the Evaluation Study)

On the other hand, graduates from ICSI are highly valued by directors and doctors in the hospitals. Graduates master basic knowledge and skills and make feedback what they learned in ICSI for other colleagues in the hospital training activities. Therefore, the working motivation of other nurses is increased and this gradually contributes to the improvement of service quality in the hospitals.

However, at the present stage, where ICSI has produced a total of 390 graduates during three years' operation, it was difficult to evaluate “the improvement in the quality of health medical services” considered as the long-term project impact.

3.3.2.2 Other Positive and Negative Impacts

Since the land of ICSI was owned by MOH the resettlement or the land acquisition was not necessary. Drainage and treatment of waste materials are properly conducted in the operational stage and there are no complaints from the surrounding residents.

ICSI organizes community activities, such as preventive/sanitary guidance and the nutrition/cooking instruction for the surrounding residents every three months, and the teachers and students participate in these activities. For students on the public nurse (preventive medicine) course, since most of their work targets the community and they study how to teach the necessary knowledge to people, this is a good opportunity for them to practice on surrounding residents. The nutrition/cooking instruction is also welcomed by the people.

The technical assistance implemented by JICA, namely the Project for Strengthening Pedagogical and Technical Skills of Teachers of Health Training Institute (2012-2016) and the Project for Strengthening Pedagogical and Technical Skills of Health Personnel in Mozambique (2016-2019), aimed to ensure the quality of human development through the standardization of curriculums and teaching manuals, the improvement in capacity for pedagogy, and the monitoring for improvement in the quality of education. In fact, the review of curriculums has so far been done for four courses¹⁷. The curriculums of other courses will be revised successively and they will be utilized in ICSI. Also the National Vocational Training Authority (*Autoridade Nacional de Educação Profissional*, hereinafter referred as “ANEP”) under the Ministry of Science and Technology started a system to issue the qualification certificate by three grades, namely “A” for staff members who have no bachelor’s degree and have attended the training program, “B” for staff members who have graduated from university, and “C” for managers with the certificate B and the bachelor’s degree. As mentioned above, the effects of JICA technical assistance are being realized and are directly contributing to improving the educational quality in ICSI. (See 3.4.2 Technical Aspect of Operation and Maintenance)

As described above, this project has almost achieved the operation and effect indicators set in the plan. However, the total number of graduates from ICSI is only about 40% of the planned number and the facilities are not well utilized. In addition, it is difficult to evaluate the project impact, namely “improvement in the quality of health medical services”, for the time being. Therefore, effectiveness and impacts of the project are fair.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional / Organizational Aspect of Operation and Maintenance

Based on the policy of decentralization, the administration of ICSs or training centers was transferred in 2013 to the Health Department under each provincial government in which they

¹⁷ The courses of nurse, midwife, medical technician and public nurse (preventive medicine).

were located. Therefore, ICSI now belongs to the government of Maputo City¹⁸. The budget is allocated by the Ministry of Economy and Finance through the government of Maputo City and the staff members are also managed by the government of Maputo City. However, the facilities and equipment are still owned by MOH, and ICSI and ICSM are respectively operated as independent institutes. Since MOH instructs the number of courses, classes, and students every year to each ICS or training center, ICSI has no authority to decide them. As mentioned above, it is a fact that the present feature of decentralization has two pillars, i.e. the staff members and the budget controlled by the government of Maputo City and the actual operation by MOH.

The institution of ICSI has been operated generally with 100 staff members since 2017 when ICSI started its operation. This is about 70% of the planned scale. Considering there are fewer classes and students compared to the plan, the number of staff members must be at a minimum level. ICSI thinks that 138 staff members (of which 58 are full-time teachers) are ideal.

Table 9: The Number of Staff Members for Operation & Maintenance in ICSI (unit: persons)

	Plan	Actual			
		2016	2017	2018	2019
Director 1, Deputy Director 2	3	3	3	3	3
Full-time Teachers	60	8	47	45	44
Staffs in Administrative Section	32	5	27	27	21
Staffs in Service Section	51	3	27	27	22
Total	146	19	104	102	90

Source: documents provided by ICSI and JICA

On the other hand, PNDRHS (2016-2025) aims at the enrichment of full-time teachers as shown in Table 10. The number of full-time teachers per class was 1.83 and the full-time teachers per student was 1/9 in ICSI in 2019. Since those figures are a little lower than the targets, ICSI will be required to increase the teachers in the future. In that case, it may come to be an issue how to ensure the qualified teachers.

Table 10: Posting Full-time Teachers

	2015(basis)	2020	2025
Full-time teachers per class	2 teachers	2.5 teachers	4 teachers
Full-time teachers per student	1/15	1/8	1/4

Source: PNDRHS (2016-2025)

Based on the above, there are a few problems in regard to secure personnel in the institutional/organizational aspects in ICSI.

3.4.2 Technical Aspect of Operation and Maintenance

It was planned that ICSI would be operated by 146 staff members, of which 83 staff members

¹⁸ Maputo city is treated as a special ward, equivalent to the state government.

would be transferred from ICSM and another 63 staff members transferred within MOH, and then it was expected that ICSI would be operated by many experienced personnel. This assumed that personnel changes would be controlled by MOH. However, under the policy of decentralization, the government of Maputo City recruited staff members for ICSI, and as a result, about 90% of staff members were newly employed.

As for the teachers in ICSI, seven teachers were transferred from ICSM in the beginning, but only one teacher has remained. ICSI employed three teachers with master's degree, 11 with bachelor's degree and another 30 teachers with mid-level educational background, hence the level of ICSI teachers is not necessarily high.^{19 20} Therefore, ICSI positively conducts training for teachers. In December 2019, all required teachers attended lectures of course "A"²¹ in ANEP to improve their level of knowledges as well as the pedagogy. ICSI also makes an effort continually to improve the level of teachers such as pedagogical training among the teachers for one week at the beginning of each semester. In the equipment maintenance course newly established in ICSI, the teachers learned the pedagogy from the maintenance specialist dispatched from the Regional Health Development Center.

For the administrative staff members in the early stage of operation, the training and the workshop were implemented through the staff exchange with other institutes. So far, no problems are reported in operation.

In-hospital practical training is implemented mainly in three hospitals²² about 10 minutes by car from ICSI, and the training for the courses of odontology and equipment maintenance newly established in ICSI is also implemented smoothly. However, it was explained that, since it is preferable to implement in-hospital practical training in the morning when many patients are at the hospitals, it is necessary to coordinate the curriculum schedule.²³ Therefore, it is the fact that the in-hospital practical training is implemented while devising the timetable.

As for laboratory equipment for use in the equipment maintenance course, although the guidance on how to use it was done when introducing it, the teachers do not know how to use some items, such as Defibrillator Analyzer or Ventilator Function Tester. Therefore, those items are not utilized. Since JICA has been continuously supporting the health sector in Mozambique it is desirable that a relevant expert is able to guide them directly when the occasion arises.

The record of asset management in terms of facilities and equipment is available. The method of maintenance basically follows the manual. The periodic maintenance for PCs, refrigeration equipment, generators, etc. is implemented by outsourcing and the maintenance records are kept.

¹⁹ For full-time teachers in ICSM, 3 teachers with master's degree, 32 with bachelor's degree and 15 others.

²⁰ According to PNDRHS (2016-2025), although the share of teachers with bachelor's degree was 46% in 2015 it aims to improve this to 60 % in 2020 and 80% in 2025.

²¹ Training program for those who are not eligible for university graduation.

²² Jose Macamo Hospital, De Mavalane Hospital and Psiquiatrico De Infulene Hospital.

²³ The share of practical in-hospital training in the curriculum of each course is 52% for nurses, 45% for midwives, 29% for medical technicians, 25% for public nurses (preventive medicine), 31% for laboratory technicians, etc.

The staff members in charge of maintenance for equipment include teachers of the equipment maintenance course.

The accreditation system was introduced in 2019 and ANEP is now doing the screening of documents for eighteen public ICSs and training centers in total, including ICSI. Since the accreditation especially attaches importance to the quality of education, it often points out the issues of quality of education, curriculum and pedagogy. Since this accreditation system is quite effective in ensuring and maintaining the quality of education in the institute, the periodical accreditation should continue to be conducted in the future.

As described above, there are a few problems with the capacity of ICSI teachers in the technical aspect.

3.4.3 Financial Aspect of Operation and Maintenance

Table 11 shows the sources of ICSI finance. As mentioned before, the national budget is distributed by the Ministry of Economy and Finance through the government of Maputo City. The Global Fund, which is controlled by MOH, is an external fund contributed by some donors and allocated when the national budget is not enough. ICSI received it in the past three years. In addition, the Health Collaboration Center (*Centro de Colaboração em Saúde*, hereinafter referred as “CCS”) is an NGO working in the area around Maputo and is funded by some donors, mainly from the United States. Both Global Fund and CCS support some specific classes operated in ICSI. Since those funds are not always available or not a stable source for ICSI, the commitment of national budget is highly required as a stable source of finance.

Table 11: Financial Sources in ICSI (unit: 1,000 Mt.)

	2017		2018		2019	
	Budget	Actual Expenditure	Budget	Actual Expenditure	Budget	Actual Expenditure
National Budget	9,360	9,360	22,850	22,456	32,386	31,608
Global Fund	4,089	4,089	11,890	11,308	12,329	4,309
CCS	15,914	15,081	14,969	14,809	-	-
Other	185	-	3,084	3,034	1,481	-
Total	29,548	28,530	52,793	51,607	46,196	35,917

Source; documents provided by ICSI

Table 12 shows the actual expenses for operation and maintenance in ICSI. It was estimated as 27,781,000 Mt. (in 2013 basis²⁴) in the plan and the actual figure was 31,699,000 Mt. in 2019. That expense was almost the same level as in the plan when considering the inflation²⁵ and that the number of students is about two thirds of the plan during the operational period. However,

²⁴ The exchange rate in the Project planning stage in March 2013 was 1Mt. = 3.02 Yen and 1Mt. = 1.74 Yen on average in 2019.

²⁵ According to IMF World Economic Outlook Databases (October, 2019), the inflation rate was 2.56% in 2014, 3.55% in 2015, 19.85% in 2016, 15.11% in 2017, 3.91% in 2018 and 5.57% in 2019 (estimation as of October 2019)

there is a big difference between the requested budget and the expenditure, making it difficult for ICSI to conduct the desirable operation. This is substantiated by the interviews to teachers. The common issue was found to be budget shortages, as indicted below.

- In the odontology technician course, the operation cost is high because most of the materials and equipment must be imported;
- In the pharmacist course, alternative medicines are often used because it is difficult to procure the real ones;
- The supplementation of consumables used for practical training is not sufficient;
- No air-conditioner in the multidisciplinary laboratory may affect the materials or the examinations.

Table 12: Operation and Maintenance Cost in ICSI (unit: 1,000 Mt.)

	Plan	2017		2018		2019	
		Requested Budget	Expenditure	Requested Budget	Expenditure	Requested Budget	Expenditure
Personnel Expenses	20,570	58,651	14,932	43,474	22,271	49,995	26,000
Fuel & Lighting	841	5,410	1,008	4,385	1,563	4,893	1,631
Foods/Consumables	3,352	16,960	3,049	15,504	15,168	5,673	3,151
Maintenance for Facility/ Equipment	3,018	1,875	629	1,550	986	2,751	917
Total	27,781	82,896	19,618	64,913	39,988	63,312	31,699

Source: documents provided by ICSI

As described above, there are a few problems with the financial aspect for operation and maintenance.

3.4.4 Status of Operation and Maintenance

Since the facilities and equipment of ICSI were utilized for three years after the project completion, no serious damage was recognized, nor was it time to replace facilities and equipment. Therefore, the usual maintenance is conducted at present.

The installation of sterilizer, which was planned to be implemented by Mozambican side in the time of operation, because a colon bacillus was detected from the well water in the planning stage, has not yet been done due to the high cost. And since the well water contains salt, it may cause the corrosion or the rust on the facilities and equipment. These are top-priority issues to be improved before a specific damage is actualized. Therefore, the budget should be ensured to do it.

Although some PC equipment was stolen in December 2016, this damage has been already discharged. After that, ICSI has been thorough in locking each room, and patrols by a security company are adequately conducted. Currently, there are 23 PCs in the PC room, two PCs in the library where 10 PCs were planned to be set, and others are used for office work. Some PCs

were purchased with ICSI's own budget. As for the shuttle buses for practical training at hospitals, although three busses were supplied, one of them was kept in the MOH Service Center and has not yet returned to ICSI. Since the number of students was small from the beginning and the place for in-hospital practical training was relatively near ICSI, there were no major operational problems. The status of bus operation and maintenance is also properly recorded and managed. Some problems were also pointed out before, for example, the omission of cleaning the grease trap, the planting to protect the slopes of ditches, the removal of sand in ditches, furnishing curtains in each room, etc. ICSI is continuously trying to make improvements within the budget availability.

Based on the above, there are a few problems with the current status of operation and maintenance.

On the whole, some minor problems have been observed in terms of the institutional and organizational aspect, technical aspect, financial aspect and current status. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project was implemented to newly construct ICSI and to supply the necessary equipment, in addition to the existing ICSM, with the objective of improving the training circumstances for mid-level health care professionals, thereby contributing to improving the quality of health medical services through the expansion of health care professionals who have mastered the appropriate skills. In Mozambique which had serious problems regarding the shortage of health care professionals, the training of health care professionals was an important issue at the times of ex-ante as well as ex-post evaluation, so the project was highly consistent with the development policy and needs. It also corresponded to the Government of Japan's aid policy at the time of plan, which emphasized support of the health sector. Therefore, the relevance of the project is high. The project scope was almost realized as planned and the cost and period were within the plan. Therefore, the project efficiency is high. As for the operation and effect indicators set in the plan, the number of graduates in 2019 from the odontology and the equipment maintenance courses achieved the target, and the number of classes per classroom in ICSI and ICSM was also improved very much. However, since MOH aims to decrease the number of operated classes and to organize 20 students per class based on a policy of "improving the quality of education", the facilities designed on the assumption of 30 students per class are not fully utilized, and the overall number of graduates in ICSI and ICSM does not reach the target. Therefore, the project effectiveness and impacts are fair. As for the operation and maintenance, some problems can be partly recognized in each aspect of

institution/organization, technique, finance and status. It is necessary to provide continuous training for the teachers, resolve the perennial budget shortages, secure teaching materials and consumables, install a well water sterilizer, connect to the internet and so on. Therefore, the project sustainability is fair. Considering the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to MOH

- (1) Based on the policy to improve the quality of education, MOH instructs ICSI to operate with fewer classes and students than the project plan. As a result of that, the facilities of ICSI are not fully utilized. MOH should consider how to utilize the ICSI facilities more effectively by reviewing the operational policy of ICSI, including the operational condition of ICSM and the budgetary issue, taking into account of the balance between quality of education and human development needs.

4.2.2 Recommendations to ICSI

- (1) For a sound operation and maintenance, ICSI should continue to ensure the national budget through the government of Maputo City and strengthen the approach of using the donor fund held by MOH and others. The omission of water treatment system directly affects the health of ICSI staff members and students, and the salty water may damage the facilities and equipment. No air-conditioning in the multidisciplinary laboratory must affect the accuracy of the practices. In addition, the lack of internet connection does not contribute to the effective and efficient study for students and office works for staff members. Therefore, to implement adequate operation and maintenance continuously, it is important to allocate budget with clear priorities.
- (2) The number of classes and students is almost two-thirds compared to the plan in 2019, so the ICSI facilities are not utilized fully. Flexible discussions should be conducted about the effective utilization of facilities, including activities which ICSI can do at its own discretion. In addition, since the occupancy rate of the dormitory is very low, it may be a subject of discussion to change the policy, for example, allowing students living in Maputo City to stay in the dormitory in case where students feel inconvenience coming to the institute.

4.2.3 Recommendations to JICA

- (1) MOH is now applying a policy to improve the quality of education by decreasing the number of classes and students in the ICSs. As a result of that, the number of classes and students in ICSI falls below the plan and the ICSI facilities will continue to have spare capacity for quite a while. Therefore, considering this MOH policy, JICA should discuss with MOH about more effective utilization of the ICSI facilities and try to promote the

necessary measures.

4.3 Lessons Learned

(1) Responding to policy changes during the Project implementation

In the project, the facilities are not utilized as much as planned due to the policy change of the recipient country just before project completion, and this situation will continue in the future. As long as the policy change is justified, it is difficult to request the recipient country to modify it and it is neither realistic to change the project plan or the facility design just before project completion. Therefore, JICA should obtain the information about policy changes of the recipient country earlier and analyse how they will affect the on-going project. Then, JICA should consider how to utilize the facilities more effectively based on the policy changes through holding discussions with the recipient country.

(2) Improvement of direct communication with the project executing agency

In the project, some components were excluded from the project scope supported by JICA due to the upper limit of the grant amount. At that time, JICA understood that those excluded components should be implemented under the responsibility of executing agency within the project period. However, the executing agency recognized that the components were completely deleted from the entire project scope and they might be constructed when the budget was available. A document to confirm this matter was not exchanged between JICA and the executing agency. It can be said that there were discrepancies of recognition and communication between the two sides. In project supervision for JICA grant aid, the consultant assumes an important role. However, as for important changes in scope and incidental revisions to project cost, schedule, etc., JICA should communicate directly with the executing agency and exchange a document to confirm the basic agreement for project change management.