

Republic of Mozambique

Ex-Post Evaluation of Japanese ODA Grant Aid Project

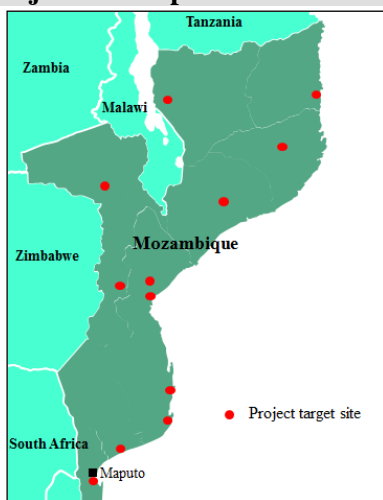
The Project for Improvement of Infrastructure and Equipment of Training Schools for  
Health Personnel

External Evaluator: Hisae Takahashi, Ernst & Young Sustainability Co., Ltd.

## 0. Summary

This project, improving facilities and providing equipment at health personnel training institutes/centers in Mozambique nationwide, is highly relevant to the Mozambique's development plan, which emphasizes the health sector in terms of fostering medical personnel and improving medical services, and its development needs as well as Japan's ODA policy. The size and number of classrooms and dormitories were expanded and the number of students and capacity of dormitories were increased at training institutes/centers supported by this project. In addition, multipurpose classrooms were constructed and practical educational equipment was provided, to increase the scope for practical lessons; enabling well-balanced education of theory and practice. Provided equipment including the PCs helped teachers in preparing classes and the number of medical personnel nationwide was boosted with the increase in graduates from training institutes/centers. From this aspect, the effectiveness and impact is high. Although the project cost was lower than planned, the project period was longer than planned. Hence, the efficiency of the project is deemed fair. In terms of operation and maintenance, the current status of facilities and equipment is generally good. Although there is no concern over the technical aspect of teachers, certain issues remain with regard to securing full-time teachers and future financial aspects. Accordingly, the project sustainability is fair. In light of the above, this project is evaluated to be satisfactory.

## 1. Project Description



Project Location



Constructed classroom (CFS Massinga)

## 1.1 Background

After the end of the civil war in 1992 and the reconstruction period supported by international donors, Mozambique has achieved record growth, with an average 9% increase in GDP between 2000 and 2004. However, the Mozambique's health sector showed seriousness of major health indicators compared to neighboring countries, such as, a maternal mortality ratio of 1,000 (per 100,000 live births) in 2000, under-five mortality ratio of 152 in 2004 and infant mortality ratio of 104 (per 1,000 live births) in 2004<sup>1</sup>. The government has faced huge challenges in expanding access to primary healthcare<sup>2</sup>, improving the quality of maternal and child healthcare, extending healthcare services to protect against HIV and other infections and increasing the required number of health personnel to respond to the abovementioned challenges. However, 13 nationwide training institutes/centers for health personnel<sup>3</sup> (ICS/CFS) face a shortage of the classrooms and dormitories needed to increase student numbers and the equipment and environment for conducting practical lessons, hence prompt expansion and improvement of ICS/CFS to deal with inadequate infrastructure and environment were needed.

Under the above circumstances, the government requested the Government of Japan to cooperate with the project for improvement of infrastructure and equipment for 12 ICS/CFS<sup>4</sup>, whereupon the Government of Japan agreed to provide support to construct facilities of classrooms, multipurpose classrooms and dormitories and also procure educational equipment for practical lessons at 12 ICS/CFS.

---

<sup>1</sup> Source: Basic Design Study Report

<sup>2</sup> Primary healthcare indicates the essential healthcare which is universally accessible to all in the community and maintained to provide based on the needs of each local condition.

<sup>3</sup> The training centers targeted in this project are those for health personnel mainly at an intermediate level (ICS) and basic level (CFS).

<sup>4</sup> Grant aid was provided to the remaining ICS Quelimane in 2004 to construct classrooms, a multipurpose classroom and dormitories and procure equipment.



Figure 1: Locations of target facilities

## 1.2 Project Outline

The objective of this project is to enhance healthcare service by improving the infrastructure and equipment of training institutes/centers for health personnel.

Grant Limit / Actual Grant Amount	1,045million yen / 973million yen
Exchange of Notes Date	July 2008
Implementing Agency	Ministry of Health, Department of Human Resource
Project Completion Date	October, 2010
Main Contractor(s)	Dai Nippon Construction
Main Supplier(s)	Ogawa Seiki Co., Ltd.
Main Consultant(s)	Matsuda Consultants International Co.,Ltd.
Basic Design	February – November 2007
Detailed Design	December 2007 – March 2008
Related Projects	JICA Technical Cooperation Project: “The Project for Strengthening of Capacity on Health Training Institutes”(2005-2008): Strengthen capacity of teaching skill of teachers of health training institutes, “The project for strengthening pedagogical and technical skills of teachers of health training institute” (2012 –

	<p>2015): Supporting efforts to improve the system for training health personnel</p> <p>Grant Aid Project: “The Project for Improvement of the Institute of Health Science of Quelimane”(2004): Construction of classrooms, practical lesson facility, operating facility, lecture hall, student dormitory and staff quarters and equipment procurement</p> <p>Other international institutions, aid organizations: establishment of common funds by sector under sector-wide approach support. The project for support to maintain training centers by the Canadian International Development Agency, Italian Development Cooperation, Danish International Development Cooperation Agency, World Bank, African Development Bank, Finnish International. Development Agency</p>
--	--

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Hisae Takahashi, Ernst & Young Sustainability, Co., Ltd.

### 2.2 Duration of Evaluation Study

Duration of the Study: August, 2013 – September, 2014

Duration of the Field Study: January 14– February 14, 2014; April 22 – May 7, 2014

### 2.3 Constraints during the Evaluation Study

Facilities were constructed at five ICS/CFS, and educational equipment for practical lessons was provided to 12 ICS/CFS, including five ICS/CFS as above. However, not all facilities were visited during the study due to time constraints and the fact that ICS/CFS were scattered all over the country<sup>5</sup>. For the planned visit to all five ICS/CFS<sup>6</sup> where facilities were constructed, ICS Beira and CFS Nhamatanda were not visited due to worsening security. The information required for these ICS and CFE, which were not

<sup>5</sup> The training centers visited are as follows: ICS Nampula, CFS Pemba, CFS Massinga, ICS Maputo, CFS Chicumbane, CFS Inhambane, CFS Mocuba, CFS Tete.

<sup>6</sup> ICS Nampula, CFS Pemba, ICS Beira, CFS Nhamatanda, CFS Massinga

included in the sites visited, was obtained by questionnaire or an interview survey at Maputo, the Mozambique capital.

### **3. Results of the Evaluation (Overall Rating: B<sup>7</sup>)**

#### **3.1 Relevance (Rating: ③<sup>8</sup>)**

##### 3.1.1 Relevance to the Development Plan of Mozambique

During the planning period, Mozambique's national strategy, "Action Plan for the Reduction of Absolute Poverty for 2006-09 (PARPA II)" was intended to reduce poverty (reducing the incidence of absolute poverty to 50%) through national economic growth, which prioritized the area of regional development. This Plan included the six priority areas including healthcare, which established health-based indicators for maternal and child health, preventing HIV infection, access to health services and also the outpatient ratio of local and urban regions. The "Health Sector Strategic Plan (PESS) 2001 - 2010" also emphasized the improvement in healthcare as key to move poverty reduction forward and sets out five strategies to provide better healthcare services and improve the national health status. The one strategy, "Strengthen of governance capacity at health sector" prioritizes efforts to develop the human capital of health personnel, enhance the capacity of health services in the region and improve and maintain medical technology. The details were described as the expansion and construction of ICS or CFS in the "Human Resource Development Plan (PDRH) 2001 - 2010".

At the time of ex-post evaluation, the "Poverty Reduction Action Plan (PARP) 2011-2014" also aims to reduce poverty incidence to 42% by 2014. One of the priority areas is "human and social development" with the strategic target of improving management to develop health personnel (qualitative improvement in health personnel) in health sector. PESS 2007 – 2012 represents the continuation of PESS 2001 – 2010 and prioritizes ensuring extensive access to and improving quality of the health service. The "National Plan for Human Resource Development (PNDRHS) 2008 – 2015" also shows the strategy for the new construction or extension of training center facilities to increase the number of health personnel (quantitative increase in health personnel). This is based on its roadmap to increase the number of full-time health personnel from 25,683 in 2006 to 45,654 in 2015 continuously to resolve the manpower shortage of health personnel.

As mentioned above, the government of Mozambique emphasized the health sector as key to reduce poverty from the time of planning through ex-post evaluation and

---

<sup>7</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>8</sup> ③: High, ② Fair, ① Low

prioritized fostering health personnel and improving medical services. Accordingly, the project, which involves extending and improving the facilities and equipment of training centers, is relevant to the Mozambique’s development plan.

### 3.1.2 Relevance to the Development Needs of Mozambique

During the planning period, it was needed to provide an additional 40% of existing training courses and corresponding student intake. However, most ICS/CFS lacked sufficient capacity in terms of classrooms and dormitories to provide additional courses or proper equipment and an environment for practical lessons. Accordingly, immediate action was required to expand and improve the training centers. The number of training courses and students at ICS/CFS were continuously on the increase under the PNDRHS program, even at the time of ex-post evaluation. For instance, the training courses provided by ICS/CFS increased from 69 in 2008 to 90 in 2012. The number of graduates also increased from 819 in 2008 to 2,497 in 2012. As shown in Table 1, although the lack of health personnel had improved, the current total remains insufficient except Maputo. From this perspective, the development needs to expand and improve training centers remain high.

Table 1: The number of inhabitants per health personnel

	During the planning period (2007)	After the project (2012)
Doctor	32,434 (16,653)	18,810 (2,568)
Nurse	4,464 (3,816)	4,072 (1,502)

Source: Anuário Estatístico De RHS (Statistical Yearbook of Health Human Resource) 2012

Note: The number shown in parentheses is the data in Maputo.

### 3.1.3 Relevance to Japan’s ODA Policy

The priority aid areas in the Country Program for Mozambique include “social sector”, “agriculture and rural development” and “human resource development”. The “social sector” indicates priority areas as education, health/medical, water/hygiene and roads/bridges. Accordingly, this project is relevant to the priority aid areas of human resource development and health sector in the Country Program of Japan for Mozambique.

Considering the above, this project has been highly relevant with the Mozambique’s development plan, development needs, as well as Japan’s ODA policy; therefore its relevance is high.

### 3.2 Effectiveness<sup>9</sup> (Rating: ③)

#### 3.2.1 Quantitative Effects (Operation and Effect Indicators)

##### 3.2.1.1 Increase in Number of Students by Expanding a Classroom

ICS/CFS did not have enough capacity of classrooms due to the increased number of students with the implementation of PDRH. In this project, 11 classrooms were newly constructed and two classrooms were rebuilt at five ICS/CFS to accommodate additional 330 students. Table 2 indicates the number of classrooms as well as students at each ICS/CFS, before and after the project implementation. As planned, 11 classrooms were expanded and two were rebuilt, which led to over 330 students being accommodated. From this perspective, the project succeeded in achieving the original target. However, each ICS/CFS currently lacks sufficient classrooms for the increased number of training courses under the country's program involving the quantitative expansion of health personnel. Therefore, most of the confirmed ICS/CFS offer classes on a two- or three-shift system. CFS Massinga currently has six classrooms, including two new classrooms which were built with aid from the Canadian International Development Agency (CIDA) upon completion of this project.

Table 2: The number of classrooms and students at target training centers

	No. of Classrooms <sup>Note 1</sup>		No. of Students			
	Before the project	After the project	Before the project	After the project		
	2007		2007	2011	2012	2013
ICS Nampula	9 (270 students)	13 (390 students)	614	908	967	1,113
CFS Pemba <sup>10</sup>	4 (120 students)	5 (150 students)	186	298	316	314
ICS Beira	9 (270 students)	13 (390 students)	609	1,196	1,265	1,370
CFS Nhamatanda	2 (60 students)	4 (120 students)	66	196	272	222
CFS Massinga	2 (60 students)	6 <sup>Note2</sup> (180 students)	62	145	235	310

Source: Prepared based on responses to questionnaires to each training center

Note 1: Numbers shown in parentheses indicate classroom capacities.

Note 2: Two out of six classrooms at CFS Massinga were built by CIDA aid upon completion of this project.

##### 3.2.1.2 Increase in Capacity of the Expanded Dormitory

As shown in Table 3, the project planned to build dormitories at five ICS/CFS, which accommodate an additional 400 students. Consequently, the total increased

<sup>9</sup> Sub-rating for Effectiveness is to be put with consideration of Impact.

<sup>10</sup> CFS Pemba is expected to increase capacity as two classrooms are under construction thanks to aid from a Spanish NGO.

capacity was 594<sup>11</sup>, meaning the target was achieved. ICS Nampula, CFS Pemba, and CFS Massinga were visited at the time of ex-post evaluation and an interview survey of ICS Beira was performed. The newly built dormitories of these centers at this project are full to capacity, while the external facility, which was a temporary dormitory before the project commenced, is currently no longer used<sup>12</sup>. However, despite the increased dormitory and the achievement of the target, as described in 3.2.1.1, the number of courses and students has continued to increase, even after project completion. Therefore, the capacity of dormitories remains insufficient, except CFS Massinga. Only CFS Massinga accommodates all students properly with newly built dormitories due to the support by CIDA, which could increase the number of students substantially in 2013.

CFS Massinga dormitory built in this project is currently used as a staff room. This is for various reasons: the capacity was limited to 16 students as CFS Massinga was originally a branch of CFS Inhambane. However, after becoming CFS, CIDA built a new dormitory to accommodate the increased number of students and part of the water utility was broken.

Table 3: Capacity of each dormitory

	Capacity before the project	Target (Planned capacity of dormitory by the project)	After the project			Increased capacity by comparison of before and after the project
			2011	2012	2013	
ICS Nampula	246	112	313	345	394	148
CFS Pemba	72	48	N.A.	N.A.	121	49
ICS Beira	391	160	531	582	637	246
CFS Nhamatanda	66	64	129	128	128	62
CFS Massinga	61	16	80	80	150	89

Source: Prepared based on the questionnaire response from each ICS/CFS

Note: The CFS Massinga dormitory was built by CIDA aid upon completion of the project, and has a capacity of 100 students.

### 3.2.2 Qualitative Effects

#### 3.2.2.1 The Expansion of the Multipurpose Classroom

Multipurpose classrooms were built in CFS Pemba and CFS Massinga as part of this project. Based on interviews with both centers, they became able to implement the same level classes (via practical lessons using equipment) as other ICS/CFS.

<sup>11</sup> It includes the number of students accommodated in dormitories, which has a capacity of approximately 100 students, constructed upon completion of this project with the support of CIDA in CFS Massinga.

<sup>12</sup> The reasons include not only resolving the shortage of dormitories but also the funding shortfall for renting external facilities.



Securing a room for practical lessons at ICS/CFS is crucial. Along with providing equipment, establishing multipurpose classrooms helps when giving practical lessons. The deputy head and teachers of CFS Massinga explained that the class used to comprise mainly theory-based lessons due to the lack of multipurpose classrooms before the project. Similarly, in CFS Pemba, the hours of practical lessons were increased after building a multipurpose classroom. Currently, all students can attend a practical lesson in addition to a theory class to prepare for field training at hospitals or medical facilities as with other training institutes.

In fact, the result of a beneficiary survey<sup>13</sup> shows that 97% of teacher respondents answered “the practical lesson became more effective by installing multipurpose classrooms” and most student respondents also felt that “high-quality practice was possible with multipurpose classrooms.” Accordingly, the effectiveness of building multipurpose classrooms was confirmed.



Multipurpose classroom built in CFS Pemba

### 3.2.2.2 Improvement of Educational Equipment for Practical Lessons

Based on interviews with each ICS/CFS visited during the ex-post evaluation, the existing equipment was scarce and lacked variety before providing educational equipment for practical lessons at this project. Accordingly, each ICS/CFS has common awareness of the issue concerning the quality of medical education, e.g. the lack of opportunities for students to use equipment and the lack of equipment required for practical lessons.

At the time of ex-post evaluation, many students now have the opportunity to practice with more abundant and varied medical equipment, which was not possible before implementing the project, at all target ICS/CFS. Practice with equipment during field training at hospitals or health facilities is considered necessary for students before contacting patients. Besides, all ICS/CFS can now host classes and practical lessons in line with the curriculum recommended by the Ministry of Health (MoH) with the utilization of the provided educational equipment for practical lessons. For instance, a training course for midwives currently requires 200 hours of theory and 300 hours of practical lessons (500 hours in total). Although some ICS/CFS were unable to provide the required 300 hours of practical lessons due to a

<sup>13</sup> The survey was implemented among Heads, Deputy Heads or Teachers (47 in total) and students or graduates (84 in total) at 6 ICS/CFS; ICS Nampula, CFS Pemba, CFS Massinga, CFS Tete, CFS Inhambane and ICS Maputo.

shortage of proper equipment before this project, all ICS/CFS reached a level to respond to the required hours of practical lessons without any problem.

The beneficiary survey also shows 98% of respondents recognized that “practical lessons had improved and become more effective” thanks to the provision of educational medical equipment (see Table 4).

Table 4: Improvement in practical lessons by providing medical equipment

	Considerably Improved	Improved	Unchanged	Worsened
Heads, Deputy Heads, Teachers	50.4 %	47.3 %	2.3 %	0 %
Students	57.1 %	40.5 %	2.4 %	0 %

Source: Based on the result of the beneficiary survey

According to the interview survey result, the implementing agency and ICS/CFS consider “high-quality education” as “emphasizing both theory and practice in a balanced way”. This project, providing educational equipment for practical lessons, secures proper hours of practical lesson and helps improve the quality of medical education at ICS/CFS.

### 3.3 Impact

#### 3.3.1 Intended Impacts

##### 3.3.1.1 Facilitating the Operation and Management of ICS/CFS

It was expected that the operation and management of ICS/CFS could be facilitated by improving the facility capacity (increasing the number of classrooms) and also quality (equipping rooms and equipment for practical lessons) under this project. Based on interviews with heads, deputy-heads and teachers of ICS/CFS and the result of beneficiary survey, provided staff rooms, personal computers (PCs) and projectors promoted effective and efficient preparation of classes for teachers (See Table 5). The continual shortage of teachers in Mozambique can be effectively countered using office equipment to reduce class preparation time, and using a projector to shorten print jobs.

Table 5: Smooth operation and management by improving the scale of facilities

Largely Smoothed	Smoothed	Unchanged	Worsened
38.3 %	53.2 %	8.5 %	0 %

Source: The result of the beneficiary survey

Note: Survey conducted to head, deputy-head and teacher

### 3.3.1.2 Quality Improvement in Health Personnel

The quality of health personnel candidates at target centers was thought to have increased by improving the educational environment as well as the training curriculum. Due to the absence of rooms for practical lessons and shortage and lack of variety of equipment at most of ICS/CFS before implementing the project, students had to practice field training at hospitals or health facilities; lacking adequate opportunity to engage in practical lessons and meaning they had to deal with patients during their initial field training. Currently, students can have a practice at field training after experiencing adequate practical lesson which has similar to the real situation and after learning theory. Consequently, the service quality of students has seen them increasingly earn a very good reputation from hospitals or health facilities where field training is provided, meaning training centers recognize the contribution made by this project to improving health personnel. In fact, nurses in the provincial hospital in Nampula indicated that a lack of adequate educational equipment for practical lessons at ICS/CFS meant students had to have field training without proper practice and affected the medical service quality; not only of students but also graduates. From this perspective, this project, providing an adequate opportunity for practical lessons, is considered to help improve health personnel.

The beneficiary survey also indicates that over 90% of students having responded as well as ICS/CFS officials recognized the improvement in medical service quality after providing equipment (See Table 6).

Table 6: The improvement in medical service quality by graduates after providing educational equipment

	Considerably Improved	Improved	Unchanged	Worsened	N/A
Heads, Deputy Heads, Teachers	27.7 %	66.0 %	2.1 %	0%	4.3%
Students, Graduates	28.6 %	61.9 %	0 %	1.2 %	8.3 %

Source: The result of the beneficiary survey

### 3.3.1.3 Increase in Number of Health Personnel per Capita

The shortage of medical personnel is a serious challenge to the health sector in Mozambique. This project anticipated a certain impact from increasing the number of health personnel per capita by assigning ICS/CFS graduates to health institutions. According to Mozambique statistics, the number of inhabitants per health personnel<sup>14</sup> upon completion of this project is improving from the number before implementing the project. For instance, there were 806 and 716 inhabitants per health personnel in

<sup>14</sup> Health personnel include not only doctors and nurses but midwives, technicians and pharmacists.

2008 and 2012 respectively (See Figure 2).

This project constructed facilities such as classrooms and dormitories, which meant an increase in the number of students at ICS/CFS and also further boosted the number of health personnel. ICS/CFS have a virtually 100% placement rate to medical institutions because graduates are required to work for three years in Mozambique medical institutions.

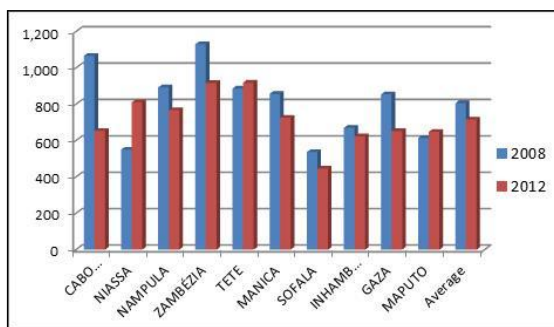


Figure 2: The number of residents per medical personnel

Source: Statistical Yearbook of Health Human Resource (2008, 2012)

### 3.3.2 Other Impacts

#### 3.3.2.1 Impacts on the Natural Environment

Based on the result of interviews with ICS/CFS, implementing the project did not exert any environmental impact. Moreover, no claims of noise and vibration were made which could affect the lives of neighboring residents during the construction.

#### 3.3.2.2 Land Acquisition and Resettlement

There was no resettlement of residents or site acquisition during the project, since the planned construction site was sited within existing ICS/CFS.

#### 3.3.2.3 Unintended Positive Impacts

The following are confirmed as other impacts of providing PCs:

- PCs were effectively utilized as tools for implementing an independent study by students and motivated them in their research.
- Teachers utilized PCs to exchange information with teachers in other ICS/CFS, which helped them provide better lessons.

According to the heads and deputy-heads of ICS/CFS at the time of the site visit, PCs are mainly used by teachers for preparing classes, and alternatively for promoting independent study among students or as a tool to exchange information by E-mail from teachers who attended the training conducted by provinces to teachers who did not attend them to share training details.

Therefore, this project has largely achieved planned objectives and its effectiveness and impact is high.

### 3.4 Efficiency (Rating: ②)

#### 3.4.1 Project Outputs

This project comprised the facility construction of five ICS/CFS and procuring educational equipment for 12 ICS/CFS. The planned and actual outputs are shown in Tables 7 and 8.

Table 7: Planned and actual facility construction

Site	Facility	Plan	Actual
ICS Nampula	Classroom bldg.	4 classrooms	As planned except some design changes
	Student dormitory	14 rooms, study room, toilet, shower room, storage	
CFS Pemba	Classroom bldg.	1 classroom	
	Multipurpose classroom	1 classroom, preparation room	
	Student dormitory	4 rooms, toilet, shower room	
ICS Beira	Classroom bldg.	4 classrooms	
	Student dormitory	20 rooms, study room, toilet, shower room, storage	
CFS Nhamatanda	Classroom bldg.	2 classrooms	
	Student dormitory	8 rooms, study room, toilet, shower room, storage	
CFS Massinga	Classroom bldg.	2 classrooms	
	Multipurpose classroom	1 classroom, preparation room	
	Toilet bldg.	-	
	Student dormitory	2 rooms, study room, toilet, shower room, storage	
	Water facility	Water tank, elevated water tank, pump room	

Source: Basic Design Study Report and data provided by JICA

Table 8: Plan and actual major educational equipment for practical lessons

Site	Type	Plan (volume)	Actual
Five centers on Table 7 with the following seven centers (12 in total)	Clinical medical equipment for practical lessons	Crank beds (12), sterilizers (autoclaves) (11), incubators (12), examination lamps (72)	As planned
	Practice model equipment	Manikin (12), muscular model (12), heart model (20), eye model (12), model for auscultation (15), model for blood pressure check (15), model for patient care (11), arm model for intravenous injection (24), muscle injection simulator (brachial region) (30), muscle injection simulator (buttock) (18), delivery simulator (high-function) (3), perineorrhaphy simulator (20), delivery simulator (prevailing model) (6), model for palpation (7), new-born baby model for nurse care training (12)	
ICS Maputo			
CFS Chicumbane			
CFS Inhambane			
CFS Chimoio			
CFS Mocuba			
CFS Tete			
CFS Lichinga			

	Examination equipment for practice	Microscope (with teaching scope) (2), microscope (4), spectral photometer (2), centrifugal machine (3)	
	Information equipment	Printer (3), OHP (15), PC(15), projector (15)	

Source: Basic Design Study Report and data provided by JICA

The facilities were built basically as planned. In the detailed design survey, the equipment featured some changes in the layout of the study room, ceiling finishing material, table/chair set and storage of the dormitory, desk and chair of classrooms, dormitory layouts of ICS Nampula and CFS Massinga and the unit volume, layout and materials of ODA name plates. These changes were required to facilitate student convenience and maintenance and were thus considered adequate. The implementing agency and training centers also confirmed that these changes did not affect the expected effectiveness.

The Mozambique government was responsible for cutting down trees, removing existing structures, improving access roads, installing and increasing the electricity capacity, improving the water system, constructing gates and fences and planting work. All were implemented as planned except for an incomplete fence at CFS Massinga. The Deputy-head of CFS Massinga explained that the fence construction had not started due to budget constraints and was not yet planned. However, the lack of a fence does not present any specific problem.



Constructed student dormitory  
(CFS Pemba)



Provided equipment: Upper arm model for injection practice (for repeated intravenous use)

### 3.4.2 Project Inputs

#### 3.4.2.1 Project Cost

The actual cost for the Japanese portion was 973 million yen, which was lower than the original plan of 1,096 million yen (89% of the original plan). The decrease in cost was due to the bidding price upon receipt of the order. The total project cost was planned as 1,112 million yen, including the Mozambican portion of 15.7 million yen. Given the lack of actual cost data for the Mozambican portion, it was not possible to compare the planned and actual total costs<sup>15</sup>. However, all planned work mentioned above was implemented except for the construction of the fence by the Mozambican government, hence the conclusion that most of the planned budget was disbursed.

#### 3.4.2.2 Project Period

The project was scheduled for a period of 29 months<sup>16</sup>, including a detailed design survey and bidding period. The project actually took 30.6 months; three months for the detailed design survey (from December 19, 2007 through March 15, 2008) and 27.6 months for the main project (from July 4, 2008 through October 29, 2010), meaning it was longer than planned. The project representative of the implementing agency analyzed the major cause of delay as the time taken for customs clearance of the procured equipment.

Although project cost was within the plan, project period exceeded the plan. Therefore, efficiency of the project is fair.

### 3.5 Sustainability (Rating: ②)

#### 3.5.1 Institutional Aspects of Operation and Maintenance

Operation and maintenance (O&M) are implemented for the facilities developed at this project by the maintenance staff of each ICS/CFS and for equipment provided in this project by staff in charge of the practical room used to store equipment or teachers using the same equipment. Table 9 shows the number of staff for O&M facilities at the time of ex-post evaluation. Based on interviews with each ICS/CFS visited at the time of the ex-post evaluation, although O&M can be handled by existing staff, it is desirable to increase the number of staff to ease the current workload. Centers without maintenance staff generally can only call for service when trouble occurs, which means they need to reply on a system with backward incidence. Accordingly, it would be

---

<sup>15</sup> The project cost was analyzed for its efficiency based on only the Japanese portion.

<sup>16</sup> The project period indicates the detailed design survey period, including the construction and procurement period.

desirable to consider having a preventive maintenance system.

There are also insufficient teachers, particularly in full-time positions (see Table 10), despite an improvement compared to the number before the project implementation. Under the circumstances, the MoH plans to increase the number of full-time teachers and reduce those working part time, except in specific areas such as information technology or mathematics. The sector plan of the MoH also reflects a similar aim<sup>17</sup>.

Table9: Number of operating staffs of each facility

	Actual	Desired
ICS Nampula	0	2
CFS Pemba	0	2
ICS Beira	2	6
CFS Nhamatanda	0	3
CFS Massinga	2	3

Source: Survey responses from each ICS/CFS

Table 10: Teacher staffing

	Full-time		Part-time	
	Actual	Desired	Actual	Desired
ICS Nampula	46	56	91	100
CFS Pemba	34	32	22	22
ICS Beira	37	61	65	40
CFS Nhamatanda	13	19	20	20
CFS Massinga	12	22	36	46

Source: Survey responses from each training center

Overall, there are insufficient O&M staff and teachers in each training center, which remains a minor issue for the institutional aspect of O&M.

The project is expected to install a copy and printing machine at the main ICS, to establish a system to accommodate the printout or distribution of textbooks requested from neighboring ICS/CFS. Currently, machines are located in ICS Nampula, ICS Beira and ICS Maputo. According to the administration staff of each ICS and the staff of the implementing agency, they acknowledge the need to share machines with neighboring centers as required but have not made it in this area. This is because neighboring ICS/CFS are very spread out and any sharing plan may be unrealistic.

### 3.5.2 Technical Aspects of Operation and Maintenance

Full-time teachers of ICS/CFS had no issues on their capacity to implement medical education, including practical lessons, because almost all staff took a teaching course after being educated in specific areas. Although part-time teachers have insight into specific areas, not all of them took a teaching course. Therefore, every ICS/CFS performs periodical class monitoring by a head or curriculum coordinator and also holds in-house training as required to improve teaching skill. Accordingly, there are currently no technical issues hindering teachers' knowledge and skill to implement practical lessons.

<sup>17</sup> Based on interviews with MoH staff and related to the training center. The MoH developed an Acknowledge Plan (2013-2015) to increase the budget of the sector plan (PNDRHS).



The site visit also showed that an educational equipment manual was attached to each practical room for the installed equipment. According to the staff in charge of the practical room, the manual is utilized as required.

### 3.5.3 Financial Aspects of Operation and Maintenance

No extensive maintenance and repair will be required for a period of five to six years upon completion of the facilities<sup>18</sup>, and current costs are incurred for utility and daily maintenance (paint, change of lighting fixtures or parts of sanitary facilities, etc.).

During the planning period, the total increased amount after implementing the project was expected to be 937,912 Mozambican Meticals<sup>19</sup> (MZN) to cover the maintenance cost of five ICS/CFS. Although the actual maintenance cost of facilities solely supported by this project was unavailable for data comparison at the time of post-evaluation, when confirming O&M cost to each ICS/CFS through questionnaire, all ICS/CFS responding recognized that no proper budget had been secured to ensure adequate maintenance (See Table 11)<sup>20</sup>. Currently, there has been no incident requiring significant maintenance at each center. However, it would be considered difficult to cover extensive repair work with the current budget. Accordingly, estimating an adequate budget in the early stages and planning to apply for additional funding to provincial health offices distributing the budget, should be considered in case of future large maintenance.

The cost of consumables for procured educational equipment for practical lessons was estimated at about 7,400 thousand yen in total for all 12 ICS/CFS during the planning period. Although the precise cost of maintaining ICS/CFS was unavailable at the time of post-evaluation, the centers visited used equipment effectively and could procure the most of required supply of consumables, except for unprocurable batteries.

Although no major problem for educational practice equipment was confirmed, certain issues remain in the event of future significant facility maintenance.

---

<sup>18</sup> Based on the material JICA provided

<sup>19</sup> About 4,450 thousand yen. (Exchange rate: 1MZN=4.74 yen) as of March, 2007

<sup>20</sup> No expense has been incurred on significant maintenance, due to only a few years having elapsed since completion of the target facility in this project. However, training centers recognized the budget shortage due to their inability to secure sufficient budget to implement adequate maintenance; not only for target facilities but all facilities. Accordingly, each training center responded that the O&M budget for facilities was insufficient.

Table 11: Annual facility budget

Site name	O&M Budget (MZN)			Sufficient / insufficient
	2011	2012	2013	
ICS Nampula	725,191	1,261,030	1,261,030	insufficient
CFS Pemba	N.A. <sup>Note</sup>	93,729	N.A. <sup>Note</sup>	insufficient
ICS Beira	176,900	163,050	400,838	insufficient
CF Nhamatanda	205,080	71,085	162,643	insufficient
CF Massinga	100,000	150,000	250,000	insufficient

Source: Response to inquiries from each ICS/CFS

Note: Indicate as N.A. due to lack of response from the CFS.

### 3.5.4 Current Status of Operation and Maintenance

The site visit at the ex-post evaluation was performed for three out of five ICS/CFS where the facilities were constructed at this project, with the remaining ICS Beira and CFS Nhamatanda, excluded for security reasons. All three ICS/CFS were used in good condition, as shown in Table 12.

Table 12: Facility condition of training centers at the time of ex-post evaluation

Center name	Condition
ICS Nampula	Both classrooms and dormitories are generally in good condition but the following flaws emerged: Electric switch damage in the classroom, a broken toilet lid in the dormitory, removed, swollen or broken floor tiles in the dormitory.
CFS Pemba	All classrooms, a multipurpose classroom and dormitories are in good condition.
CFS Massinga	All classrooms, a multipurpose classroom and toilets, etc. are in good condition. No serious flaw has been recorded to date, within a few years of the buildings' completion. The dormitory is now effectively used as a staff room (Details are described in the output).

Most of ICS/CFS visited utilize equipment effectively and maintain it properly. The equipment provided for practical lessons needs no complicated maintenance and is not broken. A case of underutilizing equipment was reported immediate upon completion of the project. However, JICA sent a short-term expert and Japan Overseas Cooperation Volunteers (JOCV), implemented a technical cooperation project<sup>21</sup> and continuously visited ICS/CFS as a part of technical cooperation project activities, which facilitated the effective and frequent use of equipment.

During the site visit of CFS Mocuba, a lot of underused or unpacked equipment

<sup>21</sup> The project for strengthening pedagogical and technical skills of teachers of health training institute (2012 – 2015)

emerged, which was due to the lack of space in practical rooms, according to the head and operating staff of multipurpose classroom. However, other training centers tackled this problem by moving elsewhere to use the equipment. From this perspective, the problem is not only one of available space but also their understanding the level of importance of the equipment. To use the equipment more effectively, follow-up activity is required by the MoH or experts in the ongoing technical cooperation projects to facilitate understanding of the importance of utilizing such equipment.

As mentioned above, although most equipment is used effectively, but some are still not utilized due to inadequacy to local specifications. For instance, the project procured training equipment for use with a practical injection model in the form of a permanent glass injector, with maintenance cost in mind, although disposable injectors are generally used in Mozambique medical institutions. Accordingly, it was confirmed that this equipment had not been fully utilized at some ICS/CFS because they recognize it as outdated and unlike the equipment actually used in clinical practices. Also the use of the autoclave (sterilizer) is currently unauthorized in Mozambique due to a different set of criteria governing the sterilizing temperature and not available for practical lessons. In addition, certain digital scales were not used in some ICS/CFS (CFS Pemba, CFS Tete and ICS Maputo<sup>22</sup>) due to the lack of button batteries. Although the three ICS/CFS concerned explained the reason for not using this equipment was the lack of the battery, another possibility is that ICS/CFS failed to examine availability properly, considering circumstances whereby other ICS/CFS continued using the scales provided and scales were procured because the consultant confirmed the availability of batteries in Mozambique. There is no equipment currently requiring maintenance – all equipment remains in good condition except for equipment which has been worn out due to frequent usage.

Although certain ICS/CFS require an improvement in the way educational equipment is utilized for practical lessons, the facilities maintained and equipment provided in this project are used effectively and properly maintained except in specific cases.

Some minor problems have been observed in terms of institutional and financial aspect of operation and maintenance. Therefore sustainability of the project effect is fair.

---

<sup>22</sup> The status of equipment usage was only confirmed when ICS/CFS was visited during an ex-post evaluation.

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

### **4.1 Conclusion**

This project, improving facilities and providing equipment at health personnel training institutes/centers in Mozambique nationwide, is highly relevant to the Mozambique's development plan, which emphasizes the health sector in terms of fostering medical personnel and improving medical services, and its development needs as well as Japan's ODA policy. The size of classrooms and dormitories were expanded and the number of students and capacity of dormitories were increased at training institutes/centers supported by this project. In addition, multipurpose classrooms were constructed and practical educational equipment was provided, to increase the scope for practical lessons; enabling well-balanced education of theory and practice. The PCs provided helped teachers in preparing classes and the number of medical personnel nationwide was boosted with the increase in graduates from training institutes/centers. From this aspect, the effectiveness and impact is high. Although the project cost was lower than planned, the project period was longer than planned, so the efficiency of the project is deemed fair. In terms of operation and maintenance, the current status of facilities and equipment is generally good. Although there is no concern over the technical aspect of teachers, certain issues remain with regard to securing full-time teachers and future financial aspects. Accordingly, the project sustainability is fair. In light of the above, this project is evaluated to be satisfactory.

### **4.2 Recommendations**

#### 4.2.1 Recommendation to the Implementing Agency

- Implementation of follow-up activities to improve the utilization of educational equipment for practical lessons

Some ICS/CFS did not use educational practice equipment properly. One of the main factors was insufficient recognition of the effectiveness and importance of practical lesson with equipment. Accordingly, the MoH should follow up again for promoting the use of equipment. For follow-up activities, which involve cooperating with an expert in the ongoing technical cooperation project, sending and utilizing JOCV, who has been dispatched to neighboring areas, can be effective.

- Understanding the current status and developing a plan toward assuring sustainability.

The shortage of full time teachers and also future budget related to the adequate education and maintenance has not become serious enough to impair the project's sustainability. However, the continuous future increase in students having to be accommodated to implement PNDRHS requires more teachers. A relatively large maintenance cost also would be needed when considerable time has passed since the facilities were constructed. Maintenance is currently performed in the event of trouble and efforts to establish preventive maintenance should be considered. It is desirable to coordinate ICS/CFS with the MoH and provincial offices to plan actions as required, by estimating the future capacity of student intake and budget and establishing a precise schedule before the situation becomes critical.

#### 4.2.2 Recommendations to JICA

N/A

#### 4.3 Lessons Learned

- Continual support implemented upon completion of the project

Many support projects for procuring medical equipment have encountered problems in terms of inadequate O&M of the equipment provided or underuse of the same. However, this project was recognized for the high usage proportion of the facilities and equipment provided, except for specific cases at certain ICS/CFS. The effective use of medical equipment is contingent on an understanding of its importance. This project ensured continual support upon completion and effectively showcased its importance by sending a short-term expert and a further expert involved in a technical cooperation project and also cooperating with JOCVs at target ICS/CFS. Accordingly, a project to procure medical equipment should consider not only training and workshops during the project for using or maintaining equipment, but also using the support of experts or volunteers upon completion of the project to ensure the continued effective use of equipment.