

Republic of Senegal

FY2017 Ex-Post Evaluation of Japanese Grant Aid Project  
“Project of Development of Health Infrastructure in the Regions of  
Tambacounda and Kedougou”

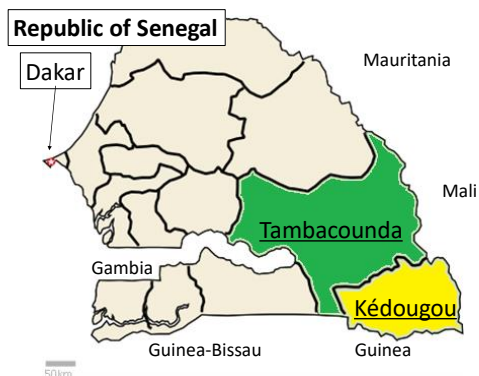
External Evaluator: Mari Nishino, TAC International Inc.

## **0. Summary**

The objective of this project is to improve the residents' access to health facilities and to improve training environments for nurses and midwives by the construction of three health centers, procurement of medical equipment, provision of technical assistance for improving maintenance management capability, and expansion of the building of the Tambacounda Regional Health Training Center (“Centre Régional de Formation en Santé” in French, hereafter referred to as “CRFS”) and procured educational equipment, thereby contributing to the improvement of healthcare services and health indicators in Tambacounda Region and Kedougou Region. The project is highly relevant to Senegal’s development policy and development needs as well as Japan’s ODA policy, therefore its relevance is high. The project was carried out mostly as planned. Although the project cost was within the plan, the project period exceeded the plan because it took a long time from the completion of construction to the opening of the health center, therefore, efficiency of the project is fair. With regard to the effectiveness, although the numbers of outpatients, childbirth deliveries, laboratory tests and X-ray examinations in all targeted health centers increased, no surgery operations could be performed including the caesarean section due to the absence of a surgeon and anaesthesiologist. Although the numbers of inpatients increased at two health centers, the number of inpatients decreased at one health center compared to before the project. Although the number of students at the CRFS did not change before and after the project, in-service training was also conducted. Therefore, the project made certain contributions to human resource development in the region. For impact, it was considered that the project made certain contributions because the maternal and child health indicators in both regions have improved after the project started. The project has achieved the quantitative expansion of healthcare services at the targeted health districts. Despite the fact that the project was aimed to improve the quality of healthcare services to accommodate secondary healthcare facilities, no surgeries have been carried out, and so the effect was limited. Therefore, effectiveness and impacts were fair. Sustainability is fair, based on the needs for strengthening institutional and technical aspects and concerns about maintenance management status of unoperated medical equipment.

Based on the above, this project is evaluated to be partially satisfactory.

## 1. Project Description



Project Location



Dianke-Maha Health Center, Tambacounda

### 1.1 Background

At the time of project planning, Tambacounda Region and Kedougou Region, which separated from Tambacounda in June 2008, were the target areas of this project. Both regions are located in the inland and they account for approximately one-third of the area of the country. Communication and transportation systems in these regions were underdeveloped and compared to the national average, health indicators<sup>1</sup> were very poor. To improve the poor indicators was an urgent problem. In Senegal, a region is divided into several health districts, and the health centers in each district are meant to provide secondary healthcare services. In 2007, the Ministry of Health and Social Action (Former Ministry of Health and Prevention, hereafter referred to as “Ministry of Health”) reviewed each health district in the country in order to improve healthcare services. As a result, the number of health districts has increased from 6 to 9 in order to meet health and medical needs in Tambacounda Region which has large land area. However, in the three new health districts, the health posts were only temporarily used as health centers and were not equipped to provide secondary healthcare services. Therefore, quality and access of healthcare services was limited in those new districts.

In 2003, the CRFS was established to train assistant nurses in order to compensate for the shortage of human resources in rural areas due to a high concentration of health workers in urban areas. Based on the national policy concerning the training of medical professionals, since 2007 the center has gradually shifted their focus on training assistant nurses to become nurses and midwives. However, because the center was only equipped to train assistant nurses, they did not have the sufficient facilities and teaching materials to train nurses and midwives.

<sup>1</sup> The following are the nationwide averages in 2005 in Senegal; Under 5 mortality rate (per 1,000 live births) 136, infant mortality rate (per 1,000 live births) 77, neonatal mortality rate (per 1,000 live births) 31, maternal mortality ratio (per 100,000 live births) 690 (adjustment value) and 58% for delivery with the assistance of a skilled birth attendants (Source: UNICEF World Children's White Paper 2007, p 104, 132), while Tambacounda Region (before separation of Kedougou Region) had the data in the following order; 200, 100, 56, 785, 27%. (Source: Senegal Demographic Health Survey 2005, p 141, 142, 217)

## 1.2 Project Outline

The objective of this project is to improve the residents' access to health facilities and to improve training environments for nurses and midwives by the construction of three health centers, procurement of medical equipment, provision of technical assistance for improving maintenance management capability, and expansion of the building of the CRFS and procured educational equipment, thereby contributing to the improvement of healthcare services and health indicators in Tambacounda Region and Kedougou Region.

Grant Limit / Actual Grant Amount	Detailed Design: 63 million yen / 63 million yen Construction: 1,662 million yen / 1,540 million yen
Exchange of Notes Date /Grant Agreement Date	Detailed Design: January 2009 / January 2009 Construction: May 2009 / May 2009
Executing Agency	Ministry of Health and Social Action (Former Ministry of Health and Prevention)
Project Completion	May, 2014
Main Contractor(s)	Construction: Toda Corporation Equipment: Mitsubishi Corporation
Main Consultant	Daiken Sekkei. Inc.
Basic Design	February, 2008- September, 2009
Related Projects	<p><b>【Technical Cooperation】</b></p> <ul style="list-style-type: none"> <li>• HIV/STI Project: Prevention and Education for Youth (2005-2007)</li> <li>• Project for the Development of Human Health Resources (2001-2006)</li> <li>• Technical Adviser at the Cabinet of Ministry of Health and Prevention (2008-2011)</li> <li>• Health System Management Advisor (2009-2010)</li> <li>• Project for Reinforcement of Maternal and Child Health Care in Tambacounda and Kedougou (2009-2011)</li> <li>• Enforcement of Management of Health System in Tambacounda and Kedougou (2011-2014)</li> </ul> <p><b>【Grant Aid】</b></p> <ul style="list-style-type: none"> <li>• Projet de construction d'un bloc scientifique polyvalent et de fourniture d'quipement l' Ecole nationale de developpement sanitaire et social</li> </ul>

	<p>(2001-2003)</p> <ul style="list-style-type: none"> <li>• Project for Reinforcement of Maternal and Child Health Care and Malaria Control (2000)</li> </ul> <p>【Other international organization】</p> <ul style="list-style-type: none"> <li>• African Development Bank : FAD/PNDS Health Project Phase 2 (2005-2010)</li> <li>• Islamic Development Bank : BID Project (2004-2007)</li> <li>• UNFPA: Country programme for Senegal, the 6<sup>th</sup> cycle of assistance for 5 years (2007-2011)</li> </ul>
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## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Mari Nishino, TAC International Inc.

### 2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted as follows:

Duration of the Study: August 2017 – July 2018

Duration of the Field Study: November 12, 2017 – December 5, 2017, and February 18, 2018 – February 28, 2018

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

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

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

During the planning phase of the project, the Invest Plan (*the Comprehensive Health Development Plan 1998-2002*) of the National Health Development Plan (*Plan National de Development Sanitaire 1997-2006*, hereafter referred to as “PNDS”), the comprehensive health policy of Senegal, prioritized 1) to construct health posts and strengthen obstetric emergency response (renovation and establishment of surgical buildings) in existing health centres<sup>4</sup> and 2) to create a health care map to correct the imbalance of health care infrastructure. According to *the 2<sup>nd</sup> National Health Development Plan (PNDS2 2004-2008)*, the central issue of health care was to lower high maternal mortality ratios, child mortality rates and birth rates. Another issue

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

<sup>3</sup> ③: High, ②: Fair, ①: Low

<sup>4</sup> The Senegalese health system consists of national hospitals as a top, regional hospitals that are responsible for tertiary healthcare services, health centers that provide secondary healthcare services, and health posts that are responsible for primary healthcare services. Regional hospitals are established in each region, and health centers are set up for each health district, which is a health administration unit. Each health district has about 15 to 20 health posts. Health centers are distinguished between referral health centers with operating rooms and health centers without them. The health centers in Maka-Colibantang and Saraya are the reference health centers, while health center in Dianke-Maha is a health center. (Source: documents provided by JICA)

was focused to resolve large regional disparities such as the low number of healthcare facilities per population and the large average distance from villages to health posts providing primary care in rural areas. In order to improve these health indicators, there are four areas that should be prioritized for the foreseeable future: (1) development of health human resources, (2) strengthening of health systems, (3) promotion of preventive measures, and (4) improvement of access to health services among the poor and socially vulnerable.

*PNDS (2009-2018)*, the development plan of the time of ex-post evaluation, prioritized (1) reduction in maternal mortality ratio / infant and child mortality rate and disease prevalence rate, (2) disease prevention measures, (3) strengthening a sustainable health system and (4) governance reinforcement. Among the strategies for achieving them, human resource development and expansion of infrastructure and medical equipment are included. In addition, the "*Integrated National Strategic Plan for Improving the Quality of the Health Sector (Plan Stratégique Nationale Intégrée de la Qualité en Santé 2018-2022)*" also includes improvements in health infrastructure. Hence, continued improvement of access to healthcare services for residents is a priority issue.

Therefore, at the time of planning and ex-post evaluation, the aim of the project was highly consistent with the health policies of Senegal that prioritises health infrastructure development and human resource development.

### 3.1.2 Consistency with the Development Needs of Senegal

At the time of project planning, Tambacounda Region and Kedougou Region, which separated from Tambacounda Region in June 2008, were the target areas of this project. Both regions are located in the inland and they account for approximately one-third of the area of the country. Communication and transportation systems in these regions were underdeveloped and compared to the national average, health indicators were very poor. Improvement of poor indicators was an urgent problem. The administrative division of healthcare in Senegal is a region which has Regional Medical Office. A region is divided into several health districts, and in each health district, health centers are meant to provide secondary healthcare services and to administer healthcare. In June 2007, the Ministry of Health issued a ministerial ordinance to review each health district in the country in order to improve healthcare services. As a result, the number of health districts has increased from 6 to 9 in Tambacounda Region which had large land area in order to meet health and medical needs. However, in the three new health districts, the health posts were only temporarily used as health centers and were not equipped to provide secondary healthcare services. Therefore, quality of healthcare services and access have not improved in those new districts.

At the time of project planning in 2008, *PNDS 2009-2018* pointed out a large shortage of health providers such as 3,433 nurses and 968 midwives. In 2003, the CRFS was established

for training assistant nurses in order to compensate for the shortage of human resources in rural areas due to the high concentration of health workers in urban areas. Based on the national policy concerning the training of medical professionals, the center has gradually shifted their target on training assistant nurses to nurses and midwives since 2007. In addition, the graduates are required to work in the regions where they studied for certain periods of time upon graduation. This would hopefully reduce the shortage of nurses and midwives in those regions in the future. However, because the existing center was only equipped to train assistant nurses in terms of facility and equipment, it lacked the necessary facilities and teaching equipment to train nurses and midwives.

Even at the time of the ex-post evaluation, health indicators in Tambacounda Region and Kedougou Region were worse than the national average. The under 5 mortality rate (per 1,000 live births) was 72 nationwide, while 100 in Tambacounda Region and 154 in Kedougou Region. The facility childbirth delivery rates were 72.8% nationwide, while 45.2% in Tambacounda Region and 32.4% in Kedougou Region<sup>5</sup>. In addition, the needs for construction and renovation of health facilities in both regions continue to be high, and the construction of health centers and health posts was still in progress through other donors such as a French NGO during the ex-post evaluation. In the interview with the principal of the CRFS, he mentioned that there was a high need for training because of the continuous shortage in the health workforce in Tambacounda Region and Kedougou Region. Especially because these regions are located in remote areas, health workers are likely to be transferred to other health facilities within a short period of time because infrastructure is undeveloped and educational institutions are limited for their children. However, it was heard that some students of the CRFS who have adapted to living in remote areas through the community practices want to work in those regions.

In conclusion, at the time of planning and ex-post evaluation, compared to the nationwide, the target area has poorer health indicators and has a higher need for health facilities and training of health workers. Therefore, this project is consistent with the development needs of Senegal.

### 3.1.3 Consistency with Japan's ODA Policy

The policy consultation meeting between Japan and Senegal held in February 1998 confirmed that basic human needs (water supply, education, healthcare), environment (prevention and control of desertification) and agriculture and fishery were priority areas, which was also consistent at the time of the project plan. Accordingly, the JICA Country Implementation Plan (revised in October 2005) declared "Improving Basic Living (water supply,

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<sup>5</sup> Source: Demographic Health Survey, 2012

education, healthcare and human resources development,)" as its priority following this. The project contributes to the focus of cooperation in the health sector: "continuing cooperation on development of facilities and supply of equipment at the primary healthcare", "improvement of reproductive health in primary healthcare facilities", and "strengthen health system management". Since 2005, the local ODA Task Force and the Ministry of Health have agreed that Tambacounda Region, one of the poorest regions, should be the priority area for Japan's cooperation in the health sector. The project was expected to be a component of "Tambacounda Health System Enhancement Program" which composed with Japanese experts, technical cooperation projects, grant aid, Japan Overseas Cooperation Volunteers (hereafter referred to as "JOCV"), and training in Japan. Therefore, the project is consistent with Japan's ODA policy.

In conclusion, this project has been highly relevant to Senegal's development policy and development needs, as well as Japan's ODA policy. Therefore its relevance is high.

### 3.2 Efficiency (Rating: ②)

#### 3.2.1 Project Outputs

##### 1) Facility construction

###### <Health Center>

All health centers were constructed as planned. A total of three health centers were constructed; Maka-Coribantan and Dianke-Maha in Tambacounda Region, and Saraya in Kedougou Region. Each health center is composed of nine departments: General Outpatient, Pharmacy, Obstetric Outpatient, Childbirth Delivery, Obstetric Hospitalizations, General Inpatient, Examination, Surgery, and Administration. Dianke-Maha has eight departments, all of the above except Surgery. These departments are all within six independent buildings (four buildings in Dianke-Maha) and divided into four separate sections - (1) General Outpatient and Administration (General Outpatient, Pharmacy and Administration), (2) Obstetrics (Obstetric Outpatient and Childbirth Delivery), (3) Examination and Surgery, and (4) Inpatient. The buildings are all single story. They are independent divisions according to each function (pavilion type), and are arranged around the courtyard.

Table 1: Laying areas of health centre (unit: m<sup>2</sup>)

	Saraya	Maka-Colibantang	Dianke-Maha
Site Area	50,000	30,000	50,000
Total Facility Area	2,256.65	2,356.67	1,792.46

Source: *Basic Design Study Report*

< The Tambacounda Regional Health Training Center >

The center was constructed as planned. It is an extension of the existing CRFS. Four classrooms, two practical training rooms, four teaching staff rooms, toilets (four booths each for men and women) and two equipment storage rooms were built into a two-story building. On the first floor, practical training rooms, teaching staff rooms, toilets, and equipment storage rooms were installed and the entrance hall was set up with a message board for the students. On the second floor, classrooms, toilets and equipment storage rooms were installed. Among four classrooms, two were equipped with movable partitions, making it possible to convert a small classroom into a large one.

2) Main Equipment

<Health Center>

Equipment was procured as planned.

Table 2: Main procured equipment in health center (unit: number)

Group	Equipment	Usage	Number		
			Saraya	Maka-Colibantang	Dianke-Maha
Image diagnose	X-ray diagnose	Chest-abdominal general radiography	1	1	-
	Ultrasound diagnose	Obstetric measurement	1	1	-
Ward	Bed with mattress	General/Obstetric room, Labor room, Recovery room	22	30	20
Dental	Treatment chair	Dental treatment	1	1	1
Operation	Anaesthesia apparatus with artificial respirator	General anaesthesia at operation	1	1	-
	Patient monitor	Measuring vitals	1	1	-
Laboratory	Auto blood cell measurement	Measurement of blood component	1	1	1
Sterilize	Auto clave steriliser	Sterilization of equipment/ surgical gown	1	1	-

Source: *Basic Design Study Report*

<Tambacounda Regional Health Training Center >

Training equipment necessary for nursing and midwifery education was installed and procured as planned.



Table 3: Main procured equipment in Tambacounda Regional Health Training Center

(unit: number)

Class room	Desks and chairs for students	Chairs with wing table	30 set x 4rooms=120 set
	Desks and chairs for teachers	Steel made	1 set x 4 rooms=4 sets
	Black boards	Open close type	1 unit x 4 rooms=4 units
Teaching staff rooms	Desks and chairs for teachers	Steel made	1 set x 4 rooms =4 sets
	Cabinets	Steel made	1 unit x 4 rooms= 4 units
	Chairs for guests	Steel made	2 chairs x 4rooms= 8 chairs
Entrance hall	Signboard	Steel made	1 unit
Practical training room	Statoscope, blood pressure monitor, thermometer, ophthalmoscope, otoscope		4 each
	Weight scale (adult/ child)		1
	Wagon for medical round visit		1
	Bed with mattress		1
	Delivery table, obstetric examination table		1 each
	Aspirator, aspirator (foot step)		1 each
	Obstetric stethoscope		2
	Delivery tool set		4
	Gynaecologic examination equipment set		2
	Treatment instrumental set		1
	Laryngoscope with resuscitator (adult/ child, neonate)		1 each
	Timer		2
	Dry heat sterilizer		1
	Anatomical model		2
	Human skeleton model, intravenous arm model		1 each
	Delivery phantom		2
	New born infant model		2
Anatomical chart		2	

Source: *Basic Design Study Report*

Although the completion report said that the soft component was carried out as planned, the evaluator could not obtain information on the implementation status at that time from the Ministry of Health and each health center. According to the completion report, health centers in Maka-Colibantang and Saraya were not yet opened, and maintenance personnel were not allocated in Dianke-Maha and Saraya at the time of the soft component implementation.

The responsibilities of the partner country, such as acquisition of construction permits, necessary facilitation for the Japanese experts to stay, levelling ground of the planned construction site, and construction of housings for health center's workers excluded doctor were mostly carried out as planned. In addition, supplementary facility construction work, relocation of existing equipment and furniture, and procurement of furniture and fixtures for the new facilities were mostly carried out as planned. However, the construction of the access road for the construction site of health center in Dianke-Maha, and the infrastructure connection to the

health centers in Maka-Colibantang and Saraya (electricity, water supply and sewage) were delayed (see 3.2.2.2 Project period).

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

The project cost on the Japanese side was planned 1,725 million yen (detailed design 63 million yen, construction 1,662 million yen), but the actual cost was 1,603 million yen (detailed design 63 million yen, construction 1,540 million yen). The project was implemented within the planned budget (89 percent of the planned amount). According to the Ministry of Health, all Senegalese responsibilities were implemented, but the cost information from Senegal's side was not available.

#### 3.2.2.2 Project Period

In light of the project purpose of "improving health services", the evaluator concluded that it is reasonable to judge the project completion is the time of opening the new health centres and, to start utilizing the facilities. The project period was planned to be 36 months including detailed design, bidding and construction. The facilities were scheduled to open promptly after the completion of construction. Among the Senegalese side's responsibilities, the construction of the access road to the health center in Dianke-Maha was delayed, and the construction of the health center was discontinued for 1 year from September 2010 because construction materials could not be carried safely. The Ministry of Infrastructure, Land Transportation and Traffic Improvement was in charge of construction of the access road, and despite the coordination in order to be implemented surely by the Ministry of Health, it was not implemented as planned. After various arrangements, construction work restarted after the Japanese contractor constructed about 30 kilometres of road to withstand of construction work by using the counterpart fund. As a result, construction was completed in March 2012 which was 1 month behind the plan (total of 37 months, 103% of the plan). Afterwards, it took time for Senegal to follow through on their responsibilities to install the electricity and water supply for health centers in Maka-Colibantang and Saraya. Finally, the health center in Maka-Colibantang opened in August 2013 and the health center in Saraya opened in May 2014. The project period totalled 63 months (175% of the plan), which was significantly longer than planned.

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

<h4>Roles and Contributions</h4>
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<p>Since this project site was located in remote areas and was a challenging project to</p>
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begin with, there were several points that should be closely coordinated and determined from the time of planning in order to ensure the implementation of Senegal's responsibilities and contributions. Against delays of project proceeding, the person involved took several countermeasures during the implementation including, installation of power reception and water supply, levelling the ground of the planned construction site, construction of the access road for the construction site and allocation of health human resources, etc. The following are the roles taken by person involved.

Regarding the health center in Dianke-Maha, even during the preliminary survey, consideration was made repeatedly on whether or not to include it in the project target area because the access road was so poorly maintained. Because there are no core healthcare facilities in the area it became a priority to improve the situation, and Senegal offered to contribute of construction of the access road by their own efforts, the site was eventually included in the project. According to the consultant in charge, after starting the project a lot of time was spent on "supervision for construction and procurement of facility and equipment" and "request and consultation for the responsibilities of Senegal." Various meetings were conducted among stakeholders and requests were repeated to the Ministry of Health. Specifically, a bi-monthly comprehensive meeting was set up from the beginning of the project and periodic meetings were held to discuss the electricity, drawing water, and ground levelling of the sites and access roads. The meetings were also held in the two regions to discuss each of their responsibilities. The Ministry of Health has issued construction request letters to the concerned ministries and agencies regarding the road, water supply and electricity. In 2010, the intensive consultation meetings on access roads were conducted and Senegal began construction. However, part of the road construction had no budget, therefore the ordering time could not be decided. As a result, there was a high possibility that construction completion within the E/N deadline could not be expected, so the Japanese side examined the construction of a part of the access roads by itself. As a result of consultations among person involved, including the Embassy of Japan, the construction of the access roads using the counterpart funds of the Ministry of Health was confirmed in February 2011. Selection of contractors and construction ordering were scheduled for bidding through the Road Maintenance & Transportation Public Cooperation. However, due to the doubt that it takes time for bidding and contract signings, etc., and the Senegalese companies were in danger of not completing construction within the planned period, a special contract was signed with the Japanese contractor of the project in September 2011. Therefore, the project was completed 1 month behind the plan.

Alternatively, JICA Senegal Office also urged the executing agency to conduct works for the electricity receiving and water supply and to allocate the health staff in the health centers to open health centers as early as possible. After the openings of the health centers, the Senegalese side requested joint monitoring, which was then planned and implemented.

### 3.3 Effectiveness and Impacts<sup>6</sup> (Rating: ②)

#### 3.3.1 Effectiveness

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

This project set operational indicators, namely the numbers of outpatients, inpatients, beds, childbirth deliveries, surgical operations, laboratory tests and X-ray examinations, and the project expected to increase those numbers from their baseline values in 2007. As for the indicators whose goals are simply "to increase" without specific numerical target numbers, there are descriptions for the assumed numbers that were calculated from the population ratio in the health districts, such as the ratios of patients and childbirth deliveries in the basic design study report. Hence, the ex-post evaluator used these values as target values and compared them with actual results to use as reference values. There were zero laboratory tests and X-ray examinations because the necessary equipment was not installed at the time of planning and the assumed numbers were not listed in the report, so the evaluator only confirmed the actual numbers. In addition, since all facilities started services in 2014, the evaluator conducted the evaluation based on actual values in 2015 (1 year after the completion of the project, which is right around the time we can see the effects of the initial plan), while monitoring the actual results for the target year (2013) which is expected to see the effects of the initial plan to the target values and secular changes during the project period.

The numbers of outpatient, childbirth delivery and laboratory tests (excluding Dianke-Maha) increased overall from the baseline values at all three facilities. Regarding the number of inpatients, Maka-Colibantang increased significantly after 2 years of opening, while Dianke-Maha remained at about 70% of the baseline values for 3 years after opening. Saraya exceeded the baseline values in the year of the opening and after 1 year of opening, but then achieved only 40% of the baseline values beyond that. The operation rooms of Maka-Colibantang and Saraya were still inactive at the time of the ex-post evaluation, no surgery has been performed. X-ray examinations increased after the introduction of a printer in Maka-Colibantang in 2016, but that is yet to be implemented in Saraya.

In actual value of 2015 with respect to the target value, the numbers of outpatient and childbirth delivery nearly reached the target values, the numbers of laboratory tests increased, and the numbers of X-ray examinations in Maka-Colibantang also increased in 2016 after a printer was installed. On the other hand, the numbers of inpatients remained at only about a half of the target values. Since the operation room was not working, the number of operations was zero. The number of X-ray examinations was also zero in Saraya.

According to the doctors of the health centers, the numbers of outpatient and childbirth deliveries increased because the residents gradually became aware that they could receive

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<sup>6</sup> In rating, the evaluator adds Impact to the judgment of Effectiveness

medical consultation and can deliver babies safely at the health centers. It was also found that during the antenatal care at the health posts, the midwives encouraged mothers to deliver their babies at the health centers. The reason that the number of inpatients did not increase was considered because there are no surgeons or anaesthesiologists to conduct surgeries at the health centers. The number of X-ray examinations may increase in Saraya once a printer is installed.

Table 4: Operational indicator: Maka-Colibantang Health Centre (unit: number)

	Baseline	Target	Actual			
	2007	2013	2013	2014	2015	2016
		1 Year After Completion		Completion Year	1 Year After Completion	2 Years After Completion
Outpatient	7,918	Increase	11,982	7,654	11,664	12,593
(Achievement rate for baseline)			151%	97%	147%	159%
(Achievement rate for target)		13,226*	91%	58%	88%	95%
Inpatient	183	Increase	96	105	304	485
(Achievement rate for baseline)			52%	57%	166%	265%
(Achievement rate for target)		1,134*	8%	9%	27%	43%
Number of beds	7	26	25	25	25	21
(Achievement rate for baseline)			357%	357%	357%	300%
(Achievement rate for target)			96%	96%	96%	81%
Childbirth delivery	267	Increase	362	785	1,188	1,105
(Achievement rate for baseline)			136%	294%	445%	414%
(Achievement rate for target)		969*	37%	81%	123%	114%
Operation	0	30	0	0	0	0
Laboratory test	0	Increase	N/A	1,322	869	1,076
X-ray	0	Increase	0	30	0	197

Source: Documents provided by JICA and executing agency

Note: \* For the indicators whose goals are "to increase" without specific numerical target numbers, the evaluator referred to each assumed number calculated at the time of planning. The same applies to the following Table 5 & 6.

Table 5: Operational indicator: Dianke-Maha Health Centre (unit: number)

	Baseline	Target	Actual			
	2007	2013	2013	2014	2015	2016
		1 Year After Completion		Completion Year	1 Year After Completion	2 Years After Completion
Outpatient	1,762	Increase	N/A	18,764**	5,315	9,118
(Achievement rate for baseline)				1065%	302%	517%
(Achievement rate for target)		11,159*		168%	48%	82%
Inpatient	478	Increase	N/A	273	416	319
(Achievement rate for baseline)				57%	87%	67%
(Achievement rate for target)		576*		47%	72%	55%
Number of beds	5	18	N/A	24	22	22
(Achievement rate for baseline)				480%	440%	440%
(Achievement rate for target)				133%	122%	122%
Childbirth delivery	150	Increase	N/A	344	163	147
(Achievement rate for baseline)				229%	109%	98%
(Achievement rate for target)		491*		70%	33%	30%
Laboratory test	0	Increase	N/A	2,629	790	1,011

Source: Documents provided by JICA and executing agency

Note: Operation room and equipment for X-ray examination are not installed in Dianke-Maha.

\*\* Numbers of outpatients includes the health posts under jurisdiction throughout its health districts.

Table 6: Operational indicator: Saraya Health Centre (unit: number)

	Baseline	Target	Actual			
	2007	2013	2013	2014	2015	2016
		1 Year After Completion		Completion Year	1 Year After Completion	2 Years After Completion
Outpatient	1,845	Increase	7,029	10,527	11,996	8,008
(Achievement rate for baseline)			381%	571%	650%	434%
(Achievement rate for target)		10,632*	66%	99%	113%	75%
Inpatient	217	Increase	N/A	303	246	91
(Achievement rate for baseline)			-	140%	113%	42%
(Achievement rate for target)		508*	-	60%	48%	18%
Number of beds	9	18	8	18	18	18
(Achievement rate for baseline)			89%	200%	200%	200%
(Achievement rate for target)			44%	100%	100%	100%
Childbirth delivery	160	Increase	100	281	277	295
(Achievement rate for baseline)			63%	176%	173%	184%
(Achievement rate for target)		386*	26%	73%	72%	76%
Operation	0	13	0	0	0	0
Laboratory test	0	Increase	0	1,588	118	930
X-ray	0	Increase	0	0	0	0

Source: Documents provided by JICA and executing agency

Due to the expansion of the CRFS through this project, the goal for basic education was to increase the number which can be accepted of nursing and midwifery students from 90 students (2008) to 180 students (2011). Regarding the in-service training, the goal was to be increased to 30 participants by 2011, from the situation that there had been no specific classrooms for in-service training (2008) and they had to use vacant classrooms. Since these target values were automatically achieved when the facility scale expanded, the actual numbers of students was used as an additional indicator. At the time of planning, training of assistant nurses was completed by the 2008 fiscal year graduation, and the plan was to sequentially increase the number of nursing and midwifery students (capacity of 30 each).

However, only 10 students in each nursing and midwifery course were admitted every year, which is only about 30% of the target value of 30 students at the time of planning. According to the head of the Department of Human Resources at the Ministry of Health, the numbers of students is determined by the budget, and the budget was allocated to admit around 10 students recent year. A new curriculum based on the Competency Approach<sup>7</sup> was introduced in 2014. With this curriculum, all students need to take the practical training but the teachers feel that there is not enough training equipment for the numbers of students.<sup>8</sup> For example, when 10 students practice with only a single intravenous drip practice model, they cannot complete any sort of substantial training within an allocated period of time.

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<sup>7</sup> The Competency Approach started at Ecole nationale de developpement sanitaire et social in 2010, and it was disseminated to training schools throughout the country sequentially. The old approach (Objective Approach) emphasizes memorization, tests and knowledge. The students learn the theory for 2 years and learn practical training in the final year. With the Competency Approach, the students learn theory and practical training continuously. Competency Approach puts emphasis on problem solving skills required to meet the needs of the target population (patients/residents) on site.

<sup>8</sup> According to the Department of Human Resources at the Ministry of Health, the introduction of the Competency Approach did not influence/limit the number of students.

Table 7: Number of students in basic training (Unit: Person)

		Nursing				Midwifery			
		1st	2nd	3rd	Total	1st	2nd	3rd	Total
2007	Estimation	14	-	-	14	-	-	-	-
	Actual	-	-	-	0	-	-	-	-
2008	Estimation	25	14	-	39	15	-	-	15
	Actual	13	-	-	13	0	-	-	0
2009	Estimation	25	25	14	64	20	15	-	35
	Actual	0	13	-	13	0	0	-	0
2010	Estimation	25	25	25	75	20	20	15	55
	Actual	13	0	13	26	0	0	0	0
2011	Estimation	30	25	25	80	25	20	20	65
	Actual	0	13	22	35	0	0	0	0
2012	Estimation	30	30	25	85	25	25	20	70
	Actual	12	0	8	20	8	-	-	8
2013	Estimation	30	30	30	90	25	25	25	75
	Actual	0	12	4	16	0	8	-	8
2014	Estimation	30	30	30	90	30	25	25	80
	Actual	11	0	12	23	6	0	8	14
2015	Estimation	30	30	30	90	30	30	25	85
	Actual	9	11	3	23	13	6	7	26
2016	Estimation	30	30	30	90	30	30	30	90
	Actual	9	9	11	29	9	13	6	28
2017	Actual	10*	9	9	28	10*	9	13	32

Source: Documents provided by executing agency

Note: \* Number of prospective students

There were no classrooms for in-service training at the time of planning; so 803 people participated in 32 classes in a year using conference rooms and available classrooms (average number of participants: 25 people). At the time of planning, the increase rate of the numbers of in-service participants was assumed to be 1.24. The necessity of in-service education is expected to decrease in the future, so the project must remain versatile in order to reach a capacity of 30 participants after completion of the project. In order to evaluate the actual operational situation, an additional indicator was set for the number of in-service training participants: 995 participants (803 participants x 1.24).

The number of in-service training participants was 2 to 4 participants per year until 2014, 20 to 31 participants in 2015 and 2016. This is about 3% of the target value of 995 participants at the time of planning. According to the principal, the 4 types of in-service training that were expected at the time of planning were not realized. The in-service training room is used to train the current assistant nurses and midwives to become nurses and midwives. Most of the trainees in the last two years belong to health facilities nearby. Although the number of trainees of basic education and in-service education at the CRFS is significantly lower than the plan, the large classroom and other classrooms are used throughout the year. They are used for conferences of the Regional Medical Office and preparation of annual activity plans (Plan de Travail Annuel, PTA) etc. by the staff of the Regional Medical and District Health Offices.



Other donors and NGOs use the venue for various trainings and workshops.

Table8: Number of in-service trainees (Unit: Person)

	Nurse		Midwife	
	Trainee	Belong to 2 regions*	Trainee	Belong to 2 regions*
2008	1	0	1	0
2009	1	0	1	0
2010	1	0	1	0
2011	1	0	1	0
2012	1	0	1	0
2013	4	0	0	0
2014	1	0	3	0
2015	10	9	10	7
2016	14	14	17	15

Source: Documents provided by executing agency

Note: \*2 regions indicate Tambacounda and Kedougou

### 3.3.1.2 Qualitative Effects (Other Effects)

Although no qualitative effect indicators were defined at the time of planning, two outcome values were set: improvement of residents' access to health facilities and improvement of learning environment for training of nurses and midwives. The interview survey by using a questionnaire was conducted to the users of health centres and students of the CRFS.

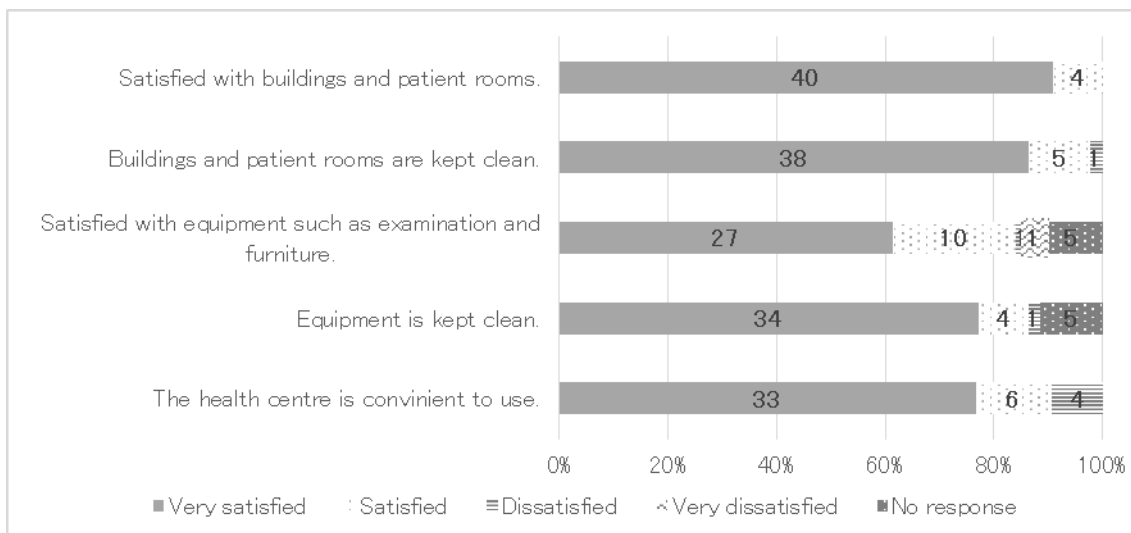
#### <User Survey>

The evaluator received a total of 44 responses (35 outpatients and 9 inpatients) from the three health centres.<sup>9</sup> In general, there was a high level of satisfaction (Fig. 1). For the buildings and inpatient rooms: very satisfied (91%) and satisfied (9%). Whether the buildings and inpatient rooms are maintained to be clean: very much agree (86%), agree (11%) and disagree (2%). For equipment of inspections and furniture: very satisfied (61%), satisfied (23%), dissatisfied (2%), very dissatisfied (2%), no response (11%). Whether equipment is kept clean: very much agree (77%), agree (9%), disagree (2%) and no response (11%). Regarding the number of health centre utilization per month, 28 people responded 1 to 7 times (average 2.5 times), 10 people responded that they utilized for the first time, 7 people responded that they did not utilize much. Whether the health centre is convenient to use: very much agree (75%), agree (14%) and disagree (9%). There was no significant difference between male and female among the health centres.

The survey shows that 80% and above of the respondents are satisfied with the facilities and equipment and 90% think that health centre is convenient to use. Based on the

<sup>9</sup> Attributes of the respondents are 20 residences in Maka-Colibantang, 11 residences in Dianke-Maha and 13 residences in Saraya. They are 34 women (77%) and 10 men (23%). A half of them are in their 20s and 30s and the average age was 27. For clinical department 80% of respondents are patients of the Department of Internal Medicine and the rest are patients of Obstetrics and Gynecology.

staff interviews, their satisfaction with the facility and equipment was high, and they responded that the number of users would increase if more residents knew about the health centers.



Note: The number shows the responses.

Figure 1: Result of user survey

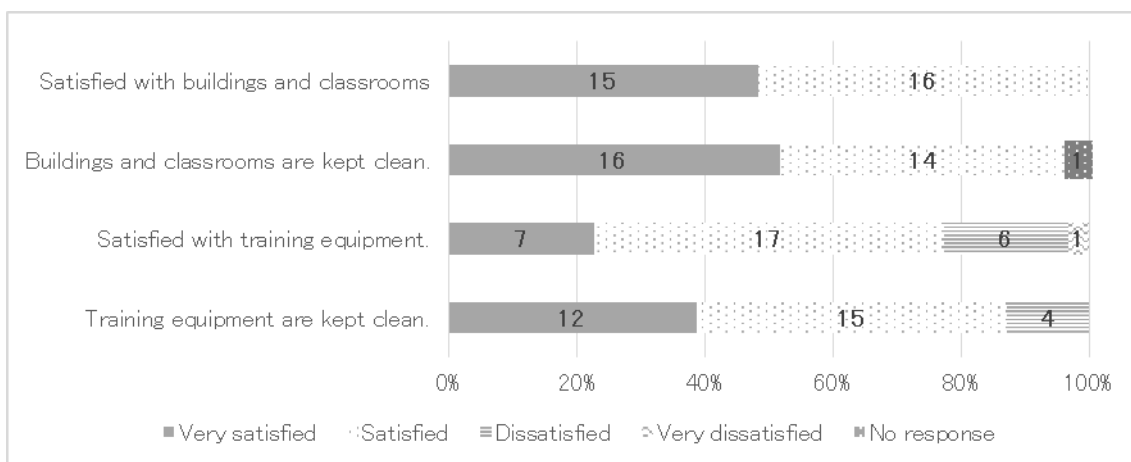
#### <Student Survey>

The evaluator received responses from 31 second and third year students of nursing and midwife courses (Fig. 2)<sup>10</sup>. Regarding the questions about the buildings and classroom, the responses are: very satisfied (48%) and satisfied (52%). Whether the buildings and classrooms are maintained to be clean: very much agree (53%), agree (47%). For training equipment: very satisfied (23%), satisfied (55%), dissatisfied (19%), and very dissatisfied (3%). Regarding training equipment is kept clean: very much agree (39%), agree (48%) and disagree (13%). The places of residency before enrolment at the center were: 21 students (68%) in Tambacounda Region, 0 student in Kedougou Region and 10 students (32%) in other regions. Therefore 70% of the respondents were from Tambacounda Region. The areas where respondents want to work immediately after graduation were Tambacounda Region (84%), Kedougou Region (3%), and other regions (13%). Therefore, 80% of the respondents were willing to work in Tambacounda Region.

Based on the student survey result, 90% and above of the respondents were satisfied with the buildings and classrooms, but only 70% were satisfied with the training equipment. One of the reasons for their dissatisfaction is considered that all 10 students cannot finish their practical training within the limited time because some of the equipment exist only one. On the

<sup>10</sup> At the time of the survey, the enrollment for first year students was delayed than normal. Thus, the second and third year students were surveyed. For the nursing course, there were 14 2<sup>nd</sup> year students and 17 3<sup>rd</sup> year students and for the midwifery courses, there were 18 2<sup>nd</sup> year students and 14 3<sup>rd</sup> year students. There were 9 male students and 22 female students. Age distribution was between ages 21 to 30, and the average age was 25.

other hand, 70% of the students are from Tambacounda Region and 80% of the student want to work in Tambacounda Region which would certainly considered to be a contribution towards health human resource development in the region.



Note: The number shows the responses.

Figure 2: Result of student survey

### 3.3.2 Impacts

#### 3.3.2.1 Intended Impacts

Through the implementation of this project, the following indirect effects were expected:

(1) Improvement of health indicators in Tambacounda Region and Kedougou Region:

- Contribute to improve health indicators in both regions that are lower than the average values of the whole country, such as maternal mortality ratio and child mortality rate

(2) Qualitative improvement of health services:

- Improve quantity and quality of healthcare services provided to the beneficiaries in the target health districts (population of about 154,000 in 2008)
- Improve the quality of healthcare services in both regions by increasing the numbers of trained health workers at the CRFS, allocating them to the target areas, and expanding in-service training

Regarding (1), as shown in Table 9, maternal and child health indicators in both regions have improved since the project started. As mentioned earlier in the Effectiveness section, since the number of childbirth delivery at the target health centres have increased, the health centers are considered to contribute to decrease the number of home births. It also contributes to increase childbirth deliveries assisted by skilled birth attendants in the areas. In

addition, the number of outpatients also increased sharply compared to before the project because health consultations for infants and children under 5 years old are now free of charge. At the time of ex-post evaluation, the evaluator found that some infants and children consulted for infectious diseases or malnutrition at the health centres. Therefore, the project has considered to make certain contributions to the medical consultation and treatment for children.

Table 9: Trend of indicators for maternal and child health (unit: number)

Indicator	Region	2005*1	2016	2016 Reference
Maternal Mortality Ratio (per 100,000 live births)	Tambacounda	785*2	NA	-
	Kedougou		NA	-
Neonatal Mortality Rate*3 (per 1,000 live births)	Tambacounda	56	28	31 (2 regions' average)
	Kedougou		34	
	Dakar	30	18	-
Infant Mortality Rate*4 (per 1,000 live births)	Tambacounda	100	48	60 (2 regions' average)
	Kedougou		71	
	Dakar	44	31	-
Under 5 Mortality Rate (per 1,000 live births)	Tambacounda	200	105	123 (2 regions' average)
	Kedougou		140	
	Dakar	79	42	-
Childbirth delivery by skilled birth attendants*5	Tambacounda	27.2%	87.6%	
	Kedougou		84.2%	
	Dakar	92.1%	97.8%	
Rate of home births	Tambacounda	64.5%	54.7%	
	Kedougou		53.5%	
	Dakar	6.6%	5%	

\*1 Kedougou Region was separated from Tambacounda Region in June 2008. Therefore, it was a part of Tambacounda Region in 2005.

\*2 Source of Maternal Mortality Ratio: Documents provided by JICA

\*3 Neonatal Mortality Rate: Mortality rate less than the first 28 days

\*4 Infant Mortality Rate: Mortality rate less than one year of age

\*5 Skilled birth attendants: Medical doctors, nurses, and midwives

Source: DHS2005 (p141, 142, 217), DHS2016 (p329, 335, 337)

With regard to (2), the quantity and quality of healthcare services in the target health districts were expected to improve through this project. As mentioned in the Effectiveness section, the healthcare services in the three health centers have achieved improvement of quantitatively compared to before the project. However, in terms of quality improvement, since the health centers only provided primary healthcare services at the health posts in the past, their effects are limited to consider the object of providing secondary healthcare services. Specifically, at the health centers in Saraya and Maka-Colibantang, the improvement of quality of healthcare service was expected through ultrasonic examination and caesarean section are available, which can reduce the maternal mortality ratio. Since X-ray examinations and general surgery are possible to conduct, quality improvement of healthcare services, such as diagnosis, operation and treatment was expected (source: document provided by JICA). Although ultrasound

examinations for pregnant women and X-ray examinations can be performed in both health centers, since their operation rooms are inactive, patients who need caesarean sections or surgery operations have to go to the regional hospital or the hospitals in Dakar. According to interviews with the staffs of Regional Medical Office and the health centers, they are confident that the residents' access to healthcare services has improved after the project, although some services are still limited under current circumstances. Furthermore, many mentioned that there would be further contributions once the operation rooms and dental clinics are available because there is need surely. Based on the user survey of the health centers, 85% of respondents are satisfied with the buildings and equipment, and 89% responded that the health centres are convenient to use. Therefore, user satisfaction is high.

CRFS was expected to contribute a stable supply of health workforce lacking constantly in the areas by increasing the number of students admitted. The quality of healthcare services was also expected to improve through the expansion of in-service training (source: documents provided by JICA). There has been no significant increase in the number of students even after the project, but the center still produced a stable health workforce. Although there is no obligation for graduates to work in the specific regions, the student survey shows that many students wish to work in Tambacounda Region upon graduation. In-service training is also conducted every year, and most participants from the last two years are belong to Tambacounda Region. Even though the number of participants of the in-service training is small, the evaluator finds that the center contributes towards improving local healthcare services.

### 3.3.2.2 Other Positive and Negative Impacts

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

Since the CRFS is an educational facility, at the time of planning it was expected that there would be very little impact on the environment. The health centers are secondary healthcare institutions, and although the possibility of discharging bacteria and other pathogens is low, the following were cited as possible damaging effects to the surrounding environment:

- Radiation from X-ray diagnostic devices and dental X-ray diagnostic devices
- Sewage and miscellaneous wastewater
- Waste treatment
- Vibration and noise from in-house generator facilities

At the time of ex-post evaluation, the evaluator examined the following items and found none of them to have little impact on the environment:

- Radiation from X-ray diagnostic device and dental X-ray diagnostic device - no problem was found since a structural wall shields the X-ray diagnostic room.

- Sewage and miscellaneous wastewater - after water is collected in the sedimentation tank and the solid has precipitated, water penetrates naturally from a penetration square. Because of the deep wells, it is determined that there is no impact on the environment. Contamination of supplied water has not been reported so far.
- Waste treatment - dangerous items such as scalpels and injection needles are placed in designated disposal boxes and dangerous items are regularly incinerated in an exclusive incinerator. The same types of disposal boxes are brought to the health centers from the health post about once a month and its contents are incinerated at the health centers. Regional Medical Offices plan to collect and process such incineration in the future. Any bloody fabric is also incinerated in halls dug on the premises. The postpartum placentas are brought home and buried by the family.
- Vibration and noise from in-house generator facilities - both permanent and emergency power generators are installed in the health centers in Saraya and Dianke-Maha. The health center in Maka-Colibantang has an emergency power generator. Since the health centers are located far from the city areas, there are no vibration or noise problems

## (2) Resettlement and Land Acquisition

The land ownership of the CRFS has been attributed to the Ministry of Health and the land ownerships of the health centers have been attributed to the districts, thus no resettlement or land acquisitions have occurred due to the implementation of the project.

## (3) Unintended Positive/ Negative Impacts: Coordination and synergistic effects within the program

Collaboration was expected among projects in the "Tambacounda Health System Strengthening Program". At the time of planning, the health centers developed by this project were expected to become the activity bases for "capacity building of the residents" by the JOCV. CRFS was expected to cooperate with the technical cooperation project "Project for Reinforcement of Maternal and Child Health Care in Tambacounda and Kedougou (Safe Delivery Project)".<sup>11</sup> For the collaborations within the "Tambacounda Health System Strengthening Program" that were expected at the time of planning, a JOCV member (2010-2012) who was in charge of medical equipment maintenance worked in the Regional Medical Office and the health center in Maka-Colibantang during this project. According to the

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<sup>11</sup> "Tambacounda Health System Strengthening Program (2007 - 2011)" consists of the following projects: "Health Advisor (2003 - 2005, 2005 - 2007)", "Tambacounda Regional Health Administration Capacity Strengthening (2009 - 2010)", "Project for Reinforcement of Maternal and Child Health Care in Tambacounda and Kedougou (2009 - 2011)", "Enforcement of Management of Health System in Tambacounda and Kedougou (2011-2014)", "Tambacounda Region and Kedougou Region Health System Management Strengthening Project (2011-2014)", and "JOVCV (nurses, midwives and rural development extension workers)" and Training in Japan and other countries "(Source: information provided by JICA).

maintenance staff of the health center in Maka-Colibantang (currently he is a part of the maintenance staff of Tambacounda Regional Medical Office), who worked together with the JOCV at the time of the project, when medical equipment was provided to the health center in Maka-Colibantang, the instruction manuals of all equipment for the center were also supplied at the same time. They worked together on scanning those manuals and kept in an electronic file. In addition, the maintenance staff member summarized the contents of the manuals along with JOCV and with it he also made a user's manual, a maintenance check manual and a checklist. Those activities helped improve the maintenance technology.

According to the interview, "Project for Reinforcement of Maternal and Child Health Care in Tambacounda and Kedougou" conducted various training programs for the staffs of the health centers and health posts at the CRFS that was completed in February 2011.

The evaluator found that the collaborations within the "Tambacounda Health System Strengthening Program" that were expected at the time of planning were achieved to a certain extent. In the interviews, other donors and the Ministry of Health mentioned that Japanese cooperation was highly significant because it comprehensively supports the health infrastructure in remote areas, namely the Tambacounda Region and Kedougou Region, and it focuses on strengthening the health system.

The project aimed not only at increasing the quantity of healthcare services but also improving the quality by development of the referral health centers with operating rooms in Maka-Colibantang and Saraya and the health center without operating room in Dianke-Maha. In other words, these health centers were expected to function as secondary healthcare facilities equipped to conduct ultrasonic examinations and caesarean section surgery, which would reduce the maternal mortality ratio. X-ray examinations and general surgery also make it possible to carry out the diagnosis, treatment and surgery. At the time of the ex-post evaluation, the numbers of outpatients and childbirth delivery had increased in all three health centres, and the numbers of clinical laboratory tests and X-ray examinations also increased. On the other hand, due to the absence of a surgeon and anaesthesiologist, no surgery operations, including the caesarean section, were able to be performed. Although the numbers of inpatients increased at two facilities, the number of inpatients decreased at one facility. Both health staffs and users are satisfied with the facilities and equipment, and staffs believe that the numbers of users will further increase if the facilities become well known to residents in the future.

CRFS trains 10 nursing students and 10 midwifery students every year. These numbers are lower than what was assumed at the time of planning. Students show high satisfaction with the facilities and the classrooms, but their satisfaction with the equipment is low because there is not enough training equipment for all the students to complete the practical training within the allocated time. Eighty percent and above of students wish to work in the regions after graduation and the center also conducts in-service training for health staffs in the regions. Thus

the evaluator concludes that the center does make certain contributions to human resource development in the areas.

Based on the above, although the quantitative expansion of healthcare services in the target health districts has been achieved, considered the purpose of providing secondary healthcare services, the qualitative effects are limited. As for impact, the project has been making certain contributions towards improving maternal and child health indicators in both regions.

As mentioned above, the project has achieved its objectives to some extent. Therefore effectiveness and impacts of the project are fair.

### 3.4 Sustainability (Rating: ②)

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

##### (1) Staff Allocation

Table 10 shows the staff allocation at the target health centers in compliance with the Ministry of Health's staffing regulations. Since opening the health centres, there has been no placement of a surgeon and anaesthesiologist. Because of no allocation of the necessary medical staff, restrictions are imposed on the implementation of diagnosis, treatment, surgery (including caesarean section) required for secondary healthcare facilities. According to an interview with the staffs at the health centers, even in other occupations there are many people who move to Dakar or other cities for work. It is difficult to retain staff members at the health centers in the regions. According to the doctors and other health staffs, staff housing on the premise of the health centers could be a strong incentive for staff to stay on to solve the lack of staff. In this project, the residence of the health center's doctor was built by the Japanese side, and the other lodging houses of the staff were built by the Senegalese side. There were problems in the layout of the lodging burden of the Senegalese side such as direct sunlight reached the interior and cracks were large on the walls due to the bad material. Thus the hope to include the staff quarters in the Japanese side burden was heard. In addition, as an incentive other than money, they proposed that the Ministry of Health should consider allowing more days for business trips to the Ministry of Health because their locations are farther. For instance, for 1 official working day in Dakar, it takes only a few hours for the staff members in Thies to commute to Dakar, while the staff members in the project sites need to take 4 days for a round trip between Dakar and Saraya. Despite this discrepancy, all staffs in all regions receive 5 business days including 1 official working day in Dakar.

According to the Department of Human Resources at the Ministry of Health, personnel placement in the remote areas has been difficult but the situation has been improving. For example, in the past few years, the Ministry have made efforts to allocate health personnel



to nationwide health posts and finally at least one nurse has been placed at a health post in the remote areas. Then, they are about to tackle to allocate personnel in health centers in the next step. According to "Report at the Difficult Places" (Rapport sur les Zones Difficiles) issued by Ministry of Health, there are some plans to set restrictions on the length of working hours at the healthcare facilities in the remote areas and to send staff members to overseas trainings preferentially.

Table10: Staff allocation in health center

(Unit: person)

	MOH Regulation	Maka-Colibantang	Dianke-Maha	Saraya
Doctor	1	2	1	2
Surgeon	1	0	No facility	0
Assistant surgeon	1	0	No facility	0
Anesthesiologist	1	0	No facility	0
Dentist	1	0	0	0
Dental technician	1	0	0	0
Laboratory technician	1	1	0	0 (to be arranged)
Ophthalmology technician	1	0	0	0
Radiologist	1	1	No facility	0
Nurse	3	7	7	15 (including assistants)
Midwife	3	5	5	20 (including assistants)
Social assistant	1	0	1 (Assistant)	0
Maintenance technician	1	1	0	0
Hygiene technician	2	0	0	4
Hygiene assistant	1	0	0	0
Assistant nurse	1	0	11	0
Secretary	1	1	1	0
Total	22	18	26	41

Source: Provided by the Executing Agency

## (2) Maintenance System

The maintenance control system of the Regional Medical and District Health Offices is implemented based on *the Policy of Maintenance for Infrastructures, Facilities and Equipment for Health Structure in Senegal (Politique de Maintenance des Infrastructures, des Installations et des Equipements des Structures de Santé du Sénégal)* issued by the Department of Infrastructure Equipment at the Ministry of Health.

- Tambacounda Regional Medical Office: A maintenance staff (1 person) and an assistant (1 person) are placed. They are in charge of maintenance at the regional level and supervision of 7 health districts.
- Maka-Colibantang District Health Office: Maintenance staff (1 person) is placed at the

health center and is in charge of the maintenance of the health center in Maka-Colibantan.

- Dianke-Maha District Health Office: There are no maintenance personnel placed. The regional maintenance personnel visit as necessary. Except for medical equipment repair, local personnel who have skills are hired as necessary for daily repair and replacement of electricity and water equipment.
- Kedougou Regional Medical Office: A maintenance staff (1 person) is placed and is in charge of maintenance at the regional level and supervision of 3 health districts.
- Saraya District Health Office: There are no maintenance personnel placed. The regional maintenance personnel visit as necessary. Except for medical equipment repair, local personnel are hired as necessary for daily repair and replacement of electricity and water equipment.

CRFS has 4 full-time teachers and 1 administrator. There is no change in the number of staff members to be placed after the project. The placement of maintenance personnel was not planned at the time of planning and there was no allocation at the time of the ex-post evaluation. According to the principal, they contact the Department of Human Resources at the Ministry of Health to deal with any problems with the facility or equipment.

Based on the above, the maintenance system seems to have no problem by mobilizing the locals and staff at the Regional Medical Office. However, since some health centers do not have specific personnel, some equipment is not working. Thus, there are some challenges to the system of operation and maintenance.

#### 3.4.2 Technical Aspect of Operation and Maintenance

At the time of planning, health centers in Tambacounda Region had no record of malfunctions and/or repairs of the equipment, thus it was not possible to trace the causes of such malfunctions. In addition, the health centers at the time of planning had few equipment that required maintenance, because the health centers were tentatively upgraded from the health posts. The plan was that for relatively expensive equipment (radiological equipment, ultrasonic diagnostic equipment and autoclave sterilisers, etc.) the health centers would make maintenance contracts with external maintenance companies. For any problems with other equipment, they would contact agents for examinations and repairs and then report to the maintenance department of the Regional Medical Office if necessary.

Since the maintenance staff of the Tambacounda Regional Medical Office and Maka-Colibantang Health Centre graduated from the National Medical Equipment Maintenance Engineer Training School in Diourbel, there were no technical problems in daily maintenance at the time of the ex-post evaluation. Maintenance Trainings are carried out twice a year by the Department of Infrastructure and Equipment at the Ministry of Health. All three health centres did not make an equipment management ledger, a repair ledger and annual

maintenance plan, which they were instructed to prepare by the soft components of this project. The health centres also did not make maintenance contracts with any external maintenance companies.

As mentioned above, although the maintenance personnel have kept up some level of maintenance by their individual skills, because personnel changes are frequent, the capacity of preventive maintenance and the ability to prepare and implement the maintenance plan is not sufficient. Therefore, technical aspects of operation and maintenance have some problems.

### 3.4.3 Financial Aspect of Operation and Maintenance

The evaluator could confirm the financial information only for Saraya Health Center and the 2016 balance of payments of Maka-Colibantang Health Center. According to interviews with the directors of the health centers, it is difficult to grasp the financial situation prior to their assignments since the financial data during the period of their predecessors is not kept in the health centres.

Table 11: Revenue and expenditure of Saraya Health Center (Unit: CFA)

Annual income	2012	2013	2014	2015	2016
Business income (health services etc.)	0	0	0	1,104,335	9,202,240
Government subsidies	16,200,000	16,200,000	11,400,000	16,200,000	16,200,000
Total	16,200,000	16,200,000	11,400,000	17,304,335	25,402,240
Annual expenditure	2012	2013	2014	2015	2016
Personnel expenses					8,344,495
General & administrative expenses	16,200,000	16,200,000	11,400,000	16,200,000	16,200,000
Liquidity investment			4,000,000	9,000,000	0
Repayment			1,450,000	4,000,000	1,156,700
Total	16,200,000	16,200,000	16,850,000	29,200,000	25,701,195
Annual balance	0	0	-5,450,000	-11,895,665	-298,955

Source: Provided by the Executing Agency

As shown above, Salaya Health Centre has had a negative balance in the past three years. Many of the expenditures are for petrol costs for official businesses and fuel costs of generators. The countermeasures to compensate for the negative balance were not taken.

In Maca-Colibantang Health Centre, the financial balance of 2016, the only information which was available, was a surplus of about 8 million FCFA in 2016. Balance breakdown was not available.

All three health centres collect fees for medical consultation and drugs from users according to the unified rate table set by the government.<sup>12</sup>

According to interviews conducted at the CRFS, there was no particular difficulty in

<sup>12</sup> Children under the age of 5 and elderly people can receive healthcare services without self-payment and their fees are reimbursed by the government.

the financial situation.

With the information from above, we can conclude that there are some problems in the financial situation because Saraya Health Centre has shown a negative balance transition and has no plan to secure future funds. Also, we judged from the limited information.

#### 3.4.4 Status of Operation and Maintenance

As results of the field survey of the three health centers show, the Health Center in Saraya was considered to be the cleanest health facility. According to the director of the health center, the members of a local women's group voluntarily clean the health facilities once a week, and the local football team mows their lawns free of charge. Health Centers in Dianke-Maha and Maka-Colibantan had dust and spider webs at the windows and the walls of the corridors. Their floors of inpatient rooms were not kept very clean. The director of Salaya Health Center and the director of Kedougou Regional Medical Office had successfully involved local stakeholders (a village head, religious leaders, local companies, and local organizations, etc.) in facility maintenance. In specific, this project had been able to lead water and electricity for the health center from the village source with technical and financial support from the local mining companies and local engineers.

The maintenance of equipment under operation was generally good in all three health centers. However, some equipment was not in operation and was left as they were. Especially in the Maka-Colibantang and Saraya health centers, the main equipment such as surgery, dentistry and X-ray equipment (the X-ray in Maka-Colibantang is working) was not used because human resources were not allocated and the equipment was left unused as if it was untouched. According to the maintenance personnel, there was no problem with the operation because he checked the operation of these unused machines periodically. According to the interview with the maintenance personnel of Kedougou District Health Office in Kedougou Region who went for on-site repair at the Saraya Health Centre, he had to repair some of the cords in dental examination unit because mice had bitten through them. It was heard that despite being capable of repair, there was a possibility that equipment could be damaged due to the lack of use. Currently there is no maintenance staff assigned to the Saraya Health Center, but maintenance is kept as needed with help from the Regional Medical Office and other District Health Offices as mentioned above.

Since the project implementation, the Department of Infrastructure and Equipment and Department of Human Resources at the Ministry of Health and JICA Senegal office have jointly monitored for delays in items that Senegal is responsible for, and for delays of the opening of health centers. Even after the opening of the health centers, joint monitoring was carried out in August 2015 and May 2017 in order to grasp the allocation of personnel and the maintenance management situation. In this regard, the directors of the three health centers said

that since the central government understands the actual conditions in rural areas and stakeholders at the rural and central levels and JICA think together to improve the conditions, the joint monitoring is useful to increase sustainability.

Therefore, although the maintenance of equipment under operation is generally good, some inactive equipment exists, thus there are some problems in the situation of operation and maintenance.

Based on the above, some minor problems have been observed in terms of the institutional, technical and financial aspects and the situation of operation and maintenance. Therefore sustainability of the project effects is fair.

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

### 4.1 Conclusion

The objective of this project is to improve the residents' access to health facilities and to improve training environments for nurses and midwives by the construction of three health centers, procurement of medical equipment, provision of technical assistance for improving maintenance management capability, and expansion of the building of the CRFS and procured educational equipment, thereby contributing to the improvement of healthcare services and health indicators in Tambacounda Region and Kedougou Region. The project is highly relevant to Senegal's development policy and development needs as well as Japan's ODA policy, therefore its relevance is high. The project was carried out mostly as planned. Although the project cost was within the plan, the project period exceeded the plan because it took a long time from the completion of construction to the opening of the health center, therefore, efficiency of the project is fair. With regard to the effectiveness, although the numbers of outpatients, childbirth deliveries, laboratory tests and X-ray examinations in all targeted health centers increased, no surgery operations could be performed including the caesarean section due to the absence of a surgeon and anaesthesiologist. Although the numbers of inpatients increased at two health centers, the number of inpatients decreased at one health center compared to before the project. Although the number of students at the CRFS did not change before and after the project, in-service training was also conducted. Therefore, the project made certain contributions to human resource development in the region. For impact, it was considered that the project made certain contributions because the maternal and child health indicators in both regions have improved after the project started. The project has achieved the quantitative expansion of healthcare services at the targeted health districts. Despite the fact that the project was aimed to improve the quality of healthcare services to accommodate secondary healthcare facilities, no surgeries have been carried out, and so the effect was limited. Therefore, effectiveness and impacts were fair. Sustainability is fair, based on the needs for strengthening

institutional and technical aspects and concerns about maintenance management status of unoperated medical equipment.

Based on the above, this project is evaluated to be partially satisfactory.

## 4.2 Recommendations

### 4. 2. 1 Recommendations to the Executing Agency

(1) Department of Human Resources at the Ministry of Health should allocate a surgeon and an anaesthesiologist to the health center in Maka-Colibantang, an anaesthesiologist to the health center in Saraya, and dentists in all three health centers. This way, all three health centers could utilise the unused medical equipment and provide secondary healthcare services. The Department also should take some measures to improve the placement and retention of other human resources.

(2) Department of Infrastructure Equipment and Department of Human Resources at the Ministry of Health should regularly conduct joint monitoring (perhaps every 6 months) along with JICA at the three health centers and the CRFS in the future, too. They should make efforts to understand the conditions of operation and maintenance management of equipment and advise and provide support as necessary.

### 4. 2. 2 Recommendations to JICA

None.

## 4.3 Lessons Learned

### Setting up the Appropriate Project Scopes

At the time of planning, if the allocation of necessary personnel is not certain, the project should consider to limit the project scopes. Even though the relevance was secured that there was a need for surgery in the target areas and for an operating room to be established at the Referral Health Centers, according to the policies and facility standards of the recipient governments. For example, the project should have made a plan without an operating room with the scope of Japanese fund and later they should have considered a step-by-step plan to establish an operating room, depending on the executing agencies. In this project, the operating rooms were constructed in the remote areas and no surgeon or anaesthesiologist was assigned, so the operating rooms and related equipment remained unused. It is important to confirm the prospect of the allocation of personnel based on information, such as the training situation of the personnel to be placed, the situation of work places, and the placement situation of other donors in similar cases. Furthermore, the project should set up appropriate project scopes and support.

### Timely Implementation of Responsibilities of the Executing Agency

At the time of planning, it is vital to consider the appropriate share of work between both countries based on the assessment of project implementation capacity and financial availability of the executing agency. In addition, the Japanese side needs to explain the responsibilities of the executing agency both during the project formulation and planning stages and to clearly notate the agreed matters in the meeting minutes. In order to be able to supervise the agreed matters for the Japanese side, it is important to identify necessary consultation items and to coordinate and organize all necessary steps at the preliminary investigation stage. In addition, if it is difficult to fulfil the activities assigned to the executing agency, the stakeholders should closely communicate with one another and take any countermeasures beforehand, and devise countermeasures against delays in the project.

### Importance of Involving Local Stakeholders in Project Planning and Implementation Processes

It is often difficult for healthcare facilities in remote areas to secure a sufficient budget and allocation of necessary personnel. They are far away from the capital and they may not be able to provide appropriate healthcare services continuously simply because they are waiting for a response from the central government. In particular, in countries that adopt a decentralization system, the local autonomy and independence affects the effect of the project. Regional Chief Medical Officers and directors at the healthcare facilities should establish a good relationship with local leaders and operate their facilities utilizing local and human resources. Therefore, from the stage of planning, the executing agency of the partner country should share the project plan with local stakeholders and start building a relationship of trust with them by discussing benefits to the areas, types of possible cooperation systems and possible support from the local people. It is important to continue building these relationships during and after the project completion.

### Inclusion of Staff Housing in the Healthcare Facilities in Remote Areas in the Project Scope of the Japanese Side

Healthcare facilities in remote areas have difficulties in hiring and retaining the necessary personnel. It often takes long time to commute due to the inadequate transportation system, and due to the poor security, it is often difficult to find a safe residence in the rural areas. Though it is necessary to prioritize this in the overall budget, in order to secure necessary human resources and obtain the expected project effects, the project should include staff housing in the construction plan of healthcare facilities in remote areas, as a part of the project scope of the Japanese side.