

Country Name	The Project for Improvement of Medical Equipment in Kinshasa University Hospital (Le projet d'aménagement en équipements des Cliniques Universitaires de Kinshasa)
Democratic Republic of the Congo	

I. Project Outline

Background	The health system in Democratic Republic of the Congo (hereinafter "DR Congo") had been weak due to long years of conflicts, and the number and quality of medical facilities and staff were inadequate and thus the performance of health indicators was extremely low. For example, infant mortality (under five years old) was 205 per 1,000 births (as of 2006), maternal mortality was 1,100 per 100,000 births (as of 2005), morbidity of tuberculosis was 645 per 100,000 population (as of 2006), and morbidity of HIV (15 years old and over) was 2,933 per 100,000 population (as of 2005). Kinshasa University Hospital (Cliniques Universitaires de Kinshasa: UNIKIN) was a top-referral hospital in the country, providing maternal and child health services and trainings for medical staff in the country. However, many of necessary medical equipment in the hospital were deteriorated and out of order, which was an obstacle to providing appropriate level of medical services and trainings.				
Objectives of the Project	The objective of the project is to improve medical services and capacity of conducting medical trainings related to obstetrics/gynecology and neonate/pediatrics in Kinshasa University Hospital (UNIKIN) by procuring medical equipment for these departments, thereby contributing to strengthening of the hospital's function as a top-referral hospital.				
Outputs of the Project	<ol style="list-style-type: none"> 1. Project Site: Kinshasa City 2. Japanese side <ol style="list-style-type: none"> (1) Procurement of medical equipment for departments related to obstetrics/gynecology and neonate/pediatrics (135 items in total)¹ (2) Soft components (trainings and seminar) on strengthening maintenance system of medical equipment and maternal and child health care 3. DR Congo's side <ol style="list-style-type: none"> (1) Construction of a shed to place an electricity generator (2) Protection and reinforcement works for a room where a mammography is placed (3) Provision of water supply, water discharge, electricity and medical gas, reinforcement of hospital facilities (including repair of leaking roof) and removal of old equipment for installation of procured medical equipment 				
Ex-Ante Evaluation	2009-2010	E/N Date	May 18, 2010	Completion Date	April 22, 2012
Project Cost	E/N Grant Limit: 728 million yen, Actual Grant Amount: 622 million yen				
Implementing Agency	Cliniques Universitaires de Kinshasa (UNIKIN)				
Contracted Agencies	International Total Engineering Corporation (ITEC), SIRIUS corporation				

II. Result of the Evaluation

1 Relevance
<p>Consistency with DR Congo's development policy at the time of ex-ante evaluation and ex-post evaluation</p> <p>This project has been highly consistent with DR Congo's development policy, as reduction of maternal and infant mortality is emphasized in policy documents such as the Health Care Development Master Plan (PDDS 2000-2009) (at the time of ex-ante evaluation) and the National Plan for Health Sector Development (PNDS 2011-2015) (at the time of ex-post evaluation) etc.</p> <p>Consistency with DR Congo's development needs at the time of ex-ante evaluation and ex-post evaluation</p> <p>UNIKIN has been one of top-referral hospitals and important training/education hospitals in DR Congo since before the time of ex-ante evaluation to the time of ex-post evaluation. The needs for medical equipment, particularly those related to maternal and child health, have been high as the maternal and child mortality has remained high in the country. Therefore, the project has been highly consistent with DR Congo's development needs.</p> <p>Consistency with Japan's ODA policy at the time of ex-ante evaluation</p> <p>The project was also consistent with Japan's ODA policy as stated in the ODA Country Data Book (2008), which states that cooperation would be provided to DR Congo that contributes to an improvement of basic living environment and community development, prioritizing health sector.</p> <p>Evaluation result</p> <p>In light of the above, relevance of this project is high.</p>

¹ Major items included the followings:

- Neonatal/pediatrics department: patient monitor, echography, infant incubator, etc.
- Obstetrics/gynecology department: echography, operation table, laparoscope, etc.
- Resuscitation/anesthesia department: anesthesia machine, defibrillator, patient monitor, etc.
- Diagnostic imaging department: automatic/manual developing device, general radiographic X-ray, mammography, CT scanner, etc.
- Laboratory/blood bank: medical freezer, Elisa analyzer, blood cell counter, etc.
- Others: sterilizer, generator, ambulance, etc.

2 Effectiveness/Impact

Effectiveness

Among 135 items of medical equipment procured under the project, the survey conducted for ex-post evaluation for the 44 main items revealed that around 80% of them are regularly used, 9% are partially used and 11% are not used². Some equipment such as biochemical analyzer, polymerase chain reaction (PCR) apparatus etc. are not used due to a lack of reactors, spare parts and consumables. UNIKIN has not been able to purchase reactors and spare parts for some equipment, as providers are not available in Kinshasa or the hospital cannot afford to buy the chemicals. Mammography and laparoscope are not used due to a lack of trained staff who can properly use these equipment. Moreover, mammography and Elisa analyzer have never been connected to a printer due to a lack of software compatibility.

Regarding quantitative effects, the number of outpatients in obstetrics/gynecology and neonate/pediatrics departments (Indicator 1) and the number of cesarean operation (Indicator 2) in 2014 are less than baseline figures in 2008. This can be explained by the fact that besides this project, nearby secondary hospitals were rehabilitated/developed after the project was completed and started to receive many simple cases who used to consult directly in UNIKIN in the past. Also, a private pediatric hospital opened in the same health zone with UNIKIN. This hospital was initiated by one of the professors of UNIKIN, and some medical staff or specialists were trained by UNIKIN. The hospital now shares the number of pediatric patients mostly as first contact due to the accessibility and the presence of specialists.

The number of gynecological operation (Indicator 3) in 2014 is 242% against the target. This is mainly due to the number of complicated cases referred to UNIKIN, especially cases referred from secondary hospitals around and other hospitals by dint of the equipment provided. According to the gynecology-obstetric department of UNIKIN, most of gynecology-obstetrics operations were referred cases.

The number of radiographic examination (Indicator 4) in 2014 is 65% against the target. This is partly because the mammography is not used, and partly because other hospitals now conduct CT examinations. It can be noted that some staff in charge of CT in those hospitals were trained in UNIKIN with the CT scanner procured by this project. On a qualitative level, UNIKIN reported positive changes such as the followings: (i) the utilization of the CT-scanner improved the diagnosis of hemorrhagic and ischemic types of cerebrovascular accidents (Department of Medical Imaging); (ii) the equipment provided in the Department of Anesthesia-Resuscitation improved also the vital prognostic of respiratory failure cases and the practices of thoracic surgery and persistent ductus arteriosus surgery operations become possible and more effective now than before.

The number of medical students and staff who participated in clinical/practical trainings in obstetrics/gynecology and neonate/pediatrics departments has been increasing in recent years, however, it could not be verified to what extent the number has increased compared with that of before the project, as the baseline figure is not available.

Impact

As mentioned above, the receiving of referral cases from secondary hospitals where some medical staff trained by UNIKIN work, and better services with the equipment provided by the project have strengthened the function of UNIKIN as a top referral hospital, although referral statistics are not available³.

Infant mortality (under five years old) has been reduced from 205 per 1,000 births in 2006 to 104 per 1,000 births in 2014 and maternal mortality has been reduced from 1,100 per 100,000 births in 2005 to 846 per 100,000 births in 2014. Although it cannot be clearly proven, it appears that the project has contributed to the improvement through strengthening the technical platform of UNIKIN as a top referral and a tertiary hospital⁴.

All the medical wastes are treated in the incinerator at UNIKIN. While there is no regular monitoring with regard to the radiation leakage, no radiation leakage has been detected, no negative impact on natural environment has been observed, nor has land acquisition been occurred under this project.

Evaluation result

Around 80% of the main equipment procured under this project have been well utilized. With these equipment and training, the project has partially achieved its objective of improving medical services and capacity of conducting medical trainings related to obstetrics/gynecology and neonate/pediatrics in UNIKIN. The lower performance of some quantitative indicators than expected can be at least partly explained by the improvement of the capacity of secondary hospitals to which this project has indirectly contributed through development of human resources in UNIKIN. Although not quantitatively verified, the expected impact of strengthening UNIKIN as a top referral hospital was observed.

In light of the above, effectiveness/impact of the project are fair.

Quantitative Effects

Indicator	Before the project (2008)	Target (2013)	Actual result (2012)	Actual result (2013)	Actual result (2014)
Indicator 1: The number of outpatients in obstetrics/gynecology department (person)	1,394	3,000	Not available	Not available	1,257
Supplemental Information 1 for Indicator 1: The number of outpatients in neonate/pediatrics department (person)	3,335 ⁽¹⁾	-	Not available	Not available	2,003
Supplemental Information 2 for Indicator 1: The number of inpatients in obstetrics/gynecology department (person)	808	-	Not available	Not available	811
Supplemental Information 3 for Indicator 1: The number of inpatients in neonate/pediatrics department (person)	1,306	-	Not available	Not available	672

² While 135 items of equipment were procured under the project, as it is difficult to check all the equipment, main equipment (44 items) indicated in JICA internal document were chosen to be surveyed.

³ According to UNIKIN, a reference note is directly attached to the medical record. However, the statistical service of the hospital has just been restructured and could not find this information in the central archives in the survey of this ex-post evaluation.

⁴ JICA is particularly the only donor that has contributed in strengthening the technical platform of a tertiary hospital (which can provide high level medical examination services) such as UNIKIN for over two decades, while some other donors have supported hospitals of primary or secondary levels.

Indicator 2: The number of cesarean operation (case)	425	552	Not available	301	369
Indicator 3: The number of gynecological operation (case)	0	53	Not available	Not available	128
Indicator 4: The number of radiographic examination (CT and mammography) (case)	0	1,300	Not available	Not available	849
Supplemental Information 4: The number of medical students participated in clinical trainings in obstetrics/gynecology and neonate/pediatrics departments (person)	Not available	-	395	652	312 (obstetrics/gynecology only)
Supplemental Information 5: The number of medical staff participated in practical trainings in obstetrics/gynecology and neonate/pediatrics departments (person)	11 (obstetrics/gynecology only)	-	57 (neonate/pediatrics only)	64 (neonate/pediatrics only)	70 (neonate/pediatrics only)

Note: (1) The baseline year for supplemental information 1 is 2007.

Source: Ex-Ante Evaluation Sheet, JICA internal document, questionnaire survey to UNIKIN

3 Efficiency

Although the project cost was within the plan (ratio against the plan: 85%), the project period exceeded the plan (ratio against the plan: 116%) because it took more time for detailed design and bidding than expected. Therefore, efficiency of the project is fair.

4 Sustainability

Institutional aspect

Before the project implementation, the allocated number of staff in obstetrics/gynecology and neonate/pediatrics departments in UNIKIN was considered to be sufficient to handle equipment procured under the project and provide medical services to patients. The number of doctors in these departments has increased by approximately 20% at the time of ex-post evaluation, and thus the allocated number of doctors is considered to be sufficient. However, data on the number of other staff such as nurses and maintenance staff is not available, and thus it could not be verified whether the number of staff other than doctors is sufficient to properly handle and conduct daily and periodic preventive maintenance and repair of medical equipment at the time of ex-post evaluation.

Technical Aspect

Trainings were provided under the project to strengthen maintenance system of medical equipment in UNIKIN. However, demonstration and guidance on how to check newly procured equipment were not provided under the project due to a delay of handing over of equipment. According to UNIKIN, regular checking of medical equipment is conducted by maintenance staff, however, their technical level is not sufficient to properly conduct daily and periodic maintenance.

Financial Aspect

The amount of UNIKIN's revenue from hospital fee in 2014 is approximately twice the amount estimated in the preparatory study. Maintenance cost of medical equipment and facilities in 2014 is approximately three times of the amount estimated before the project implementation. As had been expected, use of the equipment procured by this project created additional revenue. On the one hand, such a revenue reduced operation cost of the equipment (e.g. the revenue gained with the utilization of the CT scanner helped the diagnostic imaging department to acquire a power generator for an exclusive usage of the CT scanner with a good fuel consumption). On the other hand, the additional revenue allowed purchase of additional medical equipment, which increased the required maintenance cost. While detailed data on maintenance cost of equipment procured under the project is not available, according to UNIKIN, the amount of hospital revenue is generally not sufficient to procure necessary spare parts and consumables for medical equipment.

Current Status of O&M

The CT scanner is temporarily out of service at the time of ex-post evaluation. Maintenance of CT scanner was conducted by manufacturer's agency called MEDILOC. However, the staff of MEDILOC, who was trained under the project to conduct the maintenance of CT scanner, has left the company, and the company itself has closed down. UNIKIN wishes to contact directly the manufacturer in Japan to repair the CT scanner. Maintenance of other equipment procured under the project is regularly conducted by UNIKIN staff, and approximately 80% of 44 main items procured under the project is utilized at the time of ex-post evaluation, as explained above. The inventory and maintenance book of equipment provided under the project is partially utilized, and there is an upgrading plan to replace equipment that has reached service life. However, spare parts and consumables for medical equipment are not procured and managed properly due to financial constraints. Moreover, UNIKIN wishes to contact directly the providers of spare parts in Japan and procure them, as providers in Kinshasa are scarce.

Evaluation result

In light of the above, sustainability of project effects is fair, as it is not clear whether the number of staff (apart from doctors) in UNIKIN is sufficient to properly handle and maintain the procured medical equipment, technical level of UNIKIN staff and hospital revenue are not sufficient to properly maintain procured equipment and providers of necessary spare parts for some equipment are not available in Kinshasa, while the current status of most (80%) of main equipment is considered to be in a good condition.

5 Summary of the Evaluation

The project has partially achieved its objectives: the number of patients and examinations decreased while the number of gynecological operation increased. Nevertheless, the lower performance of some quantitative indicators than expected can be at least partly explained by the improvement of the capacity of secondary hospitals to which this project has indirectly contributed through development of human resources in UNIKIN. Although not quantitatively verified, the expected impact of strengthening UNIKIN as a top referral hospital was observed. As for sustainability, there are some uncertainty or problems in institutional, technical and financial aspects, as sufficiency of the number of staff could not be adequately verified, technical level of UNIKIN staff and hospital revenue are not sufficient to properly maintain procured medical equipment and providers of necessary spare parts for some equipment are not available in Kinshasa. As for efficiency, the project period exceeded the plan.

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

III. Recommendations & Lessons Learned

Recommendations to implementing agency:

1. For more effective and efficient operation of referral systems, UNIKIN is recommended to firmly operate the restructured statistics system including referral statistics and manage data and information.
2. To ensure sustainability of the effects of this project, UNIKIN is recommended to (i) train directly the users who receive equipment on preventive and curative maintenance, and (ii) relocate underused equipment in other departments where they can be efficiently utilized.

Lessons learned for JICA:

1. A project targeted to a university hospital can expect effects that are not confined to the targeted hospital but to other hospitals in a way that the staff who belongs to or are trained in that targeted hospital may work in other hospitals. Therefore, it should be considered that indicators such as the number of patients/clinical examinations may not simply increase if the project is successful in training staff of other hospitals and strengthening the referral system.



CT scanner



Incubators in the neonatal unit