Kingdom of Morocco

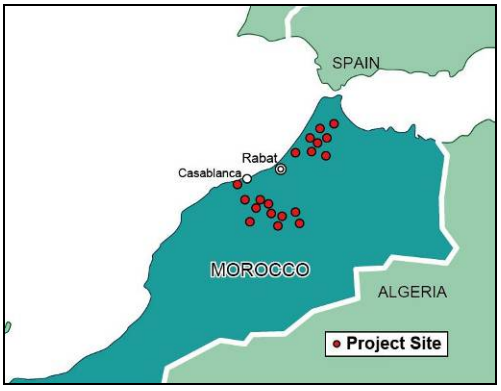
Ex-Post Evaluation of Japanese Grant Aid Project
"Project for the Improvement of Maternal Healthcare in Rural Areas (Phase II)"
("Projet d' amélioration des soins de santé maternelle en milieu rural (Phase II)")

External Evaluator: Hisami Nakamura and Junko Fujiwara, OPMAC Corporation

0. Summary

The Project is consistent with Morocco's health sector development plan and development needs and with Japan's ODA policy for Morocco, thus its relevance is proved to be high. The Project period, however, was prolonged due to the delay in construction works, which meant that the project efficiency was fair. The Project has added value to the efforts of the Ministry of Health to improve perinatal care service, and its efficiency is proved high. Although improved, there remains a certain disparity among the target institutions in their institutional and technical management capacity for operation and maintenance. The sufficient recurrent budget and its direct allocation to health centers for facility maintenance could be further pursued.
In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project Sites

One of target institutions improved under the Project: the Maternal Unit of Al Idrissi Regional General Hospital in Kénitra Province

1.1 Background

Maternal and child health indicators for the year 2004 showed a poorer situation in the Kingdom of Morocco (hereinafter 'Morocco') than in surrounding countries[1] and a need for further improvement. The infant mortality rate (IMR) was 40 per 1,000 live births, the mortality rate of children under five years old (U5MR) was 37, and the maternal mortality rate (MMR) was 227 per 100,000 births. Regional disparity in the country was also severe as shown in MMR (urban areas were 187 whereas rural areas were 267)[2]. Causes of death in pregnant women were reported as complications, poisoning symptoms, wrong treatment of high risk deliveries, pregnancy at a young age and work overload. The Government of Morocco

[1] IMR per 1,000 births in Tunisia and Libya as of 2003 were 19 and 13, U5MR were 24 and 16, and MMR per n100,000 births were 120 and 97 respectively.
[2] Ministère de la Santé, "Rapport Preliminaire de l'Enquête sur la Population et la Santé Familiale (EPSF), 2003-2004"

(GOM) introduced "Program for Maternity without Risk" (*Programme de la maternité sans risque*) in its "Health and Medical Policy 2005-2007" (*Politique de santé, acquis, defies et objectifs, plan d'action 2005-2007*), under which it outlined (i) the improvement of maternal facilities; (ii) the development of health personnel for assisting deliveries, and (iii) the enhancement of referral systems.

The Japan International Cooperation Agency (JICA) provided the "Technical Cooperation Project for the Improvement of Maternal Healthcare in Rural Areas" (*Projet technique d' amélioration des soins de santé maternelle en milieu rural*), dispatched individual experts and Japanese volunteers, and conducted a series of country-focused training programs for Moroccan delegates in Japan, to support the initiatives of the GOM. The Government of Japan (GOJ) extended its grant aid in FY 2001 and 2002, when budget constraints prevented the GOM from taking prompt action to improve rural health facilities and equipment, in the "Project for the Improvement of Maternal Healthcare in Rural Areas" (*Projet d' amélioration des soins de santé maternelle en milieu rural*) under which health facilities and medical equipment were enhanced at 27 target institutions in 14 provinces in rural and remote areas[3]. The GOM highly appreciated the GOJ's assistance, and an official request was made for the extension of further grant aid to this project targeting 19 health institutions in four provinces adjacent to the capital Rabat and the commercial center of Casablanca.

1.2 Project Outline

The objective of this project was to improve the quality of perinatal care services provided at medical institutions in four targeted provinces (Kénitra, Sidi Kacem, Khouribga, and Settat) by upgrading their facilities and equipment for perinatal care services and improving their service systems.

E/N Limit / Actual Grant Amount		972 million yen / 954million yen
Exchange of Notes Date		9 August 2006
Implementing Agency		Ministry of Health (*Ministère de la santé*)
Project Completion Date		28 March 2008
Main Contractors		Konoike Construction Co., Ltd, Mitsubishi Corporation
Main Consultants		Joint Venture Group of Kume Sekkei Co., Ltd and ITEC
Basic Design		January to August 2006
Related Projects	Grand Aid	Project for the Improvement of Maternal Healthcare in Rural Areas (1/2 phase: FY2001, E/N Limit 465 million yen, 2/2 phase: FY2002, E/N Limit 784 million yen)
	Technical Cooperation	Project for the Improvement of Maternal Healthcare in Rural Areas (2004 to 2007), Dispatch of individual experts, dispatch of Japanese volunteers and country-focused training courses in Japan

Note: E/N stands for Exchange of Notes

Project locations and project components are as shown in Table 1

[3] Séfrou, Boulemane, Zouaga My Yacoub, Fès Jdid Dar Dbibegh, Khénifra, El Hajeb, Ifrane, Errachidia, El Isamilia, El Menzeh, Tan Tan, Assa-Zag, Guelmim, and Ta Ta provinces.

Table 1: Project Locations and Project Components

Region	Province	Target Medical Institution	Project Component		
			Facility	Equipment	Ambulance
Gharb-Chrarda-Béni Hssen	Kénitra	Al Idrissi Regional General Hospital (*Hôpital général régional d'Al Idrissi*)	✓	✓	
		Zoubeir Skirej Health Center (*Polyclinique de Zoubeir Skirej*)			✓
		Sidi Slimane Polyclinic (*Polyclinique de Sidi Slimane*)		✓	
		Sidi Allal Tazi Health Center (*centre de santé de Sidi Allal Tazi*)	✓	✓	✓
		Had Oulad Jalloul Health Center (*Centre de santé de Had Oulad Jalloul*)		✓	
		Sidi Yahia Health Center (*Centre de santé de Sidi Yahia*)	✓	✓	
	Sidi Kacem	Abou Kacem Zahraoui Polyclinic (*Polyclinique de Abou Kacem Zahraoui*)			✓
		Macharaa Bel Ksiri Local Hospital (*Hôpital local de Macharaa Bel Ksiri*)		✓	✓
Chaouia-Ouardigha	Khouribga	Hassan II Provincial General Hospital (*Hôpital général provincial Hassan II*)	✓	✓	
		Bejaad Polyclinic (*Polyclinique de Bejaad*)			✓
		Boujniba Health Center (*Centre de santé de Boujniba*)		✓	
		Oulad Azzouz Health Center (*Centre de santé de Oulad Azzouz*)		✓	
		Maadna Health Center(*Centre de santé de Maadna*)			✓
	Settat	Hassan II Regional General Hospital (*Hôpital général régional Hassan II*)	✓	✓	
		Ben Ahmed Polyclinic (*Polyclinique de Ben Ahmed*)		✓	
		Soualem Health Center (*Centre de santé de Soualem*)		✓	
		Bni Khloug Health Center (*Centre de santé de Bni Khloug*)			✓
		Sidi Hajaj Health Center (*Centre de santé de Sidi Hajaj*)			✓
		Tlat Loulad Health Center (*Centre de santé de Tlat Loulad*)		✓	

Note 1: Regions and provinces were officially restructured in January 2011. Kénitra, Sidi Kacem and Sidi Slimane are now part of Rabat-Sale-Kénitra Region, and Khouribga province now belongs to Beni Mellal-Khenifra Region. Settat province is now part of Casablanca-Settat Region. The target medical institutions now belong to six provinces: Sidi Slimane Polyclinic and Sidi Yahia Health Center are now under Sidi Slimane province, and Soualem Health Center belongs to Berrechid province.

The status of some target institutions is also now different due to the health sector reform recently implemented. Some polyclinics have become provincial special hospitals. All local hospitals used to be part of primary medical care institutions in the referral system as there were no gynecologists / obstetricians allocated, although maternity units were installed. Some local hospitals are now upgraded to secondary medical care service providers with gynecologists / obstetricians. Others without gynecologists / obstetricians are now reorganized as health centers.

In order to avoid confusion, the names of medical institutions, referred to in this report, their status, the provinces and regions they belong to remain as they formerly were.

Note 2: The medical referral system in Morocco is topped by the tertiary medical care institutions such as the university hospital centers and the national hospitals (special / general) in the capital Rabat and in Casablanca. They are followed by the secondary medical care service institutions (regional hospitals (special / general), provincial hospitals (special / general), and local hospitals). Health centers and rural dispensaries in remote areas are placed as primary medical service providers.

2. Outline of the Evaluation Study

2.1 External Evaluator

Hisami Nakamura, OPMAC Corporation
Junko Fujiwara, OPMAC Corporation

2.2 Duration of Evaluation Study

The Evaluation Study was carried out as follows:
Duration of the Study: November 2010 to October 2011
Duration of the Field Study: from 6 to 25 March 2010 and from 19 to 25 June 2011

2.3 Constraints during the Evaluation Study

The Evaluation Team sent a set of questionnaires to all 19 target institutions through the Ministry of Health (MOH) prior to the field study. As the institutions are spread over vast geographical areas in the country, the Team only visited 11 institutions in three provinces which were selected according to differences in project components (facilities improvement, .equipment and ambulance procurement). There were also extended intensive discussions with the MOH and Regional / Provincial Health Service Delegations.

3. Results of the Evaluation (Overall Rating: B[4])

3.1 Relevance (Rating: 3[5])

3.1.1 Relevance to the Development Plan of Morocco

The MOH of Morocco introduced the "Health and Medical Policy 2005-2007" while implementing the "Health Action Plan 2003-2007" (*Plan d'action santé 2003-2007*), under which the Immunization Program, the Program for Maternity without Risk and the Comprehensive Disease Control Program for Children were implemented. Provincial hospitals and maternity units were also constructed under this Health Action Plan.

After the National Initiative for Human Development (*INDH: Initiative nationale pour le développement humain*[6]) was advocated in 2005 by the King of Morocco[7], the MOH raised the improvement of access to maternal and child healthcare services to one of eight strategic targets for the alleviation of MMR and IMR. The improvement of perinatal care services and the enhancement of the referral system, which were objectives of this project, contributed to the MOH efforts to promote the Program for Maternity without Risk and to improve the access to maternal and child healthcare. The implementation of this project assisted them, to certain extent, in achieving their goal.

The Health Action Plan 2008-2012, which is currently being implemented, includes actions to promote MMR reduction, to expand maternal and child healthcare services, to implement a comprehensive maintenance plan, and to enhance maintenance workshops at regional level. It seems that there was no major change in policy direction after this project was implemented. INDH has also been extended without any major change in its direction, in which the health sector is integrated in the rural poverty reduction program (one among four prioritized programs).

3.1.2 Relevance to the Development Needs of Morocco

There was severe regional disparity of MMR in Morocco as of 2004. Earlier detection

[4] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[5] 3: High, 2: Fair, 1: Low
[6] INDH's objective is to save socially vulnerable people in both rural and urban areas
[7] Mohammed VI (on the throne since 1999)

of high risk pregnancies and efficient and safe transfer to upper referral hospitals were immediate needs while medical facilities were decrepit and the shortage of medical equipment was severe. This project was to upgrade the facilities and equipment of 19 medical institutions in four provinces adjacent to Rabat and Casablanca, and to promote basic perinatal care services through the enhancement of target medical institutions providing primary and secondary medical care services in the target provinces. Furthermore, it was intended that this project would mitigate the concentration of patients at the University Hospital Centers of Rabat and Casablanca as these patients often bypassed primary and secondary medical care institutions and not all of them required the tertiary medical care service provided at the UHCs.

Although nation-wide MMR has shown a large improvement since the Basic Design Study was conducted in 2006 (as of this evaluation study (2010) it turned 112), regional disparity is still severe (urban areas: 73; rural areas: 148)[8]. The promotion of perinatal care services, the enhancement of the referral system and the improvement of medical facilities and equipment are still deemed to be required.

3.1.3 Relevance to Japan's ODA Policy

The GOM and the GOJ reached a consensus on prioritizing five sectors in their bilateral talks on economic cooperation in July 1999, in which 'rural development for the correction of regional disparity and the reduction of rural poverty' was set as one of the primary issues to tackle. "Social development assistance" was added later on as another prioritized sector. In its Country Assistance Strategy of 2004, JICA mentioned a future possible commitment to improving rural healthcare services as one of their development initiatives for lagging areas. The revised CAS of 2007 raised the mitigation of social and regional disparity as one development priority. The GOJ maintained the "improvement of healthcare services" as one of the components of 'the comprehensive development program for the interior area' in 2008 when this project was completed, and endorsed INDH as the basis of Japan's ODA for Morocco.

The objective of this project was thus coherent with both the priorities of Japan's ODA for Morocco and JICA's CAS from the project planning stage up to the present. Assistance for the health sector by other development partners as well as Japan have been well demarcated in terms of geographical location and contents. The European Investment Bank (EIB) and the France Development Agency (*AFD: Agence française de développement*) have provided assistance to health infrastructure development and technical assistance in different locations, and they do not exclusively focus upon perinatal care.

This project has been highly relevant to Morocco's development plan, development needs, as well as to Japan's ODA policy, therefore its relevance is high.

3.2 Efficiency (Rating: 2)

3.2.1 Project Outputs

3.2.1.1 Japanese Side

(1) Physical facilities

In response to a request for design change from the Moroccan side, the plan of Hassan II Regional General Hospital (HGR: Hôpital Général Régional) located in Settat province was largely changed in the detailed design stage after E/N was signed. This was not, however, to the extent that the expected healthcare service was adversely affected. Other changes were minor ones, and the total floor area of each facility remained almost as planned (See Table 2). Measures to reduce construction costs against the depreciated yen value were also taken in the project implementation stage[9].

[8] Ministère de la Santé, "Enquête nationale demographique a passages repetes (2009-2010) Principaux resultats" (14 mars, 2011)

[9] The exchange rates were 1 USD =JPY 116.91 and 1 EUR = JPY 149.90 in August 2006 (monthly average) when

Table 2: Outputs of Physical Facilities

Province		
	Target Facility	Output
Kénitra		
	Maternity Unit, Al Idrissi Regional General Hospital	One-storied reinforced concrete building (outpatient dept, delivery rooms, operation rooms), total floor area: 913.73m^2
	Maternity Unit, Sidi Allal Tazi Health Center	One-storied reinforced concrete building, total floor area: 473.94m^2
	Maternity Unit, Sidi Yahia Health Center	One-storied reinforced concrete building, total floor area: 362.12m^2
Khouribga		
	Maternity Unit, Hassan II Provincial General Hospital	One-storied reinforced concrete building (outpatient dept, delivery rooms, operation rooms), total floor area: 896.47m^2
Settat		
	Maternity Unit, Hassan II Regional General Hospital	Three-storied reinforced concrete building (outpatient dept, delivery rooms, operation rooms, inpatient dept), total floor area: 2,496.60m^2

Source: Project Completion Report

(2) Medical equipment and ambulances

Medical equipment and ambulances were procured as planned (See Table 3).

Table 3: Outputs of Medical Equipment and Ambulances

Equipment for Hospitals (471 pieces of 37 items were procured for five hospitals and polyclinics)		
Section	Outpatient Dept.	Echography, examination table (gynecology), wheel chair, stretcher
	Delivery	Cardiac respiratory monitor, fetus detector, delivery table, electric vacuum extractor, autoclave, weighing scale (infant), delivery kit, electrocardiography
	Operation rooms	Defibrillator, operation table (obstetrics / gynecology), cardiac respiratory monitor, portable electrosurgical unit, operation light (with emergency power supply source), anesthetic apparatus (with respirator), scrub unit, suction unit, caesarian operation set, stainless treatment case set
	Sterilization	Double door autoclave
	Maternity intensive care	Cardiac respiratory monitor for adults, laryngoscope set (resuscitation set for adult), oxygen flow meter, hanging aspirator set, patient bed
	Neonatal intensive care	Infant incubator, phototherapy apparatus, cardiac respiratory monitor for infants, syringe driver, infusion pump, infant warmer (with resuscitation set), bilirubin meter
	Infant rooms	Plastic baby cot, infant warmer
Equipment for Health Center (158 pieces of 20 items were procured for eight health centers)		
	-	Plastic baby cot, dressing change set, delivery kit, episiotomy set, vaginal diagnosis set, wheel chair, fetus detector, autoclave, stainless treatment case set, resuscitation set (infant), examination light, infant warmer, delivery table, examination table, electric vacuum extractor, patient bed, weighing scale (infant), weighing scale (adult), oxygen concentrators, oxygen flow meter
Vehicle for patient transfer (eight vehicles were procured for eight policlinics and health centers)		
	-	Ambulance

Source: Project Completion Report

E/N was signed. The depreciation of the yen accelerated after then to 1 USD = JPY 121.68 (-4%) and 1 EUR = JPY 157.98 (-5%) in January 2007 when the contractors signed the contracts. The lowest yen value in 2007 was 1 USD = JPY 125.95 and 1 EUR = JPY 170.56 (July).

The Moroccan currency (dirham, DH) was equivalent to JPY 13.61 in August 2006, and JPY 14.21 (-4%) in January 2007. (Source: Bank of Tokyo- Mitsubishi USJ (USD and EUR) and Bank of Al-Maghreb (DH))

The total number of pieces and items which were products from Japan and the third countries was more than planned, with the criteria for equipment selection all satisfied[10]. Most Japanese products were quite basic and did not require a high level of skills. Products from the third countries such as France and Spain are common in Morocco. Among the products procured from Japan, there was equipment with an English manual only[11]. As the manual is part of the procured equipment, the local context of Morocco should have been better considered when selecting the language for the equipment manual. In Morocco, French is widely spoken, while Arabic is more often spoken in rural and remote areas.

(3) Soft component

A "Soft Component Program" was introduced in this project to supplement the operational training provided by the supplier, and to help the end-users (staff of the target institutions) understand the importance of maintenance and to establish a system which enabled them to perform daily maintenance procedures and repair work. It was implemented between January and March 2008 in the target provinces except in Sidi Kacem (See Table 4). There was no training in Sidi Kacem as equipment procured here, for a local hospital and a polyclinic, was only two ambulances and basic equipment which did not require a high level of skill to operate. Instead, staff members of the Regional Maintenance Bureau, who supervised the target institutions located in Sidi Kacem, were admitted among the participants for training held in Kénitra. Along with the program, management manuals for medical equipment (*manuel general de gestion des équipements médicaux*), medical equipment registration and management books (*rapport de la commission Marocaine sur les équipements médicaux*), and check sheets for users (*fiche de contrôle d'utilisateur d' équipement médicaux*) were provided in French.

Table 4: Soft Component Program and Participants

Unite: person

Province	Participants		
	Basic Seminar*	Basic Management Training for Medical Equipment**	Maintenance Training for End-users***
Kénitra	35	96	42
Khouribga	4	33	42
Settat	61	104	40
Total	138	233	124

Source: Soft Component Completion Report

Note 1: * Basic Seminar: Issues such as proper method of usage, safe treatment and economical operation of medical equipment were learned by end-users at the target medical institutions (venue: regional and provincial health service delegations).

Note 2: ** Basic Management Training for Medical Equipment: basic management technology was learned prior to the installment of medical equipment procured under the Project (venue: each target institution, target: end-users).

Note 3: *** Maintenance Training for End-users: Practical training on methods of use for major equipment procured under the Project (venue: each target institution, target: end-users)

3.2.1.2 Moroccan Side

The measures necessary for construction works by the Moroccan side were promptly taken. Tax exemption and custom clearance of imported goods and materials however took a

[10] Equipment was to be selected, with mutual consent between the two countries, with the following criteria: (1) equipment that can be handled by branches or agencies located in Morocco; (2) equipment that does not often get broken or has a cost high for maintenance; (3) equipment that is easily maintained, and made by manufacturers with an established maintenance system in Morocco (4) equipment that is commonly used in Morocco, and (5) Equipment that can be procured within the E/N limit. See the Basic Design Study Report on the Project for the Improvement of Maternal Healthcare in Rural Areas (Phase 2) in the Kingdom of Morocco.

[11] Echography (Equipment List No. H-08. Confirmed at Ben Ahmed Policlinic in Settat Province).

certain amount of time due to the complicated procedures in the country.

3.2.2 Project Inputs

3.2.2.1 Project Cost: 3

The total project cost was approximately JPY 954 million, out of which JPY 950 million was spent from the treasury. The balance between total project cost and the treasury expenditure comes from the fact that construction works were not completed at the end of March 2008 when E/N expired, and the amount of money spent after the E/N expiry date was thus returned to the treasury. Both the total project cost and the treasury expenditure were lower than the E/N limit (See Table 5).

Table 5: Total Project Cost

Unit: thousand JPY

		E/N limit (A)	total project cost (B)	(B)/(A)	Amount returned to Treasury (C)	(D) =(B)-(C)	(D)/(A)
Consultant's Contract		91,000	91,000	100.0%	240	90,760	99.7%
	Physical facilities	-	70,000	-	240	69,760	-
	Equipment	-	14,000	-	0	14,000	-
	Soft component	-	7,000	-	0	7,000	-
Contractors' contracts	Physical facilities	647,000	647,000	100.0%	3,718	643,282	99.4%
	Equipment	234,000	216,529	92.5%	0	216,529	92.5%
Total		972,000	954,529	98.2%	3,958	950,571	97.8%

Source: Project Completion Report

3.2.2.2 Project Period: 2

Installment of all procured equipment had been completed as of March 19, 2008. Although the project completion certificate for physical facilities was issued on March 28, 2008, construction works continued until June 12, 2008 when the facilities were handed over to the Moroccan side. The project took 20 months from the E/N signing date to the issuance date of the project completion certificate, and 23 months from the E/N signing date to the actual date of project completion.

According to the project implementation schedule described in the Basic Design Study Report, it took five months to complete the detailed design, and another 13 months to complete construction works and the installment of the procured equipment. It was therefore anticipated that it would take 18 months to complete the project from the E/N signing date. Based on this, the project period is slightly longer than originally planned: 111.1% (20 months) and 127.8% (23 months)[12].

The major reasons why construction works took longer than planned were a shortage of construction materials, a delay in manufacturing fitting frameworks, a shortage of skilled workers (artisans and masons) and low level skills of local agencies installing air conditioners which led to a delay in installment works especially in and around the operation rooms of target hospitals.

Although the project cost was within the plan, the project period exceeded it and therefore efficiency of the project is fair.

[12] According to the ex-ante evaluation sheet disclosed by JICA, detailed design and tender procedure took 13.5 months. Compared to the project period, this is 148.1% up to the issuance date of project completion certificate, and 170% up to the actual completion date.

3.3 Effectiveness (Rating: 3)

3.3.1 Quantitative Effects

3.3.1.1 Perinatal Care Services

The facilities and equipment procured through this project are well utilized for outpatient care and delivery services at the target medical institutions and have contributed to the improvement in perinatal care service in the regions and provinces while the MOH has been promoting institutional delivery nationwide. The project objective, to improve the quality of perinatal care services provided at the medical institutions in four targeted provinces, has been achieved.

The outcome indicators set out at the ex-ante evaluation in 2006 and figures collected in the field study in March 2011 are shown below:

Picture 1: Health personnel taking care of a new born baby at Sidi Allal Tazi Health Center of Kenitra

(1) Increase in the number of deliveries at the target medical institutions

According to answers to the questionnaire, the total number of deliveries at all target institutions as of 2010 exceed the target figures set out in the basic design study of 2006.

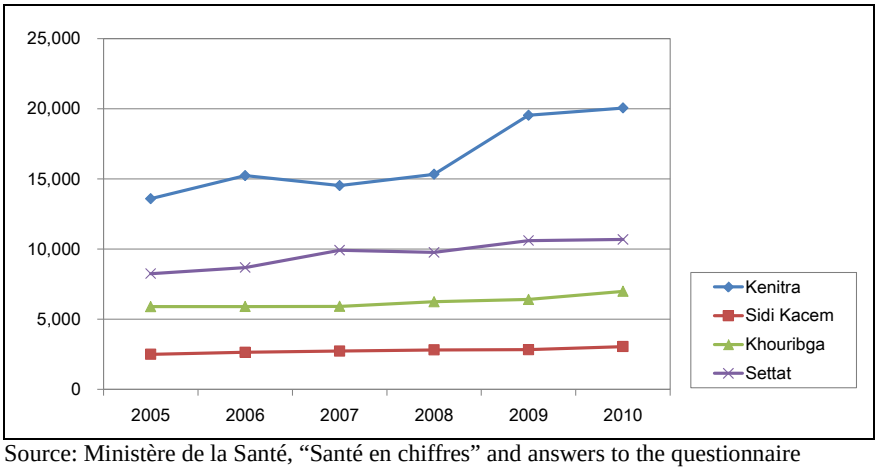
Table 6: Total Number of Deliveries at the Target Institutions

	2005	2010
As at the basic design study of 2006	28,884	33,500 (target)
Actual data collected in March 2011	29,107	40,770 (actual)

Source: Basic Design Study Report and answers to the questionnaire

Starting in 2008, delivery costs including the cost of transfers by ambulance for institutional deliveries as well as relevant tests such as echography, became free of charge in Morocco, which promoted institutional delivery nationwide. This free access to maternal healthcare has helped achieve a higher number of institutional deliveries than targeted.

A glance at the number of institutional deliveries by province between 2005 and 2010 shows a gradual increase (Figure 1), among which the increase in Kénitra is most tangible (approximately 6,500 cases) followed by Settat (approximately 2,400).



Source: Ministère de la Santé, “Santé en chiffres” and answers to the questionnaire

Figure 1: Number of Deliveries by Target Institution by Province

An outcome commonly admitted in all four provinces is the sharp increase in the number of deliveries at hospitals and polyclinics. There is, however, no common outcome to health centers. In Kénitra, the increase of transfers from target health centers to upper referral hospitals made deliveries at health centers decrease. In Khouribga, on the contrary, the number of deliveries at health centers increased. In Settat, the situation is different from one health center to another.

The number of women of reproductive age[13] in the target four provinces increased from approximately 0.87 million (2005) to 0.97 million (2010)[14], while the number of births does not show a large change (70 thousand in 2005 and 73 thousand in 2010)[15] (Table 7). This project has contributed to an increase in the accommodating capacity of the target institutions through improving their maternity units so that the can cope with the rapid spread in deliveries at hospitals and polyclinics.

Table 7: Comparison of Population, Number of Women of Reproductive Age, Number of Births and Number of Deliveries in the Four Provinces (2005 and 2010)

Province	2005				2010			
	Population	No. of women of reproductive age	No. of expected births	No. of deliveries	Population	No. of women of reproductive age	No. of expected births	No. of deliveries
Kénitra	1,183,000	314,551	25,170	13,187	1,264,000	358,790	24,609	20,049
Sidi Kacem	696,000	180,258	15,563	6,272	703,000	195,977	14,671	9,750
Khouribga	501,000	136,710	9,686	7,534	505,000	144,348	10,284	9,558
Settat	966,000	240,166	20,160	12,118	1,001,000	272,872	23,429	14,498
Total	3,346,000	871,685	70,579	39,111	3,473,000	971,987	72,993	53,855

Source: Ministère de la Santé, “Santé en chiffres 2006” and information provided by the MOH.

(2) Increase in number of referral cases for high risk pregnant women and transfer by ambulance

The MOH of Morocco has actively promoted prenatal and postnatal health checkups in recent years. Pregnant women visit the nearest health center to their home carrying their “Health Card for Women” (*Carnet de Santé de la Femme*) for prenatal health checkups around four times before delivery If any problem is found, they then visit upper referral hospitals for a detailed examination. Table 8 shows the extent to which target hospitals have accepted high risk pregnant women.

Table 8: Number of High Risk Pregnant Women Transferred to Target Hospitals

	2005	2006	2007	2008	2009	2010
Al Idrissi Regional General Hospital in Kénitra						
Number of inpatient pregnant women	6,263	6,751	7,504	9,255	10,224	11,054
Out of which high risk cases	1,660	1,850	2,291	3,262	285	473
Number of outpatient pregnant women	1,502	1,367	1,427	2,156	12,137	11,761
Out of which high risk cases	n.a.	n.a.	n.a.	n.a.	1,296	1,266
Hassan II Provincial General Hospital in Khouribga						
Number of inpatient pregnant women	5,148	5,113	5,014	5,337	5,629	5,675
Out of which high risk cases	2,067	2,521	2,411	3,044	2,936	2,897

[13] Women aged from 15 years old to 49 years old

[14] Ministère de la Santé, “Santé en chiffres 2006”.

[15] Information collected from the MOH in the field study.

	2005	2006	2007	2008	2009	2010
Number of outpatient pregnant women	1,355	1,512	1,948	2,868	1,227	1,332
Out of which high risk cases	51	284	257	332	274	320
Hassan II Regional General Hospital in Settat						
Number of inpatient pregnant women	8,948	8,944	9,287	11,058	11,638	11,041
Out of which high risk cases	964	1,025	942	1,014	1,011	1,247
Number of outpatient pregnant women	13,601	15,557	14,666	15,892	17,227	17,300
Out of which high risk cases	795	931	1,144	1,049	1,181	1,568

Source: Answers to the questionnaire

While access to medical institutions for women in rural areas has been improved, this project has added value and contributed to an expansion in the acceptance capacity for high risk pregnant women at the target hospitals. Except at Al Idrissi HGR in Kénitra, the number of inpatient high risk pregnant women at each institution showed an increase in 2008 and a moderate increase has continued since 2009.

Picture 2: Procured ambulance at Bni Khloug Health Center

Ambulances were procured at eight medical institutions under this project to enhance the emergency transfer system. Free transfers were officially declared in 2008 and transfers for pregnant women were accepted for 24 hours. In 2005, 964 pregnant women were accepted at Hassan II HGR in Settat, and the number of referral cases has been on a gradual increase as seen in 2010 (1,247 cases). However, the situation is different from one health center to another and there are no common features.

(3) Increase in the number of operations

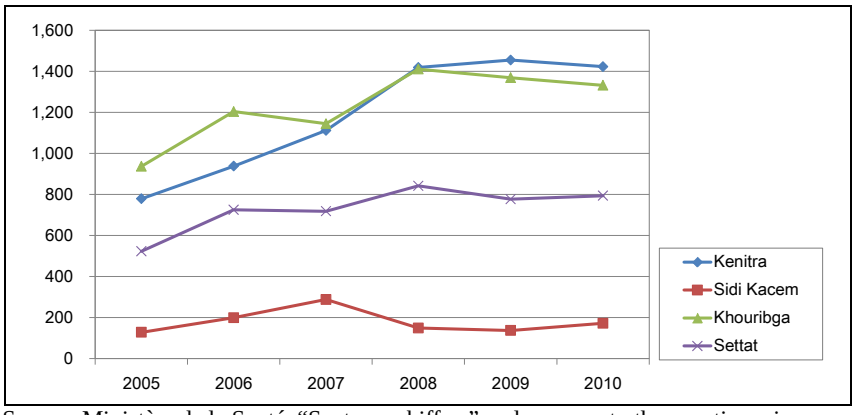
According to answers to the questionnaire collected in March 2011, the number of caesarians at the target medical institutions exceeded the target figures set out in the basic design study of 2006.

Table 9: Total Number of Operations at Target Institutions

Indicators	2005	2010
Figures set out at the time of planning (basic design study in 2006)		
Caesarians	2,164	3,000
Gynecological operations	2,499	3,000
Data collected in the field study (March 2011)		
Caesarians	2,416	3,721
Gynecological operations	n.a.	n.a.

Source: Basic Design Study Report and answers to questionnaire

Caesarians are held at hospitals and polyclinics where obstetricians are allocated. Caesarians have increased between 2005 and 2010 (See Figure 2), seen most clearly in Kénitra and Khouribga.



Source: Ministère de la Santé, "Sante en chiffres" and answers to the questionnaire

Figure 2: Number of Caesarians at Target Institutions by Province

The project, along with the better acceptance of high risk pregnant women, has contributed to improvements in the operation environment at target hospitals and polyclinics.

3.3.1.2 Improvement of the Perinatal Care Service System

In addition to the above, the expansion of the perinatal care service at target institutions is also one of outcomes of the project which has led to the achievement of the project objective. However, the degree to which the service has improved differs among institutions, and there is an apparent gap in the extent to which the project outcome is achieved. There would have been a greater impact if the expansion of system, such as the allocation of enough staff to handle the facilities and equipment procured under the Project, and to meet the requirement for providing perinatal care service, had been made in a timely manner. The Moroccan side has achieved the following in institutional capacity development

(1) Expansion of the number of gynecology beds and delivery tables

A forecast was made in the basic design of the number of beds required for a 48-hour stay after delivery. Based on this estimate, 29 beds were newly added to the existing ones in the building designs for the Hassan II HGR in Settat, the Sidi Allal Tazi Health Center and the Sidi Yahia Health Center of Kénitra. However, free access to perinatal care service boosted the number of deliveries at hospitals and polyclinics, which led to the Moroccan side further increasing the number of beds.

According to data obtained in this evaluation, the number of gynecology beds and delivery tables has shown a gradual increase through budget allocation by the Moroccan side (Table 10).

Table 10: Number of Beds at Maternity Units and Delivery Tables by Province

Province	2005		2010	
	Number of Beds	Number of Delivery Tables	Number of Beds	Number of Delivery Tables
Kénitra	119	16	148	18
Sidi Kacem	33	11	89	21
Khouribga	117	13	125	20
Settat	70	13	126	30

Source: Answers to questionnaire

The Al Idrissi HGR in Kénitra and the Hassan II HGR in Settat have further increased the number of gynecology beds to meet the requirement for the 24-hour stay after delivery (from 66

(2005) to 92 (2010), and from 44 to 86 respectively), while number of delivery tables has shown a slight increase. There has not been a large increase in the number of beds and delivery tables at health centers. Health centers do not have kitchens where meals can be cooked to serve to pregnant women and their accompanying families, and some women leave centers a few hours after delivery without receiving the proper guidance for postnatal and infant care This suggests that the degree of safe institutional delivery does not merely rely on the number of beds and delivery tables[16].

(2) Allocation of health personnel

The sufficient allocation of appropriate staff is, along with the improvement of facilities and equipment, one of the key issues for the enhancement of perinatal care services. An increase in the allocation of health personnel (nurses for obstetrics and midwives) was seen at all target institutions in Sidi Kacem and Khouribga, while number of obstetricians remained unchanged. Although the number of medical and parametical personnel, particularly at hospitals and polyclinics, was decreasing between 2005 and 2010 in Kénitra and Settat, the field study confirmed that perinatal care services had been expanded by the existing staff.

The burden of work shouldered by obstetricians and midwives has grown, and it is high time that the number of staff is increased. Due to shortages and decreases in the number of paramedical personnel, some equipment procured under this project has not been used at all since installment. The same problem also goes for the use of ambulances. Procured ambulances are properly made use of for transferring patients at target health centers and this has contributed to enhancing the emergency reference system. However, the number of drivers allocated by the MOH is limited and some centers are not able to provide a 24-hour transferring service.

Due to the fact that there is no security staff allocated at health centers, some pregnant women avoid staying overnight and instead directly visit HGPs and HGRs for delivery.

Table 11: Number of Doctors and Health Personnel at Target Institutions by Province

Province	2005		2010	
	No. of medical personnel	No. of paramedical personnel	No. of medical personnel	No. of paramedical personnel
Kénitra	22	91	13	80
Sidi Kacem	2	19	2	25
Khouribga	8	30	10	40
Settat	22	63	17	57

Source: Answers to questionnaire

(3) Efforts to sustain the emergency transfer system

Ambulances were procured under the project for the enhancement of the emergency transfer system. Among the health centers where ambulances were procured, Bni Khloug Health Center of Settat has only one driver allocated by the MOH, which means that nobody uses the ambulance except during the day on weekdays. Instead, the local community provides another ambulance for emergency cases in the evenings and at weekends to secure a 24-hour service. A free drive to an upper referral hospital is not always available due to the shortage of budget allocation for fuel, resulting in patients having to pay the cost[17].

Health centers make good use of the existing resources to sustain the emergency transfer system. Local community ambulances are often used at those health centers where no

[16] Confirmed at Bni Khloug Health Center of Settat Province.

[17] Settat Provincial Health Service Delegation provides DH 500 for fuel, which enables patients to be carried from the health center to Hassan II HGR only three times. Journeys after this are paid for by patients.

ambulance was procured under the project as a means of emergency transfer when needed[18]. There is one health center which has a contract with a private ambulance service[19].

3.3.2 Qualitative Effects

The following outcomes were set out for the soft component program when the project was designed.

Expected Outcomes of the soft component program (at the time of planning in 2006)
a) A reduction in the number of repair cases; need for repair detected earlier;
b) Shortened periods for repair and less left unrepaired as the Engineering and Hospital Management Bureau will always manage the condition of equipment at lower medical institutions;
c) Appropriate actions taken at an early stage of repair to avoid fatal errors

Source: Basic Design Study Report, p.89

These were, however, not confirmed when the soft component program was over in March 2008. This is because, due to the delay in construction works, the program was implemented before the installment of all equipment. It did not allow the program to be implemented based on the end-users' technical needs, which should have been identified in advance by practicing equipment operation.

However, as the outcome should be observed for certain period in order to see the degree of impact, and the Evaluation Team examined it as qualitative impact.

Although not a direct impact of this project, it was confirmed at the time of the field study of this post evaluation, that the MOH had been enhancing its maintenance capacity assisted by the World Bank (WB) and AFD. Although daily maintenance by end-users was not confirmed in the field study, the Regional Maintenance Bureau regularly checks the condition of equipment at medical institutions in the region and provinces, and each institution also tries to respond to the Bureau promptly. Regional hospitals and provincial hospitals are located in the same compound as the Bureau, and they deal with day-to-day maintenance works using the allocated recurrent budget and full time staff for maintenance. On the other hand, the early detection of the need for repair is not always appropriately and promptly achieved at health centers, and repair and maintenance sometimes takes a considerable time. This is mainly for non-technical reasons: the recurrent budget for maintenance is not allocated directly to health centers; the number of staff at the Bureau does not match the number of health centers that staff have to deal with, and the number of vehicles for visiting centers and carrying equipment for external repair work is limited.

During the field study, it was observed that the target hospitals do not regularly use the equipment manuals, registration books and check lists provided during the soft component program. It is because they manage not only the procured equipment but all equipment using a database, based on which end-users are guided by the Bureau for day-to-day maintenance.

Health centers, on the other hand, tend to keep the manuals, registration books and

Picture 3: Registration book made use of at Oulad Azzouz Health Center of Khouribga

[18] Oulad Azzouz Health Center of Khouribga

[19] Sidi Yahia Health Center of Kénitra

check lists to hand. The reason is that health centers do not have a lot of equipment other than the procured equipment, which makes managing the equipment easier. Also, the frequency of monitoring by the Bureau is low, which means that health centers can be more independent in managing their own equipment. In the near future, however, they may not use the documents provided in the soft component program as often as they presently do should databases for the procured equipment become more comprehensive along with others from the Bureau to check the exact condition of equipment and its frequency of use. This will be to manage equipment according to its length of usage, and to thoroughly train end-users for day-to-day maintenance.

This project has largely achieved its objectives, therefore its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

The immediate outputs of the project, i.e. the improvement of facilities, equipment and ambulances for perinatal care services, have contributed to sustaining the institutional capacity of target institutions to meet the increased needs for perinatal care services. These increases have been caused through free access to perinatal care service, the spread of the Health Card for Women, and raised awareness among pregnant women and their families about the importance of prenatal and postnatal care. The project's outputs have also contributed to the MOH's initiative to enhance the perinatal care service system.

As a result, the project has contributed to an improvement in the quality of the maternal health care services under the Program for Maternity without Risk in which MMR reduction is targeted. The logic model of the project impact is shown in Figure 3.

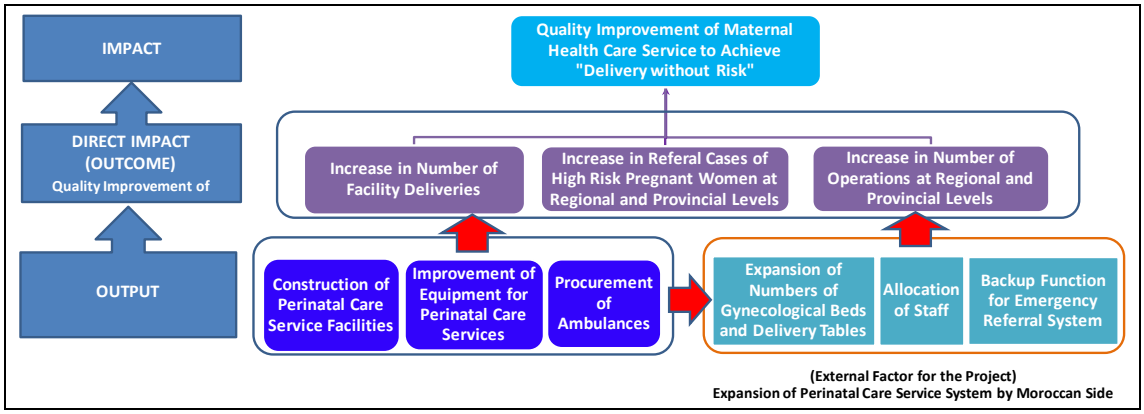


Figure 3: Logic Model of Project Impact

3.4.2 Other Impacts

3.4.2.1 Impacts on the natural environment

Of the target institutions of the Project, hospitals treat medical wastes separately. Infectious waste is sterilized, washed or disposed of on site, and general waste is disposed of on site or collected by the public service. Health centers in Khouribga also separate medical and infectious wastes for incineration, sterilization, washing or disposal. Health centers in other provinces do not always do the same. One health center disposes of syringes through special treatment[20], but others don't.

There is future space for improvement including the raising of awareness and the establishment of regulations for the thorough treatment of medical and infectious waste at health centers.

[20] Soualem Health Center in Settat Province (confirmed in the field study).

3.4.2.2 Land Acquisition and Resettlement

Five facilities improved under the project were within an existing compound, and thus there was no involuntary resettlement or land acquisition. The procurement of equipment and ambulances also did not require either resettlement or land acquisition.

3.4.2.3 Other Indirect Impact

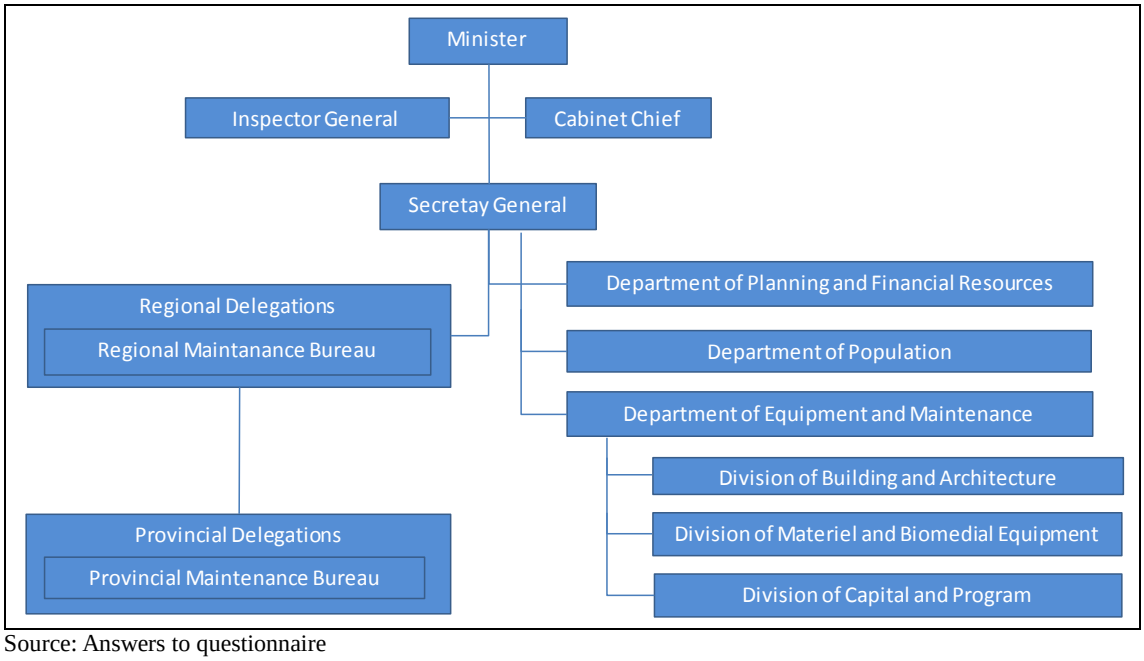
Not specified.

3.5 Sustainability (Rating: 2)

3.5.1 Institutional Aspects of Operation and Maintenance

It is the Department of Equipment and Maintenance (*Direction des Equipements et de la Maintenance*) of the MOH which supervises the project. The MOH started to promote decentralization and restructuring in the middle of the 2000s, and the maintenance budget for physical facilities and equipment is now allocated to the Regional Health Service Delegation (*Delegation régionale de la santé*). The Regional Maintenance Bureau manages budget expenditure, deals with contract procedures with agencies for equipment maintenance, and provides technical advice to the Provincial Maintenance Bureau and provincial hospitals and health centers.

Hospitals are mandated to select and purchase new equipment up to a certain amount, whereas health centers do not have their own maintenance budget, and have to wait for the approval of Regional and Provincial Health Service Delegations. They also need to get approval when they dispose of equipment.



Source: Answers to questionnaire

Figure 4: Related Departments of MOH and their Organization

As of March 2011, full time technical staff for facility and equipment management are allocated at each region and province. It is the Provincial Maintenance Bureau which handles the management of health center facilities and equipment.

Table 12 shows staff allocation details for 2005 and 2010 at the target regions and provinces.

Table 12: Staff Allocation at Target Regions and Provinces

	2005				2010			
	Facility		Equipment		Facility		Equipment	
	Engineer	Technician	Engineer	Technician	Engineer	Technician	Engineer	Technician
Gharb- Chrarda- Béni Hssen Regional Maintenance Bureau (located in Kénitra)	1	7	cum	cum	3	7	cum	cum
Provincial Maintenance Bureau in Sidi Kacem	0	4	0	2	1	6	0	3
Provincial Maintenance Bureau in Khouribga	2	6	cum	cum	3	6	cum	cum
Chaouia- Ouardigha Regional Maintenance Bureau (located in Settat)	0	2	2	1	0	5	2	1

Source: Answers to the questionnaire and interviews in the field study

Note: Gharb- Chrarda- Béni Hssen Regional Maintenance Bureau and Chaouia- Ouardigha Regional Maintenance Bureau are located next to (or within the same compound as) Al Idrissi HGR and Hassan II HGR respectively, and supervise whole regions and medical institutions in the provinces where they are located (Kénitra and Settat).

Out of the target institutions, hospitals regularly perform monitoring of equipment condition and database development. They develop annual plans of action and pay visits quarterly or semi-annually in order to check the condition of equipment for prevention care and repair. A database is being developed retroactively.

It is worth pointing out that it is AFD which has long supported the MOH in improving maintenance and management systems for health infrastructure. They have assisted through "the Program on Regionalization, Decentralization and Reinforcement of Basic Healthcare" (*Regionalisation, a la decentralization, et au renforcement des soins de santé de base*) training personnel for maintenance and establishing maintenance systems. Equipment management through registering with barcodes, database development and data sharing systems have been promoted nationwide. Moreover, due to decentralization, decision making takes place promptly at regional and provincial level, including procedures for agency contracts and repair requests. Hospitals conclude equipment maintenance contracts with agencies. Agencies visit hospitals to detect problems and repair minor ones on site, ,bringing back equipment for major repairs. On the other hand, facilities and equipment at health centers are often left as they are, as long as for a few months, because of staff constraints of the Maintenance Bureau and difficulties in their travel to remote areas[21].

Picture 4: photo taken at Gharb- Chrarda- Béni Hssen Regional Maintenance Bureau. Equipment is registered with barcode system.

3.5.2 Technical Aspects of Operation and Maintenance

A school system has now been established in Morocco where students learn both the

[21] Electricity distribution had been disturbed due to line disconnection at Sidi Allal Tazi Health Center in Kénitra province for three months as of March 2011.

knowledge and practice to be qualified as biomedical engineers and technicians. Furthermore, the Department of Equipment and Maintenance of the MOH provides training opportunities for secondary level engineering staff to learn how to operate and maintain equipment such as anesthetic apparatus, defibrillators and mammograms. As is often the case, development partners provide financial and technical assistance for technical training on medical equipment and maintenance. The number of training courses, trainees and days differs by year. Lecturers are mostly technical staff from suppliers. Foreign technical staff also provide training opportunities.

Table 13: Technical Training Opportunities

	2005	2006	2007	2008	2009	2010
Number of Training opportunities	9	5	5	n.a.	1	8
Total number of trainees	125	69	55	n.a.	8	86
Total number of days for training	20	8	6	n.a.	1	36

Source: Information provided by the Department of Equipment and Maintenance of the MOH.

End-users at target institutions learn overall to remember the methods of equipment usage. Those who already have equipment usage training teach others who have not. Engineers allocated at target hospitals often communicate with end-users and guide them in finding the root cause of breakdowns and advising them of what to be aware of for better maintenance.

3.5.3 Financial Aspects of Operation and Maintenance

Budgets for purchasing new equipment and for equipment maintenance are directly allocated to hospitals. Equipment to select is mandated and the amount of budget differs from hospital to hospital[22]. Al Idrissi HGR in Kénitra has a recurrent budget of as much as DH 4 million for purchasing new equipment. The amount of its maintenance budget is not confirmed. Hassan II HGR in Settat had a maintenance budget of as much as approximately DH 0.85 million in 2008, DH 1.6 million in 2009 and DH 1.2 million in 2010, although more was spent on equipment than facility maintenance. Hassan II HGP of Khouribga spent DH 9,800 on facility maintenance (2010), which was not sufficient for equipment maintenance. Requests are made on an ad-hoc basis to provide budgets to purchase new equipment and to maintain facilities at health centers.

There is no plan to replace equipment periodically according to equipment life-span, and no budget systematically reserved for replacement. Serious trouble in equipment operation due to ageing could be avoided through saving budget regularly and purchasing new equipment to replace old in a timely manner.

3.5.4 Current Status of Operation and Maintenance

Institutional and technical aspects of operation and maintenance at hospitals are good. There is budget for maintaining existing equipment and for purchasing new equipment, and facilities and equipment procured under the project do not face major problems. Engineers and technicians check equipment condition, and take prompt action for minor problems and repairs.

There is a wider gap among health centers in terms of the condition of facilities and medical equipment. Delays have been found in repair works. There is no full time maintenance staff allocated at health centers and no budget allocated either, which means they must wait until the Maintenance Bureau or the Provincial Health Service Delegation take any action, and this not always done in a timely way. Some equipment is not operated due to a shortage of consumables. There is space for future improvement to further decentralize authorities at ground level, along with the present structure and budget allocation.

[22] However, the Department of Equipment and Maintenance still purchase expensive equipment.

End-users clean equipment at the end of the day to remove dust and dirt. They also change small parts such as lamps and screws. Daily maintenance however is not thoroughly applied. Actions such as the early detection of minor problems, the establishment of maintenance methods, and the avoidance of equipment breakdown are not always carried out sufficiently.

Some problems have been observed in terms of structure, budget and maintenance. Therefore the sustainability of the project effect is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project is consistent with Morocco's health sector development plan and development needs and with Japan's ODA policy for Morocco, and its relevance is thus proved to be high. The project period, however, was prolonged due to the delay in construction works, which meant that project efficiency was fair. The Project has added value to the efforts by the Ministry of Health to improve perinatal care service, and its efficiency is proved high. Although improved, there remains a certain disparity among target institutions in their institutional and technical management capacity for operation and maintenance. The security of a sufficient recurrent budget and its direct allocation to health centers for facility maintenance could be further pursued.

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

4.2 Recommendations

The Evaluation Team has drawn up the following recommendations for further effective use of facilities and equipment improved under the Project.

4.2.1 Recommendations to the Executing Agency

4.2.1.1 Further Decentralization of Budget Allocation

There is no recurrent budget for maintenance directly allocated at health center level, and management of physical facilities still has space for improvement. Unlike at hospitals, it is the Provincial Maintenance Bureau which conducts the operation and maintenance of health center facilities, and delays are observed even in minor and easy repair works. Deterioration in facilities and equipment can adversely affect their day-to-day operation. It is recommended that direct budget is allocated for maintenance at health centers to further raise the project impacts from a longer-term point of view.

4.2.1.2 More Effective Use of the Existing Resources within the Present Budget

The MOH initiatives have promoted institutional delivery nationwide including in the target provinces. The present number of beds and allocated staff members do not meet the needs, which means that the procured facility and equipment are not used as effectively as expected. While staff allocation is urgent for the further promotion of institutional delivery, the following measures could be taken if no major budget increase is confirmed.

(1) Provision of meals for pregnant women and their families

In order to secure good health for pregnant women, kitchen facilities could be further expanded at health centers catering services introduced for their 48-hour stay after delivery. It is also recommended that meals are also provided to their accompanying families too in order to provide incentives to bring pregnant women to health facilities for delivery and thus to increase their understanding of institutional delivery.

(2) Reallocation of doctors and health staff

It is recommended that further improvements are made in the allocation of existing resources for more effective use. A reconsideration of the present allocation of medical staff as well as their work is an example of this.

(3) Mobilization of personnel from local the community

Local volunteers can be called in from communities for the security control of health centers to drive ambulances thus securing pregnant women's safety and 24-hour transfers to upper referral institutions.

4.2.2 Recommendations to JICA

Not specified.

4.3 Lessons Learned

When planning grant aid projects which target the improvement of medical institutions and equipment with a programmatic approach, it is recommended that JICA take into consideration the following:

4.3.1 Strategic Screening of Target Institutions based on Project Objectives

This project covered as many as 19 medical institutions spread over four provinces. It took a long time before designing facilities and equipment, to create a set of selection criteria for target institutions in accordance with the project objectives, to analyze local needs for perinatal care services, staff allocation and the accommodating capacity of each institution, then finally to short-list target institutions and examine the project component of finance. Sufficient time for the whole planning process and discussion with the recipient country should be taken for granted.

Technical examinations for the design of facilities and equipment was achieved within a short period in the field study of the basic design study of this project, and thus some component designs did not match staff allocation or accommodating capacity. In order to secure outcomes in similar projects in the future, more opportunities for discussion with the recipient country and more time allocation for technical examinations on site should be considered. Possible options to take might include field studies to be conducted more than twice, and/or complete site selection before basic design study starts.

<End>