

MINISTRY OF HEALTH & SOCIAL WELFARE  
THE KINGDOM OF SWAZILAND

**BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT FOR UPGRADING HEALTH CARE SERVICES  
IN  
THE KINGDOM OF SWAZILAND**

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July 1997

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## PREFACE

In response to a request from the Government of the Kingdom, the Government of Japan decided to conduct a basic design study on the Project for Upgrading Health Care Services in the Kingdom of Swaziland and entrusted the study to the Japan International Cooperation Agency (JICA).

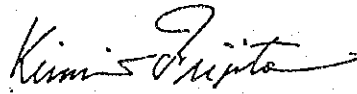
JICA sent to Swaziland a study team from March 2 to March 26, 1997.

The team held discussions with the officials concerned of the Government of Swaziland, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Sri Lanka in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Kingdom of Swaziland for their close cooperation extended to the teams.

July, 1997



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Kimio FUJITA  
President

Japan International Cooperation Agency





July, 1997

## **LETTER OF TRANSMITTAL**

We are pleased to submit to you the basic design study report on the Project for Upgrading Health Care Services in the Kingdom of Swaziland.

This study was conducted by International Total Engineering Corporation, under a contract to JICA, during the period from February 14, 1997 to July 10, 1997. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Swaziland and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



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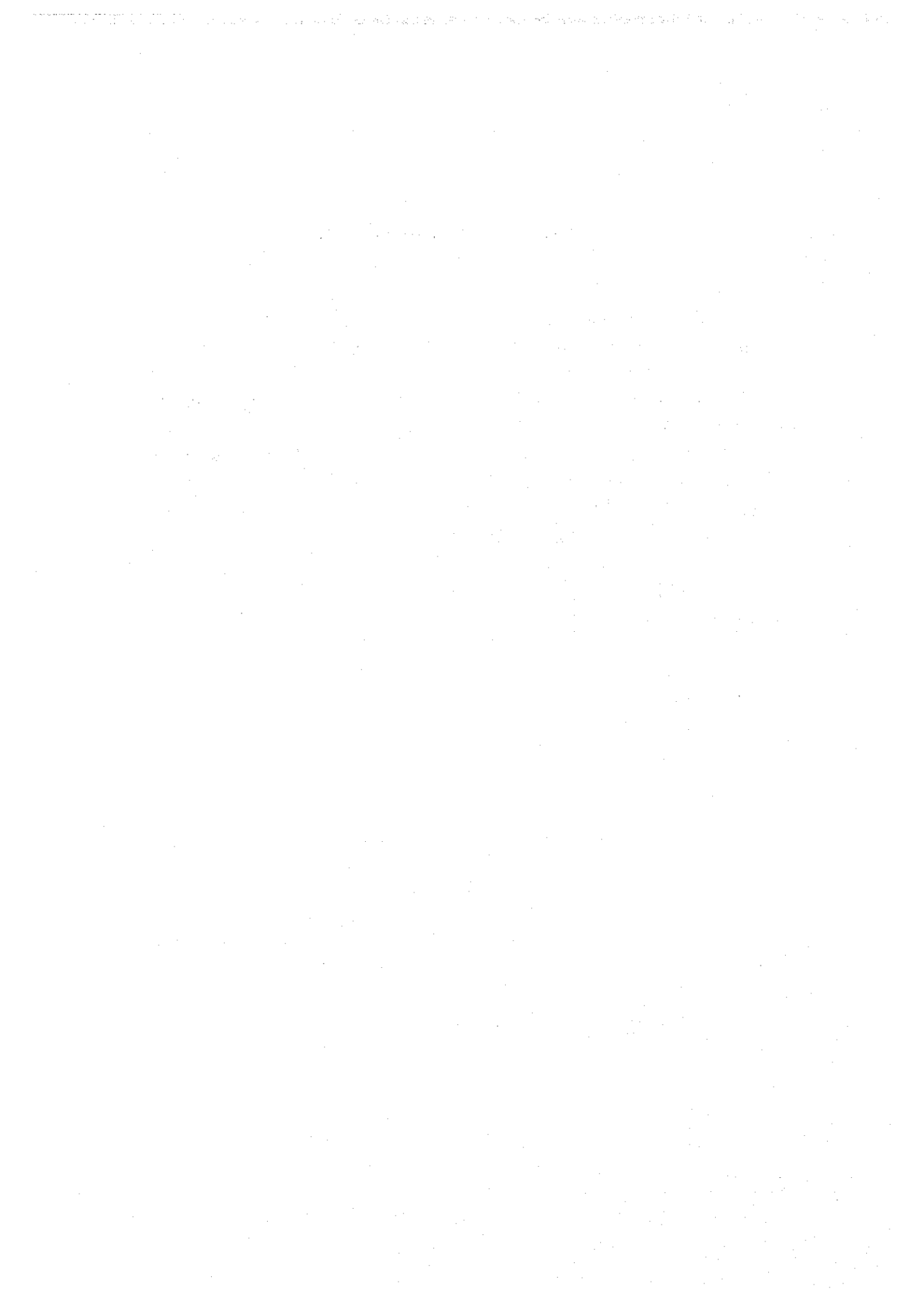
Yoji Ishikawa

Project manager,

Basic design study team on

the Project for Upgrading Health Care Services  
in the Kingdom Of Swaziland

International Total Engineering Corporation





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## Abbreviations

AfDB	United Africa Development Bank
EU	European Union
GDP	Gross Domestic Product
GNP	Gross National Product
IBRD	International Bank for Reconstruction and Development (World Bank)
IDA	International Development Association
IMF	International Monetary Fund
NGO	Non Governmental Organizations
UNICEF	United Nations Children's Fund
WHO	World Health Organization



## **Chapter 1 Background of the Project**





## **Chapter 1 Background of the Project**

### **1-1 Background of the Project**

The Kingdom of Swaziland (hereafter referred to as Swaziland) is a nation situated in southern Africa lying adjacent to Mozambique in the east and bordering South Africa in other parts. It has a land area of 17,400 km<sup>2</sup> and, as of 1993, a population of 880,000. Since it became an independent nation in 1968, it has maintained a relatively stable political structure, organized with the traditional monarchy system. Economically, Swaziland is greatly dependent upon its trade with South Africa, with approximately 90% of its import and 50% of its export business transaction with South Africa. In addition, Swaziland has a dual economic structure which consists of export trade in commercial agricultural products (mainly sugar) and mineral products (such as asbestos) and a self-sustained agricultural economy of small farms. Investment by the private sector including foreign investment has been made for these 30 years and the GNP per capita is US\$1,190 (1993). The GDP growth rate of 2.8% for 1995 and 3.3% for 1996 were higher than in other African countries. However, its population is growing at 3.4%, a rate exceeding the GDP growth rate, and unemployment is also increasing.

With these social background, the Swaziland Government established an Economic and Social Reform Agenda in January 1983 in order to accelerate economic growth, to improve essential medical and social welfare services and to set up an administrative system that is in conformance with the laws and regulations of the country. The ultimate goal of this plan is to boost national revenues and to eliminate poverty. In its medical care system, a Health Development Plan (April 1996 ~ March 1999) was set forth to improve medical services and to popularize disease preventive and health enhancing care.

The health and medical care system in Swaziland is supported by the tertiary hospitals located in Mbabane, the capital, and in Manzini, the largest city in the nation, the regional hospitals (secondary hospitals) which are located in the various regions, i.e., Hhohho, Manzini, Shiselweni and Lubombo and primary medical facilities such as health centers, clinics and outreach clinics. The total number of medical facilities in the entire nation is 321, the entire number of doctors working in Swaziland is 147, of which 48 are native Swaziland, and the number of nurses and assistant nurse is 1,747. According to a survey conducted by the Swaziland Ministry of Health and Social Welfare, the neonatal mortality rate in 1996 was 74 per 1,000 live birth, infant under 5 years mortality rate was 107 and life expectancy at birth was 58, placing this nation at a very low level on the

health and medical care index.

Based on the Economic and Social reform Agenda proclaimed in January 1983, the Swaziland Ministry of Health and Social Welfare set a Health Care Development Plan in July of the year to improve the health of the citizens by instituting and upgrading preventive care and providing necessary medical services. Under the plan, measures are taken to prevent disease, improve the water supply and living environment, promote rehabilitation programs, and enhance support and medical services. For prevention of illness as well as improvement in the water supply and living environments, the Ministry of Health and Social Welfare has actively encouraged people to receive vaccination and has prepared facilities for water supply and higher-quality lifestyles. This has resulted in enhanced preventative measures against diarrhea and other illnesses. This plan also calls for measures to enhance rehabilitation programs by improving physical therapy and vocational training in order to provide the people who comprise 10% of the general population and suffer from physical illness and other problems with opportunities to return to normal life. To enhance support services, the Ministry has promoted the substantial maintenance and management of medical equipment used at medical facilities and the system for supplying and medicines. Moreover, to improve medical services, the Ministry of Health and Social Welfare has endeavored to enhance primary medical facilities. As a result, 313 primary medical facilities, including outreach clinics, have been set up throughout the entire nation. With the aim of establishing a referral system, the Ministry is trying to enhance the function of secondary and tertiary hospitals while continuing to build primary medical facilities. For that purpose, medical facilities are to be enlarged or rebuilt, including the Mbabane Hospital, the Piggs Peak Hospital and the Mankayane Hospital in this project. Maintenance of medical equipment and employing more medical personnel are also planned. To obtain more medical personnel, it has increased the number of foreign doctors (from 93 in 1986 to 147 in 1996) under a technical cooperation agreements with Egypt, Ethiopia and other countries, as well as the number of trainee nurses (from 939 in 1986 to 1,747 in 1996), by enlarging nursing schools. However, under severe financial situation, the Swazi government is in difficulty for procuring medical equipment.

It was under these circumstances that the Government of Swaziland had approached Japan requesting Grant Aid for the procurement of medical equipment for primary secondary and tertiary hospitals. After the Japanese authorities dispatched a project identification team on 1994, the Government of Swaziland requested again about medical equipment for five medical hospital for secondary and tertiary level. Since there is limited basic information and no experience in the past of extending Japanese Grant Aid in health sector for Swaziland, Japan International Cooperation Agency(JICA)

dispatched a preliminary study team in September 1996.

The Preliminary Study team collected basic health data with respect to the health and medical care situation in Swaziland, verified the background and contents of the requests placed by the Government of Swaziland, examined the sites and conducted survey of possible aid that might be extended by other donors. Of the five hospitals that were initially included in the request, the National Psychiatric Hospital was excluded, since its preparation to receive the equipment had not been arranged and, therefore, the required equipment for the remaining four hospitals were classified and listed up.

As a result of this preliminary study, the necessity and appropriateness of this project was identified and it was decided that a basic design study should be conducted concerning the upgrade of medical equipment for four hospitals which are the Mbabane Hospital, the TB Center, the Piggs Peak Hospital and the Mankayane Hospital.

As shown in the table below, the indicators of health and medical care in this country are low, although these are still better than the average figures recorded in African countries south of the Sahara.

**Table 1 – 1 Health Hygiene Index**

	Swaziland	Congo	Cameroon	Ecuador	Zimbabwe	South Africa	Other Southern African Country	Japan
Population (1000Pop)	880	2,400	12,500	11,000	10,700	39,700	(559,000)	124,500
GNP (US\$)	1,190	950	820	1,200	520	2980	520	31,490
Crude Birth Rate (P.1000 Pop)	43	44	40	28	38	31	44	10
Crude Death Rate (P.1000 Pop)	10	15	12	6	12	9	21	8
Neonatal Mortality Rate (Per 1000 Live birth)	74	84	61	49	67	52	93	4
Infant Under 5 years Mortality Rate	107	109	113	58	83	69	172	6
Life Expectancy(Male)	51	52	49	64	60	61	52	76
(Female)	59	56	53	68	64	67		82
Population(Per 1 Doctor)	6,705	940	12,000	-	-	-	24,180	890
Population(Per 1 Nurse)	515	-	-	-	-	-	1,840	151

Source : World Bank

The Leading causes of diseases of Swaziland(1994) is shown below. Similar to a developing country, acute respiratory infections including tuberculosis, diarrhea including intestinal infection and bacterial food poisoning are major problems. At the same time, since its major cities are located at high altitude (approximately 1000 meters) including malaria do not account for a large number of cases, making parasitosis somewhat unique among developing African countries.

**Table 1 – 2 Leading causes of diseases (1994)**

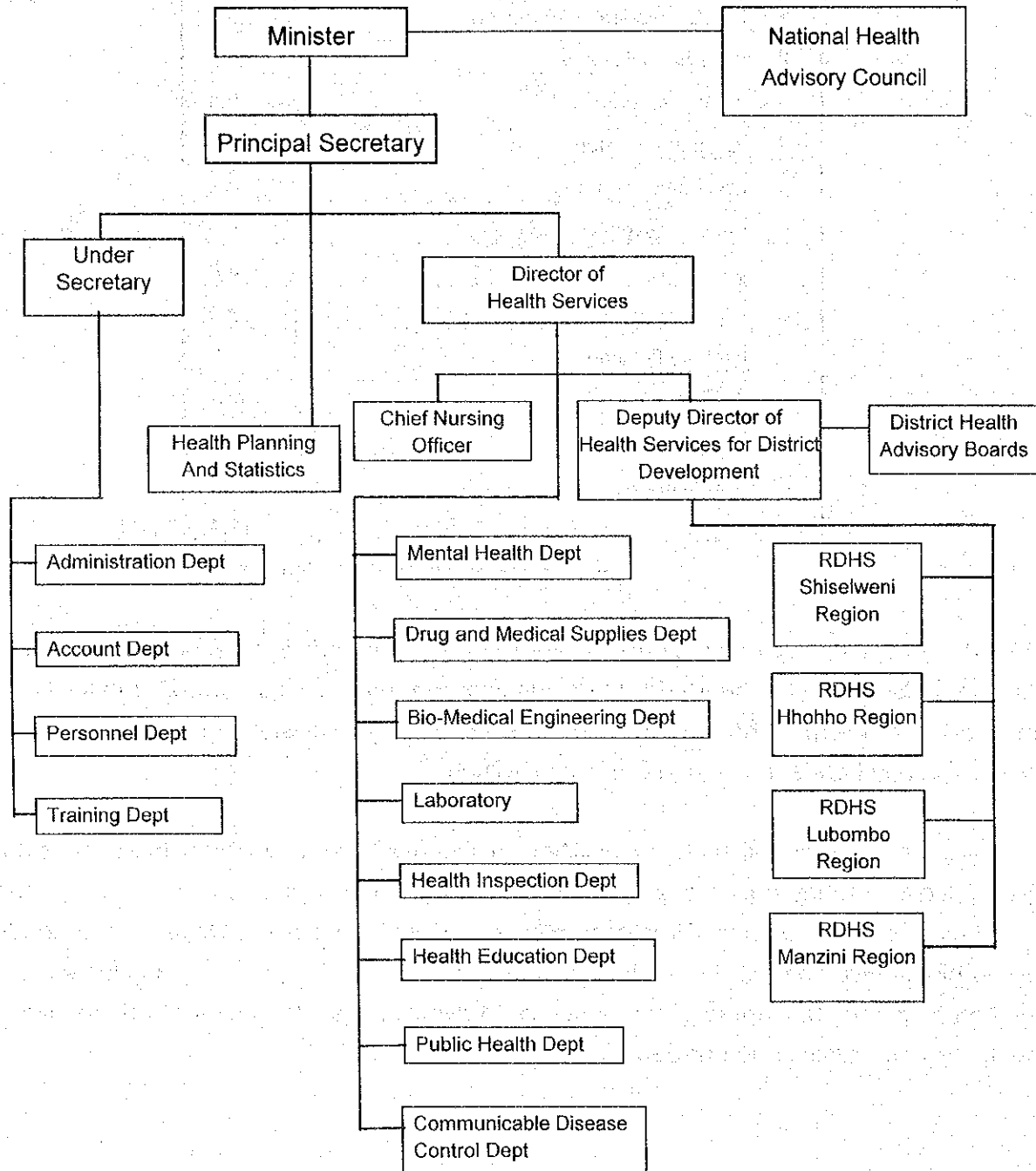
No.	Disease Group	(%)
1	Acute Respiratory Infection	25.2
2	Diarrhea Diseases	15.2
3	Skin Disorders	8.5
4	Genital Disorders	8.2
5	Digestive Disorders	6.8
6	Musculoskeletal Disorders	4.1
7	Accidents / Trauma	4.0
8	Eye Disorders	3.0
9	Urinary Disorders	2.8
10	Hypertension	2.4
11	Otitis Media	2.3
12	Parasitosis	2.2
	Others	15.4

Source : Health Sector Study Phase 1

As shown in the following organizational diagram, the Ministry of Health and Social Welfare in Swaziland is headed by the Principal Secretary as its general administrator and under him, the Under Secretary heads the Clerical Division and the Director of Health Service heads the Health Services Division.

As for the regional medical facilities, a Deputy Director of Health Services for District Development supervises medical facilities in each of the four regions, i.e., the four provinces. The Deputy Director of Health Services for District Development leads the administrative committee together with the Directors of Hospitals, Head Nurses and the Administrative Managers at the hospitals to oversee the operations of the hospitals, health centers, clinics and outreach clinics.

**Fig 1 – 1 Organogram of Ministry of Health and Social Welfare**



The health and medical care system in Swaziland is constituted of the tertiary hospitals in its Capital of Mbabane and its largest city Manzini, the regional hospitals (secondary hospitals) in the regions of Hhohho, Manzini, Shiselweni and Lubombo and the primary medical facilities including health centers, clinics and outreach clinics. The large cities such as Mbabane and Manzini have a concentration of private clinics as well, including facilities with beds. Private clinics run by mining corporations are found in Manzini, the western part of the Hhohho region and the mountainous areas near the border of South Africa. Also, on the flat planes of the Lubombo region, where the major industry is sugar cane, the sugar refineries have their own medical facilities. Christian missionaries started health care activities even before Swaziland became an independent nation and at present, the Raleigh Fitkin Memorial Hospital (tertiary hospital) in Manzini and the Good Shepherd Hospital (secondary hospital) in Siteki (Lubombo region) are active as missionary hospitals that fully participate in the nation's referral system. Since donations to these two hospitals by charity organizations were not given from in 1994, their operating costs are fully borne by the Ministry of Health and Social Welfare.

Table 1 – 3 Medical Facility (1993)

Level	Facility	Region	Hhohho	Manzini	Shiselweni	Lubombo	Total
3	General Hospital ①	Government	1 (Mbabane Hosp)	-	-	-	1
		Mission	-	1 (Raleigh/Fison Hosp)	-	-	1
	Specialty Hospital	Government	-	1 (TB Center) 1 (National Psychiatric Hosp)	-	-	2
2	Regional Hospital ②	Government	1 (PiggsPeak Hosp)	1 (Mankayane Hosp)	1 (Raticle Hosp)	-	3
		Mission	-	-	-	1 (GoodShepherd Hosp)	1
1	Healthcenter ③	Government	1	-	2	1	4
		Mission	1	-	-	-	1
		Industry	1	1	-	3	5
	Sub-Total		3	1	2	4	10
	Clinic ④	Government	10	9	16	12	47
		Mission	8	10	3	8	29
		Private	14	22	-	2	38
		Industry	2	9	-	10	21
		NGO	1	3	-	2	6
	Sub-Total		35	53	19	34	141
	Outreach ⑤	Government	21	33	23	16	93
		Mission	10	12	1	24	47
		Private	-	11	-	1	12
		Industry	-	9	-	1	10
Sub-Total		31	65	24	42	162	
Total		71	123	46	82	321	

Source : Health Sector Study Phase 1

- ①: General hospitals - An MD or a specialist MD is in service in each of its various clinical departments
- ②: Regional hospitals - While doctors are in service to treat general outpatients (internal medicine, surgical) including gynecology, obstetrics and surgery, specialized treatment (eyes, teeth, ears, nose and throat) is performed by nurses.
- ③: Health center - There are 1 ~ 3 doctors in service. While a health center is equipped with testing apparatus and x-ray equipment, it does not have an operating room.
- ④: Clinics - Only nurses are in service. A clinic only provides internal medicine, pediatric and obstetric care and emergency surgical treatment.



- ⑤: Outreach clinic - Only clinic building exists. No medical care staff in service, but doctors and nurses visit regularly from general hospitals and regional hospitals to treat patients.

The number of doctors working in the entire nation of Swaziland is 147 (of those, only 48 doctors are native Swaziland). The population per one doctor is approximately 6,705 people. 50% of the doctors work for private sector hospitals, 30% work for the government-run hospitals and the remaining 15% belong to the missionary hospitals. Since Swaziland does not have any facilities where doctors can be trained, there are only a small number of Swaziland doctors, and 70% (97 persons) of the general practitioners and 40% (5 persons) of specialists are from outside Swaziland working in the country through technical cooperation arrangement concluded with Egypt and Ethiopia.

The number of nurse including assistant nurse is 1,747, and due to the increased number of trainees in recent years, the figure has risen by 80% compared with the figure for 1985, which was 996. Of those, 50% of the nurses work at government-run hospitals, 29% work at private sector facilities and 21% work at missionary hospitals. The number of people engaged in medical service in Swaziland is as follows.

**Table 1 - 4 Worker in Medical Field (1996)**

Group	Government	Mission	Private	Total
Type of Occupation				
Doctor/Dentist	37(8)	16(4)	81(28)	134(40)
Medical Specialist	8(6)	5(2)	-	13(8)
Nurse	625	256	507	1,388
Practical Nurse	247	112	-	359
Radiologist	11	6	-	17
Laboratory Engineer	11	-	-	11
Physical/Occupational Therapist	17	1	-	18
Pharmacist	6	4	-	10
Dental Hygienist	27	-	-	27
Education	35	19	-	54
Finance	145	91	-	236
Communication	75	24	-	99
Maintenance	490	216	-	706
Others	243	53	-	296
<b>Total</b>	<b>1,977</b>	<b>803</b>	<b>588</b>	<b>3,368</b>

Source : Health Sector Study Phase 1

## 1-2 Contents of Request

The specific contents of the Swaziland requests of equipment are listed below

### MBABANE HOSPITAL

Department	Main Request Equipment
General Outpatient	Bp Machine, ECG Recorder, Stethoscope, Wheel Chair, Suction Unit
Specialty Outpatient	Head Light, Ear Speculum, Tonometer, Perimeter
Operation Theater	Operating Table, Endoscope, Lightsource, ECG Monitor, Autoclave
Laboratory	Centrifuge, Microscope, Chemical Analyzer
Rehabilitation	Wheel Chair, Tilt Table, Walker, Muscle Stimulator
Maternity	Suction Unit, Infant Scale, Incubator, Fetal Monitor, Phototherapy Unit
Ward	Instrument Trolley, Bp Machine, Stethoscope, Defibrillator, Nebulizer
Radiology	X-ray Diagnostic Unit, Film Auto Processor, CT Scanner
Emergency	Ambulance
Administration, Kitchen	Liquidizer, Pot, Slide Projector, OHP

### TB CENTER

Radiology	Radiographic X-ray Unit, Auto Film Processor
Laboratory	Microscope
Administration	OHP, Slide Projector

### PIGGSPEAK HOSPITAL

Out Patient	Bp Machine, Thermometer, Stethoscope, Examination Unit
Dental	Dental Unit, Heat Sterilizer
Ophthalmology	Slit Lamp, Ophthalmoscope
Operation Theater	Anesthetic Machine, Pulse Oxymeter, Infusion Pump, Defibrillator
Radiology	Ultrasound Scanner, Fluoroscopy X-ray Unit
Maternity	Delivery Table, Infusion Pump, Fetal Doppler
Laboratory	Blood Cell Counter, Hemoglobin Meter, Centrifuge
Administration, Emergency	Ambulance, Photocopier

### MANKAYANE HOSPITAL

Out Patient	Bp Machine, Thermometer, Examination Light, Stethoscope, Diagnostic Set
Dental	Dental Unit, Dental X-ray Unit
Laboratory	Spectrophotometer, Blood Cell Counter, Microscope, Incubator for Bacteriology
Maternity	Delivery Table, Bed for Infant Bassinet, Suction Unit
Operation Theater	Anesthetic Machine, Operating Table, Pulse Oxymeter, Infusion Pump
Radiology	Ultrasound Scanner, Fluoroscopy X-ray Unit
Ward	Bp Machine, Instrument Cart, Suction Unit, Wheel Chair, Nebulizer
Administration, Emergency	Generator, Incinerator, Ambulance

## **Chapter 2 Content of the Project**



## **Chapter 2 Contents of the Project**

### **2-1 Objectives of the Project**

The Ministry of Health and Social Welfare set forth National Health Plan in 1983 and has been making effort to improve medical services by way of diffusion of preventive health care and health enhancing movement, strengthening rehabilitation services, support service and medical services for the realization of the plan.

It is essential to establish a full referral system in order to improve medical services in Swaziland, and it is vital that the primary medical facilities where regional people receive medical services should be properly equipped and that the functions of the secondary and tertiary hospitals be reinforced to meet with the medical requirement. The objectives of this project are to improve the medical service functions of the Mbabane Hospital which is a tertiary hospital and the TB Center, and also to improve the Piggs Peak Hospital and the Mankayane Hospital, which function as secondary hospitals and to contribute to realizing reinforcement of medical services which the Ministry of Health and Social Welfare has intended by upgrading deteriorated equipment and providing equipment that are presently not possessed by those hospitals.

### **2-2 Basic concept of the project**


Renovation and expansion plans for some of the buildings of the proposed hospitals covered in this project are already in planning stage and in the case of the Mankayane hospital, which is expected to require the longest period of time for implementation, the renovation and expansion plan is estimated to take a total of 28 months (April 1997 ~ August 1999) of which the first 10 months at most will be spent in detail design and tendering, with the maximum of 18 months spent for completing the work. Thus, this project shall be implemented in two phases in conformance to the building renovation and expansion plan, with the first phase of the project focusing on those areas where the installation places for equipment are already secured and the second phase of the project focusing on new areas created by expansion. However, basic medical equipment of frequent use (Blood Pressure Machine, Stethoscopes, etc.) for which capable operators are already available and do not require installation will be included in the first phase even though they are to be used in the new area by the expansion.

The facilities that are required to install procured equipment in the second phase of the project, and the renovation and expansion of hospitals that the Ministry of Health and Social Welfare is planning are listed in the table below. The equipment to be procured in

the second phase of the project will be installed at the hospitals on condition that the renovation and expansion of the facilities at the three hospitals, with exception of the TB Center, shall be completed beforehand. It will be necessary to determine the actual period of implementation of the second phase of the project by taking into consideration how the renovation and expansion work progresses according to the renovation and expansion plans.

**Table2— 1 Renovation and Expansion Plan of the Proposed Hospitals**

Hospital	Renovation and Expansion Plan	Construction Distance	Budget
MBABANE HOSPITAL	<ul style="list-style-type: none"> <li>① Expansion of CT Room(Aprox180 m<sup>2</sup>)</li> <li>② Rebuilding of Radiology</li> </ul>	Aug 1997~Dec 1997	Cost of Construction E1,000,000 Appropriated for the Budget 1997
TB CENTER	<ul style="list-style-type: none"> <li>• Transfer to New-Built Hospital</li> </ul>	Undecided	Pre-Inspection Fee E500,000 Appropriated for the Budget 1996
PIGGSPEAK HOSPITAL	<ul style="list-style-type: none"> <li>• Expansion Plan of following Dept</li> <li>①Expansion of Pediatric Ward (Aprox350 m<sup>2</sup>)</li> <li>②Expansion of Ward for Female (Aprox350 m<sup>2</sup>)</li> <li>③Establish of Isolation Ward (Aprox140 m<sup>2</sup>)</li> <li>④Establish of TB Ward (Aprox150 m<sup>2</sup>)</li> <li>⑤Expansion of Operation Room (Aprox140 m<sup>2</sup>)</li> <li>⑥Establish of Rehabilitation (Aprox270 m<sup>2</sup>)</li> <li>⑦Establish of Workshop (Aprox120 m<sup>2</sup>)</li> <li>⑧Expansion of Laboratory (Aprox90 m<sup>2</sup>)</li> <li>⑨Repairing of Reception (Aprox80 m<sup>2</sup>)</li> <li>⑩Expansion of Service Yard (Aprox430 m<sup>2</sup>)</li> </ul>	Nov 1997~Dec 1998	Cost of Construction E5,000,000 Appropriated for the Budget 1997
MANKAYANE HOSPITAL	<ul style="list-style-type: none"> <li>• Expansion Plan of following Dept</li> <li>① New-Built of Operation Theater</li> <li>② New-Establish of Emergency Dept (①② Total Aprox380 m<sup>2</sup>)</li> <li>③ Expansion of Delivery Room (Aprox200 m<sup>2</sup>)</li> <li>④ Expansion of Laboratory (Aprox110 m<sup>2</sup>)</li> <li>⑤Expansion of Radiology (Aprox110 m<sup>2</sup>)</li> <li>⑥Expansion of OPD Consulting</li> <li>⑦Expansion of Administration (⑥⑦ Total Aprox295 m<sup>2</sup>)</li> <li>• Following Expansion Plan is scheduled as Feature Plan</li> <li>①Expansion Plan of Ward for Male(Aprox330 m<sup>2</sup>)</li> <li>②Expansion Plan of Ward for Female(Aprox330 m<sup>2</sup>)</li> <li>③Expansion Plan of Obstetric (Aprox330 m<sup>2</sup>)</li> <li>④Expansion Plan of Gynecological Ward (Aprox330 m<sup>2</sup>)</li> <li>⑤Establish Plan of Rehabilitation (Aprox80 m<sup>2</sup>)</li> <li>⑥Expansion Plan of Kitchen Laundry (Aprox240 m<sup>2</sup>)</li> <li>⑦Expansion Plan of Staff Quarter (Aprox180 m<sup>2</sup>)</li> </ul>	Jan 1998~Aug 1999	Cost of Construction E2,400,000 Appropriated for the Budget 1997

 The Construction Part related to this Project

## **2-3 Basic design**

### **2-3-1 Design concept**

The design concept of this project is established based upon the following guidelines.

- \* The projection for procurement of equipment should be made while ensuring that such equipment will help the hospitals achieve technical independence and technical improvement by full investigation and deliberation upon the administrative objectives set forth by the Ministry of Health and Social Welfare and the opinions of those involved in medical services such as the proposed hospital staffs.
- \* It should be borne in mind that the cost required for maintenance of procured equipment should be within a range that the implementing agency and the proposed hospitals can afford.
- \* Taking into consideration the quantity of similar equipment currently available at those hospitals, quantities of equipment to be procured should be determined based upon the necessity, the number of operators available and the number of patients who will benefit from such equipment. It is to be noted that sharing of the equipment among different departments within the same hospital should be considered as much as possible.

Based upon the guidelines set forth above, policies and standards in regard to selection of equipment, operation and maintenance, procurement thereof and implementation periods have been determined as set forth below.

#### **(1) Policy on equipment selection**

- \* Procurement will focus on basic medical equipment to be used by doctors, nurses and other medical personnel such as x-ray technicians and clinical test technicians.
- \* Since the Biomedical Division is in charge of maintenance of medical equipment, equipment that requires the same degree of technology for maintenance currently possessed by the Biomedical Division should be selected so that the experience and knowhow of the Biomedical Division personnel in medical equipment maintenance can be fully utilized.

#### **(2) Policy on operation and maintenance**

- \* In order to minimize the cost of operation and maintenance, equipment that requires expensive reagents and consumables in large quantities should be avoided. Equipment with specifications that facilitate procurement of consumables should be selected.

- \* Products from manufacturers who have dealerships or branch offices in South Africa should be selected whenever possible in regard to the equipment that requires regular maintenance and replacement of parts, replenishment of consumables.
- (3) Policy on equipment procurement
- \* If a majority of the operators are familiar with the equipment from a third country through their past work experience in a neighboring country such as South Africa, procurement of the equipment from the third country should be considered whenever possible.
- (4) Policy on implementation period
- \* The project is to be implemented in two phases in conformance to Swaziland's work plan for renovation and expansion of the facilities.

### 2-3-2 Basic design

#### (1) Overall design

The equipment to be procured in the process of implementing this project is divided into Phase 1 equipment, which is to be installed in the existing facilities and Phase 2 equipment, which is to be installed in new or renovated facilities.

#### (Phase 1)

The equipment to be procured during this phase is to be installed in the existing medical facilities. The equipment will be installed at the following departments at the relevant hospitals.

**Table 2-2 Objective Department for Installation (1 Phase)**

HOSPITAL	DEPARTMENT
MBABANE HOSPITAL	General Outpatient Dept (Consulting Room, Treatment Room, Obstetric & Gynecology, Endoscopy) Specialty Outpatient Dept (ENT, Ophthalmology, Dental) Laboratory, Operation Theater(Operating Theater, Urology, CSSD) , Maternity Radiology, Physiotherapy, Occupational Therapy, Ward, Emergency, Administration
TB CENTER	Laboratory, Radiology, Administration
PIGGSPEAK HOSPITAL	Outpatient Dept (Consulting Room, Treatment Room) , Maternity, Operation Theater, Ophthalmology, Dental, Radiology, Ward, Emergency Administration
MANKAYANE HOSPITAL	Outpatient Room( Treatment Room, Ophthalmology) , Maternity, Radiology, Ward, Emergency, Administration



(Phase 2)

Procurement of the Phase 2 equipment for installation in the relevant departments at the following three facilities will be implemented on condition that the local renovation and expansion work is completed beforehand.

Table 2-3 Objective Department for Installation (2 Phase)

HOSPITAL	DEPARTMENT
MBABANE HOSPITAL	Dental, Radiology
PIGGSPEAK HOSPITAL	Laboratory
MANKAYANE HOSPITAL	Dental, Laboratory, Maternity, Operation Theater, CSSD, Radiology, Ward, Administration

(2) Equipment plan

The contents and scale of the equipment procurement plan in this project will be determined based upon the functions, roles, technical standards, frequency of use of such equipment, financial ability to carry the required expenses, technical knowhow for maintenance work, availability of required operators and the general conditions at the relevant medical facilities. The criteria for selection of equipment, which were verified through discussions held between the Swaziland side and the Japanese basic design study team, are as follows.

The request for equipment was confirmed by the Swaziland side and the basic design study team and the final request was established by classifying the individual items into three categories A, B and C based upon priorities. These three categories, i.e., A, B and C are defined as follows.

(Equipment priority)

A: Items that are vital in carrying out medical care at the hospitals, need to be upgraded or replaced and are suitable for installation at the relevant facilities.

B: Items that are vital in carrying out medical care and are suitable for installation at the relevant facilities.

C: Items that are needed but should be installed or upgraded only after the facilities are prepared for installation or the operators are procured.

It is to be noted that the number of required items in each category, classified according to priority are given in Table 2-4 below.

**Table 2— 4 Equipment Q'ty By Priority Order**

HOSPITAL	PRIORITY			TOTAL
	A	B	C	
MBABANE HOSPITAL	126	31	4	161
TB CENTER	3	-	-	3
PIGGSPEAK HOSPITAL	43	13	13	69
MANKAYANE HOSPITAL	32	2	38	72

Based upon the priority order of those items that the Swaziland side and the team agreed upon and the details of the individual items that have become available during individual discussions held with personnel at the different departments after the minutes of discussions were signed, the justification and necessity for acquiring those items were further deliberated upon back in Japan. After the items were classified into three categories, i.e., items for upgrading, items for new acquisition and items for replenishment in, the final overall decision was made based upon the following criteria.

(Classification of items)

- Renewal : items to be renewed indicated as "A"
- New items : items to be newly procured indicated as "B"
- Replenishment : items to be replenished in quantity for existing equipment indicated as "C"

(Criteria)

1 Degree of necessity

- : Existing equipment that has become superannuated and requires renewal. Equipment that is essential in conducting medical care activities and currently requires renovation or replenishment.
- ×: Equipment that is not vitally necessary judging from the current status of medical care provided in Swaziland. Equipment that is considered to benefit only small number of patients.

2 Quantities

- : Equipment for which a viable installation plan has been drawn up and quantity for procurement is appropriate.
- △: Items whose quantity needs to be adjusted according to the number of operators available, the number of patients requiring treatment with the equipment and the installation plan.

3 Operation and maintenance system

- : Equipment that can be easily maintained. Equipment that can be maintained with a level of expertise that manufacturer dealerships can provide.
- ×: Equipment that may cause maintenance-related problems after installation because of the high cost of maintenance and the high degree of technical expertise required.

4 Operators

- : Equipment for which operators with sufficient technical ability is already available and which is determined to be operable with the technical level expertise that existing operators can provide.
- △: Equipment that will necessitate procuring new personnel in order to operate or maintain it.

5 Facilities and installation conditions

- : Equipment that can be installed at existing facilities under the current installation conditions.
- △: Equipment that cannot be installed at existing facilities under existing conditions and necessitates renovation or expansion of the facilities for installation.

(Overall decision-making)

- : Equipment whose procurement has been deemed justifiable through deliberations on the contents of the request.
- ×: Equipment that is not to be included in the project after deliberating upon the contents of the request.

The results of deliberation on the individual items based upon the criteria mentioned above are given in the following table; "Review Result of the Equipment"

Review Result of Equipment for MBABANE HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase	
						1	2	3	4	5				1	2
CONSULTING ROOM (GENERAL)	Table Top Bp Machine	8	A	2	C	○	○	○	○	○	○	8	Japan	○	○
	Floor Type Bp Machine	4	A	1	C	○	○	○	○	○	○	4	Japan	○	○
	ECG Recorder	2	A	0	B	○	○	○	○	○	○	2	Third Country	○	○
	Diagnostic Set	4	A	0	B	○	○	○	○	○	○	4	Japan	○	○
	Stethoscope for Doctor	4	A	4	C	○	○	○	○	○	○	4	Japan	○	○
	Stethoscope for Nurse	8	A	3	C	○	○	○	○	○	○	8	Japan	○	○
	Examining Light	4	A	0	B	○	○	○	○	○	○	4	Third Country	○	○
	Examining Table	6	A	2	C	○	○	○	○	○	○	6	Japan	○	○
	X-ray Film Illuminator	4	A	1	C	○	○	○	○	○	○	4	Japan	○	○
	Boiling Sterilizer, Table Top Type	2	A	1	C	○	○	○	○	○	○	2	Japan	○	○
DRESSING & TREATMENT ROOM	Wheel Chair	4	A	1	C	○	○	○	○	○	○	4	Third Country	○	○
	Refrigerator for Medicine	1	A	1	C	○	○	○	○	○	○	1	Japan	○	○
	Nebulizer	2	A	1	C	○	○	○	○	○	○	2	Japan	○	○
	Suction Unit, Table Top Type	1	A	1	C	○	○	○	○	○	○	1	Third Country	○	○
	ECG Recorder	1	A	0	B	○	○	○	○	○	○	1	Third Country	○	○
CONSULTING ROOM (SPECIAL)	X-ray Film Illuminator	1	B	0	B	○	○	○	○	○	○	1	Japan	○	○
	Microscope	1	B	0	B	○	○	○	△	○	○	0			
	Table Top Bp Machine	1	B	1	C	○	○	○	○	○	○	1	Japan	○	○
	ECG Recorder	1	A	1	C	○	○	○	○	○	○	1	Japan	○	○
	X-ray Film Illuminator	1	B	0	B	○	○	○	○	○	○	1	Japan	○	○
GYNECOLOGY	Microscope	1	B	0	B	○	○	○	○	○	○	0			
	Table Top Bp Machine	1	B	1	C	○	○	○	○	○	○	1	Japan	○	○
	Gynecology Examination Unit with Table	1	A	1	C	○	○	○	○	○	○	1	Japan	○	○
	Colposcope	1	A	0	B	○	○	○	○	○	○	1	Japan	○	○
	Suction Unit, Portable	1	A	1	R	○	○	○	○	○	○	1	Third Country	○	○
	Insufflation Apparatus	1		0	B	○	○	○	○	○	○	0			
	Cryosurgery System	1		0	B	○	○	○	○	○	○	0			
		1		0	B	○	○	○	○	○	○	0			
ENT CLINIC	Killian Head Light	5	A	1	A.C	○	○	○	○	○	○	5	Japan	○	○
	Ear Speculum	20	A	8	C	○	○	○	○	○	○	20	Japan	○	○

Review Result of Equipment for MBABANE HOSPITAL

Department	Description	Requested Qty	Priority	Existing Qty	Class	Evaluation					Result	Qty	Origin	Phase	
						1	2	3	4	5				1	2
	Ear Syringe	20	A	1	A.C	○	○	○	○	○	○	Japan	○	○	
	Binocular Diagnostic Microscope, Floor Type	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	ENT treatment Chair & Unit	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Esophagoscope, Rigid Type	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Laryngoscope, Jackson Type	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Mastoidectomy Drill with built-in Irrigation Unit & Burrs	1	A	1	A.C	○	○	○	○	○	○	Japan	○	○	
	ENT Instrument Set	1	A		C	○	○	○	○	○	○	Japan	○	○	
	Hearing Test Booth	1	B	1	A	○	○	○	○	○	○	Japan	○	○	
	Audiometer, Dual Type	1	B	1	A	○	○	○	○	○	○	Japan	○	○	
	Audiometer, Free Field Type	1	B	1	A	○	○	○	○	○	○	Japan	○	○	
OPHTHALMIC	Tonometer	1	A	1	A	○	○	○	○	○	○	Japan	○	○	
	Humphrey Perimeter	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Slit Lamp with Table	1	A	3	C	○	○	○	○	○	○	Japan	○	○	
	Wheel Chair	1	A	0	B	○	○	○	○	○	○	Third Country	○	○	
ENDOSCOPY CLINIC	Gastrointestinal Fiberscope Set	2	A	1	A.C	○	○	○	○	○	○	Japan	○	○	
	Colono Fiberscope Set	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Fiberscope Cleaning Machine	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Endoscopic Video System	1		0	B	×	○	○	△	○	×				
	Endoscopic Trolley	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Endoscopic Cabinet	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Light Source for Endoscope	1	A	1	R	○	○	○	○	○	○	Japan	○	○	
	Endoscopic Suction Unit	2	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Resectoscope Set	1	A	1	A	○	○	○	○	○	○	Japan	○	○	
	Irrigating Cystoscope Set	1	A	0	B	○	○	○	○	○	○	Japan	○	○	

Review Result of Equipment for MBABANE HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase	
						1	2	3	4	5				1	2
	Urethral Stone Dislodge Forceps	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Bladder Evacuator, Elick	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Cysto-Urethroscope Set	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Light Source for Urology Scope	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
DENTAL	Dental Unit with Accessories	1	A	2	A	○	○	○	○	○	○	Japan	○	○	
	Ultrasonic Scaler	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Steam Sterilizer, Table Top Type	1	A	1	C	○	○	○	○	○	○	Japan	○	○	
	Dental Panoramic X-ray Unit	1	C	0	B	○	○	○	△	○	○	Japan	○	○	
	Dental X-ray Film Processor	1		1	C	×	△	○	○	○	×			○	
	Visible Light Source	1	B	1	A	○	○	○	○	○	○	Japan	○	○	
	Apex Locator	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Amalgam Mixer	1	A	1	A	○	○	○	○	○	○	Japan	○	○	
	Electro Cautery Unit	1	B	1	A	○	○	○	○	○	○	Japan	○	○	
LABORATORY	Blood Bank Refrigerator	1	A	1	C	○	○	○	○	○	○	Japan	○	○	
	Centrifuge	2	A	2	C	○	○	○	○	○	○	Japan	○	○	
	Binocular Microscope	2	A	6	C	○	○	○	○	○	○	Japan	○	○	
	Darkfield Attachment for Microscope	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Blood Cell Counter	1	A	2	A	○	○	○	○	○	○	Third Country	○	○	
	Incubator for Bacteriology	1	B	1	A	○	○	○	○	○	○	Japan	○	○	
	Autoclave, Vertical Type	1	B	2	A	○	○	○	○	○	○	Japan	○	○	
	Distiller	1	A	1	A	○	○	○	○	○	○	Japan	○	○	
	Chemical Analyzer	1	A	1	A	○	○	○	○	○	○	Third Country	○	○	
RADIOLOGY	X-ray Diagnostic Unit with Tomography	1	A	0	B	○	○	○	○	○	○	Third Country	○	○	
	Fluoroscopy X-ray Unit with TV	1	A	1	A	○	○	○	○	○	○	Third Country	○	○	
	Mobile X-ray Unit	1	A	1	A	○	○	○	○	○	○	Third Country	○	○	

Review Result of Equipment for MBABANE HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase
						1	2	3	4	5				
	X-ray Film Auto Processor	1	B	2	A	○	○	○	○	○	○	Third Country	○	
	CT Scanner	1	C	0	B	○	○	△	△	○	○	Third Country	☆○	
	Film Name Printer	1	A	0	B	○	○	○	○	○	○	Japan	○	
	Film Loading Table	1	A	1	A	○	○	○	○	○	○	Japan	○	
	X-ray Film Cassette Set	1	A	32	C	○	○	○	○	○	○	Japan	○	
	Silvery Recovery Unit	1	B	0	B	○	○	○	○	○	○	Third Country	○	
	Ultrasound System for Internal Medicine	1		1	C	X	△	○	○	○	X			
PHYSIOTHERAPY	Muscle Stimulator	1	A	1	A	○	○	○	○	○	○	Japan	○	
	Microwave Therapy Unit	1	A	0	B	○	○	○	○	○	○	Japan	○	
	Wheel Chair	2	A	1	A.C	○	○	○	○	○	○	Third Country	○	
	Walker	7	A	2	A.C	○	○	○	○	○	○	Japan	○	
	Tilt Table	1	A	0	B	○	○	○	○	○	○	Japan	○	
	Exercise Mat	3	A	2	A.C	○	○	○	○	○	○	Japan	○	
OCCUPATIONAL	Wire Twisting Machine	1	B	0	B	○	○	○	○	○	○	Japan	○	
THERAPY	Intermittent Time Switch Unit and Photoelectric Switch	1	B	0	B	○	○	○	○	○	○	Japan	○	
	Wheel Chair Table	1	B	0	B	○	○	○	○	○	○	Japan	○	
	Medicine Ball	1	A	1	C	○	○	○	○	○	○	Japan	○	
	Roll	1	A	1	C	○	○	○	○	○	○	Japan	○	
	Wedge	1	A	0	B	○	○	○	○	○	○	Japan	○	
	Wheel Chair for Adult	2	A	1	A.C	○	○	○	○	○	○	Third Country	○	
	Wheel Chair for Child	1	A	0	B	○	○	○	○	○	○	Japan	○	
	Wheel Chair for Narrow Adult	1	A	0	B	○	○	○	○	○	○	Japan	○	
	Nesting Wheel Chair Transfer Stool Set	1	B	0	B	○	○	○	○	○	○	Japan	○	
	Exercise Mat	3	A	1	A.C	○	○	○	○	○	○	Japan	○	

Review Result of Equipment for MBABANE HOSPITAL

Department	Description	Requested Qty	Priority	Existing Qty	Class	Evaluation					Result	Qty	Origin	Phase	
						1	2	3	4	5				1	2
ORTHOPEDIC WORKSHOP	Sanding Machine	1	B	1	A	○	○	○	○	○	○	Japan	○	○	
	Stitching Machine	1	B	1	A	○	○	○	○	○	○	Japan	○	○	
	Sole Stitcher	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Rubber Sewing Machine	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Leather Skinning Machine	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Finishing Machine	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
OPERATION THEATER	Operating Light, Mobile Type	2	A	1	A,C	○	○	○	○	○	○	Third Country	○	○	
	Anesthetic Machine with Ventilator	1	A	3	C	○	○	○	○	○	○	Japan	○	○	
	Orthopedic Operating Table	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Universal Operating Table	1		3	C	X	△	○	○	○	X				
	ECG Monitor	2	A	1	A,C	○	○	○	○	○	○	Third Country	○	○	
	Infusion Pump	4	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Pulse Oxymeter	2	A	1	A,C	○	○	○	○	○	○	Japan	○	○	
	Ventilator for Anesthetic Machine	1	B	2	C	○	○	○	○	○	○	Japan	○	○	
	Defibrillator	1	A	1	C	○	○	○	○	○	○	Third Country	○	○	
	Bronchoscope Set	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Electrosurgical Unit for Resectoscope	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Amputation Saw	2	A	2	A	○	○	○	○	○	○	Japan	○	○	
	Laparotomy Set for Adult	1	A		C	○	○	○	○	○	○	Japan	○	○	
	Laparotomy Set for Child	1	A		C	○	○	○	○	○	○	Japan	○	○	
	Gastrectomy Set	1	A		C	○	○	○	○	○	○	Japan	○	○	
Cholecystotomy Set	1	A		C	○	○	○	○	○	○	Japan	○	○		
Emergency Tracheotomy Set	1	A		C	○	○	○	○	○	○	Japan	○	○		
Plastic Surgery Set	1	A		C	○	○	○	○	○	○	Japan	○	○		
Caesarean Incision Set	1	A		C	○	○	○	○	○	○	Japan	○	○		



Review Result of Equipment for MBABANE HOSPITAL

Department	Description	Requested Qty	Priority	Existing Qty	Class	Evaluation					Result	Qty	Origin	Phase	
						1	2	3	4	5				1	2
	Cataract Set	2	A		C	○	○	○	○	○	○	Japan	○	○	
	Minor Operation Set	3	A		C	○	○	○	○	○	○	Japan	○	○	
	Thyroidectomy Set	1	B		C	○	○	○	○	○	○	Japan	○	○	
	Adenotonsillectomy Set	1	A		C	○	○	○	○	○	○	Japan	○	○	
	Arthroscope Set	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Low Pressure Continuous Suction Unit	2	A	3	C	○	○	○	○	○	○	Third Country	○	○	
CSDD	Autoclave with Boiler	2	A	3	A	○	○	○	○	○	○	Japan	○	○	
	Chemical Gas Analyzer	1		0	B	○	X	△	△	X	○	Japan	○	○	
	Boiling Sterilizer, Floor Type	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
MATERNITY	Wheel Chair	2	A	1	A.C	○	○	○	○	○	○	Third Country	○	○	
	Suction Unit	2	A	1	A.C	○	○	○	○	○	○	Third Country	○	○	
	Infant Scale	2	A	1	A.C	○	○	○	○	○	○	Japan	○	○	
	Vacuum Extractor	2	B	1	A.C	○	○	○	○	○	○	Japan	○	○	
	Emergency Cart	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Infant Incubator	2	A	1	A.C	○	○	○	○	○	○	Japan	○	○	
	Infant Warmer	2	A	1	A.C	○	○	○	○	○	○	Japan	○	○	
	Phototherapy Unit	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Fetal Doppler	2	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Fetal Monitor	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Neonatal Monitor	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Suction Unit for Abortion	1	A	0	B	○	○	○	○	○	○	Japan	○	○	
	Neonatal Resuscitation Set	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
WARD	Suction Unit	17	A	3	A.C	○	○	○	○	○	○	Third Country	○	○	
	Wheel Chair	17	A	4	A.C	○	○	○	○	○	○	Third Country	○	○	
	Instrument Trolley	17	A	4	A.C	○	○	○	○	○	○	Japan	○	○	

Review Result of Equipment for MBABANE HOSPITAL

Department	Description	Requested Qty	Priority	Existing Qty	Class	Evaluation					Result	Qty	Origin	Phase	
						1	2	3	4	5				1	2
	Emergency Cart	17	B	0	B	○	○	○	○	○	○	17	Japan	○	○
	Wheel Stretcher	9	A	7	AC	○	○	○	○	○	○	9	Japan	○	○
	Floor Mobile Bp Machine	34	A	2	AC	○	○	○	○	○	○	34	Japan	○	○
	Table Top Bp Machine	34	A	4	AC	○	○	○	○	○	○	34	Japan	○	○
	Stethoscope for Nurse	34	A	4	AC	○	○	○	○	○	○	34	Japan	○	○
	Medicine Trolley	17	A	7	AC	○	○	○	○	○	○	17	Japan	○	○
	X-ray Film Illuminator	17	A	0	B	○	○	○	○	○	○	17	Japan	○	○
	Nebulizer	17	A	1	AC	○	○	○	○	○	○	17	Japan	○	○
	ECG Monitor	4	A	0	B	○	○	○	○	○	○	4	Third Country	○	○
	Defibrillator	2	A	0	B	○	○	○	○	○	○	2	Third Country	○	○
	Patient Bed with Mattress	15	B		C	○	○	○	○	○	○	15	Japan	○	○
	Weighing Scale	17	A	1	AC	○	○	○	○	○	○	17	Japan	○	○
	Low Pressure Continuous Suction Unit	3	A	0	B	○	○	○	○	○	○	3	Third Country	○	○
	Spirometer	1	A	0	B	○	○	○	○	○	○	1	Japan	○	○
EMERGENCY	Ambulance, 4WD Wagon	1	B	2	C	○	○	○	○	○	○	1	Japan	○	○
KITCHEN	Liquidizer for Kitchen	1	A	0	B	○	○	○	○	○	○	1	Japan	○	○
	Pot for Liquid Diet	3	A	0	B	○	○	○	○	○	○	3	Japan	○	○
ADMINISTRATION	Slide Projector Set	1	A	0	B	○	○	○	○	○	○	1	Japan	○	○
	OHP Projector	1	A	0	B	○	○	○	○	○	○	1	Japan	○	○
RADIOLOGY	Multi Format Camera for CT Scanner	1	C	0	B	○	○	○	○	○	○	1	Third Country	○	○
	X-ray Film Auto Processor for CT Scanner	1	C	0	B	○	○	○	○	○	○	1	Third Country	○	○

Review Result of Equipment for TB CENTER

Department	Description	Requested Q'ty	Priority	Existing	Class	Evaluation					Result	Q'ty	Origin	Phase	
						1	2	3	4	5				1	2
RADIOLOGY	Radiographic X-ray Unit	1		1	C	○	○	○	△	△	X	0			
	Auto X-ray Film Processor	1		1	C	X	△	○	○	○	X	0			
LABORATORY	Teaching Microscope	1	A	1	C	○	○	○	○	○	○	1	JAPAN		○
	Incubator for Bacteriology	1	A	1	C	○	○	○	○	○	○	1	JAPAN		○
ADMINISTRATION	OHP	1		0	B	X	○	○	○	○	X	0			
	Slide Projector Set	1	A	0	B	○	○	○	○	○	○	1	JAPAN		○

Review Result of Equipment for PIGGSPEAK HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase	
						1	2	3	4	5				1	2
ADMINISTRATION	Photocopier	1	A	1	A	○	○	○	○	○	○	Third Country	○		
DENTAL	Dental Unit with Accessories	1	A	1	A	○	○	○	○	○	○	Japan	○		
	Steam Sterilizer, Table Top Type	1	B	1	A	○	○	○	○	○	○	Japan	○		
	Heat Sterilizer	1		1	C	X	△	○	○	○	X				
	Ultrasonic Scaler	1		0	B	X	○	○	△	○	X				
	Amalgam Mixer	1	A	0	B	○	○	○	○	○	○	Japan	○		
	Hand Pieces	1		3	C	X	△	○	○	○	X				
OPD CONSULTING	Table Top Bp Machine	4	A	3	AC	○	○	○	○	○	○	Japan	○		
	Thermometer	20	A		C	○	○	○	○	○	○	Japan	○		
	Examination Light	3	A	0	B	○	○	○	○	○	○	Third Country	○		
	X-ray Film Illuminator	2	A	1	AC	○	○	○	○	○	○	Japan	○		
	Stethoscope for Doctor	4	A	2	AC	○	○	○	○	○	○	Japan	○		
	Stethoscope for Nurse	4	A	2	AC	○	○	○	○	○	○	Japan	○		
	Diagnostic Set	3	A	0	B	○	○	○	○	○	○	Japan	○		
	ECG Recorder	1	A	0	B	○	○	○	○	○	○	Third Country	○		
	Gynecology Examination Unit	1	A	0	B	○	○	○	○	○	○	Japan	○		
	Refrigerator for Medicine	1	A	1	A	○	○	○	○	○	○	Japan	○		
	Boiling Sterilizer, Table Top Type	1	A	1	A	○	○	○	○	○	○	Japan	○		
	OPD TREATMENT	Minor Operating Instrument Set	2	A		C	○	○	○	○	○	○	Japan	○	
Light for Minor Operation		1	A	1	A	○	○	○	○	○	○	Third Country	○		
Nebulizer		1	A	0	B	○	○	○	○	○	○	Japan	○		
Suction Unit, Portable		1	A	1	A	○	○	○	○	○	○	Third Country	○		
LABORATORY	Refrigerator for Reagent	1	C	1	C	○	○	○	○	○	○	Japan	○	○	
	Blood Cell Counter	1	C	1	A	○	○	○	○	△	○	Third Country	○	☆○	

Review Result of Equipment for PIGGSPEAK HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase	
						1	2	3	4	5				1	2
	Differential Counter, Manual Type	1	C	1	A	○	○	○	○	△	○	Japan	○	○	
	Hemoglobin Meter	1	C	1	A	○	○	○	○	△	○	Japan	○	○	
	Pipette Washer	1	C	0	B	○	○	○	○	△	○	Japan	○	○	
	Centrifuge	1	C	1	A	○	○	○	○	△	○	Japan	○	○	
	Binocular Microscope	1	C	1	C	○	○	○	○	△	○	Japan	○	○	
	Distiller	1	C	0	B	○	○	○	○	△	○	Japan	○	○	
	Autoclave, Vertical Type	1	C	0	B	○	○	○	○	△	○	Japan	○	○	
	Incubator for Bacteriology	1	C	1	A	○	○	○	○	△	○	Japan	○	○	
	Hot Oven	1	C	1	A	○	○	○	○	△	○	Japan	○	○	
	Hot Plate	1		0	B	X	△	○	○	○	X				
	Water Bath	1	C	1	C	○	○	○	○	△	○	Japan	○	○	
	Colony Counter	1	C	0	B	○	○	○	○	△	○	Japan	○	○	
MATERNITY	Delivery Table	2	A	2	A	○	○	○	○	○	○	Japan	○	○	
	Infant Bassinet	2	B		C	○	○	○	○	○	○	Japan	○	○	
	Vacuum Extractor	2	A	1	A.C	○	○	○	○	○	○	Japan	○	○	
	Fetal Doppler	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Infant Scale	1	A	1	C	○	○	○	○	○	○	Japan	○	○	
	Caesarean Incision Set	2	A		C	○	○	○	○	○	○	Japan	○	○	
	Infusion Pump	2	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Neonatal Resuscitation Set	1	B	0	B	○	○	○	○	○	○	Japan	○	○	
	Ambulance, 4WD Wagon	1	B	3	A	○	○	○	○	○	○	Japan	○	○	
	Anesthetic Machine	1	A	1	A	○	○	○	○	○	○	Japan	○	○	
THEATER	Operating Table	1		2	A	X	△	○	○	○	X				
	Pulse Oxymeter	1	B	1	A	○	○	○	○	○	○	Japan	○	○	

Review Result of Equipment for PIGGSPEAK HOSPITAL

Department	Description	Requested Qty	Priority	Existing Qty	Class	Evaluation					Result	Qty	Origin	Phase	
						1	2	3	4	5				1	2
	Infusion Pump	1	B	0	B	○	○	○	○	○	○	1	Japan	○	○
	Defibrillator	1	B	0	B	○	○	○	○	○	○	1	Third Country	○	○
	Suction Unit	2	A	2	A	○	○	○	○	○	○	2	Third Country	○	○
	Surgical Instrument Set	2	A		C	○	○	○	○	○	○	2	Japan	○	○
	ECG Monitor	1	A	0	B	○	○	○	○	○	○	1	Third Country	○	○
	Operating Light, Mobile Type	1	A	0	B	○	○	○	○	○	○	1	Third Country	○	○
CSSD	Autoclave with Boiler	1	A	2	A	○	○	○	○	○	○	1	Japan	○	○
	Sterilizing Drum, LMS Size Each 10 Set	1	A	5	C	○	○	○	○	○	○	1	Japan	○	○
OPHTHALMOLOGY	Slit Lamp with Table	1	A	0	B	○	○	○	○	○	○	1	Japan	○	○
	Ophthalmoscope	1	B	1	A	○	○	○	○	○	○	1	Japan	○	○
OTHER	Generator	1	A	1	A	○	○	○	○	○	○	1	Japan	○	○
	Stabilizer, Table Top Type	3	A	0	B	○	○	○	○	○	○	3	Japan	○	○
	Incinerator	1	B	1	A	○	○	○	○	○	○	1	Third Country	○	○
RADIOLOGY	Ultrasound Scanner	1	B	0	B	○	○	○	○	○	○	1	Third Country	○	○
	Fluoroscopy X-ray Unit	1	A	0	B	○	○	○	○	○	○	1	Third Country	○	○
	Film Name Printer	1	A	0	B	○	○	○	○	○	○	1	Japan	○	○
	X-ray Film Illuminator	1	A	1	A	○	○	○	○	○	○	1	Japan	○	○
	Protective Apron	1	A	1	C	○	○	○	○	○	○	1	Japan	○	○
WARD	Floor Mobile Bp Machine	6	A	3	AC	○	○	○	○	○	○	6	Japan	○	○
	Instrument Trolley	6	A	4	AC	○	○	○	○	○	○	6	Japan	○	○
	Suction Unit, Portable	2	A	3	A	○	○	○	○	○	○	2	Third Country	○	○
	Wheel Chair	5	A	2	AC	○	○	○	○	○	○	5	Third Country	○	○
	ECG Monitor	1		0	B	X	○	○	○	○	X	0			
	ECG Recorder	1	A	0	B	○	○	○	○	○	○	1	Third Country	○	○

Review Result of Equipment for PIGGSPEAK HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase	
						1	2	3	4	5					
				Q'ty		1	2	3	4	5				1	2
	Nebulizer	3	A	0	B	○	○	○	○	○	○	3	Japan	○	
	Low Pressure Continuous Suction Unit	2	A	0	B	○	○	○	○	○	○	2	Third Country	○	
MATERNITY	Infant Incubator	2	B	1	A.C	○	○	○	○	○	○	2	Japan	○	

Review Result of Equipment for MANKAYANE HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase
						1	2	3	4	5				
ADMINISTRATION	Photocopier	1	A	0	B	○	○	○	○	○	○	1	Third Country	※○
	Typewriter	1	A	1	C	○	○	○	○	○	○	1	Third Country	※○
DENTAL	Dental Unit with Accessories	1	C	1	A	○	○	○	△	○	○	1	Japan	○
	Dental X-ray Film Processor	1	C	0	B	○	○	○	△	○	○	1	Japan	○
	Dental X-ray Unit	1	C	0	B	○	○	○	△	○	○	1	Japan	○
	Steam Sterilizer, Table Top Type	1	C	1	C	○	○	○	△	○	○	1	Japan	○
	Heat Sterilizer	1		1	C	×	△	○	○	○	×	0		
	Ultrasonic Scaler	1			B	×	△	○	○	○	×	0		
	Amalgam Mixer	1	C	0	B	○	○	○	△	○	○	1	Japan	○
	Hand Piece	1		1	C	×	△	○	○	○	×	0		
	Table Top Bp Machine	3	A	1	AC	○	○	○	○	○	○	3	Japan	※○
	Thermometer	20	A		C	○	○	○	○	○	○	20	Japan	※○
OPD CONSULTING	Examination Light	2	A	1	AC	○	○	○	○	○	○	2	Third Country	※○
	X-ray Film Illuminator	2	A	1	AC	○	○	○	○	○	○	2	Japan	※○
	Stethoscope for Doctor	3	A	2	AC	○	○	○	○	○	○	3	Japan	※○
	Stethoscope for Nurse	3	A	3	C	○	○	○	○	○	○	3	Japan	※○
	Diagnostic Set	1	A	0	B	○	○	○	○	○	○	1	Japan	※○
	ECG Recorder	1	A	1	A	○	○	○	○	○	○	1	Third Country	※○
	Refrigerator for Medicine	1	A	1	C	○	○	○	○	○	○	1	Japan	※○
	Boiling Sterilizer, Table Top Type	1	A	0	B	○	○	○	○	○	○	1	Japan	※○
	Minor Operating Instrument Set	2	A		C	○	○	○	○	○	○	2	Japan	※○
	Nebulizer	1	A	0	B	○	○	○	○	○	○	1	Japan	※○
OPD TREATMENT	Suction Unit, Portable	1	A	0	B	○	○	○	○	○	○	1	Third Country	※○
	Spectrophotometer	1	C	0	B	○	○	○	△	○	○	1	Japan	☆○
	Refrigerator for Reagent	1	C	1	C	○	○	○	△	○	○	1	Japan	○
	Blood Cell Counter	1	C	1	A	○	○	○	△	○	○	1	Third Country	☆○
	Differential Counter, Manual Type	1	C	1	A	○	○	○	△	○	○	1	Japan	○
LABORATORY														



Review Result of Equipment for MANKAYANE HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase
						1	2	3	4	5				
	Hemoglobin Meter	1	A	0	B	○	○	○	○	○	○	1	Japan	※○
	Pipette Washer	1	C	0	B	○	○	○	○	△	○	1	Japan	○
	Centrifuge	1	C	1	A	○	○	○	○	△	○	1	Japan	○
	Binocular Microscope	1	A	1	C	○	○	○	○	○	○	1	Japan	※○
	Distiller	1	C	0	B	○	○	○	○	△	○	1	Japan	○
	Autoclave, Vertical Type	1	C	0	B	○	○	○	○	△	○	1	Japan	○
	Incubator for Bacteriology	1	C	1	A	○	○	○	○	△	○	1	Japan	○
	Hot Oven	1	C	0	B	○	○	○	○	△	○	1	Japan	○
	Hot Plate	1		0	B	X	△	○	○	○	○	0		
	Water Bath	1	C	1	C	○	○	○	○	△	○	1	Japan	○
	Colony Counter	1	C	0	B	○	○	○	○	△	○	1	Japan	○
	Drying Tumbler	1	B	1	A	○	○	○	○	○	○	1	Japan	※○
	Delivery Table	2	C	2	A	○	○	○	○	△	○	2	Japan	○
	Infant Bassinet	2	C	2	C	○	○	○	○	△	○	2	Japan	○
Suction Unit	2	A	2	A	○	○	○	○	○	○	2	Third Country	※○	
Fetal Doppler	1	A	0	B	○	○	○	○	○	○	1	Japan	※○	
Pulse Oxymeter	1	A	0	B	○	○	○	○	○	○	1	Japan	※○	
Infant Scale	1	A	1	C	○	○	○	○	○	○	1	Japan	※○	
Caesarean Incision Set	2	C		C	○	○	○	○	△	○	2	Japan	○	
Infusion Pump	1	C	0	B	○	○	○	○	△	○	1	Japan	○	
Ambulance, 4WD Wagon	1	A	2	C	○	○	○	○	○	○	1	Japan	※○	
Anesthetic Machine	1	C	0	B	○	○	○	○	△	○	1	Japan	☆○	
Operating Table	1	C	0	B	○	○	○	○	△	○	1	Japan	☆○	
Pulse Oxymeter	1	C	0	B	○	○	○	○	△	○	1	Japan	☆○	
Infusion Pump	1	C	0	B	○	○	○	○	△	○	1	Japan	○	
Defibrillator	1	C	0	B	○	○	○	○	△	○	1	Third Country	☆○	
ECG Monitor	1	C	0	B	○	○	○	○	△	○	1	Third Country	○	
LAUNDRY														
MATERNITY														
CASUALTY														
OPERATION														
THEATER														

Review Result of Equipment for MANKAYANE HOSPITAL

Department	Description	Requested Q'ty	Priority	Existing Q'ty	Class	Evaluation					Result	Q'ty	Origin	Phase	
						1	2	3	4	5				1	2
	Suction Unit	1	C	0	B	○	○	○	△	△	○	Third Country	○	○	
	Surgical Instrument Set	2	C	0	B	○	○	○	△	△	○	Japan	☆	○	
	Operating Light, Ceiling Type	1	C	0	B	○	○	○	△	△	○	Japan	☆	○	
CSSD	Autoclave with Boiler	1	C	1	C	○	○	○	○	△	○	Japan	○	○	
	Sterilizing Drum, LMS Size Each 10 Set	1	C	3	C	○	○	○	○	△	○	Japan	○	○	
OPHTHALMOLOGY	Slit Lamp with Table	1		0	B	X	△	○	○	○	X				
	Ophthalmoscope	1	A	1	A	○	○	○	○	○	○	Japan	※	○	
OTHER	Generator	1	C	1	A	○	○	○	○	△	○	Japan	○	○	
	Stabilizer, Table Top Type	1	A	0	B	○	○	○	○	○	○	Japan	※	○	
	Incinerator	1	B	1	A	○	○	○	○	○	○	Third Country	○	○	
RADIOLOGY	Ultrasound Scanner	1	A	0	B	○	○	○	○	○	○	Third Country	※	○	
	Fluoroscopy X-ray Unit	1	C	0	B	○	○	○	○	△	○	Third Country	☆	○	
	Film Name Printer	1	C	0	B	○	○	○	○	△	○	Japan	○	○	
	X-ray Film Illuminator	1	C	1	A	○	○	○	○	△	○	Japan	○	○	
	Protective Apron	1	C	1	C	○	○	○	○	△	○	Japan	○	○	
WARD	Floor Mobile Bp Machine	6	A	1	A.C	○	○	○	○	○	○	Japan	※	○	
	Instrument Trolley	3	A	1	A.C	○	○	○	○	○	○	Japan	※	○	
	Suction Unit, Portable	2	A	2	A	○	○	○	○	○	○	Japan	※	○	
	Wheel Chair	3	A	2	A.C	○	○	○	○	○	○	Third Country	※	○	
	Nebulizer	3	A	0	B	○	○	○	○	○	○	Japan	※	○	
	Low Pressure Continuous Suction Unit	2	A	0	B	○	○	○	○	○	○	Third Country	※	○	
MATERNITY	Infant Incubator	1	A	1	A	○	○	○	○	○	○	Japan	※	○	
	Infant Incubator	1	C	0	C	○	○	○	○	△	○	Japan	○	○	

※ : Included in 1 Phase because of basic medical equipment for frequent use for which capable operators are already available and do not require installation.

☆ : Specialint shall be acquired to utilize.

### (3) Main Equipment

The Composition and Specification of Main Equipment are listed below.

#### MBABANE HOSPITAL

Equipment	Q'ty	Composition	Specification	Installation Place	Phase
Binocular Diagnostic Microscope	1	1.Main Unit 2.Mobile Cart 3.Halogyn Light	Objective:3.6x,6.6x,12x	ENT	1
ENT Treatment Chair & Unit	1	1.Main Unit	Electric Move Foot Switch	ENT	1
Esophagoscope Rigid Type	1	1.Main Unit	Diameter:9mm AngleF Up210° ,Down90° Right,Left,each100° LengthF 1025mm	ENT	1
Audiometer, Dual Type	1	1.Main Unit	Air :10-125dBHL Bone :10-80dBHL	ENT	1
Gastrointesstinal Fiberscope Set	2	1.Main Unit 2.Forcep Set	DiameterF 9.5mm Length F 5-100mm Angle F Up210° Down90° Right,Left,each100°	Endoscopy Clinic	1
Colono Fiberscope	1	1.Main Unit 2.Forcep Set	DiameterF 13mm Length F 5-100mm Angle F Up-Down180° Right,Left160°	Endoscopy Clinic	1
Fiberscope Cleaning Machine	1	1.Main Unit 2.Forcep Washer 3.Softner	Cleaning Bath :15k Detergent Bath:2.5k Water Required:11-13k /min.	Endoscopy Clinic	1
Resectoscope Set	1	1.Main Unit 2.Light	Angle:25° Light:Halogyn	Urology	1
Cysto-Urethroscope Set	1	1.Main Unit 2.Forcep Set	Angle:30° ,70°	Urology	1
Dental Unit with Accessories	1	1.Main Unit 2.Compressor 3.Chair 4.Water Softner	Dental Unit Handpiece Diagnostic Light Compressor:0.75KVA	Dental	1
Dental Panoramic X-ray Unit	1	1.Main Unit	Generatoer E Voltage 60-80KV E Current 5-10mA Exposure E Panarama E Cephalo	Dental	2
Binocular Microscope	2	1.Main Unit	Objective:3.6x,6.6x,12x	Laboratory	1

Equipment	Q'ty	Composition	Specification	Installation Place	Phase
Blood Cell Counter	1	1.Main Unit	RBC,WBC,HMB,HCT,PTL	Laboratory	1
Chemical Analyzer	1	1.Main Unit 2.Water Softner	SpeedF 200Test/hour Wave LengthF 340-700nm	Laboratory	1
X-ray Diagnostic Unit with Tomography	1	1.Table 2.Stand 3.Intancifire 4.Generator	Max Current F 600mA Max Voltage F 150Kv Table LengthF 2000mm Angle F +90° , -15°	Radiology	1
Fluoroscopy X-ray Unit with TV	1	1.Table 2.Stand 3.Intancifire 4.Generator	Max Current F 600mA Max voltage F 150Kv Table LengthF 2000mm Angle F +90° , -15°	Radiology	1
Mobile X-ray Unit	1	1.Main Unit 2.Mobile Cart	Power :Rechergerable Battery Voltage:50~125KV Current:0.4-320mAs	Radiology	1
X-ray Film Auto Processor	1	1.Main Unit 2.Tanks for Development	SpeedF 90sec/Film Drier	Radiology	1
CT Scanner	1	1.Main Unit 2.Bed for CT 3.Control Console	Tube :110, 130KV Range :50,70,100mA Channel:704	Rdiology	2
Sanding Machine	1	1.Main Unit	Power:2.2KW .RPM1850	Orthopedic Workshop	1
Leather Skining Machine	1	1.Main Unit	Well Roller,Sole Cutter, Heel Trimer,Edge Beveler, Skiver	Orthopedic Workshop	1
Finishing Machine	1	1.Main Unit 2.Sanding Belt	Power :230Volt Sanding Belt:4x59inch, 4.5x59inch	Orthopedic Workshop	1
Anesthetic Machine with Ventilator	2	1.Anesthesia Unit 2.Flowmeter 3.Baporizer 4.Ventilator	Flowmeter:O2 0.1-10L/min N2O-0.5-10L/min Ventilate:1-20L/min Times :5-40/min Alarm Fancion	Operation Theater	1
Orthopedic Operation Table	1	1.Operating Table	Table :2140x525mm Up-Down:870-1290mm Up-Down(Table Head):25° Electric Type	Operation Theater	1
ECG Monitor	2	1.Main Unit 2.Cart 3.Cable Hanger	ECG :2 Channel Display:7 Inch	Operation Theater	1
Bronchoscope Set	1	1.Main Unit 2.Forcep Set	DiameterF 6mm Length F 550mm Angle F 120°	Operation Theater	1

Equipment	Q'ty	Composition	Specification	Installation Place	Phase
Gastrectomy Set	1	Instrument Set	Stainless Steel	Operation Theater	1
Cholecystomy Set	1	Instrument Set	Stainless Steel	Operation Theater	1
Caesarean Incision Set	1	Instrument Set	Stainless Steel	Operation Theater	1
Cataract Set	2	Instrument Set	Stainless Steel	Operation Theater	1
Arthroscope Set	1	1.Main Unit 2.Forcep Set 3.Light Source	Angle:0° ,30° ,70° Xenon Light	Operation Theater	1
Autoclave with Boiler	2	1.Main Unit 2.Boiler 3.Water Softner	CapacityF 150L Temp :130°C	CSSD	1
ECG Monitor	4	1.Main Unit 2.Cart 3.Cable Hanger	ECG :2 Channel Display:7 Inch	Word	1
Ambulance,4WD Wagon	1	1.Vehicle	Fuel :Petrol Engine:4200cc	Emergency	1
Multi Format Camera for CT Scanner	1	1.Main Unit	Digital Type Memory F 100films ChannelF 10	Radiology	2
X-ray Film Auto Processor for CT Scanner	1	1.Main Unit 2.Tanks for Development	SpeedF 90sec/Film Drier	Radiology	2

TB Center

Equipment	Q'ty	Composition	Specification	Installation	Phase
Binocular Microscope	1	1.Main Unit	Objective:3.6x,6.6x,12x	Laboratory	1

PIGGSPEAK HOSPITAL

Equipment	Q'th	Composition	Specification	Installation Place	Phase
Dental Unit with Accessories	1	1.Main Unit 2.Compressor 3.Chair 4.Water Softner	Hand Piece Diagnostic Light Compressor:0.75KVA	Dental	1
Blood Cell Counter	1	1.Main Unit	RBC,WBC,HMB,HTC,PTL	Laboratory	2
Delivery Table	2	1.Main Unit 2.Pads(Arm,Knee)	Length :1150mm Width :550mm Up-Down:640-990mm	Maternity	1
Ambulaance,4WD Wagon	1	1.Vehicle	Fuel :Petrol Engine:4200cc	Casualty	1
Anesthetic Machine	1	1.Anesthesia Unit 2.Flowmeter 3.Baporizer 4.Ventilator	Flowmeter:O2 0.1-10L/min N2O-0.5-10L/min Ventilate:1-20L/min Times:5-40/min Alarm Fancion	Operation Theater	1
ECG Monitor	1	1.Main Unit 2.Cart 3.Cable Hanger	ECG :2 Channel Display:7 Inch	Operation Theater	1
Autoclave with Boiler	1	1.Main Unit 2.Boiler 3.Water Softner	CapacityF 150L Temp :130°C	CSSD	1
Generator	1	1.Main Unit	Diesel 60Hz Output:180KVA Ps/rpm:220/1800	Administration	1
Incinerator	1	1.Main Unit 2.Oil Tank	Type:Oil Type Fabcation	Administration	1
Ultrasound Scanner	1	1.Main Unit 2.Prive 3.Printer	Prove :Linear,Sectral Convex Display:12 Inch Color	Radiology	1
Fluoroscopy X-ray Unit	1	1.Generator 2.Stand 3.Table 4.Intancifire	Max Current F 600mA Max Voltage F :150Kv Table LengthF 2000mm AngleF +90° , -15°	Radiology	1

MANKAYANE HOSPITAL

Equipment	Q'ty	Composition	Specification	Installation	Phase
Dental Unit with Accessories	1	1.Main Unit 2.Compressor 3.Chair 4.Water Softner	Dental Unit HandPiece Diagnostic Light Compressor:0.75KVA	Dental	2
Blood Cell Counter	1	1.Main Unit	RBC,WBC,HMB,HTC,PTL	Laboratory	2
Delivery Table	2	1.Main Unit 2.Pads(Arm,Knee)	Length :1150mm Width :550mm Up-Down:640-990mm	Maternity	2
Ambulance,4WD Wagon	1	1.Vehicle	Fuel :Petrol Engine:4200cc	Casualty	1
Anesthtic Machine	1	1.Anesthetic Unit 2.Flowmeter 3.Baporizer 4.Ventilator	Flowmeter:O2 0.1-10L/min N2O-0.5-10L/min Ventilate:1-20L/min Times :5-40/min Alarm Fancion	Operation Theater	2
Operating Table	1	1.Main Unit	Oil Pressure Manual Type	Operation Theater	2
ECG Monitor	1	1.Main Unit 2.Cart 3.Cable Hanger	ECG :2 Channel Display:7 Inch	OpARATION Theater	2
Autoclave with Boiler	1	1.Main Unit 2.Boiler 3.Water Softner	CapacityF 150L Temp :130°C	CSSD	2
Generator	1	1.Main Unit	DieselEngine 60Hz Output:180KVA Ps/rpm:220/1800	Administration	2
Incinerator	1	1.Main Unit 2.Oil Tank	Unit:Fabrication Type Type:Oil Type	Administaration	2
Ultrasound Scanner	1	1.Main Unit 2.Prove 3.Printer	Prove :Linear,Sectol, Conbex Display:12 Inch Color	Radiology	2
Floroscopy X-ray Unit	1	1.Generator 2.Stand 3.Table 4.Intencifire	Max Current F 600mA Max Voltage F 150Kv Table LengthF 2000mm AngleF +90° , -15°	Radiology	2

The drawings of each hospital are as per attached Appendices(4. Site Drawing1-4)