BASIC DESIGN STUDY REPORT
ON
THE REHABILITATION OF THE CHO RAY HOSPITAL
IN
THE SOCIALIST REPUBLIC OF VIET NAM

AUGUST 1991

JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

In response to the request from the Government of the Socialist Republic of Viet Nam, the Government of Japan decided to conduct a basic design study on Cho Ray Hospital Improvement Project and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Viet Nam a study team headed by Mr. Katsu Iwamoto, Managing Director, Grant Aid Project Management Department, JICA, from February 25 to April 10, 1991.

The team held discussions with the officials concerned of the Government of Viet Nam, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission headed by Mr. Yutaka Yokoi, Deputy Director, Grant Aid Division of Economic Cooperation Bureau, the Ministry of Foreign Affairs, was sent to Viet Nam from July 10 to 21, 1991 in order to discuss a draft report and the present report was prepared.

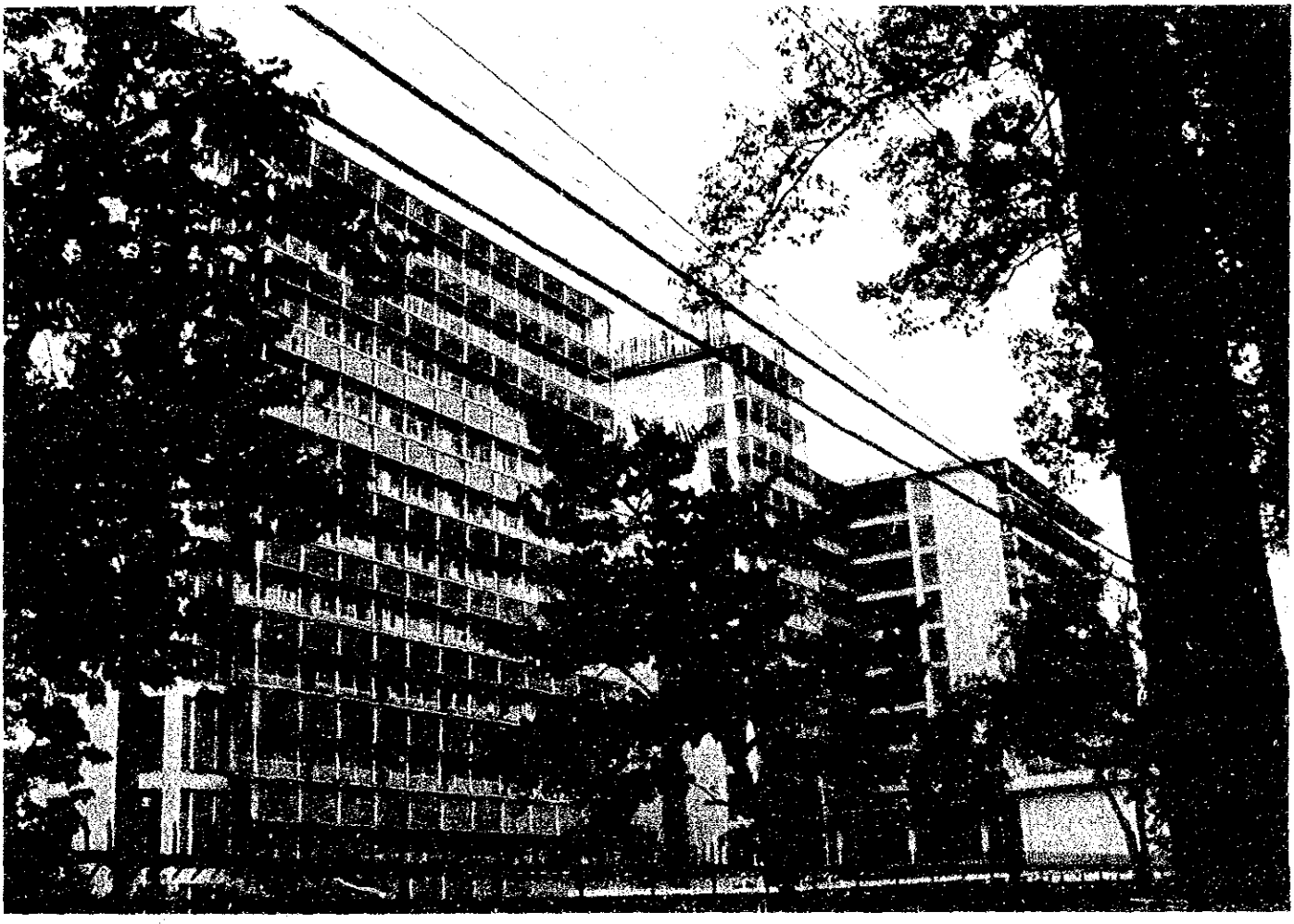
I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Socialist Republic of Viet Nam for their close cooperation extended to the teams.

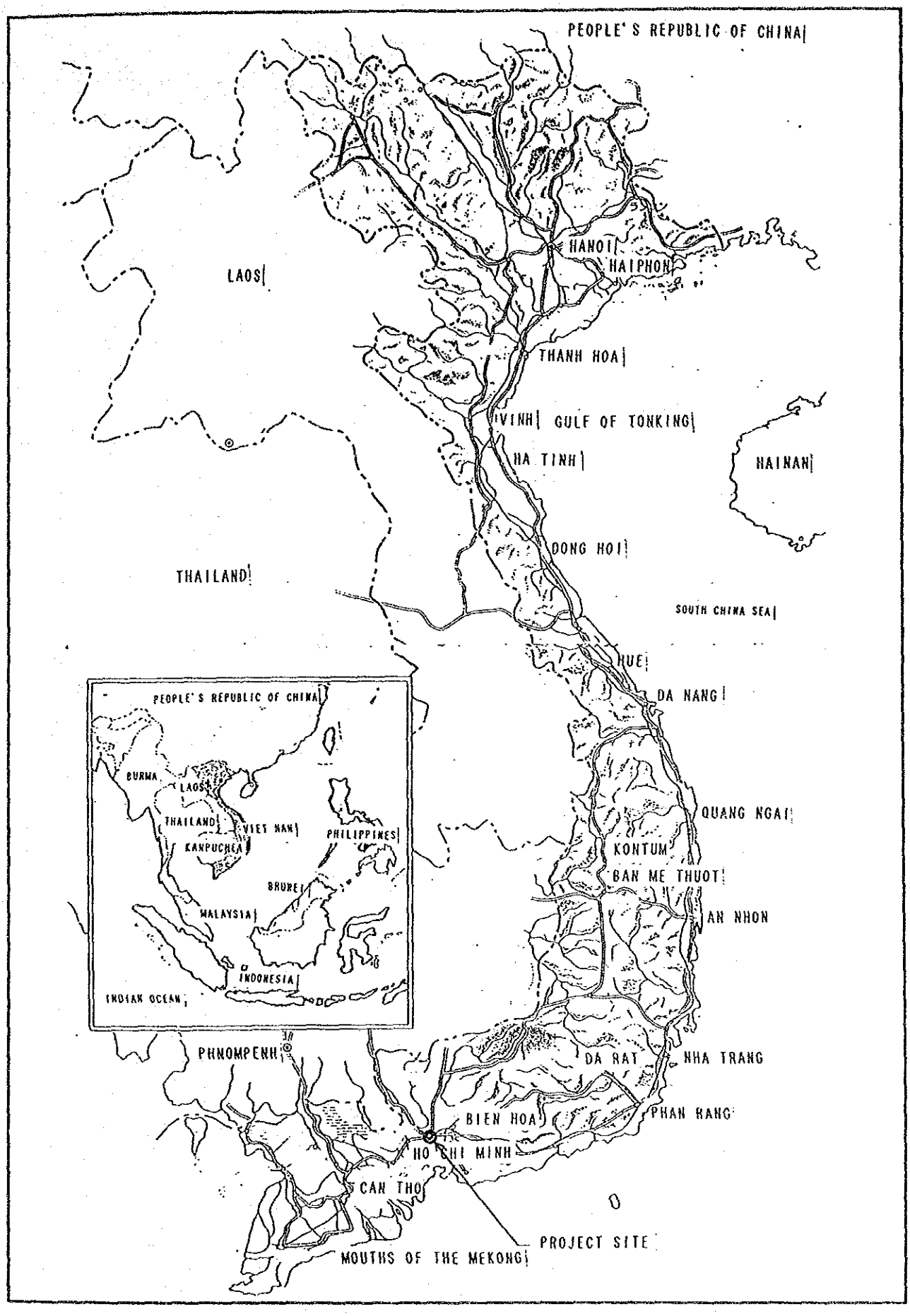
August 1991

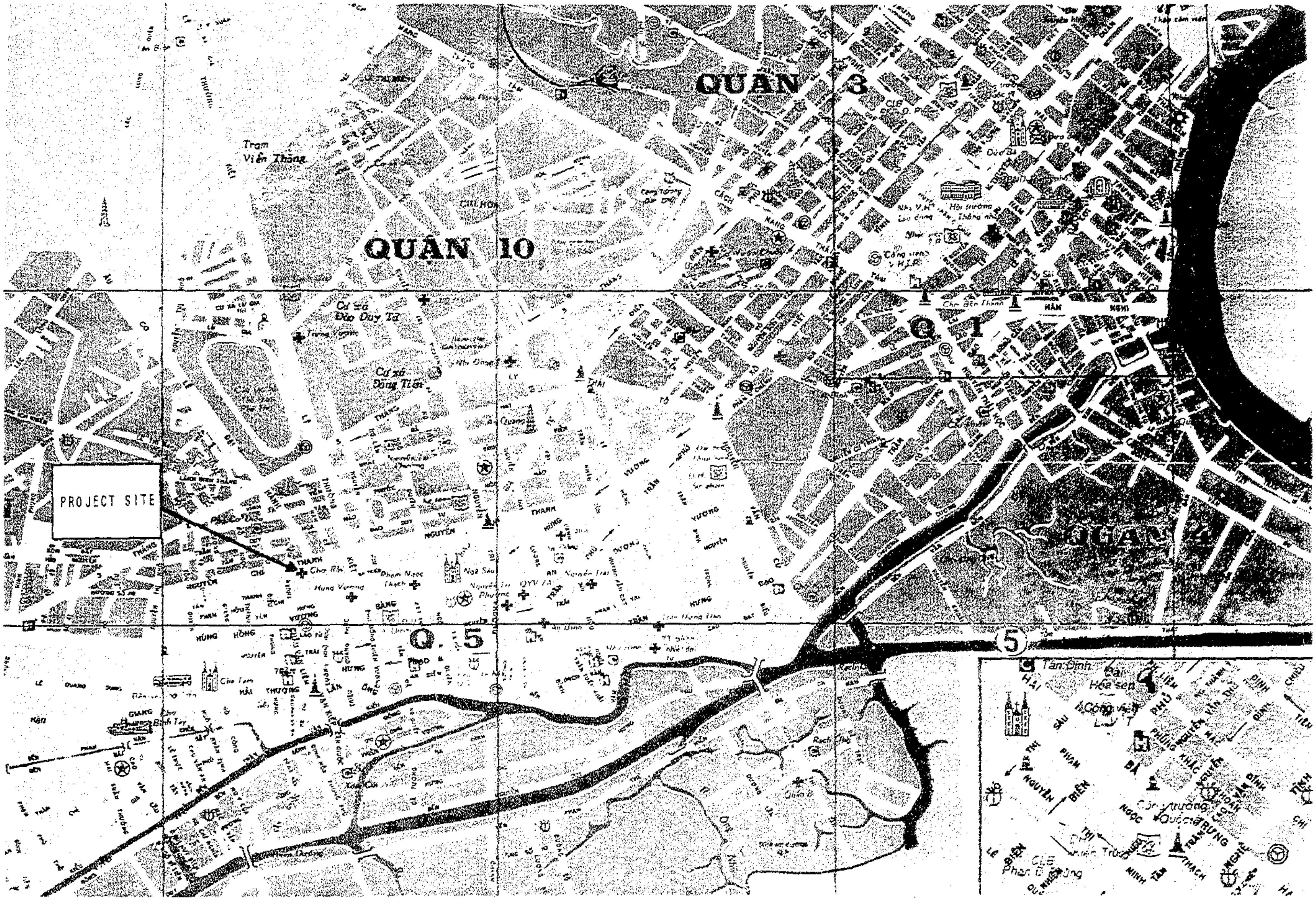
Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency



THE SOCIALIST REPUBLIC OF VIET NAM

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Q. 1
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Chợ Lớn
Tân Định
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SUMMARY

The fourth five-year economic development plan of the Government of the Socialist Republic of Viet Nam has been underway since 1986. Its principal objectives are to increase food production and consumer goods, expand exports, and reduce the population growth rate. In 1990, the final year of the plan, the Government aimed to further advance the Doi Hoi policy, which had begun in December 1986, through achieving certain goals. These included improving economic policy by introducing a self-supporting accounting system; expansion of production, distribution, and trade; and a solution to the unemployment problem.

Since the beginning of 1990, however, relief supplies from the U.S.S.R. and other Eastern bloc countries, which were worth about $2 billion annually at their peak, have dropped off, causing shortages in the supply of goods. With the onset of the gulf crisis, furthermore, rising oil prices accelerated the underlying rise in rice, fertilizer, steel, and gasoline prices, leading to a life-threatening situation. The Government of Viet Nam has overcome these difficulties by procuring supplies from the Philippines and other Southeast Asian countries. Although sales of rice products is a precious source of foreign revenue, the current international quotation of rice has slumped due to increasing production in China and India and it is proving difficult to acquire foreign currencies from exporting rice.

At present, the Government of Viet Nam is promoting a five-year plan (1991-1995) for health care, with attention focused on issues of health care, education, and sanitary conditions including water. In this five-year plan, the Government intends to pursue the following national targets: 1) In the health care field --- training of medical care personnel, improvement of nutritional conditions, promotion of maternal and child health, family planning, etc.; 2) In the educational field --- development and improvement of education programs, reduction in the illiterary rate, etc.; 3) In the sanitary condition field --- safe water supplies and improvement of sewage systems, etc.

Cho Ray Hospital opened in the early 1900s and was used as a French army hospital when the country was a French colony and as a Japanese army hospital during the Second World War. It became a national general hospital for the public in 1945 after the end of the war.

Cooperation between Japan and the hospital was initiated in 1966 with a request for medical assistance including full-scale reconstruction of the hospital. In response to the request, reconstruction of the hospital commenced in 1970 under Japanese Grant Aid, and a new hospital of 11-stories was completed in 1975. With the assistance of Japan University, technical assistance was given from 1968 to 1974, and the hospital has developed into a top-level national hospital in the Socialist Republic of Viet Nam.

However, when Vietnamese troops were sent into Cambodia immediately after the formation of the new government, economic and technical cooperation with the country had to be postponed. For humanitarian reasons, medical supplies worth 5 million yen in 1978 and 30 million yen in 1981 were provided, and biennial supplies of special medical equipment worth 30 million yen have been provided since 1983.

The country's health and medical care system is a pyramid-shaped organization headed by Bach Mai Hospital in the north and Cho Ray Hospital in the south. Cho Ray Hospital is a national general hospital under the direct control of the Ministry of Health, and it provides medical care for 17 southern provinces centered on Ho Chi Minh City. The hospital also has a research function, with such units as a tropical diseases institute, and an educational function for medical staff including lecture tours to other hospitals in the province. It is the largest hospital in the country: the hospital has 1,000 beds, is run by 1,208 medical staff, and handles 110,000 outpatients and 22,500 inpatients annually.

The hospital plays an important role in promoting health care in the southern part of the country. However, due to difficulties in obtaining spare parts and consumables required for maintenance, and to insufficient finance, almost all the facilities --- such as plumbing systems for water

supply and drainage, electrical equipment, and the air-conditioning system --- do not function satisfactorily, and as a result, the hospital cannot fulfill its mission as a top referral hospital.

Under these circumstances, the Government of Viet Nam requested the Government of Japan in July 1990 for Grant Aid Assistance in restoring and improving this hospital which plays such an important role in improving medical services in Viet Nam.

In response to the request, JICA dispatched to Viet Nam a preliminary study team to confirm the background and details of the request from October 31 to November 11, 1990, and the effects and validity of the project were confirmed through discussions with the authorities concerned on the Viet Namese side.

After the report by the preliminary survey team, JICA sent a basic design study team to Viet Nam from February 25 to April 10, 1991. With regard to the basic design study report which was prepared after analysis in Japan, a draft explanation was written and a team was dispatched to Viet Nam to discuss the design and confirm its details with those concerned on the Vietnamese side from July 11 to July 20, 1991.

The present conditions of the hospital's facilities and equipment were reported as follows. In general, the buildings were in relatively good condition, including the concrete structure and the aluminum fittings. However, some aging was noticeable, such as rust on steel louvers on the towers and on the steel structure of emergency exterior staircases, stains on the P tiles of floors and on ceilings due to water leakage, peeling finish materials, and rust inside elevators. Additionally, many of the lavatory facilities were found to have gone out of use due to corrosion of the partitions. Although the overall appearance has been damaged in some respects from a structural and architectural standpoint, it was judged that the buildings, except the lavatories, could be used without difficulties. However, the water supply and other systems have deteriorated so considerably that most of the equipment previously provided cannot now be

used, and the hospital suffers from serious difficulties in offering medical services.

Most of the main medical equipment, provided in 1974, although being used for longer than its designed service life, is still being used by cannibalizing parts from unusable equipment and inventive local manufacturing. In the present circumstances, in which financial difficulties have impeded the upgrading of medical equipment, aggravation to the medical service cannot be avoided. Japan's provision of medical equipment and supplies has barely reduced the rate of aggrevation.

The total 1990 expenditure of the hospital was only about 4.7 billion dong (about 90 million yen). Most of this, after necessary expenses such as staff salaries and the cost of consumables, was used for repair of facilities and equipment (about 10 million yen). The repair costs, accounting for 90% of the total expenditure, is expected to be significantly reduced after implementation of this Project. It can easily be seen that renovation of facilities and replacement of equipment are very urgent tasks since reduction of repair costs is very important to improve the operation of the hospital.

The project aims at restoring the original function of the water supply system, air-conditioning system and electrical equipment in Cho Ray Hospital, as well as generally improving facilities at the hospital, which heads the medical organization in southern Viet Nam, and the medical care system of the country as a whole.

The project is outlined below.

(i) Improvement of facilities

1) Plumbing systems for water supply and drainage
   . Water supply and drainage piping
   . Reservoirs and pumps
   . Water purifier tanks
   . Medical gases (oxygen supply and aspirators)

. Hot water supply system
. Others

2) Electrical equipment
. Power reception and transformer systems
. Power equipment
. Electric lights/sockets
. Others

3) Air-conditioning system

4) Elevators

5) Building work

(ii) Medical equipment

1) Clinical examination equipment
2) Medical treatment equipment
3) Others

The Vietnamese side, though free from financial burden for this improvement work, is expected to bear the costs of operation and maintenance costs after improvement, totalling about 80 million dong (about 1.6 million yen).

The construction term of the Project is expected to be 36 months, and will be divided into three phases, in line with the grant aid system.

	Construction document	Execution and procurement
Phase I	3 months	12 months
Phase II	3 months	12 months
Phase III	3 months	12 months
Total		36 months

Seen in this light, implementation of the project under Grant Aid from Japan would give the hospital, a symbol of the friendly relations between Japan and Viet Nam, the potential to provide service for a long period of time. The operation and management of the hospital will be improved by reducing repair costs and thus reducing the heavy financial burden on the hospital, thus improving medical treatment services. Along with implementation of the plan, technical assistance through training staff from Cho Ray Hospital in Japan and by dispatching experts to Viet Nam --- is expected to serve to further improve the functions of Cho Ray Hospital. It can be expected that with the added impetus given by such technical assistance, the plan will become yet more beneficial.

CONTENTS

CHAPTAR 1

INTRODUCTHION

CHAPTER 1 INTRODUCTION

Since there is no means to prevent deterioration of the hospital's facilities, to alleviate the shortage of medical equipment under the present circumstances, in July 1990, the Government of Viet Nam requested the Government of Japan for Grant Aid Assistance to cover the Cho Ray Hospital Improvement Project.

In response to the request, the Government of Japan decided to dispatch a preliminary Study Team to confirm the actual background, the present status of Cho Ray Hospital, and the current condition of its facilities.

The JICA sent a preliminary Study Team headed by Mr. Yasuo Saito, Director of Grant Aid Division, Economic Cooperation Bureau, the Ministry of Foreign Affairs, between October 31 and November 11, 1990.

The Study Team visited the agencies concerned at the Ministry of Health, the Ministry of Foreign Affairs, the Ho Chi Minh City government, etc. and carried out a survey of Cho Ray Hospital and similar hospitals.
From the results of the survey, it is concluded that this improvement project is significant for humanitarian reasons and that it is necessary for improving public welfare, enough to warrant extending Grant Aid from the Government of Japan to the government of Viet Nam.

The report presents the Government of Japan's decision to send a basic design Study Team. The JICA sent this basic design Study Team, headed by Katsu Iwamoto, Managing Director, Grant Aid Project Management Department, JICA, from February 25 to April 10, 1991.

The team held discussions about the project with the Ministry of Health and other related agencies, and conducted a detailed technical survey of the facilities now available in Cho Ray Hospital.

The team reconfirmed the details of Viet Nam's request, and studied the improvement project, with analysis continuing after their return to Japan. Based on their work, a draft of the basic design report was written.

The team then explained their draft plan to the Vietnamese side on site between July 10 and July 21, 1991. After further discussions and checks, this report has now been prepared.

Attached at the end of this report are materials such as lists of team members, site survey schedules, and Minutes of Meeting held for the agreement.

CHAPTAR 2

BACKGROUND TO THE PROJECT

CHAPTER 2 BACKGROUND TO THE PROJECT

2-1 General Conditions in Viet Nam

2-1-1 Overall description

(1) Geology

Viet Nam is a long narrow country stretching in an S shape along the eastern edge of the Indo-China Peninsula (latitude 8°30' through 23°22'). Its coast faces the Gulf of Tongking, the South China Sea, and the Gulf of Siam, while it is bordered by China, Laos, and Cambodia. It is 1,650 km from extremity to southern tip, the coastline is 2,260 km long.

(2) Climate conditions

The northern and southern areas have very different climates: the north has a temperate monsoon climate and the south is of tropical monsoon type. In the north the four seasons succeed each other: during the long summer from May to October sleepless nights continue with temperatures over 30°C and a humidity of 90% or more; in the short autumn from November to the middle of December, the air is relatively dry and comfortable; subsequently, a damp, drizzly season arrives and stays until around March, with temperatures as low as 10°C; finally, in April, the short spring comes. In and around Ho Chi Minh City in the south, meanwhile, the year is separated into the rainy season from May to October and the dry season from November to April. From January through March, in particular, it seldom rains, and the average annual rainfall of 1,800 mm is concentrated in the period from May through October.

On the Annam Coast, the temperature and humidity are high, and average annual rainfall reaches 3,000 mm in Hai. Tyhoons

strike most frequently during August and September anywhere in the country.

(3) Area

The area is 331,668 km^2, which is equal to that of Japan less Kyushu.

(4) Population: population density: growth rate of population

The population is 64,411,668; 48.6% male and 51.4%, female.
The population density is about 194 persons/km^2.
The population growth rate is 2.13%. A family-planning program aims to reduce the rate to 1.7% by 1990.

(5) Capital: population of principal cities

The capital is Hanoi, the northern central with about 3.05 million people. The southern central city, Ho Chi Minh, has about 3.934 million people. Hiphong, in the middle, has 1.448 million people.

(6) Race

Vietnamese accounts for about 80-90% of the total population, and most of them come from "King Tribe." Chinese account for the remainder, about 1 million, residing mostly in the south centered on Ho Chi Minh City; Khmer, about 710,000, in the Mekong region; Siamese, about 80,000, in the central area; and about 55 minorities in the mountainous regions.

(7) Language

The Vietnamese language is officially used. Minorities use their own languages, and four of them are authorized under laws as official languages for use in their homelands.

(8) Religion

There is religious freedom although Buddhism broadly prevails. The percentage is 55% Buddhists, about 7.4% Catholics, and about 2.5% Kaodas most of who are farmers in the south, about 2.5% Oahaos living mostly in the Mekong Delta region.

(9) Education

Compulsory education is 5 years in primary school between 6 and 11, and semi-compulsory education is 4 years of junior high school between 12 and 15. Although there is basically no tuition for primary and junior high schools, about 10% of the expenses are charged due to operational problems. Textbooks are supplied free of charge but many students have to avail themselves to the lending services of libraries. Schools are operated under a two-shift system, in the morning and afternoon, because of the insufficient number of teachers and schools. The rate of primary school attendance and graduation are 86% and 60% repectively, and that of junior high school both about 50%. The main reason for children not attending school is economic.

High schools have an entrance examination for the 3-year course and the rate of attendance is about 30%. After graduating high school, about 0.7% continue on to universities, junior colleges, or professional training schools.

The illiteracy rate stands at about 15%.

(10) Currency

The unit is Dong. The exchange rate is US$1 = Dong 7,530 (as of April 1991), however, dong is showing a downward tendency.

(11) GNP

Though no accurate data are available regarding GNP, the "World Development Report 1988" (IBRD) estimates it to be US$109 per capita.

(12) Transportation links

At present, no airline provides direct flights from Japan to Viet Nam. From Japan, Viet Nam is generally accessed by way of Bangkok or Manila.

There are now three international airports - Hanoi, Ho Chi Minh, Noi Bai.

2-1-2 Politics

(1) Brief history. The road to independence.

The history of Viet Nam started with the invasion of South Viet Nam (214 BC) by Chinese Emperor Shih-Huang-Ti of the Ch'in Dynasty. Domination by China continued for over 1,000 years (a period known as the "Period of Northern Subordination" <Back Touch>", until Viet Nam came under the protection of France (1888) about 2,100 years after the country's history began. France divided Viet Nam into three districts: Tongking (north), Annam (central), and Cochin China (south), and established the Indo-China Union in French Territory including Cambodia (Laos was added in 1899). The Vietnamese people resisted French colonial rule. The Independence Union of Viet Nam (Viet Minh), established in 1941 under the leadership of Ho-Chi-Minh, declared independence as the Democratic Republic of Viet Nam (DRV, or North Viet Nam) on September 2, 1945, taking advantage of the political confusion left by the Japanese invasion of French Indo-China, and the defeat of the Japanese army.

After the Second World War, France sent the army into the southern part of Viet Nam with the aim of restoring dominion over Indo-China, and in December 1946 the First Indo-China war broke out.

France endeavored to oppose the DRV in the north, by establishing a nation headed by Baodai, the last emperor of Nguyen Dynasty in 1949. However, France was defeated in the Battle of Dien Bien Phu, and the war ended in May 1954.

In July 1954, the Geneva Convention concluded leaving South and North Viet Nam, divided at the 17th parallel, confronting each other.

In the south, the Republic of Viet Nam, ruled by President Go Dinh Gem, was established in 1955. After the Gem Administration fell in 1963, a series of coups occurred, and Nguyen Van Chu, grabbed power in 1969. The political situation seemed to stabilize thereafter, but the South Vietnamese National Liberation Front had exerted so much power that U.S. forces began a direct military intervention in 1965. Beginning in 1967, U.S-North Viet Nam talks were held, and in 1970 this expended into a quadripartite conference with South Viet Nam and the provisionally revolutionary government of South Viet Nam; the so-called Paris Peace Conference.

After the Paris Peace Agreement was concluded in January 1973, the U.S. forces began to withdraw from Viet Nam. However, fighting continued and North Vietnamese forces surrounded Saigon by the end of 1974. Huge assaults, begun by the north in the central highlands in March 1975, rapidly spread throughout the country, and the Republic of Viet Nam collapsed with unconditional surrender of the Saigon Administration on April 30.

Thereafter, the south district has developed in the disorganization of old system and socialization. After a general election covering both South and North Viet Nam in April 1976 and the birth of the United National Assembly in June of that year, South and North were unified in July, and the present Socialist Republic of Viet Nam was established.

(2) Government system and administrative structure

Viet Nam is a socialist nation ruled by the communist party. The new constitution of the Unified Viet Nam was unveiled on December 19, 1980. According to this constitution, parliament is regarded as the highest organ of state power, and the National Council is given responsibility for managing parliament. It exercises its authority during the closing of

the Diet. The head of state is the Chairman of the National Council, and the chairman of the Cabinet Council (President) directs the administration. The legal mechanism consists of the Supreme Public Court in the center, plus all levels of district public courts and military courts.

The prosecuting organizations are the Supreme Public Prosecutors Office and the Military Prosecutors Office.

Viet Nam is now divided into three special cities as administrative districts: Hanoi, Ho Chi Minh, and Haiphong which are directly controlled by central government, 40 provinces, and 1 special ward. Prefectures, villages, and counties are subordinate to the provinces.

2-1-3 Economy

(1) Current conditions

Viet Nam is a naturally blessed country with two large, fertile deltas along the Mekong River and a long coastline, as well as a large working population. The country has a huge potential for great advances in the economy. However, the Vietnamese economy is today substantially restricted by various historical and economic factors, and accordingly confronts extremely serious problems. The government has endeavored to accomplish three major goals (increases in the production of food, consumer goods, and export commodities) and adjust economic policies to suit the actual economic conditions of Viet Nam. As to foreign policy, the government has made efforts to introduce foreign capital through enacting a new Foreign Capital Act (at the end of 1987), while reforming related regulations including the Foreign Currency Control Act (of October 1988). As of June 1990, 151 investment plans (US$1.08 billion) had been authorized (Mostly relatively large-scale joint ventures, such as an oil surveys in cooperation with France, Italy, India, etc. and the culture/export of marine products with Australia.)

The contribution of agriculture to the economy is large, with more than 70% of the total workforce engaged in agriculture. The two major agricultural regions of the country are the Red River delta in the north and the Mekong delta in the south, and the major product, rice, is produced through double or triple cropping in some areas. However, rice production is unstable because of a general shortage of seedlings, fertilizer, agricultural chemicals, etc. as well as frequent natural disasters such as drought, floods, and typhoons. In the outskirts of cities, vegetables, fruit, and other produce is grown, while in the central and mountainous areas, sugar cane, coffee, tea, rubber and other tropical crops are produced.

The country has placed emphasis on the development of fisheries, forestry, and mining. The long coastline is a treasure-house of marine resources, including shrimp and cuttlefish, which are valuable exports. The north is endowed with mineral resources such as Hongei coal, famous as a good-quality anthracite, phosphate rock, chromium, and tin. However, these potentially rich resources have not been well exploited because of a shortage of the capital and technology necessary for development, as well as the numerous problems with transportation and other infrastructure. Under those circumstances, the production of crude oil as a commercial enterprise was launched off the coast of Dantau in the south in June 1986 in cooperation with the Soviet Union, and further development is expected (production: 40,000 tons in 1986, 270,000 tons in 1987, 680,000 tons in 1988, 1,500,000 tons in 1989, and a goal of 2,500,000 tons in 1990).

The domestic economy suffered from hyper inflation (487.2% in 1986, 301.2% in 1987, 308.2% in 1988) in 1985. However, the inflation rate was reduced to about 39.3% in 1989, after a high interest rate policy was introduced, and subsidies were abolished in order to advance the self supporting accounting system. In the agricultural field, a great increase in production by contract has increased the farmers' will to work, resulting in a 24-million-ton increase in production of food. However, the halting of subsidies has given rise to difficulties in financing, and competitiveness is insufficient to rival foreign products (Chinese, Thai, etc.) flowing into the country. About 49% of national enterprises, therefore, faced difficulties in production by the middle of 1989, with about 19.4% of workers having been dismissed. Unemployment thus increased (about 20% of labor force is estimated to be wasteful). As the economic policy, in 1990 the Government set out the following principal objectives for further promoting the Doi Hoi policy:

(A) Continuous economic stability by further reducing inflation, and improvement in the economic control system by promoting the self-supporting accounting system;

(B) Expansion of production, distribution, and overseas economic activities;

(C) Solution of unemployment and other social problems;

(D) Defense of the homeland as a socialist nation; and

(E) Extension of democracy and the people's sovereignty.

(2) Economic development plan

(i) Principal aims of the fourth five-year plan (1986-1990) were as follows:

1) Achieve three targets to develop the economic sector: increases in the production of food, consumer goods, and export commodities.

(a) Attain food production of 20-23 million tons, calculated in terms of unhulled rice.

(b) Increase consumer goods production by an annual average of 13%-15%.

(c) Increase production of export commodities by 70%, compared with the level attained in the previous five-year plan (1980-1985).

2) Decrease population growth from the current rate of 2.2% to 1.7%.

(ii) Principal 1990 national goals are as follows:

1) Continue to promote the renovation and improvement of the management system and economic policies in order to increase national income, counter inflation, and stabilize social and economic conditions.

2) Maintain stability for the low-income population, particularly laborers, teachers, and military personnel.

3) Regulate prices by controlling the money supply. Reduce the fiscal deficit.

4) Targets in respective fields are as follows:

(a) Food production of 21.5-22 million tons.

(b) Fisheries production of 1 million tons, up 7% from the previous year.

(c) Increase industrial goods production by 6-8% and consumer goods production by 8-10% over 1989.

(d) Increase exports by 46.6%.

(e) Account 23-25% of national production income into the budget to meet financial demands. Curtail defense spending and raise expenditure on economic and social sectors.

(f) Promote the agricultural tax exemption plan to stabilize agriculture-centered economy and implement cash payment of agriculture tax.

(g) Focus on labor problems, particularly, the employment of demobilized soldiers.

(3) Key industries

(i) Agriculture

Agriculture is the key industry in Viet Nam; more than 70% of the population are engaged in it. Of agricultural products, rice accounts for about 86% of the harvest. Other products are corn, pineapple, sugar cane, coffee and tea.

(ii) Forestry

Although only about 0.7% of the population is engaged in forestry, it is an important industry since high grade wood such as rosewood, ebony, and medlar are produced.

(iii) Fisheries

Although Viet Nam has a long coastline, fishing facilities and technologies have not developed. About 20,000 tons of frozen shrimp and cuttlefish are exported annually, and investment in cultivation of shrimp has increased.

(iv) Mining

Of mining resources, coal, phosphate rock, iron ore, chromium, and tin, are centered in the north, with the coal being the most important. Hongei coal is the famous good-quality anthracite, with rich deposits around the world. Exploration and development of submarine oil field on the South China Sea is under way.

The development of oil resource is expected to contribute greatly to the development of Viet Nam.

(v) Industry

About 10% of the population is engaged in industries. Light industries shows larger growth rate than heavy industries. In light industries, processing of agricultural products leads the field, followed by textiles, rubber and electric machinery.

(4) Trend of foreign trade relations

Among Viet Nam's major trade partners, the U.S.S.R. ranks an overwhelming number one, with trade accounting for 75% to 85% of Viet Nam's total trade. Over 60% of imports from the U.S.S.R. are of equipment used for production, such as conveying, power, and electrical equipment, and the rest consists of raw materials and fuel. Exports from Viet Nam are mostly primary products including rubber and coffee, as well as textiles and handicrafts.

The second largest trade partner is Japan, although trade is less than 10% that with the U.S.S.R.. The exports are oil and anthracite, and imports are electrical equipment and machinery. Tables below show the main trade partners and main trade articles with Japan.

(i) Main trade partners

(1/2)

(Unit: US$1 million)

	1982		1983		1984		1985		1986		1987		1988	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Socialist countries														
Czechoslovakia	25.9	45.8	34.4	43.5	28.3	50.2	30.1	66.9	40.4	76.1	37.7	105.6	...	...
Hungary	7.6	20.9	8.7	12.4	6.0	18.0	8.9	23.3	10.8	35.4	12.2	30.7	12.2	23.2
Poland	14.8	15.1	19.3	18.3	17.7	22.3	18.6	23.4	19.5	24.6	23.4	29.6	28.1	35.4
Romania	4.8	2.7	3.3	5.3	3.9	17.5	8.3	2.3	8.8	2.4	10.5	2.9	12.6	3.5
USSR	284.3	1,219.9	317.0	1,338.0	318.4	1,360.7	379.8	1,734.0	418.1	1,992.3	504.1	2,529.1	639.1	2,521.3
Cuba	25.2	8.7	20.0	23.9	36.3	12.6	23.9	1.9	17.4	5.0	...	...	...	...
Industrial countries														
USA	...	35.3	...	22.8	0.1	24.3	...	22.0	0.1	33.0	...	25.6	...	16.9
Australia	0.6	1.4	4.0	2.3	3.7	2.2	7.0	2.0	8.4	5.6	13.2	4.5	16.9	11.5
Japan	32.7	101.4	34.6	131.3	46.4	130.7	59.6	165.4	75.9	209.3	131.8	198.8	177.6	212.8
Belgium, Luxemburg	0.1	3.4	4.6	3.1	2.6	17.1	2.7	1.1	4.2	1.8	2.8	3.8	4.3	2.0
Finland	...	4.3	...	1.3	0.1	0.8	0.3	0.9	1.0	8.9	0.5	9.6	...	6.3
France	5.4	25.7	6.9	35.7	7.6	29.8	8.0	24.6	13.4	38.2	16.7	41.2	10.8	56.5
West Germany	3.6	8.1	4.6	4.6	5.3	9.0	4.9	8.6	7.7	10.5	7.1	14.8	11.9	17.9
Italy	0.6	15.9	0.6	13.0	1.3	4.9	1.6	14.7	2.2	5.7	1.9	12.8	2.9	12.6
Netherlands	0.1	6.7	1.4	4.1	0.4	2.5	0.3	2.9	0.7	3.9	0.4	8.6	0.6	12.4
Sweden	...	24.9	0.1	12.8	0.4	17.4	0.7	10.2	1.1	23.4	0.7	15.7	0.8	26.7
UK	0.2	1.7	0.8	1.6	1.5	2.6	2.0	2.9	1.6	2.1	0.5	4.6	0.8	4.3

	1982		1983		1984		1985		1986		1987		1988	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Asian countries														
Myanmar	...	2.1	...	2.1	...	2.3	...	2.4	...	2.5	...	3.0	...	3.6
Hong Kong	73.9	65.5	63.9	60.9	80.1	80.8	90.8	61.5	96.4	65.3	103.0	74.2	132.2	104.6
India	...	9.2	...	9.2	...	10.1	...	10.6	...	11.1	...	13.4	...	16.0
Indonesia	4.0	...	1.6	0.4	1.4	2.2	5.5	5.4	4.2	32.2	5.4	26.9	5.7	21.1
Cambodia	3.1	...	3.1	...	3.4	...	3.6	...	3.7	...	4.5	...	5.4	...
Laos	...	6.2	...	6.2	...	6.8	...	7.2	...	7.5	...	9.0	...	10.8
Malaysia	1.9	0.6	7.6	1.0	7.8	0.3	12.3	0.6	15.0	1.6	12.6	3.8	24.6	6.8
Philippines	...	2.5	...	...	...	...	...	1.4	...	2.8	0.3	1.9	...	13.6
Singapore	19.2	38.2	30.4	49.5	44.4	78.6	56.6	142.0	...	...	...	...	...	...
Thailand	0.8	0.6	0.4	1.0	0.6	9.4	0.5	0.4	1.6	1.2	2.6	4.7	8.3	5.1

Note: Export: FOB base, Import: CIF base. Other major trading countries are East Germany and Bulgaria.

Data sources: IMF, Direction of Trade Statistics Yearbook, 1989. UN, International Trade Statistics, 1987, for the data of Czechoslovakia from 1982 to 1987, and USSR from 1982 to 1986. Calculated from Monthly Survey Report on Trade of USSR and East European Countries, February 1990 for the data of USSR. from 1987 to 1988.

(ii) Main trade articles

(Jan. - Apr. 1990)

Export		Import	
Items	Share (%)	Items	Share (%)
Oil, anthracite	54	Machine, equipment	72
Marine products	26	Chemical products (including fertilizer, agricultural chemicals)	8
Iron scraps	7	Steel	6
Textiles and products	4	Textiles and products	5

(Data sources: Japan Trade Yearbook)

2-1-4 Relations with Japan

(1) General description

In 1973, Japan entered into diplomatic relations with the Government of the Democratic Republic of Viet Nam while retaining relations with the Government of the Republic of Viet Nam. After unification of the country, Japan initiated economic assistance, interrupted when Viet Nam advanced into Cambodia in December 1978 and has remained cut off till today. Total annual exports and imports between Viet Nam and Japan range from 40 to 50 billion yen, though trade is greatly restricted as a result of the Cambodia problem.

(2) Economic cooperation and related matters

(i) Economic cooperation is as follows:

October 1975	Grant Aid of 8.5 billion yen settled
September 1976	Grant Aid of 5.0 billion yen settled
April 1977	Grant Aid of 4.0 billion yen settled
April 1978	Settlement was made on the credit and debt problem
July 1978	Loans of 10.0 billion yen settled

(ii) Assistance to Viet Nam aside from the above economic cooperation is as follows:

1) Emergency relief during disasters

(a) Emergency relief after wind damage
100 million yen (October 1978)

(b) Emergency relief after typhoon damage
$100,000 (December 1983)

(c) Emergency relief after typhoon damage
$10,000 (November 1984)

(d) Emergency relief to fight Japanese encephalitis 20 million yen (August 1985)

(e) Emergency relief after wind damage $200,000 (October 1985)

(f) Same as above $150,000 (November 1986)

(g) Same as above $150,000 and pharmaceutical products equivalent to 15 million yen (January 1988)

(h) Emergency relief after typhoon damage $150,000 plus pharmaceutical products and blankets equivalent to 15 million yen (October 1989)

2) Materials have also been provided as follows:

(a) Provision of pharmaceutical products to Cho Ray Hospital 30 million yen (1981)

(b) Provision of LL equipment for Japanese language studies to Hanoi University of Foreign Language Studies 20 million yen (1983)

(c) Provision of medical equipment parts to Cho Ray Hospital 30 million yen (1983)

(d) Provision of equipment for agricultural studies to Kanto University 30 million yen (1985)

(e) Provision of medical equipment to Cho Ray Hospital 30 million yen (1985)

(f) Provision of medical equipment and pharmaceutical products to Too Zuh Hospital 50 million yen (1986)

(g) Provision of medical equipment and pharmaceutical products to Cho Ray Hospital 32 million yen (1987)

(h) Provision of audio-visual equipment for theaters 24 million yen (1987)

(i) Provision of medical equipment to Cho Ray Hospital 30 million yen (1989)

2-2 Medical Services in Viet Nam

2-2-1 General description

The health and sanitary conditions in Viet Nam, where such gastrointestinal diseases as salmonellois and dysentery and insect-transmitted disease like malaria account for about 70% in the morbidity distribution, show a pattern typical of developing countries. The number of medical and paramedical staff in the country has increased rapidly: the number of doctors has doubled in the last ten years, and the ratio of doctors to population increased 1.5 times, but is still far below that of developed countries. Accordingly, there is a need to improve medical services.

The ratio of medical expenditures to the national budget is about 3%, and 50% of the expenditures is allocated to Primary Health Care (PHC). Health and sanitary conditions are not quite so bad considering that medical expense per capita is US$1.05 in this country where almost 80% of the population are engaged in agriculture. The reason for the above can be thought to be due to the PHC policy. Although medical care is basically free in socialist countries, each hospital must make a profit in its operation due to lack of national budget; therefore, costs of medicines and medical care are charged to the patients, except for the poor. The government began to recognize the necessity of operating hospitals on a self-supporting accounting system a few years ago.

Under such circumstances, Viet Nam has introduced an experimental health insurance system in some provinces since 1990. The government has made efforts to promote it in order to improve medical services and stabilize the livelihood of medical staff with the people's support. The 1990 experiment has benefited hospital management: in the case of Song Thao province, 38% of the total medical budget was subsidized by the provincial government, 17% of that was from hospital's income and 45% was from payment by the

system. Medical services in Viet Nam will improve by implementing the system nationwide and by strengthening the organization.

2-2-2 Disease types

High-morbidity diseases are as follows: most of them transmitted by insects like malaria and dengue fever and such gastrointestinal diseases as salmonellois and dysentery.

Top-ten high-morbidity diseases (1989)
(among the whole population)

Disease	Number of cases	Morbidity
Malaria	416,101	0.646
Other salmonellois disease	197,101	0.306
Dysentery	120,450	0.187
Tuberculosis	104,991	0.163
Bronchitis	64,412	0.100
Odontopathy	40,579	0.063
Pneumonia	40,579	0.063
Dengue hemorrhagic fever	23,188	0.036
Cerebral neuropathy	21,900	0.034
Rheumatic heart disease	17,391	0.027

Source: Ministry of Health

The main causes of deaths by diseases are shown in the table below. Death due to malaria is the highest, and measures to fight malaria is the major concern in Viet Nam.

Top-ten causes of death (1989)
(per 100,000 population)

Disease	Number of cases	Mortality
Malaria	1,417	2.2
Pneumonia	689	1.07
Cerebral hemorrhage	515	0.8
Dengue hemorrhagic fever	322	0.5
Cerebral trauma	270	0.42
Tetanus	193	0.30
Other salmonellois diseases	180	0.28
Acute dynamic syndrome	180	0.28
Malnutrition	161	0.25
Heart disease	148	0.23

Source: Ministry of Health

Antimalarial drugs can be supplied to only about 60% of the patients since the raw material is imported (from Indonesia, Swiss, etc.) and because of lack of national budget. Regarding insecticides, U.S.S.R. had supplied DDT until 1990 but it was suspended in 1991. A sufficient supply of medicines and preparation of insecticides are needed at present.

The table below shows the breakdown of infectious diseases. Such countermeasures as improvement in water supply and sewage systems, extermination of insects and the strengthening of EPI are requested. EPI was carried out for five years from 1985 to 1989 and an 80% implementation rate was achieved for children under the age of 1, which produced noticeable reduction in the morbidity and mortality rates of children.

Morbidity and mortality rate of main disease
(per 100,000 population)

Disease	1988		1989	
	No. of cases	No. of deaths	No. of cases	No. of deaths
Cholera	0.51	0.01	0.16	---
Typhoid/paratyphoid	9.4	0.05	7.6	0.03
Other salmonellois diseases	732.0	1.07	306.0	0.28
Dysentery/amebiasis	182.9	0.57	187	0.16
Pest	0.3	0.009	0.5	0.05
Anthrax	0.2	0.02	0.09	0.003
Diphtheria	1.5	0.18	0.5	0.06
Pertussis	33.4	0.08	12.0	0.04
Tetanus	3.4	0.72	1.3	0.3
Polio	1.3	0.05	0.6	0.3
Chicken pox	12.9	0.001	7.3	---
Measles	34.4	0.06	16.0	0.9
Dengue hemorrhagic fever	133.5	1.29	36.0	0.5
Virus encephalitis	4.2	0.46	2.9	0.28
Rabies	95.5	0.2	50.0	0.15
Virus hepatitis	22.0	0.05	23.0	0.05
Epidemic parotisis	11.9	---	---	---
Malaria	1,086.0	1.4	646.0	2.2
Leptospirosis	---	---	0.15	0.008

Source: Ministry of Health

2-2-3 Present situation of medical services

The health and medical care system in Viet Nam functions under a pyramid-shaped network. Every citizen is registered in Health Station (HS), the peripheral organization, and is referred to the upper organizations such as the District Hospital (DH), Provincial Hospital (PH), and City Hospital (CH) as necessary. The HS is the most important organization in the system in Viet Nam making a great account of PHC. The roles of HS are as follows:

(i) Vaccination (periodically every month)

(ii) Delivery (Only normal deliveries. Abnormal cases are referred to upper-level hospitals.)

(iii) Sanitary education (through schools)

(iv) Medical care (Medicines are sold in a pharmacy.)

(v) Family planning (contraceptions, etc.)

(vi) Preparation of statistics (Population and statistics on sanitation are reported monthly to DH.)

The HS acts as a field organizationof PHC, and the reports on the activities are used as statistics on sanitation of the country. A DS corresponds functionally to Japan's clinics having many departments. A PH and a CH following a DH correspond to Japan's hospital but medical equipment is insufficient. National hospitals such as Cho Ray Hospital, unlike HS, DS, PH, and CH which are located in villages, districts, provinces, and cities, belongs directly to the Ministry of Health and is ranked top of the above-mentioned hospitals as the tertiary medical organization directing the lower hopitals. In addition, they play a role of educational and research facilities.

Cho Ray Hospital is a national hospital, the top referral hospital for the 17 southern provinces of the Socialist Republic of Viet Nam for which it provides medical services. Other functions of Cho Ray Hospital are a training facility offering lecture tours for the medical staff of lower-ranked hospitals; a center for each medical treatment field; and a training hospital for medical universities. Thus the hospital forms the core of medical treatment services for the whole southern part of the country.

In each medical organization, medical expenses are charged on a self-supporting accounting system due to lack of national budget. In some districts, a health insurance system has been introduced experimentally and excellent results have been obtained. In Viet Nam, it can be said that the medical system is presently undergoing reformation.

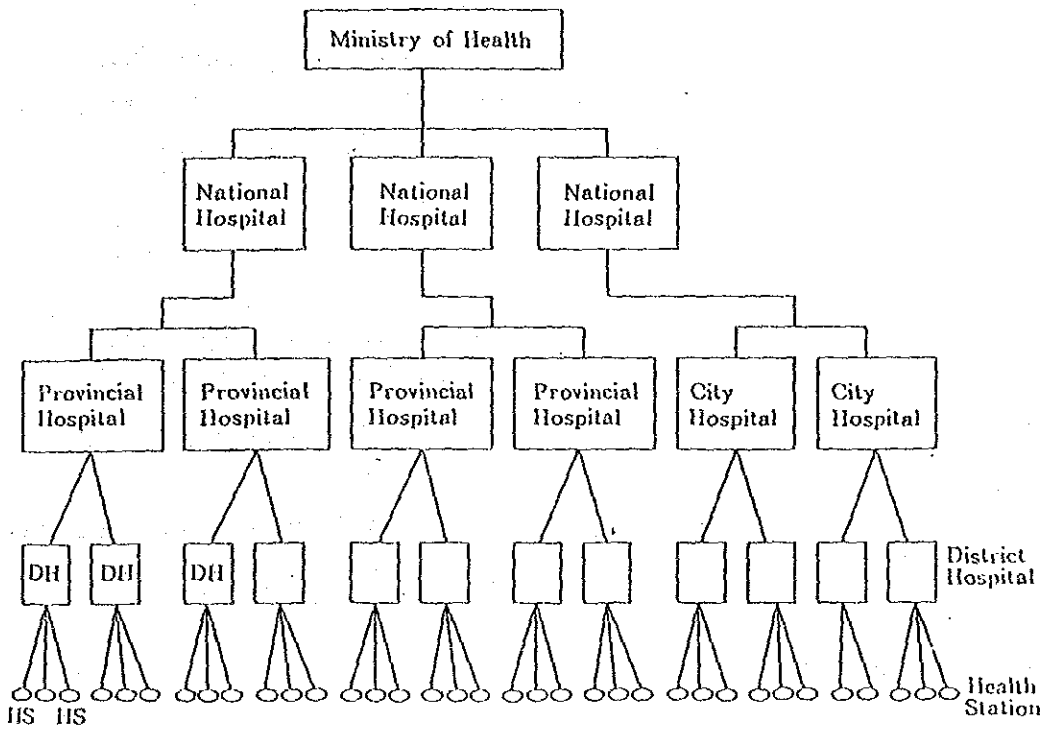


Fig. 1 Health care and medical system in Viet Nam

2-2-4 National plan for health care

In the next five-year plan (1991 to 1995), the government addresses the problems of health, education, and sanitary environments of water, etc. aiming at the following matters:

(1) Promotion of family plan

Further decrease in population growth rate by 0.5%.

(2) Measures against infectious diseases

Controlling diseases caused by malnutrition, malaria, trachoma, tuberculosis, and goiter.

(3) Upgrading medical services

Development of medical staff and a full supply of medical equipment and medicines.

(4) Improvement of nutritive conditions

Target of 2,200 Kcal caloric intake per day by 1995.

(5) Supply of safe water

Target of 60% nationwide water extention ratio.

(6) Infant health

Improvement of services for the growth of infants.

(7) Improvement of education

Improvement of educational environment

(8) Reduction in illiteracy

Particularly aimed at people under 35-year old.

(9) Improvement of education

Increase in admission rate to schools and decrease in the drop out rate.

As a result of cooperation between Viet Nam and UNICEF, the following issues are also emphasized:

(1) Reduction in mortality rates of infant, children under-5, and maternal mortality rates.

(2) Reduction in infant morbidity.

(3) Improvement of water and sewage systems.

(4) Correction of imbalance in health, nutrition, and education by district and social status.

(5) Promotion of maternal and child health.

2-2-5 Malaria control

Malaria, which has the highest morbidity and mortality rates of any other disease in Viet Nam, must be brought under control as soon as possible. However, few antimalarial measures have been put into effect because the disease is prevalent in the mountainous regions, where 80% of the total population live. These regions suffer from a shortage of medical staff and lack of funds for hygiene education.

Raw materials for antimalarial drugs are imported from Indonesia, Switzerland, and other countries. Chloraquine and Fansidar --- the antimalarial drugs --- are manufactured by VINAPHA, a pharmaceutical organization directly under the jurisdiction of the Ministry of Health. The national budget for the manufacture of antimalarial drugs amounts to $1 million annually, while an additional $200,000 worth of antimalarial drugs are imported annually. With this total spending of $1.2 million, only about 60% of malaria patients can be treated. It is thought that this inadequate supply of medication results in an increased mortality from the disease.

U.S.S.R. had supported by supplying DDT, an insecticide, until last year but has suspended it in 1991. The development of another insecticide is now requested since there is no DDT manufacturing plant in the country. Insecticide-resistant mosquitos, the research on a few kinds of insecticides including SUMICHION are now under way.

The Netherlands and WHO have continued their support by annually contributing about $200,000 worth of medicines, insecticides, and technology assistance regarding malaria.

2-2-6 Maternal and child health

Among mothers and children, the morbidity is very high as shown in the table below. The cause is mainly malnutrition, but other factors such as incomplete education to pregnant women and midwives can be considered. Although there is a maternity passbook system, the situation is such that examination during pregnancy is almost neglected.

Maternal, infant, and perinatal mortality rates (1989)
(per 1,000 births)

Maternal	1.2
Infant	34.3
Neonatal	22.0
Preterm-neonatal	12.3
Perinatal	22.7

Source: Ministry of Health

The Maternal and Child Health/Family Planning Unit (MCH/FP Unit) was established in March 1990, in which future activities are expected. This section is a national organization handling all facilities relating to the MCH/FP, and its main services are the health care for mothers and children, family planning and cooperation with UNFPA project.

The population growth is the major problem in Viet Nam: 11.7 million people, i.e. a 22% increase in the last ten years. To prevent disturbance to social and economic development, the lowering of growth from 2.2% in 1989 to 1.7% is set as the national target. Encouraging family planning among people is an urgent task.

2-3 Similar Projects and Assistance Projects by International Organization

(1) Vietnamese coordination system for assistance

Assistance from foreign countries is coordinated by the Committee for Economic Relations with Foreign Countries (CERFC), and adjustments such as selection of preferential programs, regional distribution of assistance, etc., are made by the Ministry of Foreign Affairs, State Planning Committee (SPC), State Committee of Science (SCS), and the Ministry of Finance. The four organizations work to adjust projects in close contact with the ministries concerned.

Assistance from agencies of the United Nations to Viet Nam is managed by the UNDP's local representative through continuous contact with the organizations involved in bilateral cooperation. On the Vietnamese side, the ministry of overseas economic aid also play a role in administering bilateral cooperation.

(2) Change in total amount of assistance (by source of assistance)

The amount of assistance from non-socialist nations in 1987-1988 (including former East Germany) changed as described in Tables 1 and 2.

Table 1 Development cooperation assistance to Viet Nam

1987 (US$1,000)

Source	Technical and programme assistance	Humanitarian & commodity assistance	Capital Assistance	Total
Bilateral	20,960(38%)	15,690(49%)	56,119(92%)	92,769(63%)
Multilateral	30,149(54%)	11,395(35%)	4,571(8%)	46,115(31%)
NGO	4,340(8%)	5,116(16%)		9,456(6%)
Total	55,449(100%)	32,201(100%)	60,690(100%)	148,340(100%)

(Source: UNDP Report, 1990)

Table 2 Development cooperation assistance to Viet Nam

1988 (US$1,000)

Source	Technical and programme assistance	Humanitarian & commodity assistance	Capital Assistance	Total
Bilateral	56,005(59%)	13,561(24%)		69,566(46%)
Multilateral	34,092(35%)	33,062(60%)		67,154(45%)
NGO	4,422(6%)	8,724(16%)	41(100%)	13,186(9%)
Total	94,519(100%)	55,347(100%)	41(100%)	149,906(100%)

(Source: UNDP Report, 1990)

In Table 2, the bilateral assistance was provided mainly by Sweden (largest donor, 75%), Finland (2nd, 18%), and Australia (3rd, 3%), the multilateral assistance was by WFP (largest donor, 43%), UNDP (2nd, 31%), and UNICEF (3rd, 12%). As for assistance from NGOs, 19% was provided by CIDSE, an international NGO, followed by former West Germany's agency.

(3) Cooperation in the health and medical sector

Of the total amount of assistance shown in the above tables, about 13% was distributed to the health sector in both 1987 and 1988. In 1988, the health sector was placed fourth in priority, following the industrial sector (22%), the emergency relief sector (18%), and the natural resources sector (15%).

(i) Multilateral assistance

The health sector receives 12% of the total multilateral assistance following the emergency relief sector (25%), agriculture, forestry, and fisheries sector (17%), and the social infrastructure sector (13%). (The figures given from here on are for 1988.)

A great deal of the assistance (12%) is granted by UNICEF (76%), then from WHO (12%), UNFPA (9%), UNDP (2%), and others (1%).

(ii) Bilateral assistance (Refer to Table 3)

The health sector receives 10% of the total bilateral assistance, following the industrial sector (37%) and the natural resources sector (23%) This assistance is granted by Sweden (93%) Netherlands (4%), Switzerland (2%) and Australia (1%).

(iii) Assistance from NGO (Refer to Table 3)

The health sector is placed second (34%), following the emergency relief sector (39%).

(4) Details of assistance to the health and medical sector

(i) Multilateral assistance

1) UNICEF (1988-1990)

The assistance is for Viet Nam's health programs, with emphasis on PHC. Details are as given below.

(a) Maternal and child health

- Vaccinations for infants against preventable diseases
- Improvement of ante- and post-natal care at health centers, as the first step towards continuous health care
- Control of diarrhea and acute respiratory infectious diseases
- Furnishing of medical equipment and consumables, pharmaceutical products, etc. to health centers, and the training of health care staff
- Promotion of regional health education, linked with sanitation and nutritional improvements

(b) Immunization

- Implementation of EPI (Expanded Program of Immunization) and UCP (Universal Child Program) The percentage of communities covered by the programs rose from 74% (1987) to 91% (1989).
- Promotion of nationwide vaccination campaign
- Supply of cold chains, sterilizers, syringe needles, etc.
- Cooperation in achieving local production of BCG and DPT

(c) Diarrhea control plan

. The plan has allowed 80% of children under five-years old to be cared for.

. Training of persons involved in the management of ORS.

(d) Acute respiratory infectious disease control plan

. The plan includes activities to improve the current care coverage, which reaches only 10% of children under five years old.

(e) Strengthening of PHC network

. Improvements to community health centers, community clinics, and county hospitals

. Promotion of health education to raise the health consciousness of mothers.

2) WHO

The WHO provides assistance to strengthen PHC activities and enhance the quality of health centers. Details are as follows.

(a) Malaria control plan
(b) Maternal and child health plan
(c) Family planning
(d) Technical advancement plan for medical care, clinical examinations, and radiology
(e) Basic medicine and vaccine manufacturing plan, and quality/safety improvement plan
(f) Insect-vector infections disease control plan
(g) Immunization
(h) Eye disease control
(i) Dental disease control
(j) Development of methods for planning and evaluating health programs

3) UNFPA

UNFPA is carrying out programs to supply medical kits for maternal and child health, sterilizers, and other equipment, to train personnel who will promote maternal and child health care and family planning, and to supply contraception devices and pills. This organization thus supports a key objective in Viet Nam's national development plan: control of the population growth rate.

4) UNDP

UNDP is executing a project to encourage health control for coal miners as well as an AIDS project promoted in cooperation with the WHO and others.

(ii) Bilateral cooperation

1) Sweden (SIDA) (1986-1990)

(a) Plan for improving the activities of the central medical equipment repair workshop in Hanoi
(b) Cooperation in making use of foreign countries expertise and knowledge of the PHC sector
(c) Development of models for PHC activities
(d) Improvement of the management at infant hospitals (which form the top-level of the referral system in infant medical care), and development of their role as the top medical organizations for infant treatment
(e) Improvement of the management at Vong Bi Province general hospital, and development of its role as the central provincial hospital
(f) Nationwide improvement of operational knowledge and management of basic medicines; import of raw

materials for domestic production; renovation of pharmaceutical plants.

2) Assistance from socialist countries (1985-1990)

(a) U.S.S.R.

1. Medical equipment and medicine: 1 million rubles/year. Particularly in the fields of eye disease and malaria

2. Scholarship and training (hereafter based on annual data)
   - Personnel dispatches to scientific conferences 10 times
   - Enrolled 3 persons in training for malaria treatment (3 months per person)
   - Enrolled 5 persons training for antibiotic manufacture (6 months per person)
   - Stationed 5 persons at the Viet Nam Soviet Friendship Hospital (hospital management studies) (6 months per person)
   - Stationed 5 persons at the International Hospital (specialist areas and hospital management studies) (6 months per person)
   - Received a total of 30 students and interns, recruited through the Ministry of Education and National Planning Committee rather than the Ministry of Health

(b) Bulgaria

1. Received trainees only (every year)
   - 10 people in specialist areas (2 years per person)
   - 3 persons for specific subjects (3 months per person)
   - Dispatch to scientific conferences five times

- Sending patients overseas for treatment (6 weeks)

(c) Hungary

1. Received trainees only (every year)
   - 10 people for drug control (6 months per person)
   - 10 interns in specialist areas (2 years per person)
   - Dispatch to scientific conferences four times
   - Sending 60 patients overseas for treatment (6 weeks)

(d) Czechoslovakia

1. Received trainees only (every year)
   - 10 people in specialist areas (3 years)
   - 10 people in health control studies (6 months)
   - 10 people for occupational disease treatment (6 months)
   - Dispatch to scientific conferences twice
   - Inspections twice (a month each)
   - 15 people for treatment (3 months each)

(e) Poland

1. Received trainees only (every year)
   - 5 persons in specialist areas (6 months)
   - 5 persons in specialist areas (one year)
   - 10 people for treatment (2 months)

(f) East Germany

1. Received trainees only (every year)
   - 5 persons in specialist areas (2 years)
   - 5 persons in specialist areas (5 years)
   - 5 persons in specialist areas (a year)
   - Dispatch to scientific conferences twice
   - 20 people for treatment

(g) Cuba:

1. Received trainees

- Twice (only personnel associated with Don Phoi Hospital, which was established with aid from Cuba)

2. Provided equipment and medicines

- $250,000 per year for the Don Pho; Hospital

(5) Assistance projects

Assistance projects which the Ministry of Health has decided to accept during the five years from 1991 to 1995 are as shown in Table 4.

Table 3

(US$1,000)

Description	Multilateral assistance US$	%	Bilateral assistance US$	%	Assistance from NGO US$	%	Total	Percentage %
Political affairs								
General development issues, policy making and planning	2,007	3.0	300	0.4	53	0.4	2,360	1.6
Natural resources	5,513	8.2	16,072	23.1	384	2.9	21,969	14.7
Agriculture, forestry and fisheries	11,705	17.4	4,635	6.7	1,887	14.3	18,227	12.2
Industry	6,901	10.3	25,940	37.3	540	4.1	33,381	22.3
Transport and communication	3,520	5.2	5,107	7.3	21	0.2	8,648	5.8
International trade and development finance	82	0.1	96	0.1			178	0.1
Population	421	0.6			17	0.1	438	0.3
Human settlements	446	0.7	1,010	1.5	5		1,461	1.0
Health	7,746	11.5	6,960	10.0	4,494	34.1	19,200	12.8
Education	1,211	1.8	3,546	5.1	119	0.9	4,876	3.3
Employment								
Humanitarian aid and relief	16,798	25.0	5,447	7.8	5,082	38.5	27,327	18.2
Social conditions and equity	8,845	13.2	115	0.2	559	4.2	9,519	6.4
Culture	50	0.1			26	0.2	76	0.1
Science and technology	1,909	2.8	337	0.5			2,246	1.5
Total	67,154	100	55,348	100	13,187	100	149,906	100

(Source: UNDP 1988 Report)

Table 4 Bilateral cooperation and international organization's assistance to Ministry of Health, 1991-1995

Organizations	1991	1992	1993	1994	1995	Total
	($U.S. 1000)					
UNDP	30	29	27	26	37	146
WHO	3,923	2,000	3,000	2,000	3,000	13,923
UNFPA	2,850	3,000	2,900	2,900	3,000	14,650
SIDA	5,627	6,400	6,400	6,400	6,400	31,227
WFP	8,420	8,420	8,420	8,420	8,420	42,100
NGOS	1,900	3,500	3,000	3,000	3,000	14,400
CMEA COUNTRIES	1,550	1,500	1,500	1,500	1,500	7,550
UNICEF	5,100	5,100	5,100	5,100	5,100	25,500
TOTAL	29,400	29,949	30,347	29,346	30,457	149,496

Source: Department of Planning and Finance, Ministry of Health Hanoi, 1990

2-4 Background and Details of the Project

2-4-1 Background of the Project

Japan's cooperation with Cho Ray Hospital was initiated when Japanese cerebral specialists were dispatched in 1966, and in 1967, the Cho Ray Hospital cerebral survey project was initiated with construction of a cerebral survey ward and acceptance of trainees. The hospital's facilities were totally reconstructed under Grant Aid from Japan over several years from 1971, and Cho Ray Hospital, formerly separated into branch wards, was renewed into a modern hospital of 11 above-ground stores, 750 beds (initially), and a central medical treatment facility. (Amount of grant, about 6 billion yen.)

In August 1974, the completed Cho Ray Hospital was handed over to the Vietnamese side, and it was planned that, after opening, technical assistance on hospital operation, maintenance, and management would be introduced. However, when the Viet Nam War ended in April 1975 and the new government took over, the Cambodia problem forced Japan to cut off technical assistance to Viet Nam, including this project. Later assistance to the hospital was resumed for humanitarian reasons after the country was unified. Since the first medical products worth 5 million yen were granted in 1978, team of experts in equipment maintenance and inspection have been sent, and, since 1983, special medical equipment and supplies equivalent to 30 million yen have been provided every other year. At present, the hospital functions as the central hospital in the southern part of Viet Nam. Called the "Japanese Hospital" by residents of the neighborhood, it has became a symbol of Japanese cooperation accessible to everyone. Nevertheless, the hospital has not seen substantial repairs for more than ten years since its opening, and the hospital facilities and equipment have deteriorated. Much of the equipment has also become unserviceable. As a result, the country has asked Japan to provide Grant Aid to

restore its facilities and furnish new equipment for those sectors requiring immediate improvement.

2-4-2 Details of the request

(1) Restoration of facilities

(i) Water supply and wastewater treatment system works
1) Water and drainage pipe and sanitary fixture
2) Water storage tank and pump
3) Septic tank
4) Oxygen supply and vacuum system
5) Steam and hot water supply system
6) Laundry and kitchen equipment
7) Tool and machine
8) Others

(ii) 1) Electricity supply system
2) Generating system
3) Control board
4) Lighting and receptacle system
5) Transmission system
6) Others

(iii) Air-conditioning system

(iv) Elevator

(v) Architectural works

(2) Procurement of equipment

(i) Clinical examination equipment
1) Physical examination equipment
2) Clinical labratory equipment
3) Radiography equipment

(ii) Equipment for diagnosis and treatment

1) Emergency and ICU
2) Operation theater
3) Surgical department
4) Internal department

(iii) Others

1) Consumables
2) Medical equipment spare parts

(3) Technical cooperation

(i) Training in Japan

1) Hospital administration
2) Clinical examination (surgical and internal departments)
3) Nursing care
4) Medical equipment engineering
5) Facilities and equipment engineering

(ii) Dispatch of Japanese experts

1) Hospital Management
2) Neurosurgery
3) Chest surgery / General surgery
4) C.T. Scanner engineering
5) Maintenance of medical equipment
6) Nursing care

2-4-3 Details of preliminary survey

In order to survey the details of the request given above, Japan dispatched a Preliminary Study Team between October 30 and November, 12, 1990.

Based on the results of the preliminary survey, the following details of the request were confirmed.

(1) Restoration work has priority over medical equipment work. Restoration work has the following priority (based on the degree of surgery of its replacement from the standpoint of frequency of use)

(i) Water-supply and drainage system, electrical equipment oxygen supply system

(ii) Air conditioning system, elevators, communication system, refrigeration system

(iii) Heating system, laundry system

(2) Medical equipment work should be carried out in the following order of priority (based on the degree of urgency its replacement from the standpoint of proper medical care)

(i) Diagnostic equipment

(ii) Equipment related to treatment and testing

(iii) Other equipment

(3) Technical cooperation (Dispatch of experts, and training in Japan)

CHAPTAR 3

PRESENT SITUATION OF CHO RAY HOSPITAL

Chapter 3 PRESENT SITUATION OF CHO RAY HOSPITAL

3-1 General Description

3-1-1 Role and function of the hospital

Cho Ray Hospital established in the early 1900s, was used as a French army hospital during colonial days and as an army hospital of the former Japanese Imperial Army during World War II. In 1945, after the end of World War II, it was made a national hospital offering medical treatment to the general public, and the basis of the present hospital was established.

The relationship of the hospital with Japan for medical treatment cooperation had started in 1966 when the Government of Viet Nam made a request for medical cooperation including the construction of a hospital. In response to a request by the Government of Viet Nam, the Government of Japan in 1969 provided grant aid cooperation for the project to fully reconstruct Cho Ray Hospital. In 1975, the facilities, centering on the 11-story main hospital building, were completed at a total cost of 6 billion yen. In parallel with the project, technical assistance was promoted through the dispatch of 89 doctors and specialists, in alliance with a hospital affiliated with Nippon University. Cho Ray Hospital has established itself firmly as a top level national hospital in the Socialist Republic of Viet Nam.

Cho Ray Hospital consists of about 20 buildings, with the 11-story building at the center, which was built with the grant aid cooperation of the Government of Japan on a site of about 53,000 m^2 in area. It is a national hospital having about 1,000 beds. The number of outpatients accounts for about 110,000 per year and the total number of patients who are admitted to the hospital accounts for as many as about 22,000. In the Socialist Republic of Viet Nam where the health and medical treatment has pyramidal structure, Cho Ray Hospital is a top referral hospital directly

under the jurisdiction of the Ministry of Health. It covers medical treatment in 17 southern provinces, including Ho Chi Minh, with a total population of about 4 million. The hospital is at the top of the health and medical treatment system covering the southern part of the country, and it performs the following four main functions:

(i) Functions as a top referral hospital in the south:

The hospital is positioned at the top of the Vietnamese medical structure and is the final referral hospital providing tertiary medical services as well as general medical care.

(ii) Functions as medical educationist to lower hospitals

A team consisting of about two doctors, an anesthetist, and a nurse from the departments of cerebral surgery and cardiology visits the district and provincial hospitals about five times a year to make diagnosis and perform operations; at the same time giving medical education to those engaged in medical services.

(iii) Function as a center in various medical fields

The hospital also has research functions such as a tropical diseases institute, and conducts autopsies in the district. The department of neurosurgery, cardioangiology and neurology in the hospital play a central role in the medical fields in Viet Nam.

(iv) Functions as educationist to those engaged in medical services

The hospital functions as a practical hospital and provides

an educational environment after graduation (postgraduate educational function) for the students in the medical, dentistry and pharmaceutical departments of Ho Chi Minh Medical University.

3-1-2 Operational state

(1) Organization and management

The operation and management of this hospital is performed with the Director and five Vice-Directors forming the highest managerial organization. (See Fig. 2.)

At present, the rejuvenation of managerial officers at this hospital is being planned and research and training of younger staff for managerial positions has been put into practice. One example is the selection of younger staff members to be dispatched to Japan as trainees. The total number of staff members is 1,208 and the breakdown is as follows:

Doctor	260 persons	Laboratory technician	114 persons
Paramedic	20 persons	Pharmacist	53 persons
Nurse	21 persons	Medical worker	45 persons
Medical examination	118 persons	Others	205 persons
		Total	1,208 persons

(As of March 1991)

The academic backgrounds of those engaged in respective medical services are as follows:

Doctor:

A person who has completed a 6-year course in medical university

Assistant doctor:

A person who has completed a 3-year course in medical education after graduating from high school.

Pharmacist:

A person who has completed a 6-year course in the department of pharmacy in a university.

Pharmaceutical chemist:

A person who has completed a 3-year course in pharmaceutical education after graduating from high school.

Assistant pharmaceutical chemist:

A person who has completed a 1-year course in pharmaceutical education after graduating from junior high school.

Senior nurse:

A nurse who has graduated from university.

Graduate nurse:

A person who has completed a 3-year course in nursing education after graduating from high school.

Practical nurse:

A person who has completed a 1-year course in nursing education after graduating from junior high school.

Midwife:

A person who has completed a 3-year course in education after graduating from high school.

Lab technician:

A person who has completed a 5-year course in lab technician education after graduating from high school.

Assistant lab technician:

A Person who has completed a 3-year course in lab technician education after graduating from high school.

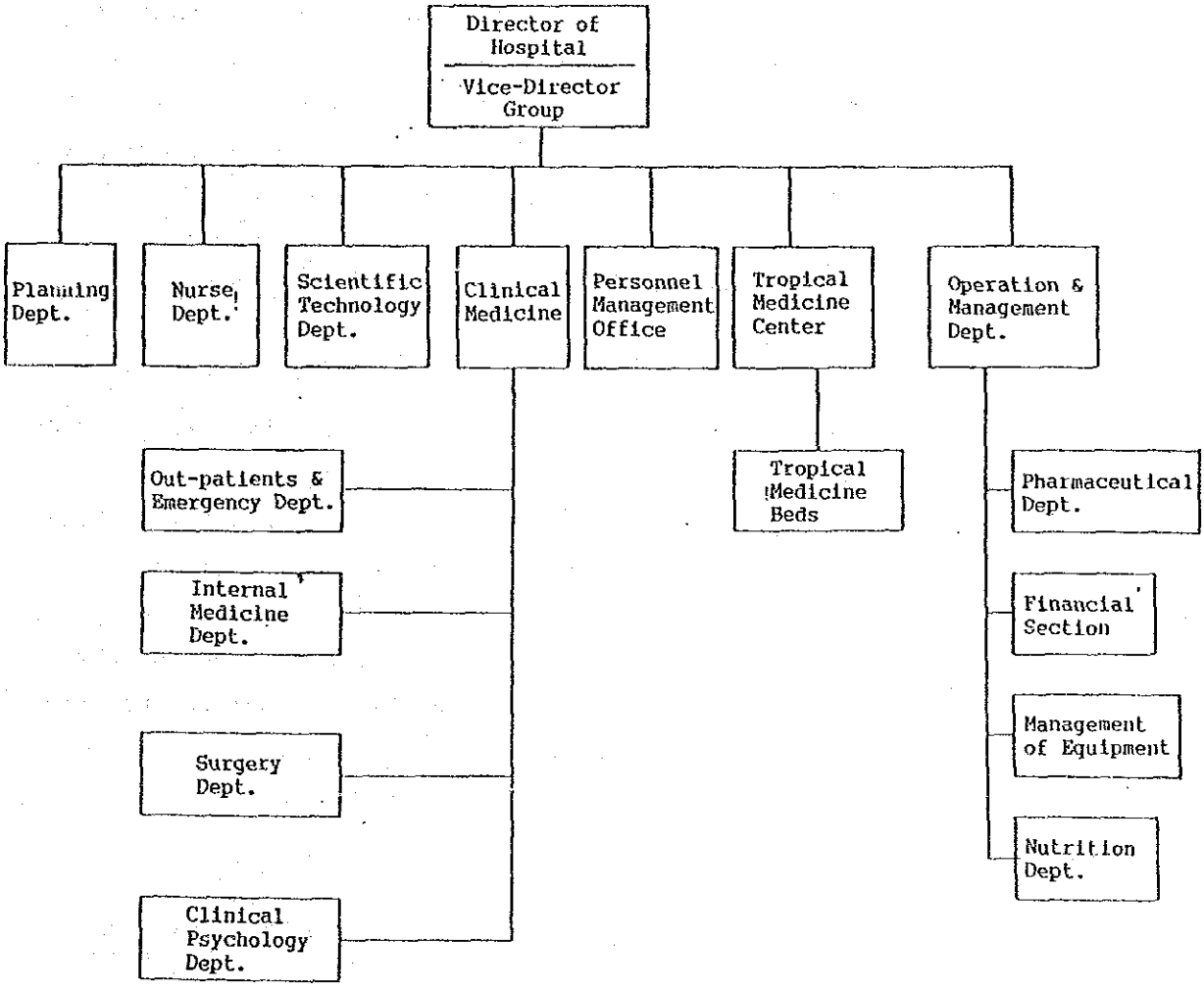


Fig. 2 Operational organization chart of Cho Ray Hospital

(2) Procurement and management of medical equipment and medicines

Purchases and repairs of medical equipment, procurements of medicines and medical consumables are carried out in the pharmaceutical department under the supervision of a manager. Although the medical equipment in the hospital is repaired mainly in the repair shop, the repair is limited to simple ones due to the difficulties in procuring machine tools and materials. The restoration of the repair shop is one of the important subjects in the smooth operation of the hospital. Although there are repair and manufacturing works for medical equipment directly under the control of the Ministry of Health, the hospital does not use them due to financial problems. A part of medicines are manufactured in the hospital, but almost all of them are purchased. Ledger for medical equipment and medicines are not prepared, which is one of the items to be improved in the future.

(3) Finances of the hospital

Despite the annual increase in national budget provided by the Ministry of Health, the ratio to the total expenditures decreases. The ratio of total expenditure to the national budget was only about 40% in 1990. (See Table 5.) Making up for the deficit with treatment fees paid by patients and other financial aid, the hospital is now operating a self-supporting accounting system. However, most of the patients cannot pay for their treatments, thus the hospital is beset with financial difficulties.

Table 5 Annual revenue and expenditure table of Cho Ray Hospital (last 6 years)

REVENUE AND EXPENDITURES
Unit = 1,000 DONG

REVENUE	1985	1986	1987	1988	1989	1990
A. THE BUDGET PROVIDED BY THE GOVERNMENT	7,413	23,222	80,584	355,731	1,137,400	2,100,100
B. THE BUDGET OVER LIMIT						
. Patient pay	1,382	4,752	25,080	160,141	866,393	1,653,491
. The assistance of the provinces	261	100	1,500	23,945	16,000	/
. The grant aid commodities	153	1,858	469	/	6,411	70,674
. Fund B (+)	/	/	/	26,067	355,384	866,811
. Other sources of revenue	2,953	3,155	21,775	33,824	423,200	264,643
A + B =	4,749	9,865	48,824	243,977	1,667,418	2,855,619
Total =	12,162	33,087	129,408	599,708	2,804,818	4,955,719
EXPENDITURES						
. Salary	2,194	7,312	22,990	103,147	619,265	742,253
. Common welfare	173	308	2,447	57,075	180,209	755,258
. Expenses for (*)	1,834	8,268	22,481	163,038	716,345	1,371,843
. Expenses for (♯)	2,495	10,950	42,117	182,387	607,030	1,144,543
. Buying fixed assets	255	2,156	3,823	4,543	45,268	162,844
. Reparation	142	1,145	4,610	37,253	87,389	535,773
. Others	181	1,055	816	719	4,511	5,858
Total =	7,274	31,194	99,284	548,162	2,260,017	4,718,372

(+) The collection from other sources.

(*) Stationery, printing, gasoline, oil, electricity, sanitary items, labor tools, reception

(♯) Medicine, blood, x-ray, oxygen

3-2 Present Activities

3-2-1 Number of beds

The total number of beds available is about 1,000. The hospital has the following department excluding the departments of pediatrics, psychiatry and obstetrics and gynecology. The breakdown is as follows:

Intensive care unit	22 beds	Cerebral surgery	116 beds	Surgery	166 beds
Chest surgery	58 beds	Orthopedics	58 beds	ENT	58 beds
Ophthalmology	60 beds	Urology	58 beds	Circulatory system	58 beds
Liver and chest clinic	58 beds	Gastroen-terology	58 beds	Neurology	62 beds
Malaria	50 beds	Internal medicine	46 beds	International ward	20 beds
Traditional medicine	55 beds	Hematology	12 beds	Burns	10 beds

(As of March 1991)

The bed utilization rate is very high in each department: 211% in burns, 126% in cerebral surgery, over 100% in orthopedics, hemetology and ophthalmology departments, and the average is 97%.

3-2-2 Medical activities

The present medical service situation is as follows:

Number of patients	111,175 persons
Number of diagnoses	154,486 times
Number of beds	1,000 beds
Number of inpatients	22,479 persons

Number of days the patients were treated	331,314 days
Average length of stay in hospital	15 days
Mortality rate	5.0%

(In 1990)

The breakdown of 111,175 patients are as follows: 33% for emergency treatments due to traffic accidents, etc., 22% for internal medicine, 15% for ENT, 10% for ohpthalmology and 8% for dentistry. The breakdown of 22,479 in-patients are as follows: 17% for celebral surgery, 10% for surgery, and 7% for internal medicine. The number of diagnoses in respective departments is as follows:

The number of diagnoses in respective departments

Department	No. of diagnoses	Department	No. of diagnoses
Internal medicine	31,592	Surgery	5,383
Neurology	3,970	Cerebral surgery	857
Hematology	3.021	Chest surgery	1,617
Gastroenterology	872	Urology	5,312
Endocrinology	5,495	ENT	18,254
Lung and kidney disease	253	Ophthalmology	6,246
Physical therapy	1,475	Dentistry	12,964
International ward	1,593	Mobile services	2,685

In the outpatient department, 59 doctors, 23 nurses and 15 assistants are stationed. Major diseases of the outpatients are as follows:

Major diseases of the outpatients

Disease	1985	1986	1987	1988	1989
Infectious disease/ parasite	7,779	5,133	4,524	3,797	3,255
Malignant tumor	2,413	2,427	2,571	2,072	1,496
Endocrine/metabolism	10,103	9,996	9,133	6,471	5,478
Blood dyscrasia	184	375	246	208	199
Mental disease	264	212	227	276	289
Neuropathy	25,123	23,701	22,079	20,213	19,872
Cardiovascular disease	9,783	9,532	8,478	6,428	6,084
Respiratory disease	19,706	21,591	21,222	15,625	14,583
Gastrointestinal disease	16,951	17,203	17,644	13,514	12,956
Urinary/genital disease	4,300	4,192	3,894	2,858	2,673
Dermal disease	1,351	1,932	1,819	627	361
Orthopedic disease	1,257	1,583	2,587	1,063	1,784
Obstetrics disease	17	11	53	36	69
Congenital abnormality	361	244	216	202	208
Newborn	0	0	0	0	0
Diagnosis unknown	9,009	9,094	11,951	8,174	6,876
Injury/toxipathy	28,824	26,783	29,581	30,623	30,538
Total	137,425	134,009	135,725	112,196	106,721

A letter of referral is required for the outpatients basically. The breakdown of referral letters is as follows: 3090 from provincial and city hospitals, 23-25% from district hospitals and clinics, 35-37% from the National Council, and the rests, from general practitioners.

Regarding the area served by the medical services of the hospital, the results of the survey regarding the distribution of in-patients' domiciles are as follows:

Locational distribution of in-patients

Province	Distance (km)	%	Province	Distance (km)	%
Ho Chi Minh	0	32.4	Ben Tre	85	2.6
Dong Nai	30	13.6	Thanh Hai	190	2.4
Long An	47	11.1	Minh Hai	280	2.1
Song Be	30	5.9	Lam Dong	293	1.7
Tien Giang	71	5.7	Vung Tau	129	1.4
Tay Ninh	99	4.2	Kien Giang	248	1.1
Cuu Long	137	4.0	Da Lat	353	0.7
An Giang	190	2.9	Phu Yen	568	0.6
Dong Thap	143	2.8	Others		2.0
Hau Giang	167	2.7			

From the above table, it can be seen that the hospital extends medical services throughout the 17 southern provinces, while at the same time the underdeveloped traffic network is an obstacle to the medical activities.

The hospital has an emergency ward open 24 hours to cope with emergency cases. The number of personnel in the department totals 61: 18 doctors, 32 nurses, and 11 assistants; and 9 doctors are always stationed under a three-shift system. The average number of emergency patients are 120 per day, about 80 at the minimum and over 200 at the most. The number of emergency patients in 1990 totaled 38,748.

Of the emergency patients sent to the hospital, 66% are due to traffic accidents. Other surgical diseases are: acute appendicitis and pyoperitonitis, 7%; ileus, 7%; and gastro-

intestinal bleeding, 3%. For internal medicine diseases, majority are for heart attacks, followed by cerebral hemorrhage, gastro-intestinal bleeding, urinary diseases, bellyache, and fever. About 33% of the emergency patients required treatment in the hospital and were sent to the appropriate department. The mortality rate in the emergency ward is 1%.

3-3 Assistance from Other Countries

Assistance to Cho Ray Hospital from other countries are the following three items:

(1) Supply of medical equipment, pharmaceuticals and medical consumables.

A large portion of the assistance ($300,000) and a burns ward came from West Germany. Besides this, 10-19 aid shipments were made annually from 1981 to 1991 by the U.S.A., the Netherlands, France, Switzerland, East Germany, and Singapore. Japan has provided medical equipment worth Y30 million every other year since 1983.

(2) Technical assistance by dispatching experts

There were six cases of technical assistance for surgery in the last four years. Three French ophthalmologists came in 1988 and operated 10 times a week. In 1989 two Soviet surgeons, three French ophthalmologists, and one German medical team consisting of two surgeons, two anesthesiologists, an internal medicine doctor, and a nurse, came. Also, in 1990, a medical team from Germany came to co-operate in surgery. In 1991, an American surgeon came.

(3) Medical education by studying abroad

Two neurosurgeons are now studying abroad in France, although detailed information is not available.

3-4 Maintenance and Management Structure

(1) Structure and situation of maintenance and management

The operation of this hospital is performed by a group consisting of the Director and 5 Deputy Directors as the highest level of management and with Dr. Duc, Deputy Director, as chief of practical business affairs. It is composed of the Mechanical Workshop, the Laundry, Housekeeping, the Motor Pool, General Supplies Purchasing and Custodian Service, 6 departments in all, as shown in the attached organizational chart (Fig. 3).

(i) Mechanical workshop department (41 employees)

This department performs operation and repair of utility equipment, such as boilers and elevators (12 persons), repair of electrical and communication equipment, repair of medical equipment (15 persons), and repair of buildings (14 persons), etc., and has 41 employees.

Although the repair work of equipment is carried out in the workshop, it was confirmed that its function cannot be demonstrated sufficiently due to a shortage of repair machines and difficulties in obtaining repair materials in Viet Nam. Table 6 shows a list of equipment available in the workshop.

An examination of the facilities and repair equipment reveals that the deterioration and shortage of repair machines is remarkable, and therefore it is judged that improvement of this department is a matter of urgency for existing facilities and equipment and for future Grant Aid Assistance plans.

Instruction of a maintenance manual and procurement of spare parts become one of an important key factors in this Project. This department has to be further strengthen since it is the most important department to be able to operate the hospital by its own efforts.

(ii) Laundry department (25 employees)

This department carries out services, such as the washing of linen and sewing.

According to a survey of the laundry building, it was confirmed that its functions are not fully demonstrated due to deterioration and failure of equipment, such as washing machines, dehydrators and driers. At present, there is no iron available. It is necessary that the equipment must be maintained.

(iii) Housekeeping department (21 employees)

This department performs services such as gate keeper, management of bicycle shed, and cleaning.

One to three persons take care of the cleaning of one floor and insufficient cleaning was very obvious due to shortage of personnel. According to the explanation given by the hospital side, an increase in personnel was difficult from a budgetary viewpoint. However, since cleaning is strongly related to the service life of the building and equipment, this is a matter on which the hospital side should be strongly pressed.

As it was also observed that the building has been made dirty by patients, visitors, etc., in more locations than necessary, the education and guidance to patients and visitors will largely affect the life of the hospital in

the future. It is judged that in addition to the problems of the shortage of personnel, maintenance from the viewpoint of software will be important.

(iv) Motor pool department (12 employees)

This department is in charge of transporting vehicles and repair of vehicles.

The hospital owns one passenger car, which is managed and operated by this department. The problem of a shortage of ambulances during New Year holidays, etc., we are told, is overcome by using passenger cars and we see no special problems in this regard.

(v) General supplies, purchasing department (6 employees)

This department performs such services as the provision of office supplies, fixtures, etc. No important problems appear to exist.

(vi) Custodian service department (6 employees)

This department is in charge of keeping electrical appliances, medicines, oil, furniture, etc. No important problems appear to exist.

Table 6 List of instruments for reparation and replacement

I/Electrical instruments:	Qty.
1- Oscilloscope 110/220 V 5-10 MH3	2 each
2- Multimeter V-ohm 50,000 /Volt D.C	
(Digital meter) 10,000 /Volt D.C	3 each
3- Tool set	5 set
4- D.C Poner supply 0-30 VD.C/SA	3 each
5- Soldering IC	2 -
6- Break board	10 -
7- Frequency generator (Max-1GH3)	1 -
8- Pulse generator (Triangle, square ....)	2 -
9- A.C Voltage box	
(Changeable from 0VAC-240VAC/10A)	2 -
10- A.C Amprop	1 -
II/Mechanical instruments:	
1- Threading machine (threader) 60 mm	1 each
2- Set of thread (many sizes)	
25 mm < <160 mm	1 set
3- Set of knives for cutting pipes	2 -
4- Reaming machine	1 each
5- Lathe 60 mm	1 -
6- Drilling machine (medium size)	1 -
7- Electric welding	1
8- Oxygenacetylene soldering set	1 set
9- General purpose shaver	1 each
10- Mechanical tool set	5 set

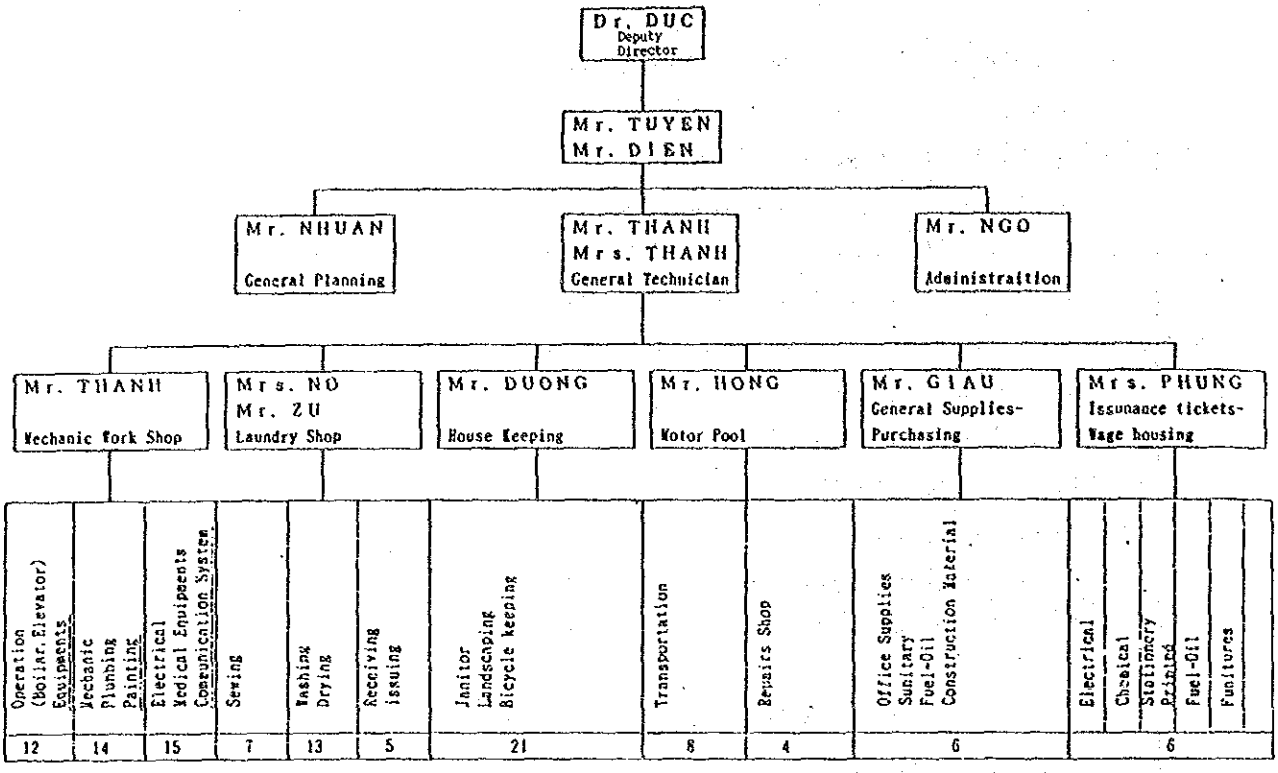


Fig. 3 Maintenance and management structure of Cho Ray Hospital

(2) Present state of maintenance and management expenses

The list of expenses for maintenance and management in the past six years for the hospital is shown below. Although the total expenditure on maintenance and management is clearly shown, the breakdown thereof is not totally understood by the hospital side.

Comparing annual expenditure with the preceding year, although the growth rate is considerable each year, practically no increase was seen before 1988 when examined together with the rate of inflation as shown for reference and it can be judged that the substantial increase occurred after 1989.

If facilities and equipment are improved as a result of this Project and the introduction of elements that promote the

revenue of the hospital with regard to rehabilitation of the international ward and the test equipment, etc., is made possible, it is judged that reduction in repair costs, which account for 17% of maintenance and management costs, can be expected, and about 260 million dong (about 5 million yen) can be used for other expenditures, and the ability to maintain and manage the hospital would be further strengthened.

Table 7 Annual maintenance and management expenses of Cho Ray Hospital (last 6 years)

	Year 1985	Year 1986	Year 1987	Year 1988	Year 1989	Year 1990
Wear and tear expenses	1,834 (449%)	8,268 (271%)	22,481 (725%)	163,038 (439%)	716,345 (191%)	1,371,843
Wear and tear expenses for medical equipment and supplies	2,495	10,950 (438%)	42,117 (384%)	182,387 (433%)	607,030 (332%)	1,144,543 (188%)
Expenses for equipment and supplies	255	2,156 (845%)	3,823 (177%)	4,543 (118%)	45,268 (996%)	162,844 (359%)
Repair expenses	142	1,145 (806%)	4,610 (402%)	37,253 (808%)	87,389 (234%)	535,773 (613%)
Total	4,726	22,519 (476%)	73,031 (324%)	387,221 (530%)	1,456,032 (376%)	3,215,003 (220%)
Rate of inflation	(192%)	(500%)	(300%)	(300%)	(20%)	

* Unit of currency is 1,000 dong.
* Figures in ( ) indicate the ratio against the preceding year.
* Rate of inflation is shown for reference.

3-5 Problems Regarding Cho Ray Hospital

(1) Personnel plan

Although we were told that the hospital side plans to increase the number of personnel for maintenance and management, no specific plan has been formulated because of an insufficient budget, and no clear data exists.

The level of technical skills of technicians is considered to be just about satisfactory for what is necessary and the rate of completion of requests for repair is about 60%. With regard to the remaining uncompleted repairs, the shortage of repair machines and materials constitute a large factor though they are partly due to the problems of lack of ability of the technical skills of personnel. Parts needed are taken from other equipment when it fails and such procedures were confirmed everywhere. The fact that this hospital barely operates at all is due much to the distinguished services of this department. However, upgrading of the level of technical skills of personnel is a matter of necessity and there is a plan to dispatch the manager of this department to Japan for training.

Regarding the maintenance and management services that cannot be accomplished within the hospital organization, these will be supplemented by outside workers in order to compensate for the shortage of personnel.

Taking into account the present condition regarding cleaning of facilities, equipment and supplies, the storage of maintenance and management personnel is all too obvious.

(2) Rehabilitation of maintenance and management structure

Of the six departments, three departments require

rehabilitation, the mechanical workshop, laundry and housekeeping, to independent operation of this hospital.

(i) Mechanical workshop department

The rehabilitation of the workshop is necessary for the repair of each equipment. It is presumed that the rehabilitation of machines and tools in the workshop will improve the rate of completion of repairs to 70-80% from the present 60%.

As it is apparent that the present condition of equipment and tools was caused due to the fact that the maintenance of utility equipment and medical equipment was insufficient as a result of manuals for equipment not being available, etc., in the past, the guidance on the preparation of manuals for equipment is also an essential matter from the viewpoint of development of software.

(ii) Laundry department

Rehabilitation of washing machines, dehydrators, driers, etc., is necessary. The situation whereby they are still used while repairs are being performed because of a decrease in functions due to deterioration of equipment is remarkable. It is judged that an iron is also required though one is not available at present.

(iii) Housekeeping department

An increase in personnel for cleaning is necessary.

At present this department is staffed by 21 employees and each floor is cleaned by 1-3 persons, but the shortage is obvious. At this hospital, comprehensive cleaning is done

every Saturday and is only just managed from the viewpoint of software. It is practically not effective.

(3) Improvement of procurement system of medical equipment and supplies

Looking at maintenance and management of Cho Ray Hospital from the viewpoint of medical equipment and supplies, the procurement of medical equipment and supplies is the responsibility of the Medicine Section according to the request from within the hospital as is also the case with the placing of orders with outside suppliers of medical equipment and supplies as the occasion demands. The domestic suppliers include a plural number of enterprises both national and private and the dealings are conducted with those enterprises deemed suitable. However, private enterprises established in 1990 according to Doi Moi Policy have not yet reached the stage where they can compete with national enterprises as they have less experience. The national enterprises for medical equipment and supplies include one in Hanoi City and one in Ho Chi Minh City. Their business activities are extensive covering not only sales service, but also the manufacture of small medical machines such as small distillation apparatuses, and materials including consumables; and in addition, they offer repair service for medical equipment. Even though they are national enterprises, the situation is such that the budget allotted to them by the Ministry of Health is less than 20% of their operating funds and they are forced to operate on a self-supporting basis. Most of their operating funds comes from charges recovered from the hospital and the size of this budget at the end of the day is determined by the procurement budget for equipment and supplies and the repair budget of each hospital. The products handled include self-manufactured products, equipment and supplies manufactured by other domestic enterprises, and imported products from overseas, but it is possible to handle all equipment and supplies as needed. From

the scale of distribution, however, it would be natural to expect that these companies have practically no connection with particular countries or companies for import and a one-shot deal is arranged whenever the need arises. With regard to repair, as there is the workshop with an organizational structures as shown below, repairs are performed by employees at the request of each department. However, as the shortage of personnel and lack of repair equipment are both considerable, amateurish repair of basic mechanical parts and reconnection of broken wires is about the maximum capability.

CHAPTAR 4

OUTLINE OF THE PROJECT

CHAPTER 4 OUTLINE OF THE PROJECT

4-1 Objectives of the Project

Since its completion of the new facilities in 1974, the Cho Ray Hospital has been forced to maintain its facilities and equipment in an urgent manner by diverted use of parts, use of substitute parts, etc., without large-scale overhaul or repair due to the insufficient budget, difficulties in procuring consumables and spare parts domestically, etc. However, the deterioration of overall utilities, equipment and materials due to secular change has become considerable making them almost unusable and the condition is becoming extremely difficult from viewpoint of management of hospital facilities.

The objective of this Project is to give Cho Ray Hospital the necessary functions for management of hospital facilities by carrying out renewal and improvement of these facilities, equipment and materials so as to reduce the load on maintenance and management on the part of the hospital.

At the same time, another objective is to procure equipment and materials for repair so that repair activities will be undertaken more expeditiously as well as further repleting self-reliance efforts.

4-2 Examination of Contents of Request

4-2-1 Examination of adequacy and necessity of the Project

The Cho Ray Hospital is one of the largest hospitals in the Socialist Republic of Viet Nam and plays an important role as the top referral hospital in the southern region of Viet Nam, in which the health and medical care system is a pyramid-shaped organization.

However, the budget allocated by the government has been annually reduced; it was 38% of desired expenditure in 1990 and is estimated to be 20-25% in 1991. For this reason, the hospital needs to be

managed indipendently, and is presently making efforts to collect medical fees from patients and to increase business orders from outside sources.

Although we are told that the plan is gradually, becoming effective, the situation seems to be such that very significant effort must be continued, if a profit is to be made.

Under these circumstances, not only has appropriate maintenance of the facilities and equipment been neglected, but major items of equipment have already reached the end of their life and medical equipment has deteriorated.

The facilities are damaged and worn, causing problems in maintaining the functions of the hospital. Improving this situation should contribute to restoration of its functional and training functions at the hospital, and improved techniques and staff expertise in medical centers lower down the pyramid.

Also, as can be clearly seen from the Annual Revenue and Expenditure Table of Cho Ray Hospital (Table 5), the item of repair expenses shows a large increase in recent years. The increase in may figures be due to inflation, but it is considered to be also an indication of the strenuous efforts on the part of the hospital to revive equipment and supplies that have already reached the end of their life-spans, and it is apparent that these expenses will be reduced sharply after this Project has been implemented. It was judged that the Project qualifies as a Grant Aid Assistance Project from the above point of view.

4-2-2 Examination of implementation and operation plan

This hospital is maintained and managed with a total staff of 111 persons including General Supplies Purchasing Department with Dr. Duc, Deputy Director, as its leader. Although the breakdown thereof is shown in Fig. 3, the number by each department is shown below.

Mechanical Workshop Department	41 persons
Laundry Department	25 "
Housekeeping Department	21 "
Motor Pool Department	12 "
General Supplies-Purchasing Department	6 "
Insurance Ticket-Payroll Department	6 "
Total	111 persons

With regard to the maintenance and management system of the hospital, no special problems were found. As a result of surveying the details and the state of affairs, no great problem was found in Motor Pool Department, General Supplies-Purchasing Department, and Insurance Ticket-Payroll Department. However, in Mechanical Workshop Department it did not fulfil the function fully due to lack of tools andmaterials. In Laundry Department, the function was also lowered due to the deterioration of machine. Housekeeping Department was in no condition to keep sanitary state of a hospital due to incomplete cleaning by shortage of manpower.

Particularly in the Mechanical Workshop department, the following personnel are lined up and judging from records of repair work thus far accomplished, the number of staff would be reduced by half.

	No. of staff at present	Predicted No. of staff after completion of the project
Boiler, elevator operator	12 persons	6 persons (boiler only)
Repair personnel, mechanical	14 "	6 " (maintenance)
Repair personnel, electrical	15 "	5 " (replacement of light bulbs and repair of medical supplies)

The fuel and light expenses are expected to rise slightly when the Project is completed. Since, at present electric power is only used at the minimum number of locations required, the frequency of use would increase as more terminals are developed.

On the other hand, oxygen, waterworks and steam are leaking everywhere, but when the improvement is completed their consumption would be more economical contributing to a reduction in expenses. Particularly, it was judged that the consumption of water would be reduced by half.

4-2-3 Review on contents of requested facilities, equipment and supplies

The survey of hospital buildings showed that, in general, the buildings were in relatively good condition, including the concrete structure and the aluminum fittings. However, some deterioration was visible, such as rust on steel louvers on the towers and on the steel structure of emergency exterior staircases, stains on the P tiles of floors and on ceilings due to water leakage, peeling finish materials, and rust inside elevators. Additionally, many of the toilet facilities were found to be unusable due to corrosion of the partitions. Although the overall appearance has been damaged in some respects from a structural and architectural standpoint, it was judged that the structures, except the lavatories, could be used without difficulties. However, the water supply and other systems have deteriorated so considerably that most of the equipment previously provided cannot now be used, and the hospital suffers from serious difficulties in controlling medical services.

Most of the main medical equipment, furnished in 1974, has been used for longer than its designed service life as a result of cannibalizing parts from unusable equipment and manufacturing inventive local parts. In the present circumstances, in which financial difficulties have impeded the upgrading of medical equipment, aggravation to the medical service cannot be avoided. Japan's provision of special medical equipment and supplies has barely reduced the rate of the aggravation.

Note: Items requiring urgent improvement are asterisked.

(1) Building

(i) Exterior

Although the exterior of the building still remains in a reasonably good state generally, it was judged that improvement would be necessary in the following areas:

1) Block wall of connecting corridor

The lower part of the perforated block is severely corroded where wind concentrates rainwater during the rainy season and the reinforcing bars were seen to be exposed making the situation very dangerous as the blocks are on the verge of collapse in three locations.

2) Waterproofing

Over lines ⑰ - ㉗ , the roof waterproofing on 10F has reached the end of its life span, thereby damaging the ceiling on 10F. Repair work should be performed as soon as possible to prevent the effects on the building frame.

3) Steel louvers

A great deal of rust has accumulated on the steel blinding louvers that are installed on the penthouse and rooftop, spoiling the appearance of the building. However, it is judged that the corrosion of the body of the louvers has not progressed to the degree anticipated, but nevertheless, unless preventive measures against corrosion are taken as soon as possible, all louvers may have to be replaced at considerable expense in the future.

4) Outdoor stairs of C building

There is a steel staircase used in case of an emergency, and holes made on the stair landing when medical equipment was carried in have not been repaired making staircase dangerous to use, and also rust has formed. It is judged that repairs are

required to render the staircase fit for its primary use as an emergency escape.

5) Upper rain gutter of POOL-2

This is a leader to guide the rainwater collected on the lean-to-roof to POOL-2, and it is corroded in 6 places making its collapse imminent. It is judged that urgent repair is considered necessary as its collapse would allow rainwater to leak into the rooms.

6) Emergency exit slope of C building

Although it is finished with tiles and has anti-slipping specifications, most of it has been damaged making the travelling of carts with casters impossible. Repair is considered necessary, therefore.

(ii) Interior

The floor and walls have generally remained in good condition though there are some stains. However, damaged ceilings can be seen everywhere due to moisture and water leakage in the rooms where water is used, and steel panel wall surfaces are so severely damaged, they are almost out of service.

*1) Toilets in wards

In the ward toilets, corrosion or float can be seen on most of the floors, ceilings, walls etc., at 19 locations due to leakage and improper control of use

and it is judged that a full-scale repair job should be performed urgently to improve sanitary conditions.

2) Ceiling in boiler room

The corrosion of the ceiling backing has progressed considerably due to moisture and insufficient ventilation and over half its area, parts had fallen off. Early repair is considered necessary as the Research Department is located above the Boiler Room.

3) Foreigner's ward and showers for doctors (68 locations)

Since the vinyl-coated steel panel of the unit is corroded from the packing, causing holes in most of the lower parts of the wall surface, which causes water leakage to the floor below. Improvement is urgently required.

4) Ceiling of ICU and CCU

In some places, unfinished repair holes can be seen. It is judged urgent that a partial repair of the ceilings, together with the air conditioning work, be performed this time since sanitary environment is especially critical for these rooms.

5) Other ceilings

Despite the fact that they have no direct bearing on the operation of the hospital, stains in ceilings due to water leakage and corrosion in the backing can be seen everywhere. Also, holes bored in ceilings for piping and electrical repairs are left unrepaired,

thereby requiring repair from the viewpoint of sanitation.

(2) Plumbing and sanitary equipment work

(i) Plumbing equipment

1) Fixed water level valve

Due to the failure of the fixed water level valve (FM valve) water is left constantly running out and the valve has to be opened and closed manually 24 hours a day according to the level of water in the receiving tank. This presents a big problem from the viewpoint of conservation control and as such, requires improvement.

*2) Receiving tank

The receiving tank is an underground type, which has never been cleaned since the opening of the hospital and there is a possibility that is installed on the tank slab and water leakage from the pump could flow into the tank, thereby causies problems in water quality.

It is considered necessary to improve this situation so as to prevent oil and water from flowing into the tank from outside and to arrange for the tank to be cleaned periodically. Repair is urgent from the viewpoint of sanitation and management.

*3) Lifting pump

Water leakage from packings of the lifting pump is considerable due to deterioration. As the pump has

already exceeded its service life, damage is imminent.

*4) Accessories of lifting pump

Water leakage from damaged parts of the valve and flexible joints is considerable, calling for replacement of the pump and furthermore, the work is required urgently to secure the water supply. Also, all gauges are inoperable so their replacement, together with the pump, is urgent.

*5) Elevated water tank

Water leakage is seen constantly from damaged parts and joints of the elevated water tank (FRP made) due to deterioration. Of six tanks, one of them has had emergency repair work performed on it with iron sheet, etc., due to deterioration, and another tank is open without the manhole cover for inspection, conditions that give rise to water leakage and are extremely unsanitary.

Urgent replacement of these is necessary considering sanitation and management expenses, etc.

6) Accessories of elevated water tank

Water leakage is seen from valves and flexible joints in above-ground water tanks. It is best to improve them when the water tanks are replaced.

7) Valves

It is difficult to open most of the valves and they

remain closed as a result of rust accumulation. If they are located in the area of the work to be performed, it is best to replace them at the same time.

8) Main pipe

Although water leakage is observed as a result of rust accumulated in the joints of the piping within the building, it is evidently caused by outside rust (leakage caused due to improper rust preventive measures, damage to joints through external force, etc.) and except for the branch pipes the main pipe was found to be in good condition following a visual observation from outside and by means of measuring instruments.

*9) Main pipe to toilets

Water leakage has frequently occurred due to corrosion at penetration points of water supply piping through waterproof layers of toilet slabs. It is urgently necessary to improve together with a drainage system and sanitary fixtures described in the following section.

(ii) Drainage system

1) Sewage piping

Water leakage has occurred frequently from everywhere in the sewerage piping due to deterioration of rubber packing at mechanical joints.

*2) Sewerage and drainage piping

The inflow of foreign objects, newspapers, pieces of cloth, etc. have caused blockages in sewerage piping, drainage piping and drainage fixtures everywhere. As a cleaning tool is not readily available (however there is a set of cleaners available), it was requested that such facilities be provided, but it is necessary that the method of improvement thereof should be reviewed together with item (ii)-1) and the water supply system and sanitary fixtures. This improvement is required urgently to secure sanitary conditions.

3) Drainage piping for wash basins

It was observed that most of the drainage piping for wash basins has been blocked due to the inflow of leftover rice. It is considered necessary to examine and improve the installation of all metal fittings etc., in order to permit the removal of the leftover rice.

*4) Septic tank

The septic tank and wastewater tank have never been cleaned since their installation and a lowering of the quality of treated water can be assumed. Of the two septic tanks available, one has been left unused, making it inoperative due to an accumulation of decomposed gas, etc., and failure of pumps.

It is necessary to perform a complete overhaul of the septic tanks rather than more cleaning. Also, the pumps need to be replaced as they are currently submerged in water.

5) Drainage pump

Frequent failures have occurred due to deterioration of drainage pumps in the drainage tank, spring water tank, etc. The two pumps that are used for the septic tank have been inoperative due to failure.

Since they have already exceeded their service lives, they should be replaced.

6) Drainage piping

It was also seen that sink, etc., at some locations have been left in an inoperative condition at places where blockages in drainage piping are not yet been repaired. It is consider necessary that cleaners, etc., be provided.

7) Untreated water of isolation ward

The untreated water of the isolation ward presents no particular problems as such patients would be transferred to a specialized hospital.

8) Outdoor drain

Due to insufficient cleaning measures of the outdoor catch basin, the situation is much that most of the basins are blocked with scum and soil, etc., barely allowing water to flow.

Also at present, the piping is only cleaned when it is blocked completely and it is necessary to clean the basins and piping thoroughly.

(iii) Sanitary fixtures

1) Sanitary chinaware

The damage to and losses of chinaware, etc., are seen in various places.

This is particularly important as it is becoming a major cause of damage to ceilings and steel panels, etc., as a result of water due to breakage of toilet stools for outpatients and wards. It is necessary to examine this problem bearing in mind a full-scale improvement is urgently needed in consideration of convenience of use, etc.

2) Sanitary bardware (water faucet, etc.)

Wastewater as a result of free discharge was seen in various places due to failure of hydrants flush valves, ball taps of high tanks, etc., and wear of packings. It is necessary to correct deficiencies, together with improvements in toilets facilities.

*3) Shower units

Because of damage caused by the deterioration of the steel plates in the shower units, water leakage to the floors below and stains and damage to the ceiling surfaces have occurred. These are also having a bad effect not only on the ceiling surfaces, but on the structure of the building. Also, it is considered urgently necessary to improve the international ward, the only source of income, along with the hot water system.

*4) Wash basins in the operating section

Due to damaged levers on the knee-operating type wash basins in the operating section, there are many that cannot easily be operated, i.e. 3 locations out of 16 are found to be inoperative. Only 3 locations have a soap dish while the others do not. As this is a section that requires the utmost cleanliness, the fact that many wash basins cannot be used readily is a serious matter. It is virtually important that this situation be improved as soon as possible.

(3) Electrical equipment

(i) Receiving and substation equipment

*1) As the voltage cannot be obtained by the expiration of power (DC source), automatic switching is inoperative,at the time of power failure so it has to be operated manually. Also, most indicator lamps on the high-tension boards, low-tension boards and monitoring boards do not light, as they too have expired.

*2) As the voltage cannot be obtained by the expiration of the automatic high-tension circuit breaker is inoperative.

*3) As the voltage cannot be obtained by the expiration of the leak alarm board is inoperative.

*4) With regard to ACB (Air cut-off board) and IVR (automatic voltage regulator), although they are working (the IVR is operated manually as it cannot be automatically operated), as 16 years have elapsed

since their installation, it is judged that they will only last several more years and breakdown with secondary failure would occur if they should fail.

Therefore, it is judged that replacement of the DC power source, to recover operating power, ACB to insure safety and the IVR to secure a stable power source for medical treatment equipment is urgent.

*(ii) Generator

1) As the voltage cannot be obtained by the expiration of operating power (DC source), the automatic starter and circuit breaker at the time of power failure are inoperative and are being operated manually.

2) Of the two generators available, one is inoperative at present due to burn-out of engine parts from overheating caused as a result of insufficient cooling water, making the other a single operation. But the one in operation is old and oil leakage can be seen in places due to deterioration of the gasket and packing.

3) The pneumatic pressure system for the engine starter has deteriorated, particularly, as the pressure tank is corroded and its use thereof under the rated pressure would cause a serious accident, it is kept stand-by state by lowing its pressure.

4) Although the air compressor was replaced at the site, capacity is small and continuous operation is not possible.

5) The air compressor, cooling water pump and oil pump have deteriorated markedly. The present equipment is

old and they are not manufactured any longer, and so with replacement of only the one that cannot be started, synchronous operation of two sets will be impossible. Therefore, it is judged that the two generators and the generator board should be replaced.

(iii) Trunk line equipment

1) The trunk line cable was found to be in good condition with current leakage almost zero A. However, it is judged urgent that the trunk line cable for medical equipment and the distribution transformer be replaced to provide against an unexpected failure.

(iv) Motor equipment

1) Parts of some boards have been removed and diverted for repair of other boards.

2) In keeping with improvement of air conditioning equipment, five motor control panels, CP-7, 8, 9, 10 and 11 should be repaired.

3) In keeping with improvement of plumbing and sanitary equipment, the repair of seven motor control panels CP-1, 2, 3, 4, 5, 6 and 7 has become urgently necessary.

(v) Lighting and receptacle system

*1) Because the type of lighting fixture used is for a rapid fluorescent lamp that cannot be procured localley most of the fixtures have been remodelled to allow the use of a glow fluorescent lamp. However,

the lighting ratio of lighting fixtures is about 20% and locations with insufficient intensity of illumination including the elevator hall, etc., have been observed.

*2) The lighting fixtures that have contact with the outside air were corroded due to rust.

*3) Because of the problems of fuquint use, the commonly-used sections, particulaly wiring fixtures around toilets, was damaged severely.

Therefore, urgent replacement of lighting fixtures and wiring fixtures and the provision of spare fixtures is necessary.

(vi) Telephone equipment

1) The telephone exchange equipment is barely being used while failed relays, etc. are repaird, and the rate of operation is about 60% of normal operation.

2) The telephone sets are also in a similar condition and it is judged that their service lives have just about expired.

The telephone exchange equipment is an old type which cannot be maintained by the Japanese side. Therefore, it is necessary to replace it with an electronic type that can be maintained in the future.

(vii) Loudspeaker system

1) Out of 10 units of 120 W amplifiers, only 3 units are being operated due to deterioration of the remaining 7 units which are impossible to repair.

2) 36 units of flush type loudspeakers have been removed as they are inoperative.

3) Because of damage caused by small animals, etc., inoperative speakers were observed.

Therefore, it is necessary to replace amplifiers, inoperative loudspeakers and piping and wiring.

(viii) Clock

1) Although the master clock is operating, as the batteries for replacement are not available and there is no compensating power source in case of power failure, a lagging of secondary clocks was observed. The deterioration of equipment was found to be considerable.

(ix) Nurse call system

1) Due to deterioration of equipment and damage to wiring caused by small animals, etc., while a nurse call can be made from the nurse station, but the patients are unable to call the nurse station making the system functionally inadequate.

2) Indicator lamps and return lamps was deteriorated.

Therefore, a full-scale repair is necessary.

(x) Automatic fire alarm system

1) The deterioration of receives is considerable and indicator lamps do not light.

2) Due to deterioration of the sensors and the breaking of wires, etc., by small animals, erroneous alarms are sent out. Therefore, the receiver switch is kept constantly OFF. Thus automatic fire alarm system does not function at all.

Therefore, a full scale repair is necessary from the viewpoint of accident prevention.

(xi) Airplane warning light

1) Due to deterioration of the central panel and equipment, the system is not operating. Therefore, it is necessary to replace the control panel and equipment.

(xii) Lighting arrester system

1) No problems exist with the lighting rod or the conductor on the ridge.

2) The grounding resistance was measured at 0.2-1 ohms, which presents no problems.

(4) Oxygen supply system and suction equipment system

*(i) Oxygen supply system

1) The average consumption of oxygen is 35 cylinders/day (7,000 liters/cylinder) with daily supply coming from an oxygen plant. Therefore, normal use presents no problems though shortages occur at peak times such as after the New Year holidays.

2) Although the production capacity of the oxygen plant is sufficient, there is leakage due to a shortage of

oxygen cylinders and improper connection caps, making it impossible to secure spare cylinders.

It is necessary to examine the oxygen supply together with the above item 1).

3) Damage to the connection pipe with oxygen cylinders in the manifold room and the automatic switching unit cause inadequate functioning. As this also constitutes the cause of the lowered-usage pressure at the outlet, it is urgently necessary to replace the whole oxygen supply system for the function of the hospital.

4) Most of the outlets in each room are damaged and left inoperative. Even usuable ones have leakage due to wear in connections. As the pressure is insufficient (3.5 kg/cm^3 minimum), oxygen cylinders are brought into rooms in some cases to remedy the immediate situation.

To secure required pressure and as wear and tear are considerable due to non-maintenance, it is urgently necessary to replace all outlets together with the above item (3).

5) Due to leakage from connections (cylinder itself, connection fittings, outlets, etc.), and considering the cost of oxygen, oxygen supply from the center has been suspended at night.

Together with the above items (1)-(4), it is necessary and urgent that all defective parts at all locations be replaced so as to secure the required pressure and ensure normal and safe supply of oxygen to patients.

6) Judging from its present state, the oxygen line piping is sufficiently durable for use in the future.

*(ii) Suction equipment system

1) At the time the hospital opened, the vacuum pump procured from Japan was already in an inoperative condition due to failure. Although the pump procured by the hospital is being used, the degree of vacuum is not as high as the prescribed value.

2) The outlets in each room are mostly damaged and left inoperative. Even for ones that are operative, as they have no prescribed degree of vacuum, portable suction equipment is used when required.

It is urgently necessary to replace all suction equipment and outlets, etc., as is case with the oxygen supply system.

3) Judging from the present state of suction line piping, it is sufficiently durable for use in the future though blockages in small-diameter parts of the branch piping may occur due to improper handling of the portable suction equipment. Such problems can be improved by cleaning, etc.

(5) Air conditioning and ventilation equipment

(i) Package-type air conditioning equipment

1) The operation room system has not been operated for 7 years. The equipment was replaced once with an American system, but became inoperative after 2 years. At present all roll filters, electric dust collectors, etc., are inoperative. Although cooling

is carried out by installing a window-type cooler in each room, even that can cool only 2 rooms. The situation is considered extremely problematic as a clean environment is vital for the operating room.

To prevent future failures, it is urgently necessary that the system be changed and upgraded to one with a backup function.

*2) ICU, CCU operation room system

The system has been completely inoperative is the case with the operation room system.

Similarly, the CCU operation room is also cooled using a window-type cooler with a hole through the wall.

There are problems from the viewpoint of maintenance and management, but since their life has expired and they are inoperative, it is urgently necessary to replace all equipment.

*3) Central material system

As the service life of the equipment has expired, it is urgently necessary replace it as is the case with the above item (b).

4) Physiological test, X-ray and auditorium systems

These are quite different from the above systems, as they are operated on the basis of the minimum necessary for energy saving purposes (physiological test and X-ray systems have a window-type cooler in each room, which is used as a backup, and the

auditorium system is used only when that room is in use), functions have been retained more or less, but a decrease in air volume due to damage to the filter and blinding and insufficient capacity due to a poor air compressor body have already been observed and as the life of the equipment has expired it may become inoperative any time. Therefore, replacement is necessary.

(ii) Cooling tower

*1) All cooling-towers have deteriorated severely with metal parts falling off due to corrosion, damage to inner filter material is considerable and in some cases motors are missing from ones that are inoperative.

As they constitute a set with the above-mentioned package-type air conditioning equipment, it is urgently necessary to replace them together with the equipment.

(iii) Electrical dust collector, roll lifter

*1) The deterioration of those currently in use is considerable as their service life has expired. The ones installed in the broken system are inoperative as is the case with the air conditioning equipment.

Also, they constitute a set with the air conditioning system as is the case with (ii) above, it is urgently necessary to examine and improve them along with the units that can be maintained locally.

(iv) Blower

1) All blowers have deteriorated severely and in some cases motors are missing from those that are inoperative. It is necessary to replace them as their service life has expired.

(v) Outlet, inlet fixtures

*1) The greater part of the fixtures is in good condition even though they are stained, but some have slipped out of the ceiling surface.

(vi) Window-type air conditioner

1) The equipment that has been in use since the opening of hospital has deteriorated severely and although some have been replaced with equipment purchased locally by the hospital, the number thereof is limited due to budgetary problems and they have to be overhauled every 2-3 years as the products are of inferior quality.

It is necessary to replace them in sequence by allotting them an order of priority according to criticality of the place where they are to be installed.

2) As the airtightness at wall penetration points of some of the equipment that has been installed locally is inferior, dust and dirt may enter the rooms (operating room, experiment room, etc.) causing contamination.

It is necessary to review and improve them together with the package-type air conditioning equipment.

(vii) Airconditioning machine room

*1) Due to the entry of small animals, such as bats and rats through openings, the interior of rooms became their nests and corrosion caused by excrement can be observed. The sanitary condition of the interior of the room also presents problems.

It is urgently necessary to review and improve the situation together with the package-type air conditioning equipment.

(viii) Piping, ducts

*1) Judging from its outside appearance and from measurements, there is no particular problems with regard to the piping. With regard to the dust, the condition is similar to that of the piping though it is urgently necessary to clear the ducts that have not been used for several years together with the air conditioner.

(ix) Instrumentation system

*1) The greater part of the many of the indicator lamps on the central panel do not light, and contact points of relays are severely worn. As a result, damage and malfunction of motors can be assumed.

*2) The deterioration of breakers, relays, condensers, etc., in the central panel of the air conditioning system in use is considerable, leading to many parts, such as breakers, etc., falling off in outer control

panels of the conditioning system that are inoperative.

*3) Instrumentation equipment, thermostats etc., have deteriorated badly and some were observed to be inoperative. It is urgently necessary to review and improve together with 1) and 2) above and the replacement work of the air conditioning equipment, etc.

*(6) Elevator system

(i) There are 7 motors for the higher floors and 1 motor for the lower floors, all of which have deteriorated badly. In the motors for the higher floors particularly, grease has sprayed out from the gland.

(ii) We are told that Wires for the dumbwaiter were replaced by the hospital, but wires for 7 other units have never been replaced since the opening of the hospital. It is judged that replacement is necessary as soon as possible.

(iii) With regard to the cage, the floor part for all 8 units is badly worn, particularly that of the dumbwaiter from corrosion due to seasoning, such as salt, as the dumbwaiter transports meals.

(iv) Breakshoe is severely worn.

(v) Most of the indicator lamps do not light.

(vi) The elevator for the higher floors is operated on the basis of simultaneous operation with 3 units in rotation, all of which are operated by the operators.

(vii) In some cases the elevator floor slips away from floor level on arriving, which is due to erroneous action of the limit switch or relay.

(viii) As the opening and closing of the inner door cannot be controlled, elevator operation is carried out with the inner door open, which is an extremely dangerous practice. Urgent improvement is necessary from the viewpoint of medical services as a hospital and to ensure safety.

(7) Heat source equipment

*(i) Steam equipment

1) Because of incomplete combustion due to deterioration of the furnace nozzles of two boiler units, the boilers cannot generate the rated pressure thereby causing frequent failures.

2) Due to the failure of the automatic water level device, it is now operated manually.

3) Lowering in water quality due to deterioration of the water softener, greatly affects the boilers.

4) The water return tank is without gauges, such as temperature gauge, water level gauge, the tank itself has deteriorated badly, the manhole cover for inspection is rusted and damaged and the cover cannot be fixed tightly.

As the service life of all equipment has expired, it is necessary to upgrade them urgently together with the above item 1)-3) to avoid the danger of major accidens, such as fire, etc.

5) With regard to the piping, no internal damage was observed as is the case with the outer piping though rust, etc., can be seen from outside. Traps in many locations were found to be inoperative.

It is necessary to upgrade them together with the above replacement work.

6) The operating condition of the boiler in the dry season is 1.5 hrs in the morning and 1.5 hrs in the afternoon, 3 hrs/day in total, and for the rainy season, it is 2 hrs in the morning and 2 hrs in the afternoon, 4 hrs/day in total (for drying of laundry) and when required in case of emergency. (The budget for fuel is limited.)

The locations of use of steam are for disinfection of autocalve, etc., laundry, international ward and steam for the hot water supply to test building. However, the boiler for hot water supply is not in use at present due to failure.

*(ii) Hot water supply system

1) Three storage tanks in total are inoperative due to deterioration. It is urgently necessary to replace them at this time together with the shower unit in the international ward, which is a source of revenue in the hospital.

2) The hot water circulation pump has deteriorated badly. Same action as above should be taken. It should be repaired together with the above 1).

3) As a result of measurement the piping was judged to be sufficiently durable for use in the future.

*(8) Laundry equipment

The present amount processed is 700-800 kg/day. The work clothes and white smocks of all staff members including doctors and nurses are washed at home due to insufficient capacity of the laundry. The consumable materials, such as cleanser, etc., are products of a joint venture company with Soviet Union which adequately meets the demand at present.

Although the dehydrator is 20 years old, it is functioning after having been repaired.

The service life of the mechanical parts of the dryers themselves has expired and they are not functioning properly. Therefore, drying is done by hanging outdoors in the dry season and in the rainy season it is done by hanging on the back of a shed.

The number of employees and their roles at present is as follows:

Laundry and drying	6 persons
Ironing	2 persons
Sewing, repair	4 persons
Others	12 persons
Total	25 persons

The practice of washing work clothes and the white robes of staff members at home is considered very unsanitary. It is judged that the machines are being used beyond their limit and they will, in the near future, break down.

Therefore, it is urgent that the capacity be increased together with renewal of machines.

Although they are not included in the request, the items to be examined below were pointed out at the stage of the Preliminary Study, and they have been studied in detail in the Basic Design Study which is performed at this time.

(9) Radioactive waste treatment facility

The RI Department has been transferred to the first floor of the Brain Surgery ward and is not now at the initially designated location. The radioactive waste is stored in a tank for a certain period of time to attenuate and is then discharged.

(10) Waste, treatment facility

General rubbish discharge is about 5 tons a day on average. This rubbish (mostly combustible materials) is collected at GL through a dust chute (hume pipe) of 500 m/m in diameter on line F-⑫, transferred by a handcart to a dumps in which it is stored and then carried out of the hospital by garbage trucks.

On the other hand, medical waste is also disposed of together with general rubbish. Parts of body amputated are storaged in a specified container and carried out of the hospital for direct burial at the appropriate time at the hospital's expense.

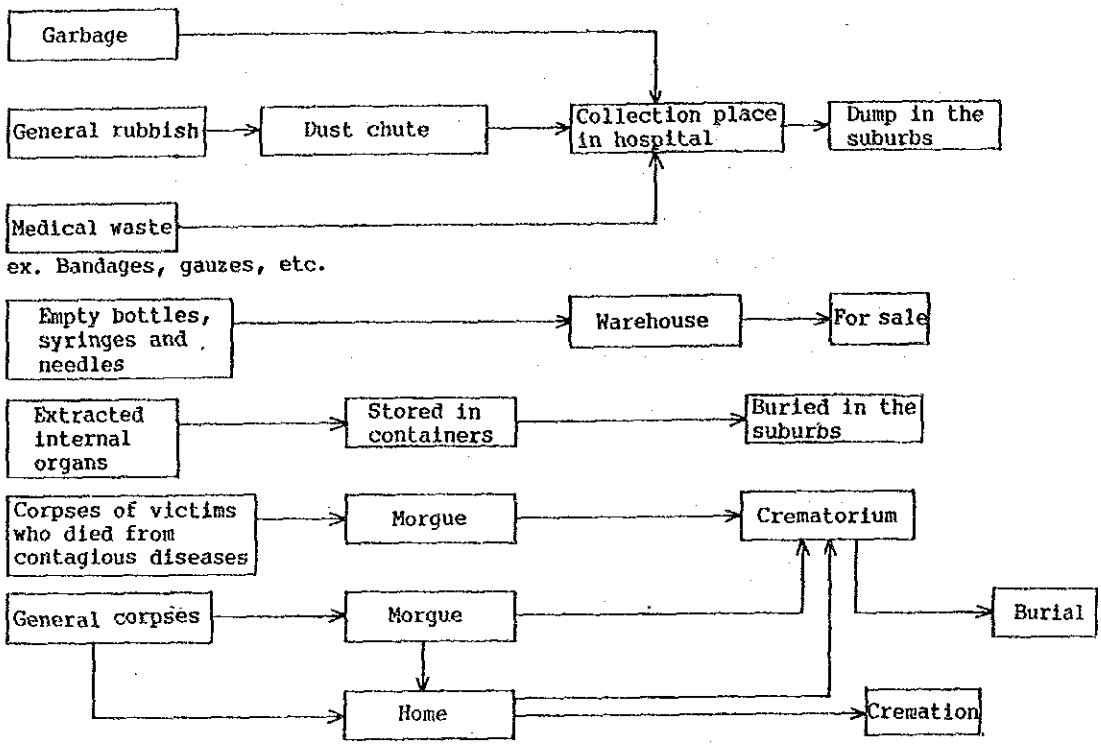
The corpses of patients who suffered from cortagious diseases are entrusted to outside contractors for cremation.

The incinerator provided to the hospital in 1974 by the Government of Japan has not been used as yet due to oil conservation and differences in wastes-disposal practices.

To transfer rubbish within the premises a stretcher is used if the rubbish is light, and if there are larger amounts, a

self-made box with caster diverted from medical supplies is used without any cover. The box on casters is also old and has not been satisfactorily maintained.

The waste-disposal flow chart for this hospital is shown below.



As a result of an examination of the present situation, it was judged that the existing incinerator has insufficient capacity to dispose of both general garbage and medical waste (bandages, gauze, etc.) even using expensive oil. General garbage can be dumped in the suburbs without problem. But regarding medical wast which presents the danger of infection, it should be incinerated inside the hospital as there is presently a problem of transportation and treatment outside. It is necessary to replace the existing incinerator with a more effective and pollution-free type to incinerate this medical waste.

*(11) Kitchen equipment

The kitchen system caters for all the meals of patients admitted to the hospital, a staff dining room, visitors and a dining room for out-patients. Five thousand meals are prepared everyday and delivered to each location by female staff using only 4 push carts.

There were 20 push carts available in the past, but due to deterioration of caster, etc., only 4 push carts are in use at present, though even they have to be repaired occasionally

The kitchen equipment was provided by the U.S.A. many years ago, but it was not used at all, due to the time restriction on the steam supply (only 3 hours a day), and expiration of its service life.

The kitchen equipment presently in use includes the following:

Type	Number	Specification	Use
① Electric hot water heater	3	Remodelled from drum can, electrode immersion type	Cooling of hot water for patients to drink
② Burner	8	Manual pressurizing type oil heater	Cooking and frying
③ Rice cooker	3	Aluminum pan, charcoal ball, charcoal, wood, etc., are used	Rice, rice gruel, boiling
④ Refigerator	2	700-liter capacity for household	

The heat source for operation when gas supply cannot be obtained (propane gas and butane gas are not commercially available), will generally be steam, which cannot be depended upon under the situation where the budget for heavy oil for fuel is limited. (The boiler is operated for 1.5 hrs in the morning and 1.5 hrs in the afternoon).

Accordingly cooking is accomplished by using a combination of oil burners, coal, charcoal balls and wood. Because of this the kitchen room is extremely unsanitary and resembles a machine shop.

However, improvement of the kitchen equipment will only be urgent with regard to the following points as a result of an examination from the viewpoints of safety and sanitation:

(i) Upgrading of hot water heaters (drum can)

(ii) Upgrading of refrigerators

*(12) Repairshop

Unlike other general buildings, this hospital operates on a 24 hour basis.

Accordingly, wear and tear on equipment and supplies is remarkedly severe. To cope with this, it is both necessary and essential that constant maintenance be carried out. However, the work space is small and even storage for parts and materials has deteriorated. (as though it were a temporary building)

It is by urgently necessary to maintain backup facilities and repair equipment for maintenance and provision of parts, not only to prolong the life of equipment and supplies but to increase the effective rate of use of owned equipment and supplies.

The repair of medical equipment and supplies that requires highly sophisticated technology calls for training through technical cooperation, but it is judged that at present the level of repair technology for general facilities and ordinary medical equipment and supplies is adequate.

(13) Accident prevention system

(i) Fire hydrant pump presents no problems as a result of the discharge test.

(ii) Fire hydrant box itself appears satisfactory.

However, the hose, nozzle, etc. that should be kept in the box are stored in the nurse stations for prevention of stolen. At present they are short at 15 locations as a result of damaged hoses that were bitten off by rats and also as some are missing.

It is necessary to make up for hoses and nozzles that are missing or deficient from the viewpoint of initial firefighting activities.

(iii) Although some water leakage from outdoor fire hydrants was observed at the time of the discharge test, this presents no special problem. Regarding piping, it is judged that it will be sufficiently durable in the future.

(14) Medical equipment and supplies

Those in use at present can be classified roughly into four categories depending upon the time of installation, existing condition and problems are as follows:

(i) Equipment and supplies installed before 1974

Even though some are still in use, they have completely deteriorated with improper use and are used as reserve equipment for emergencies. As such, they are recognized as non-existent.

(ii) Equipment and supplies procured in 1974

These are the ones procured from Japan when the hospital was opened, about 70% of which are still in use. Although they constitute the main strength of the hospital even now, their service lives have generally expired by many years in addition to the fact that daily maintenance has not been properly performed and that the supply of maintenance parts and consumables is insufficient. Therefore, practically no equipment in perfect condition can be found. Although the largest cause of the incomplete maintenance work and the extreme shortage of consumables, etc., is the limited operating budget. There are, in addition, the following problems:

1) As equipment scheduled for procurement after 1974 has not yet been delivered, spare parts and manuals are lacking for many items of equipment. (Only equipment was supplied in 1974.)

2) As a result of personnel changes due to the opening of Viet Nam, the managerial structure for handling equipment is inefficient.

3) Many of the maintenance parts and consumables are not manufactured locally, and it is difficult to import from overseas. (Laughing gas for anesthesia equipment, etc.).

(iii) Equipment donated by individual Viet Nams who have emigrated to foreign countries.

These mainly include secondhand equipment from various countries, which is rarely operative due to lack of manuals and shortage of parts.

(iv) Equipment procured after 1985

This is the equipment and supplies furnished specially from Japan every other year, much of which is appropriated for consumables and maintenance parts and many faults have occurred in equipment already, making the condition far from satisfactory to cater to the functions of a hospital. The problems include the following:

1) As the grant aid was for independent equipment, no engineers were dispatched.

2) No stable electric power could be obtained due to malfunction of the automatic voltage regulating unit.

In some cases the equipment itself was stored and used to supply spare parts for other equipment, rendering the former mere junk at present, or where repair of the equipment is impossible, only part of its function are used in such a manner that they are used totally inefficiently. Nothing is completely functioning out of all the equipment in the hospital, causing a large deficiency in everyday medical activities.

Under the above circumstances, a list of the required medical equipment was submitted by the hospital. The list marked with the priority, consists mainly of the replacement of existing equipment which has lost function and which is in great demand.

It was prepared in full recognition of the objectives of the project; that is, it mainly lists equipment required to restore the original functions of the hospital. It is judged that the request is appropriate in general. But it is necessary to review by fully understanding the present situation because newly requested equipment such as an

X-ray CT scanner and an automatic analyzer is included. The details of the reguest are as follows. The equipment which is of special urgency is marked with *.

*1	X-ray Portable Unit
*2	Gastrointestinal Radiograph
3	Cranial X-ray Apparatus
*4	Bedside Monitor
5	X-ray Diagnosis System for Circulatory Organ
*6	Bedside Monitor
*7-1	Critical Care Ventilator
*7-2	Critical Care Ventilator
*8	Anesthesia Apparatus
*9	Endotracheal Set
*10	Manual Resuslitator
*11	Surgical Scrub System
*12	Suction Unit
13	Encephalo Echo Apparatus
*14	Abdominal Echo Apparatus
*15	Duodeno Fiberscope
*16	Colono Fiberscope
17	Cysto Fiberscope
18	Broncho Scope
19	Basal Metabolic Measurement
20	Tranducer 5 MHz, 7.5 MHz
21	Endoscopic Retrograde Choledocho Fiberscope
*22	Proctoscopic Fiberscope
23	Retrograde Uretero Endoscope
24	Bicycle for Master Test
25	Electroretinograph
26	Electromyograph
27	Ultrasonic Doppler
28	Large Autoclave
*29	Small Autoclave
*30	Large Ultrasonic Cleaner

*31	Small Ultrasonic Cleaner
32	Infusion Set & Needle Cleaner
33	Formalin Gas Sterilizer
*34	Moturary Refrigerator for 2 bodies
35	Autopsy Instrument Set
*36	Paraffin Oven
*37	Microtome Knife Sharpener
38-1	Urological X-ray Apparatus
*38-2	X-ray Processor
*39	Surgical Glove Conditioner
40	Tracheotomy Instrument Set
41	Luer Tracbeal Tubes
42	Small Operating Instrument Set
43	ICU Bed
44	Wheels of Patient Bed
*45	Dermatome
46	Homodialysis System
47	Treating Water System
48	Peitoneal Dialysis
49	Steam Pressor Sterilizer
50	System for Serum Filter
51	Boiling Instrument
52	Instrument Sterilizer
53	Hot Air Fan
54	Vacuum Cleaner
55	Humidifier Fan
*56	Electro Cardiograph (1-channel)
*57	Wintrobe Hematocrit Set
58	Oxygen Cylinder Truck
59	Dressing Drum
60	Dressing Drum Stand
*61	Electro Cardiograph (3-channel)
*62	Cast Cutting Instrument
63	Continuing Traction Device
64	External Fixation Device
*65	Image Intensifier Television in Operating Theatre

66	Surgicla Motor for Sawing with Saw Blades
67	Electro Surgical Drilling Motor
68	Operating Table
69	Fiber Naso-Pharyngo Laryngoscope
70	Box of ENT Consultation & Aerozol for Inpatient
71	Electrical Drill
*72	Air Pressure Skull Operation Set
73	Electric Skull Operation Set
*74	Loupe
75	Cryo Surgery Set for Catarart Operation
76	Temporary Pace Maker
*77	Binocular Microscope
*78	Analytical Balance
*79	Water Bath
*80	Incubator
*81	Rotary Shaker
*82	Magnetic Stirrer with Hot Plate
*83	Distilling Apparatus
*84	Labsystems Finnpipette
*85	Glass Seropipette
86	Glass Cuve
*87	Spectrophotometer
88	Heater
89	Cryomicrotome
90	Laminar Flow Chamber
91	Multipette
92	ELISA Equipment
93	Test Kit for ELISA (HBs)
94	Test Kit for ELISA (Aids)
*95	Refrigerant Centrifuge
*96	Refrigerator Blood Bank
97	Microscope (Quadriocular)
*98	Instrument Sterilizer
99	Ophthalmoscope
*100	Operating Microscope
101	Ophthalmological Operating Microscope

*102	Analyzer (Glucose)
103	Pack Warmer
104	Electrophoresis
105	Central System of Air Conditioner and Sterilizer
106	Aerosol Apparatus
107	Chart Carriage
108	Stretcher
109	Kick Bucket
110	Laundry Cart (Washed)
111	Laundry Cart (Unwashed)
112	Stethoscope (Doctor Type)
113	Stethoscope (Nurse Type)
114	Percussion Hammer
115	Clinical Thermometer
116	Head Mirror
117	Doctor Light
118	Diagnostic Set
119	Scale
120	Ice Cube Machine
121	Refrigerator
122	Wheel Chair
123	Centrifuge
124	Automatic Analyzer
125	CT Scanner
*126	Instruments to Repair Set
127	Ultraviolet Lamp for Sterilization
128	Heart Lung Machine
129	Instruments Set for Operation
130	Defibrillator
131	Spare Lamp for Operating Light
132	Electro Surgical Unit