Ministry of Health, Federation of Bosnia and Herzegovina
Ministry of Health and Social Welfare, Republic of Srpska
Bosnia and Herzegovina

BASIC DESIGN STUDY REPORT

ON

THE PROJECT FOR

IMPROVEMENT OF MEDICAL EQUIPMENT

IN PRIMARY HEALTH CARE INSTITUTIONS

IN

BOSNIA AND HERZEGOVINA

December, 1997

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
INTERNATIONAL TECHNO CENTER CO., LTD.
OVERSEAS ENGINEERING SERVICE

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PREFACE

In response to a request from the Government of Bosnia and Herzegovina, the Government of Japan decided to conduct a basic design study on the Project for Improvement of Medical Equipment in Primary Health Care Institutions and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Bosnia and Herzegovina a study team from July 9 to August 20, 1997 and October 1 to October 14, 1997.

The team held discussions with the officials concerned of the Government of Bosnia and Herzegovina, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, as this result, the present report was finalized.

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

I wish to express my sincere appreciation to the officials concerned of the Government of Bosnia and Herzegovina for their close cooperation extended to the teams.

December, 1997

Kimio Fujita
President
Japan International Cooperation Agency

December, 1997

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Improvement of Medical Equipment in Primary Health Care Institutions in Bosnia and Herzegovina.

This study was conducted by International Techno Center Co., Ltd., and Overseas Engineering Service under a contract to JICA, during the period from July 1, 1997 to January 30, 1998. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Bosnia and Herzegovina and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

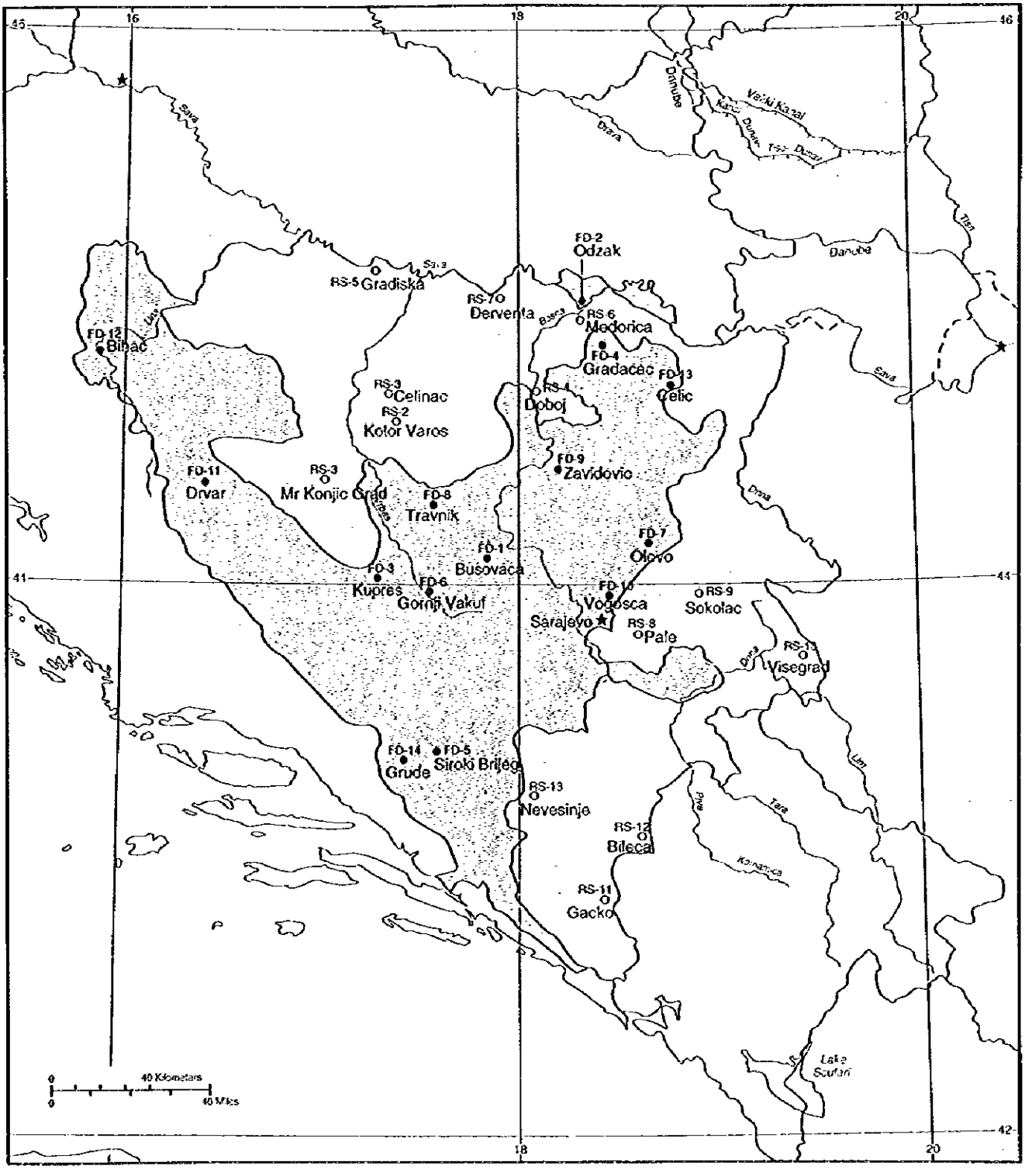
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

Chiharu Abe
Project Manager,
Basic design study team on the Project
for Improvement of Medical Equipment
in Primary Health Care Institutions
of Bosnia and Herzegovina
International Techno Center Co., Ltd.

BOSNIA AND HERZEGOVINA

PROJECT SITES



FEDARATION OF BOSNIA AND HERZEGOVINA

REPUBLIC OF SURPSKA

● FD-1~14 PROJECT SITES

○ RS-1~13 PROJECT SITES

Abbreviations

A/P	Authorization to Pay
B/A	Banking Arrangement
BiH	Bosnia and Herzegovina
CIDA	Canadian International Development Agency
E/N	Exchange of Notes
ECHO	Europian Commission Humanitarian Office
EU	Europitan Union
GDP	Gross Domestic Product
IMF	International Monetary Fund
MSF	Medecins Sans Frontieres
NGO	Non Governmental Organization
PHC	Primary Health Care
PIU	Programme Implementation Unit
SFOR	Stabilization Force
UK/ODA (DFID	Overseas Development Administration Department for International Development)
UNDP	United Nations Developement Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

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CONTENTS

[Appendices]

Chapter 1 Background of the Request

Chapter 1 Background of the Request

1-1 General Conditions

Bosnia and Herzegovina is located in the center of the Balkan peninsula, and it was the geographical center of the former Yugoslavia. It has a land area of approximately 51,000km^2. It is boardered by the Republic of Croatia and the Federal Republic of Yugoslavia (referred to as New Yugoslavia) with Sava river in the north and Drina river in the east. The land is hilly and mountainous, and the forest occupies about 46% of the land. Climate is continental, but weathers and temperatures change dramatically in the mountainous regions. Several species of large and small game and freshwater fish are found in the heavily forested mountains and valleys. Flat areas lie along the Sava river, and these areas are suited for stock raising rather than for agriculture because the topography is in karst.

Democratization which started in 1989 in Eastern Europe affected the socialist countries and promoted racism or nationalism and the resulting separation of the republics of the former Yugoslavia (the Socialist Federal Republic of Yugoslavia). Firstly, the Republics of Slovania and Croatia seceded from the federation and became independent in June, 1991. Following this event, Bosnia and Herzegovina declared independence in March, 1992. As the population of this republic consists of Serbs, Croats, and Muslims, ethnic rivalry started among these groups for power in the newly independent republic, immediately after the declaration. A war began when the neighboring Serbia and Croatia interfered in the dispute, and many cities and towns were destroyed, and many people were killed. The war lasted for a period of three and a half years until the signing of the Dayton Peace Agreement in November, 1995 (formally signed in Paris in December, 1995).

According to the Dayton Peace Agreement, Bosnia and Herzegovina shall exist as a nation with the present territory but with two entities: the Federation of Bosnia and Herzegovina for Muslims and Croats (referred to as the Federation) and the Republic of Srpska for Serbs (referred to as Srpska). Under the same agreement, the following state-level governmental structures are organized: a presidency consisting of three members, a Muslim and a Croat from the Federation and a Serb from Srpska; a coucil of ministers appointed by the presidency; and a parliament consisting of 15 members for the house of people and 42 members for the house of representatives (two thirds of the members for each house are selected from the Federation and one third from Srpska). While the central government is responsible for diplomatic relations, trade relations, and financial policy, the government of each entity is responsible for other matters of the respective entity. The Government of Japan recognized Bosnia and Herzegovina as a state in January, 1996.

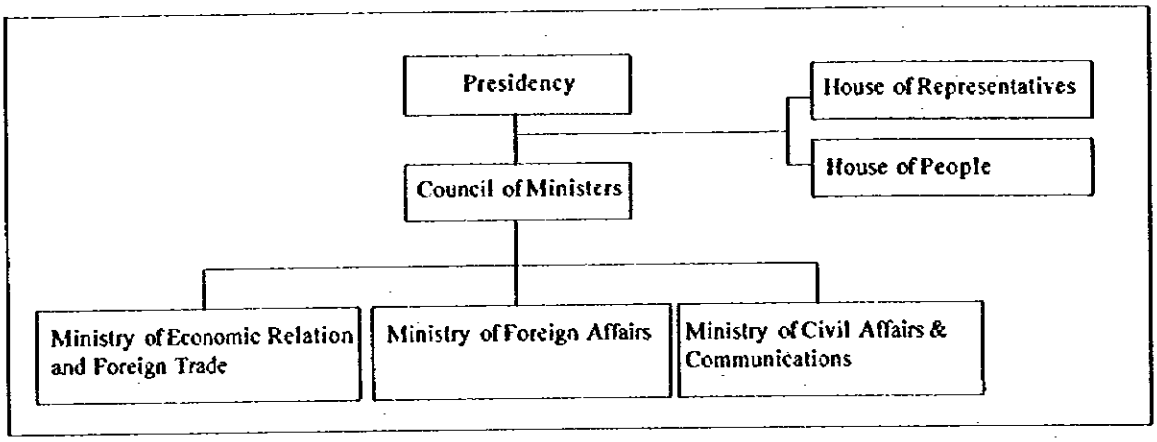

Figure 1-1: Organization of the Government of Bosnia and Herzegovina

1-2 Demography

The population of Bosnia and Herzegovina was 4,377,000 in 1991. 2,795,000 people lived in the region which the Federation holds as territory at present, and 1,582,000 were in the region which is the territory of Srpska at present. The number of deaths from the war is estimated over 200,000. No census has been conducted either for Bosnia and Herzegovina as a whole or for each entity after the war. However, the total population of Bosnia and Herzegovina is about 4,000,000 (2,500,000 for the Federation and 1,500,000 for Srpska) according to an estimation given by UNHCR in October, 1996. About one million of total population are displaced people caused by the war, and the ratio of the displaced to the population is 25% in the Federation and 32% in Srpska. By the October of 1996, 760,000 displaced people had returned from other areas to the territory of the Federation. There is no available report which accounts the number of people who have returned to Srpska. UNHCR estimates that about 40,000 to 50,000 displaced people may have returned to Srpska.

Table 1-1: Population of Bosnia and Herzegovina

	1991(census)	Oct. 1996 (UNHCR)			
	Total	Total	Inhabitants	Displaced	Returned
Bosnia and Herzegovina	4,377,000	3,988,032	2,807,884	1,103,872	--
Federation of Bosnia and Herzegovina	2,795,000	2,536,130	1,820,588	639,266	76,276
Republic of Srpska	1,582,000	1,451,902	987,296	464,606	--

1-3 Social and Economic Condition

Coal and other minerals lie under the land of Bosnia and Herzegovina. With this blessing, Bosnia and Herzegovina played an important role as a producer of power and industrial materials in the former Yugoslavia. It is estimated that iron ore deposits of Bosnia and Herzegovina accounted 85% of the total amount of the former Yugoslavia and that other mineral or coal deposits and timber resources also accounted about 26%, respectively. Because of these natural resources, Bosnia and Herzegovina was well advanced in mineral mining,

manufacturing, and hydroelectric generation. However, since not only major industrial facilities but also substantial part of the infrastructure including houses and roads were heavily damaged in the war, it is estimated that the production has decreased to 5 to 10% of the pre-war level. Although post-war reconstruction is under way, the economic infrastructure including production facilities has not been totally restored from the damages yet. Thus, economy is in bad condition.

At present, statistics such as GDP or rate of increase of industrial production are not collected. Only estimations are available, but these estimations do not agree with one another.

Table 1-2 lists a summary of economic indicators which are reported in the "The Priority Reconstruction Program : from Emergency to Sustainability, 1997" by the World Bank. According to this report, GDP which was US$ 8,670 million in 1991 declined to US$ 1,538 million in 1994. However, it is estimated that, after the Dayton Peach Agreement, GDP increased at the rate of 30 to 50% in 1995 and 1996.

Table 1-2: Economic Condition of Bosnia and Herzegovina

	1991	1994	1995	1996
GDP (millionUS$)	8,670	1,538	2,105	3,260
GDP per capita (US$)	1,979	357	501	776
Real growth rate (%)	--	--	33	50
Invisible trade balance (millionDEM)	--	FD -29 RS -37	0 -9	-5 -1
Foreign currency reserve (millionUS$)		38	159	
External debt (millionUS$)	1,057	3,245	3,518	115% against GDP
Debt service ratio (%)	--	196	135	66% against Export
Industrial growth (%)				FD 87 (Jan to Nov, against 95) RS 58 (Oct 96, against Dec. 95)
Unenployment (excluding agriculture) (%)	27	--	53	FD 44 RS 61
Average monthly income (DEM)	666	--	FD 94 RS 51	182 (Jan to Nov) 61
Price fluctuation (%)	114	FD 780 RS 1,061	-12 133	3 -9

Source : Bosnia and Herzegovina - From Emergency to Sustainability, World Bank, 1996

The World Bank recommends that appropriate policy based on a clear vision and comprehensive institutional reform must be effected in order to maintain the current rate of recovery for the improvement of the economic condition and the standard of living. Objectives are restructuring the macro economy, privatizing the industry, improving the financial system, improving the working conditions and social security, etc. The post-war recovery and the

transformation to a market-oriented economy are keys to successful economic development, and the latter is especially important in the long run. Creating a market economy requires development of a private sector and recovery of the industrial production, and these in turn require foreign investments. Therefore, social and economic reform as well as stability is an essential condition for attracting investments.

The central government is responsible for diplomatic relations, trade relations, and financial policy, and the government of each entity is responsible for other matters of the respective entity. For social stability, it is important for each entity to implement the terms of the Dayton Peace Agreement. It is also important to stabilise the social services for the people such as education, housing and health care. These are a real challenge to the government of each entity and a test of their administrative ability.

The project is to improve medical facilities, named Dom Zdravlja, which provide primary health care (PHC). The improvement of PHC service will not only improve the medical service but also bring about benefits to the people in social security with improving the living standard.

1-4 Present State of Health Care

1-4-1 Leading Diseases and Causes of Death

During the war, which lasted three and a half years, health care services were severely impaired. While health care services were not widely available, people were not only under psychological stress but also in extreme undernourishment. In this condition, the psychological and physical health of the people were significantly jeopardized or even damaged to a certain extent.

Table 1-3: Pre-war Leading Diseases and Causes of Death (statistics in 1990)

Leading Diseases	
1 Respiratory diseases	31.55%
2 Cardiovascular diseases	15.50%
3 Diseases of muscle-bone system	9.62%
4 Diseases of nerve and sense systems	9.32%
5 Diseases of digestive system	8.45%
6 Diseases of Urinary and genital systems	5.50%
7 Skin diseases	5.22%
8 Injuries and poisoning	4.29%
9 Insufficiently defined conditions	2.78%
10 Infectious and parastic diseases	2.56%
Other diseases	5.21%
Total	100.00%

Cuases of Death	
1 Cardiovascular diseases	50.00%
2 Insufficiently defined conditions	6.80%
3 Neoplasm of digestive system	6.20%
4 Neoplasms of respiratory organs	4.70%
5 Diseases of digestive system	4.20%
6 Injuries and poisoning	3.90%
7 Respiratory diseases	3.60%
8 Leukaemia and other blood producing organ diseases	2.60%
9 Neoplasms of urinary and genital organs	2.00%
10 Neoplasms of not specified locations	1.90%
Other diseases	14.10%
Total	100.00%

Source : Strategic Plan for Health System Reform and Reconstruction 1997-2000, Srpska MOHSW/WHO, May 1997

Health care needs in Bosnia and Herzegovina are characterized by cardiovascular disease and cancer, which are major causes of death. This is a disease pattern which is prevalent in

developed s. During the war, major causes of death were directly war-related, and they are external injury, physical disability, mental disability, etc. Because patients of chronic disease or hypertension were under stress or were prevented from receiving proper care, some causes of death are also indirectly related to the war. There are no available data to indicate how well the condition has improved after the war. However, it is considered that the basic health service has recovered to a certain degree.

Table 1-4: Leading Diseases and Causes of Death during the War (1991 - 1995)

Leading diseases and conditions in BiH from 1991 to 1995

Ranking	1991	1992	1993	1994	1995
1	Acute respiratory infections	Acute respiratory infections	Acute respiratory infections	Acute respiratory infections	Acute respiratory infections
2	Diseases of muscular-bone's system and connective tissue	Hypertension	Hypertension	Hypertension	Hypertension
3	Hypertension	Neurotic disturbances	Neurotic disturbances	Neurotic disturbances, related to the stress, disturbance of person or related to the behaviour	Diseases of muscular-bone's system and connective tissue
4	Neurotic disturbances, disturbances of person and other unsymptomic disturbances	War injuries	Injuries	Injuries	Neurotic disturbances, related to the stress, disturbance of person or related to the behaviour
5	Diseases of urinary system	Diseases of muscular-bone's system and connective tissue	Acute bronhchitis	Diseases of muscular-bone's system and connective tissue	Diseases of digestive system

Leading causes of death in BiH from 1991 to 1995

Ranking	1991	1992	1993	1994	1995
1	Circulatory system diseases	Circulatory system diseases	War activities	Circulatory system diseases	War activities
2	Malignant neoplasms	War activities	Circulatory system diseases	External caused	Circulatory system diseases
3	Symtoms and insufficient defined conditions	Symtoms and insufficient defined conditions	Symtoms and insufficient defined conditions	War activities	Symtoms and insufficient defined conditions
4	Injuries and poisoning	Malignant neoplasms	Malignant neoplasms	Malignant neoplasms	Malignant neoplasms
5	Respiratory system diseases	Digestive system diseases	Digestive system diseases	Digestive system diseases	Digestive system diseases

Source : Health and Social Consequences, Institute of Public Health of BiH , 1996

1-4-2 Medical Facilities

The war did not exclude medical facilities from its destruction. Especially where the conflict was severe, the facilities were severely damaged, so new facilities were built in emergency. While the quality of services provided in the medical facilities was being substantially declining, humanitarian aid in health care was provided from other countries and international aid organizations, starting from 1993 throughout the conflict. The number of major donors who provided such aid for the restoration of medical facilities counted about 40 by 1996.

1-4-3 Medical Personnel

The number of people who were engaged in providing health care had decreased by 40% during the war because some medical workers were killed in the war or fled abroad. The number of students enrolled with medical schools are also down at present. It may take a long period of time before trained medical workers will have developed in an adequate number. However, it is rather important to improve the system of medical education of the students and reeducation of present medical workers in terms of the improvement of health care service for future. With this vision, the Ministries of Health are revising the curricula of medical schools, establishing educational centers for medical personnel, and carrying out retraining programs.

Table 1-5: Medical Personnel

Federation (1991,1995)

	number of medical personnel		population per personnel	
	1991	1995	1991	1995
General practioner	1,615	983	1,285	1,630
Specialist	2,571	1,299	807	1,233
Sub total	4,186	2,282	496	702
Stomatologist	731	304	2,764	5,270
Pharmacist	650	190	3,193	8,433
High health technicien	1,587	706	1,308	2,269
Health technicien	10,400	6,130	200	261
Others	8,139	5,363		
Total	25,693	14,975		

Srpska(1996)

	number of medical personnel	population per personnel
	1996	
General practioner	494	2400 ~ 7700
Sub total	1630	670 ~ 973
Dentist	165	1800 ~ 11000
Nurse	4901	180 ~ 350
Midwife	290	4000 ~ 5700

Source : Health and Social Consequences, Institute of Public Health of BiH, 1996

1-4-4 Health Care Finance

Funds for providing health care have been appropriated through the Health Insurance Fund, a nationally organized fund for health insurance. At present, the financial condition of the fund is not good because the economy has not recovered to the pre-war level, and unemployment is still at a high level. Even though the major cause which impaired the operation of the system originated from the war, there are other problems which are straining or wasting the funds. One is that there is no checking mechanism which controls the cost of care in the system. Without such mechanism, patients are free to visit any high-level medical facility for a first medical examination even with slightest illness, and doctors can administer valuable drugs or costly examinations to the patients who may not really in need. Another problem is that the health care system itself is organized in a direction which emphasizes the role of hospitals. This emphasis

has caused ineffective distribution of medical personnel and has made health care activities inefficient. To solve these problems, the health insurance system also needs reform in the current post-war restoration process as in the case of the social and economic reformation. At the same time, the health care services must be reexamined for efficiency to restore the financial viability of the health care system and to secure the availability of health care to the people.

1-4-5 Organisation of Ministries of Health

In compliance with the Dayton Peace Agreement, health care is provided separately by each entity through the Ministry of Health in the Federation and the Ministry of Health and Social Welfare in Srpska. These Ministries of Health are organized as follows.

Ministry of Health of the Federation of Bosnia and Herzegovina

The following departments are organized in the ministry: Department for Health Insurance (managing insurance funds), Department of Pharmacy (supplying medicines, etc.), Department of Sanitary Inspection (promoting public hygiene), Department for Organization of Health Care (improving medical facilities and providing training), Department of International Relations, Informatics, and Development (managing health care information and collecting statistics), and Department of Legislative and Economic Issues (managing health care related law). Each department has a director who is an assistant to the minister, two advisers to the minister, and other staff members. Procurement and improvement of medical equipment is carried out by the Department for Organization of Health Care.

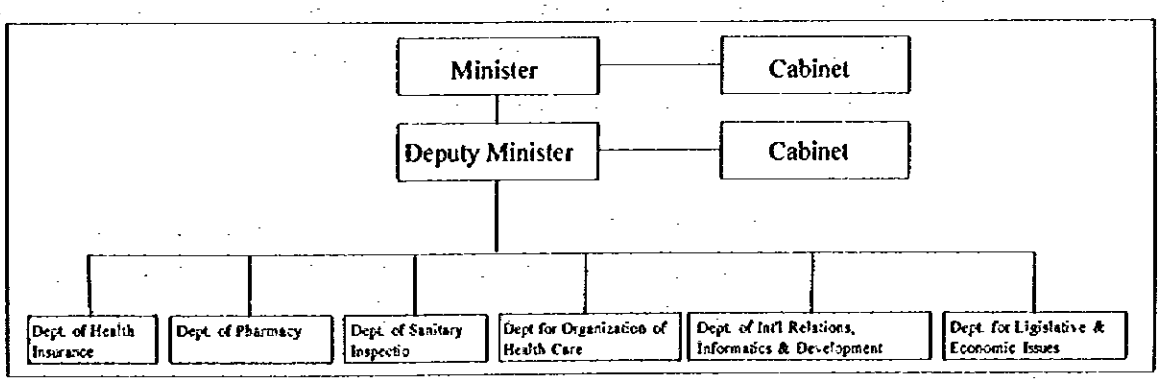

Figure 1-2: Organization of the Ministry of Health of the Federation of Bosnia and Herzegovina

Ministry of Health and Social Welfare of the Republic of Srpska

The following departments are organized in the ministry: Department of Health Insurance (managing insurance funds), Department of Health Service (supplying medicines, etc.), Department of Reconstruction (providing training), and Department of Social Welfare (providing welfare). Procurement and improvement of medical equipment is carried out by the

Programme Implementation Unit for Hospital Projects (PIU). Although the PIU is an organization which is created for the implementation of World Bank projects, this is the only organization which can represent the ministry for the procurement and improvement of medical equipment at the moment.

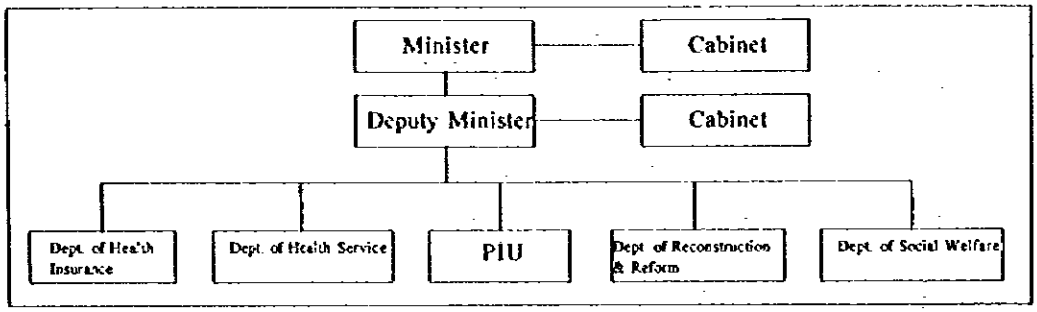

Figure 1-3: Organization of the Ministry of Health and Social Welfare of the Republic of Srpska

1-4-6 Important Health Care Policies

The above mentioned two ministries issued a joint statement to the international community in 1996 and showed their determination that they would promote post-war reconstruction and reform of health care service on the basis of a common principle although administrative responsibility rested on the respective individual entities. In this joint statement, not only reconstruction of the buildings of medical facilities but also reform of the health care system was emphasized in the future of health care. At present, the ministries of both the entities are positively working to improve the efficiency of the health care system so that health care funds can be used effectively. Particularly, both the entities have decided to introduce "Family Medicine Component" as a major policy in health care improvement.

(1) Strengthening PHC

The effectiveness of prevention and treatment activities can be improved by shifting the system from the hospital emphasized direction to another direction in which PHC is emphasized. In this new direction, the improvement of Dom Zdravljas and Ambulantas becomes important.

Dom Zdravlja

Dom Zdravlja is a medical facility which has functions of a poli-clinic and a health center. One Dom Zdravlja is provided in every municipality with an important role of providing primary health care. Specific functions of the Dom Zdravlja are providing general consultation, pre-school health care, in-school health care, women's health care, prevention of tuberculosis, worker's health care, researches in epidemiology, etc. Many Dom Zdravljas are similar to a hospital which is typical in other countries except that most Dom Zdravljas do not have

operation department and hospitalization facility. Each Dom Zdravlja is provided with specialized departments in internal medicine, pediatrics, gynecology and obstetrics, surgery, dentistry, otorhinology, and ophthalmology in addition to a laboratory and a pharmacy. Moreover, Dom Zdravlja provides inoculations, activities for preventing tuberculosis, and hygienic activities such as examining the water quality and the hygiene of the restaurants in the area.

Ambulanta

Ambulanta is a unir which belongs to a Dom Zdravlja. It is typical for an Ambulanta to have a doctor and a nurse, who provide medical services to patients visiting there and health care guidance to the people in the area. Some Ambulantas are located separately away from the respective Dom Zdravljas to which they belong, and others are located integratedly in the Dom Zdravljas to which they belong. While Dom Zdravljas are staffed with a large number of specialists, Ambulantas are not. Therefore, the Ambulantas tend to transfer patients to their respective Dom Zdravljas easily. Furthermore, people tend to visit hospitals directly. As a result, Ambulantas have not functioned as intended.

Current Problems

In order to improve the health care service, it is important that the functions of Dom Zdravljas and Ambulantas be revitalized to strengthen PHC. Dom Zdravljas and Ambulantas are local bases through which PHC services are provided to the people. On this project, Dom Zdravljas are improved to provide effective and efficient services in PHC.

At present, the biggest problem of Dom Zdravljas is a shortage of essential and appropriate medical equipment. Of course, the direct cause of this shortage is the war, another indirect cause of the shortage was the breakdown of the procurement system which functioned to provide medical equipment and services related to procurement. The breakdown resulted from the collapse of former Yugoslavia and the subsequent war. The shortage of medical equipment is hampering the functions of Dom Zdravljas. For the restoration of Dom Zdravljas, X-ray apparatus, laboratory equipment, ambulances, etc. are needed for alleviating the shortage and for replacing the existing equipment which is often old or in bad condition. While the buildings of Dom Zdravljas and Ambulantas which were severely damaged in the war are being reconstructed in the restoration effort carried out by the entities with assistance from other countries, there is little progress in the restoration of the medical equipment. The shortage of medical equipment is clearly seen at every Dom Zdravlja. It is urgent that this problem be solved for the promotion of PHC.

(2) Introduction of Family Medicine Component

In general, the family medicine system is a system in which welfare, health care, and medical service are provided continually and comprehensively in a cooperative and consistent manner on a local basis. The system is based on the participation and cooperation of the following three groups: residents of the community who receive the service, health care workers or medical workers who provide the service, and administrative officials. The core of the service is the practice of cooperative care at PHC level. This cooperative care is characterized by the provision of comprehensive health care to the people in the community. The system offers the first point of access for receiving medical services, which are always available to the people. It also offers patients with chronic diseases continual care on a long term basis including consultations to the families of patients and referral service which refers patients who need specialized care to specialists in respective medical fields.

For the introduction of the family medicine system, both the entities of Bosnia and Herzegovina are providing training to the medical personnel and revising the curricula of medical schools at present. While the personnel are being developed, the model communities where the family medicine system is tried are being added, starting from urban areas such as Sarajevo. This new system is introduced on the basis of the PHC facilities because medical examinations on which treatments are based are performed by these facilities. Especially important are the radiology departments and laboratories of Dom Zdravljas, which offer medical examinations needed for the PHC activities carried out in the respective communities. Therefore, it is important also from the standpoint of the introduction of the family medicine component that the functions of the PHC facilities be improved for laying the basic infrastructure necessary for the system.

1-4-7 Request for Japanese Grant Assistance

On this background, the Japanese government had the Japan International Cooperation Agency (JICA) carry out a sector study in Bosnia and Herzegovina in January, 1997, for the purpose of forming a project in the health care field. During the study, the need of improvement of the PHC facilities was discussed, and the Government of Bosnia and Herzegovina made a request to the Government of Japan for a grant to procure medical equipment to the PHC facilities.

At present, the shortage and dilapidation of the existing medical equipment is a serious problem for all the medical facilities of all the regions in Bosnia and Herzegovina. This serious problem is a heavy burden to the health care budget of the entities. This project, for which a request is made to the Government of Japan for a grant, is to procure medical equipment for the purpose of improving the functions of Dom Zdravljas. In the original request, 121 Dom Zdravljas of the two entities were included for procurement of X-ray apparatus, ultrasound diagnostic equipment, laboratory equipment, ambulances, etc. on the project. However, during the basic design study carried out in July, 1997, the contents of the request were focused and confirmed as Table 1-6.

Table 1-6: Confirmed Items of Equipment in the Request

Federation (Sites / Equipment)	1 BOSOVACA	2 ODZAK	3 KUPRES	4 GRADACAC	5 SIROKI BRIJEG	6 GORNJI VAKUF	7 OLOVO	8 TRAVNIK	9 ZAVIDOVICI	10 VOGOSCA	11 DRVAR	12 BIHAC	13 CELIC	14 GRUDE	Total
RTG apparatus	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Film x-ray developing machine	1	1	1	1	1	1	1		1	1	1	1	1		12
Negatoscope	1	1	1	1	1	1	1		1	1	1	1	1	1	13
Ultrasound	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Spirometer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
ECG, 3ch	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Biochemistry analyzer		1			1			1	1			1			5
Spectrophotometer				1			1		1	1	1		1	1	7
Blood cell counter				1		1	1	1	1	1		1	1		8
Microscope		1		1	1	1	1	1	1	1	1	1	1		11
Centrifuge				1	1	1	1	1	1	1	1	1	1	1	11
Sterilizer	1	1	1	1	1	1	1	1	1	1	1	1	1		13
Balance				1	1	1	1	1	1	1		1	1	1	10
Distiller	1			1	1	1	1	1	1	1		1	1	1	11
Ambulance vehicle	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Defibrillator	1	1	1		1	1	1	1		1	1	1	1	1	12
Reanimation set		1	1	1	1	1	1			1	1	1	1	1	11
Laryngoscope	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Oxygen apparatus, mobile	1	1	1	1	1	1	1	1	1	1		1	1	1	13
Aspirator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Aspirator mobile	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Otoscope	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Needs for complete dental surgery	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14

Srpska (Sites / Equipment)	1 CELINAC	2 KOTOR VAROS	3 MRKONJIC GRAD	4 DOBOJ	5 GRADISKA	6 MODRICA	7 DERVENTA	8 PALE	9 SOKOLAC	10 VISEGRAD	11 GACKO	12 BILECA	13 NEVESINJE	Total
RTG apparatus	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Film x-ray developing machine	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Ultrasound	1	1	1	1	1	1	1	1	1	1	1	1	2	14
ECG	1	1	2	2	1	3	1	4	5	3	1	3	2	29
Spectrophotometer	1	1	1	1	1	1	1			1	1	1	1	11
Blood cell counter	1	1	1	1	1	1	1			1	1		1	10
Microscope	2	2	2	2	2	2	2	1	1	1	1	1	1	20
Centrifuge	2	2	2	2	2	2	2	1	1	1	1	1	1	20
Sterilizer	5	6	6	12	8	10	8	8	12	8		4	6	93
Balance	1	1	1	1	1	1	1	1	1		1		1	11
Distiller	1	1	1	1	1	1	1	1	1		1		1	11
Ambulance vehicle	3	2	2	4	3	3	3	3	2	3	2	4	3	37
Defibrillator	1	1	1	2	1	1	1	1	1	1	1	1	1	14
Complete set of resuscitation	3	1	1	2	1	5	1	2	3	1	1	1	2	24
Instrument for small surgery	9	1	3	3	3	1	3	3	1	2	2	5	3	37
Laryngoscope	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Oxygen apparatus, mobile	1	1	1	1	1	1	1	1						8
Aspirator	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Otoscope	9	4		6	4	10	4	6	15	3	2	3	4	70
Opthalmoscope	3	3	2	4	3	1	3	2	15	2	2	1	4	45
Computer	1	1	1	1	1	3	1	1	2	1	1	1	1	16

Table 1-7: Priorities of the Items Requested

	Sites in Federation													
Number in Minutes of Discussions	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Priority of sites	9	11	13	1	2	7	8	14	12	3	6	5	10	4
	BOSOVACA	ODZAK	KUPRES	GRADACAC	STROKI BRIJEG	GORNJI VAKUF	OLOVO	TRAVNIK	ZAVIDOVICI	VOCOSCA	DRVAR	BIHAC	CELIC	GRUDE
RTG apparatus	A	A	A	A	A	A	A	A	A	A	A	A	D	A
Film x-ray developing machine	A	A	A	A	A	A	A		A	A	A	A	D	
Negatoscope	A	A	A	A	A	A	A		A	A	A	A	D	A
Ultrasound	C	C	C	D	C	D	D	D	D	D	C	D	C	C
Spirometer	C	C	C	D	C	D	D	D	D	D	C	D	C	C
ECG, 3ch	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Biochemistry analyzer		D			D			C	C			C		
Spectrophotometer				C			C		C	C	D		A	D
Blood cell counter				C		C	C	C	C	C		C	A	
Microscope		D		C	D	C	C	C	C	C	D	C	A	
Centrifuge				C	D	C	C	C	C	C	D	C	A	D
Sterilizer	D	D	D	C	D	C	C	C	C	C	D	C	A	
Balance				C	D	C	C	C	C	C		C	A	D
Distiller	D			C	D	C	C	C	C	C		C	A	D
Ambulance vehicle	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Defibrillator	E	E	E		E	E	E	E		E	E	E	E	E
Reanimation set		E	E	E	E	E	E			E	E	E	E	E
Instrument for small surgery														
Laryngoscope	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Oxygen apparatus, mobile	E	E	E	E	E	E	E	E	E	E		E	E	E
Aspirator	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Aspirator mobile	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Otoscope	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Opthalmoscope														
Computer														
Needs for complete dental surgery	F	F	F	F	F	F	F	F	F	F	F	F	F	F

	Sites in Srpska												
	1	2	3	4	5	6	7	8	9	10	11	12	13
	12	9	10	11	13	6	4	7	8	3	2	5	1
	CELINAC	KOTOR VAROS	MRKONJIC GRAD	DOBOJ	GRADISKA	MODRICA	DERVENTA	PALE	SOKOLAC	VISEGRAD	GACKO	BILECA	NEVESINJE
RTG apparatus							D						
Film x-ray developing machine							D						
Negatoscope													
Ultrasound							A						
Spirometer													
ECG, 3ch							B						
Biochemistry analyzer													
Spectrophotometer							C						
Blood cell counter							C						
Microscope							C						
Centrifuge							C						
Sterilizer							J						
Balance							O						
Distiller							M						
Ambulance vehicle							F						
Defibrillator							I						
Reanimation set							E						
Instrument for small surgery							G						
Laryngoscope							K						
Oxygen apparatus, mobile							N						
Aspirator							L						
Aspirator mobile													
Otoscope													
Opthalmoscope													
Computer							H						
Needs for complete dental surgery													

Priority of Sites — Numerical order in the column

Priority of Equipment — Alphabetical order

(1) Facilities Improved on the Project

121 Dom Zdravljas of the two entities were listed in the original request. However, during the discussions, the following points were stressed for the final selection of medical facilities, and 27 Dom Zdravljas were selected for the project.

* Fairness for the two entities and for all the ethnic groups of Bosnia and Herzegovina;
* Implementation of this project with ensured execution and effects;
* Technical study at all the selected Dom Zdravljas in the basic design study with no problem on the route and securit; and
* The size of the selection shall be 25 to 30 Dom Zdravljas.

(2) Medical Equipment Requested

There are some differences between the two entities with respect to the items of medical equipment which are included in the finalized request and to the priorities assigned to these items. However, all the items requested by the two entities can be generally grouped by use in the following categories: X-ray apparatus, laboratory equipment, emergency care equipment, dental care equipment, etc. The highest priority is given to the items which are used in diagnostic examinations performed at Dom Zdravljas. The following table summarizes diseases which can be diagnosed with these items of medical equipment.

Table 1-8 : Summary of Requested diagnostic equipment

Items	Diagnoses	Diseases
X-ray apparatus	diagnostic imaging	Bone fracture, internal injury, tuberculosis, pneumonia, disease of digestive system, etc.
Ultrasound apparatus	ditto	Disease of internal organs, gynecologic disease, etc.
Electrocardiograph	physiological examination	Abnormality of cardiac function
Spirometer	ditto	Physiological examination and general physical checkup, Disease of respiratory system
Biochemical analyzer	specimen analysis	Inflammatory disease, abnormality in renal function and liver function, etc.
Spectrophotometer	ditto	ditto
Blood cell counter	ditto	Hematological abnormality, etc.
Microscope	ditto	Virus infection, anemia, etc.

The above listed diagnoses are important activities of the Dom Zdravljas, which can support the community health care. Therefore, it is clear that the request is directly related to the objectives of the current health care policy of the government, which are the rehabilitation and improvement of the PHC service and the introduction of the family medicine system.

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Objectives of the Project

The Ministries of Health of the two entities of Bosnia and Herzegovina are making their effort to rebuild their health care system from direct and indirect damages which were caused in the war and to make real improvements in future services. The reconstruction and reform should proceed in various aspects of health sector, such as providing medical services in primary through tertiary level, educating medical students and training medical personnel, allocating health insurance fund and other resources, and so on.

The major importance of the improvement in provision of medical services is given to introduction of family medicine component and strengthening of PHC service, and development of adequate hospital functions. These are intended to realize provision of services appropriate for each level of health care and simultaneously to improve the efficiency of health care service.

For the purpose of strengthening the PHC service, it is essential that actions be targeted to improving the functions of Dom Zdravljas and Ambulantas. It is important to take actions to effect renovation or repair of medical facilities and procurement of medical equipment as well as revision of activities carried out there together with reorganization of the staffs. The buildings of Dom Zdravljas and Ambulantas, which were severely damaged in the war, have been being repaired by the governments with international assistance since the signing of the peace agreement. However, most medical facilities are very inadequate in supply of medical equipment, and the existing equipment is old and dilapidating. It is urgent that new supplies of medical equipment be distributed to these facilities. However, the governments are severely limited in purchasing power because of chronic shortage of funds which can be directed to health care service.

On this background, a request for a Japanese grant aid is made regarding procurement of the medical equipment of Dom Zdravljas for the purpose of improving the functions of them. It is considered that such assistance is absolutely necessary and meaningful for improvement of the social condition and the condition of health care in Bosnia and Herzegovina and that this project be realized for both the entities of Bosnia and Herzegovina in order to support the self-effort of both the Ministries of Health.

This project is to improve the functions of Dom Zdravljas and to contribute to the restoration and improvement of the PHC service of Bosnia and Herzegovina. The objectives of the project are as follows.

Objectives of the project

1. To improve the diagnostic functions of Dom Zdravljas, and
2. To secure emergency care which is essential for the provision of community health care.

The goal of the government policy of the restoration and improvement of health care is efficient high quality care, which can be achieved by improving the functions of facilities and strengthening of system of the PHC. With respect to this policy, this project improves the diagnostic function and emergency care function of the PHC service by improving the medical equipment of Dom Zdravljas.

Especially, the diagnostic function including diagnostic imaging, specimen analysis, and physiological examination forms the foundation on which consultations and medical treatments are established. Thus, the improvement of the diagnostic function can produce a maximum effect on the health care service. The project is to improve 27 Dom Zdravljas, and about 800,000 people live in the municipalities where these Dom Zdravljas are located. All these people are the direct beneficiaries of the project.

2-2 Basic Concept of the Project

The primary objective of this project is to improve the diagnostic function of Dom Zdravljas. Specifically, the diagnostic function to be improved includes diagnostic imaging, specimen analysis, and physiological examination, which are essential examinations before providing medical treatments. Thus, the diagnostic function is the foundation of health care in each area, and it will be the core of the health care service in each municipality after "Family Medicine System" is introduced and operational along with the restoration and improvement of the health care system.

On this project, in determination of the items of equipment to be procured other than those requested for improvement of the diagnostic function, the second priority is given to the items which are requested for emergency care. In Bosnia and Herzegovina, emergency centers exist in urban districts such as Sarajevo, but such cases are rare. In other districts, the Dom Zdravljas are the first access point of medical service for any emergency patients. Therefore, for the purpose of providing comprehensive health care in the community, the Dom Zdravljas must maintain not only a function for providing first aid to emergency patients but also a system for transporting patients in serious condition to a hospital of higher level, with a doctor and a nurse accompanying the patient.

2-3 Basic Design

2-3-1 Design Concept

(1) Facilities to be Improved on the Project

121 Dom Zdravljas were included in the original request, however, the basic design study team discussed the concept of project with the Ministries of Health of the two entities, based on fairness for both entities and all the ethnic groups, the ensured execution and effects of the project, the size of selection as 25 to 30 Dom Zdravljas. As the result of this, 27 Dom Zdravljas was selected, and the technical study by the team was performed at all 27 sites. Each of selected

Dom Zdravljas has its own individuality, and each is distinct from others. However, in analysis of the present state of Dom Zdravljas and what is requested by both the entities in accordance with the policies of the Japanese grant aid, it is considered appropriate to include all these 27 Dom Zdravljas to be improved on the project.

(2) Medical Equipment to be Procured

The requested equipment which is finalized by both the Ministries of Health can be generally grouped by use in: X-ray apparatus, laboratory equipment, emergency care equipment, dental care equipment, and others. Both the ministries have given the highest priority to the medical equipment for diagnostic examinations. The purpose of their request is to improve the diagnostic examination and emergency care at Dom Zdravljas, and it reflects the priority needs of their health policy of reconstruction and reform. In reply to this, the project should be designed to support the self effort by the ministries, to contribute to the restoration and improvement of the PHC service strengthening the priority function of Dom Zdravljas, and the unity as one project maintained. Accordingly, the medical equipment to be procured in the project should be selected for the main purposes; to improve the diagnostic function by providing essential equipment for diagnostic imaging, specimen analysis, and physiological examination, and to maintain the emergency care function by providing ambulances and emergency care equipment.

(3) Grade and Specification of Equipment

The equipment to be procured is determined on the basis of necessity in renewing or replacing existing items in dilapidation or in breakdown, and the grade of each item of the equipment is determined appropriately in accordance with the current size of the concerned activities. In fact, the most of requested items are to replace the existing, dilapidating items. The cost of the activities with these items can be sbsorbablein the size of the current budget of Dom Zdravljas. In addition, the maintenance cost may even decrease substantially by replacing the existing equipment which is 30 years old or older. With this consideration, the grade and specifications of each equipment to be procured are determined to make the operation and maintenance cost as low as possible so that the procurement of the equipment will not burden Dom Zdravljas financially. The existing medical equipment are fully utilized by the staffs of Dom Zdravljas, who are highly motivated. There will be no problem in the skills or technical matters of the staff members as long as the grade of each item of the equipment is determined as mentioned previously.

(4) Procurement from a Third Country

Products made in a third country can be included in the determination process so that the supplier can be selected on a fair and optimal basis to allow comparison of a plurality of products in terms of performance, price, and availability and security of the after-sale service, in case few Japanese products meets the conditions regarding the after-sale service such as supply of consumables and service of periodical maintenance work.

(5) Consideration of Local Agents

The items which require technical services provided by the manufacturers or their representatives shall be determined in consideration on the local agents, which represent the manufacturers of the products, in Bosnia and Herzegovina, surrounding countries, or Austria.

(6) Work Schedule

The work schedule of the implementation of this project shall be determined with the consideration that the supply contracts needs to be signed separatelyfor two entities, and that the land transportation and installation work are expected to take place in the winter season.

(7) Monitoring the Condition of Procured Equipment under Japan's Grant

The effects of this project shall be monitored by the Ministries of Health of the two entities to evaluate the effects of the Japanese grant assistance after the implementation. Such indicators as the numbers of specimens tested or of patients examined with the equipment procured on the project shall be recorded, and maintenance reports on the equipment be filled at each Dom Zdravlja. By compiling the information collected in this manner, a report shall be made on the effects of the project by the Ministries of Health to the Japanese side periodically after the implementation.

2-3-2 Basic Design

(1) Overall Plan

The sites of the project are 27 Dom Zdravljas shown below.

	Federation of Bosnia and Herzegovina		Republic of Srpska
1	Busovaca	1	Celinac
2	Olzak	2	Kotor Varos
3	Kupres	3	Mrkonjic Grad
4	Gradacac	4	Doboj
5	Siroki Brijeg	5	Gradiska
6	Gornji Vakuf	6	Modrica
7	Olovo	7	Derventa
8	Travnik	8	Pale
9	Zavidovici	9	Sokolac
10	Vogosca	10	Visegrad
11	Drvar	11	Gacko
12	Bihac	12	Bileca
13	Celic	13	Nevesinje
14	Grude		

Many of these Dom Zdravljas were damaged in the war. However, restoration work is in progress, so there is no serious problem which may hinder the installation of the equipment procured on the project. Only in some sites, some actions shall be taken by the party of Bosnia and Herzegovina on the following points along with the vacation of the existing equipment.

* Making entrance openings and pathways wide enough for putting the equipment through, especially the doors or openings of the X-ray rooms;
* Securing outside vacant lots for unloading the equipment; and
* Making the differences in level of the driveways smooth for ease of moving the equipment.

The work necessary for these matters is borne by the party of Bosnia and Herzegovina. The study team confirmed during the field study the willingness of the Ministries of Health to deal with these matters in connection with the implementation of this project. It is important that the ministry of each entity take necessary actions on these matters as soon as possible because, in the schedule of the implementation of the project, the installation work is planned during winter months for all the 27 sites.

(2) Equipment Plan

In summarizing the basic design study of the project, the following items of medical equipment are planned for procurement against what has been requested. The items and their quantities to be procured for each Dom Zdravlja are determined in consideration of the activities, the size of the activities, and the condition of the existing equipment of the respective Dom Zdravlja. The followings are the items of medical equipment to be procured on the project.

Table 2-1 : Equipment Plan

		Federation	Srpska	Total
Imaging diagnosis	RTG apparatus	14	13	27
	Film x-ray developing machine	11	13	24
	Ultrasound	14	13	27
Physical examination	Spirometer	14	–	14
	ECG	14	13	27
Laboratory testing	Biochemistry analyzer	5	–	5
	Spectrophotometer	5	11	16
	Blood cell counter	7	10	17
	Microscope	7	20	27
	Centrifuge	11	20	31
	Sterilizer	10	19	29
	Balance	10	10	20
	Distiller	10	11	21
Emergency care	Ambulance vehicle	14	11	25
	Defibrillator	12	11	23
	Reanimation set	11	12	23
	Laryngoscope	14	13	27
	Aspirator	14	13	27
Others	Computer	–	13	13

Category 1) Diagnostic imaging

Equipment	Requested	Planning	Contents	
RTG apparatus	27	27	all 27 sites	1 each
Film x-ray developing machine	25	24	24 sites	1 each
Ultrasound	28	27	all 27 sites	1 each
Negatoscope	13	Excluded		

Both the ministries have given the highest priority to the items of medical equipment which are used in diagnostic imaging since the diagnostic imaging by X-ray or ultrasound is most important in the diagnostic function of Dom Zdravljas. The existing equipment of Dom Zdravljas is old and unreliable in precision examinations. Many of the general X-ray apparatus and fluoroscopic apparatus of the 27 Dom Zdravljas are 20 to 30 years old, and many of the fluoroscopic apparatus are not operable. Also, in many Dom Zdravljas, the ultrasound diagnostic apparatus are not operating in good condition, and, in some Dom Zdravljas, no such apparatus are in existence. Only eight Dom Zdravljas have operable apparatus. They are Busovaca, Kupres, Gradacac, Siroki Brijeg and Grude in the Federation, and Gradiska, Sokolac and Bileca in Srpska. However, the ultrasound diagnostic apparatus owned by these eight Dom Zdravljas are more than ten years old. In this condition, the diagnostic function of Dom Zdravljas in internal medicine and gynecology is handicapped by the lack or shortage of such equipment.

X-ray apparatus and Film X-ray developing machine will be procured so as to be in examination of bone fractures and internal injuries or disease of the alimentary system. Ultrasound diagnostic apparatus will also be procured so as to be used in diagnoses in internal medicine and obstetrics and gynecology. Negatoscope, which are requested by the Federation, is excluded because they are considered to be still usable though they are old.

X-ray apparatus shall be as an apparatus of general X-ray imaging and fluoroscopy, in consideration of the objectives of Dom Zdravlja set at the establishment of them, and of the activities which have been carried out since pre-war days. For the ultrasound diagnostic apparatus, an apparatus with appropriate probes shall be selected to satisfy the needs of diagnostic examination in obstetrics and gynecology and pediatrics, which can be performed by doctors of Dom Zdravljas.

One X-ray apparatus and one ultrasound diagnostic apparatus shall be provided to each Dom Zdravlja, and one unit of the film developing machine is planned to be provided to 24 Dom Zdravlja, excluding 3 Dom Zdravljas with film developers in good condition.

The film developing machine to be procured shall be a type which consumes relatively small amounts of developing fluid and fixing solution. This is to limit adverse effect of the liquid waste which comes from the developers to the environment. In addition, each Dom Zdravlja is guided for safe disposal of the liquid waste, which must be diluted before being discharged.

Table 2-2 : Conditions of Existing X-ray Apparatus

			Age Status	Others
FD	1 BOSOVACA	General X-ray imaging Fluoroscopy	30 years Operating 30 years Out of order	Mirror Camera(30 Years, Out of order) Developer(15 Years, Operating)
	2 ODZAK	General X-ray imaging Fluoroscopy	25 years Operating 25 years Out of order	
	3 KUPRES	General X-ray imaging Fluoroscopy	20 years Operating 20 years Out of order	
	4 GRADACAC	General X-ray imaging Fluoroscopy	28 years Operating 28 years Out of order	Mirror Camera(25 Years, Out of order) Developer(3 Years, Operating)
	5 SIROKI BRIJEG	General X-ray imaging Fluoroscopy	Operating Out of order	
	6 GORNJI VAKUF	General X-ray imaging Fluoroscopy	35 years Operating 35 years Out of order	
	7 OLOVO	General X-ray imaging Fluoroscopy	30 years Out of order 30 years Out of order	Mobile X-ray (40 Years, Operating)
	8 TRAVNIK	General X-ray imaging Fluoroscopy	35 years Operating 30 years Operating	<-- mobile Developer(New, Operating)
	9 ZAVIDOVICI	General X-ray imaging Fluoroscopy	15 years Operating Out of order	
	10 VOGOSCA			Mirror Camera(30 Years, Out of order)
	11 DRVAR			
	12 BIHAC	General X-ray imaging Fluoroscopy	20 years Operating 20 years Operating	
	13 CELIC			
	14 GRUDE	General X-ray imaging Fluoroscopy	30 years Operating 30 years Out of order	Developer(Operating)
RS	1 CELINAC	General X-ray imaging Fluoroscopy	15 years Operating 15 years Out of order	
	2 KOTOR VAROS	General X-ray imaging Fluoroscopy	15 years Operating 15 years Out of order	
	3 MRKONJIC GRAD			
	4 DOBOJ	General X-ray imaging Fluoroscopy	15 years Operating 15 years Out of order	
	5 GRADISKA	General X-ray imaging Fluoroscopy	15 years Operating 15 years Out of order	Mirror Camera(25 Years)
	6 MODRICA	General X-ray imaging Fluoroscopy	16 years Operating 16 years Out of order	
	7 DERVENTA	General X-ray imaging Fluoroscopy	Operating Out of order	
	8 PALE	General X-ray imaging Fluoroscopy	5 years Operating	<-- second hand
	9 SOKOLAC	General X-ray imaging Fluoroscopy	35 years Operating 35 years Partially operating	Mirror Camera(30 Years, Operating)
	10 VISEGRAD	General X-ray imaging Fluoroscopy	35 years Operating 17 years Out of order	
	11 GACKO	General X-ray imaging Fluoroscopy	25 years Operating 35 years Out of order	
	12 BILECA	General X-ray imaging Fluoroscopy	35 years Operating 35 years Out of order	
	13 NEVESINJE	General X-ray imaging Fluoroscopy	35 years Operating 35 years Out of order	C arm(25 Years, Operating)

Category 2) Physical examination

Equipment	Requested	Planning	Contents	
Spirometer	14	14	All 14 sites in FD	1 each
ECG	43	27	All 27 sites	1 each

The existing electrocardiographs (ECG) and spirometers of the Dom Zdravljas are quite old, so these items are renewed on the project. Although spirometers are requested only by the Federation, the item of spirometer is included in the procurement. The reason is that spirometers are essential for examination of respiratory disease, and presentation of the result of a physical examination of the respiratory organ is required in acquiring a health insurance policy in the entity. There has not been any renewal in recent years even though pulmonary function tests are needed that way. The existing spirometers are more than 20 years old.

3 channel type and mobile single channel type are requested as ECG apparatus in the original request, however, the former is preferable as a physical examination equipment, and ECG procured in the project is specified as to 3 channel type. The specifications of the spirometer shall be one which satisfies the minimum number of test items of respiratory function which are necessary for conducting a screening test.

14 ECGs have been requested by the Federation side; 1 for each of 14 Dom Zdravljas, and 29 by Srpska side; for each Dom Zdravlja and their Ambulanta. The number of ECGs procured in the project should be limited as equipment for Dom Zdravljas because of the concept of the project under Japanese grant assistance. 27 ECGs should be procured for all 27 Dom Zdravljas of both sides; 1 for each of them. 14 spirometers should be procured for 14 Dom Zdravljas of the Federation; 1 for each of them.

Category 3) Laboratory testing

Equipment	Requested	Planning	Contents	
Biochemistry analyzer	5	5	5 sites in FD	1 each
Spectrophotometer	18	16	5 sites in FD, 11 sites in RS	1 each
Blood cell counter	18	17	7 sites in FD, 10 sites in RS	1 each
Microscope	31	27	7 sites in FD, 6 sites in easten area of RS	1 each
			7 sites in western area of RS	2 each
Centrifuge	31	31	11 sites in FD, 6 sites in easten area of RS	1 each
			7 sites in western area of RS	2 each
Sterilizer	106	29	10 sites in FD, 5 sites in easten area of RS	1 each
			7 sites in western area of RS	2 each
Balance	21	20	10 sites in FD, 10 sites in RS	1 each
Distiller	22	21	10 sites in FD, 11 sites in RS	1 each

Specimen analysis is essential for diagnosing pyrexia and inflammatory disease, renal and hepatic insufficiency, etc. These examinations are necessary not only for providing primary care but also for obtaining medical data of patients which can be referred to a hospital of higher level. They are precision analysis which supports the diagnostic function of Dom Zdravljas along with the diagnostic imaging. The existing respective items of equipment are quite old and in need of renewal. Especially, the existing spectrophotometers are not operable in many Dom Zdravljas, so colorimeters are used instead, which is an inefficient way of analysis. Each of the 27 Dom

Zdravljas has laboratory technicians, and ten of them have laboratory doctors. General analysis, biochemical analysis, hematological analysis, etc. are eagerly performed by these staffs. The equipment of some Dom Zdravljas was damaged or lost in the war. The laboratories of Dom Zdravljas are in urgent need of analytic equipment. It is clearly seen in the effort shown by these laboratory staffs in contriving from what was left in use to maintain the laboratory function. In the study, the operability of the existing equipment was checked, and the result is listed in Table 2-3. Even though some items of the equipment are listed as operable, most are quite old and inaccurate in measurement. This project procures respective equipment to Dom Zdravljas whose existing items of equipment need renewal or which lack essential items necessary for analysis.

Table 2-3 : Conditions of Laboratory Equipment

Federation

	Blood cell counter		Spectrophotometer		Biochemistry Analyzer		Microscope	
	operability	planning	operability	planning	operability	planning	operability	planning
1 BOSOVACA	○		○				○	
2 ODZAK	○		○			1	●	1
3 KUPRES	○		○				○	
4 GRADACAC	○		○				○	
5 SIROKI BRIJEG	○		○			1	○	
6 GORNJI VAKUF		1	○				○	
7 OLOVO		1		1			●	1
8 TRAVNIK		1	○			1	○	
9 ZAVIDOVICI	●	1	○			1	●	1
10 VOGOSCA		1		1			●	1
11 DRVAR	○			1			●	1
12 BIHAC	●	1	○			1	●	1
13 CELIC		1		1			●	1
14 GRUDE	○		●	1			○	
Sub Total		7		5		5		7

Srpska

1 CELINAC		1	●	1		●	2
2 KOTOR VAROS		1		1		●	2
3 MRKONJIC GRAD		1	●	1		●	2
4 DOBOJ		1	●	1		●	2
5 GRADISKA		1	●	1		●	2
6 MODRICA		1	●	1		●	2
7 DERVENTA	●	1	●	1		●	2
8 PALE	○		○			●	1
9 SOKOLAC	○		○			●	1
10 VISEGRAD		1		1		●	1
11 GACKO		1	●	1		●	1
12 BILECA	○		●	1		●	1
13 NEVESINJE		1	●	1		●	1
Sub Total		10		11			20

Total	17	16	5	27

Conditions : ○ : Operating, ● : Renewal needed, Empty : Lacking

The equipment for laboratory testing; biochemistry analyzer, spectrophotometer, blood cell counter, and microscope; and centrifuge which is essential for preparing specimen, are included in the project as the replacement of old equipment. Other requested items; sterilizer, distiller, and balance are planned for procurement as the replacement of the existing equipment in breakdown and not repairable, since the effects of their performance on the measurements or analyses are not as direct as the analyzer equipment, though they are essential as well in the laboratory.

The type of biochemistry analyzer shall be semi-automatic which accepts the nomal reagent so that the operating cost will not burden, and which meets the minimum number of testing parameters in the laboratory of Dom Zdravljas. The specifications of the spectrophotometer shall be manual type and also accepts the nomal reagent. The specifications of the blood cell counter shall satisfy at least the minimum number of test items (i.e., measurements of white blood cell count, red blood cell count, hemoglobin, hematocrit, erythrocyte volume, hemoglobin volume, hemoglobin concentration, platelets) which are required in the present blood examination performed in Dom Zdravljas. The microscopes shall be a general type which is equipped with objectives of x4, x10, x20, and x100 and an eye lens of x10.

Category 4) Emergency care

Equipment	Requested	Planning	Contents	
Ambulance vehicle	51	25	14 sites in FD, 11 sites in RS	1 each
Defibrillator	26	23	12 sites in FD, 11 sites in RS	1 each
Reanimation set	35	23	11 sites in FD, 12 sites in RS	1 each
Laryngoscope	27	27	14 sites in FD, 13 sites in RS	1 each
Aspirator	27	27	14 sites in FD, 13 sites in RS	1 each
Instrument for small surgery	37	Excluded		
Oxygen apparatus, mobile	21	Excluded		
Aspirator mobile	14	Excluded		
Otoscope	84	Excluded		
Opthalmoscope	45	Excluded		

In analysis of the condition of Dom Zdravljas and the activities in demand, ambulance vehicles and emergency care equipment are planned for procurement. The request for oxygen cylinders is turned down because they are locally available. Also, the request for mobile aspirators made only by the Federation and the request for instrument sets for small surgery made by Srpska are turned down. Also, the request for otoscopes and ophthalmoscopes is turned down because they are not used in emergency care but rather used in other specialized care.

The specifications of the ambulance vehicle to be procured are determined in consideration of the staff organizations and technical levels of Dom Zdravljas and in accordance with the use which is to transport patients to regional hospitals. Thus, the ambulances are equipped with limited features including a stretcher and hooks for infusion bottles, to satisfy only the essential needs.

As for the request for defibrillators, resuscitation set, laryngoscope, and aspirators, those requested for some Ambulantas by Srpska are excluded from the procurement, and the items determined not needed for Dom Zdravljas of the Federation in consideration of the condition of the existing equipment are also excluded from the procurement.

Ambulance vehicles are stationed at all Dom Zdravljas. As for 27 Dom Zdravljas which are to be improved on the project, only one or two ambulances are in operation at each Dom Zdravlja. Ambulances were used heavily during the war. In this condition, ambulances are prone to breakdown and not easily repairable. This project procures an ambulance vehicle to renew an existing vehicle or to add an new vehicle to Dom Zdravljas which are in need based on the analysis on the condition of the existing vehicles and the burden of patient transportation. This project will not procure vehicles in the quantities which can meet the general needs of each Dom Zdravlja, but it will procure only one vehicle to each Dom Zdravlja to renew one of the old vehicles or to alleviate the shortage.

The followings are the conditions used in the analysis deciding the procurement of an ambulance for each Dom Zdravlja, and the result of the analysis indicates.

Conditions Applied in the Analysis:

A. Condition of the ambulances in operation
(years of use, vehicle models, and the number of vehicles); and

B. Burden on transportation
(distance to reagional hospital, road condition, and the number of vehicles).

Appropriateness of the Procurement:

① Replacement of old vehicle is needed:	14 Dom Zdravljas
② Adequate type of vehicle is needed :	2 Dom Zdravljas
③ Special consideration on location and accessibility leads the necessity of new supply :	1 Dom Zdravlja
④ Necessity of alleviating of burden leads the necessity of new supply:	8 Dom Zdravljas
	Total: 25 Dom Zdravljas

As seen above, this project procures ambulance vehicles to 25 Dom Zdravljas, one vehicle to each Dom Zdravlja. The results of the analysis and the appropriateness of the procurement are shown in table 2-4.

Table 2-4: Justification of Ambulance Vehicle

	A. Vehicle Condition			B. Transportation burden		
	Age	Q'ty	Type	Distance	Access	Reason of Procurement
FD-1 BOSOVACA	C	1	not adequate	24 km		① Replacement of old vehicle
FD-2 ODZAK	C	1	not adequate	50 km	entity boarder	
FD-4 GRADACAC	C	3		60 km		
FD-5 SIROKI BRIJEG	C	2		23 km		
FD-6 GORNJI VAKUF	C	1		80 km		
FD-7 OLOVO	C	1		60 km		
FD-8 TRAVNIK	C	6		10 km		
FD-11 DRVAR	C	1		110 km		
FD-12 BIHAC	C	2	not adequate	3 km		
RS-5 GRADISKA	C	2		20 km		
RS-6 MODRICA	C	1		50 km		
RS-9 SOKOLAC	C	2		76 km		
RS-11 GACKO	C	2		70 km		
RS-12 BILECA	C	1		28 km		
RS-1 CELINAC	B	1	not adequate	15 km		② Adequate type of vehicle needed
FD-10 VOGOSCA	A	1	not adequate	8 km		
FD-13 CELIC	A	1		18 km	entity boarder	③ Special consideration on location
						④ Ttransportation burden
RS-13 NEVESINJE	A	1		134 km		(1) Over 100km, only 1 vehicle
RS-10 VISEGRAD	A	1		92 km		
FD-3 KUPRES	B	1		48 km		(2) Bad accessibility, only 1 vehicle
FD-14 GRUDE	B	1		40 km		
RS-8 PALE	A	1		40 km		
FD-9 ZAVIDOVICI	B	2		70 km		(3) Age, q'ty and distance
RS-3 MRKONJIC GRAD	B	1		64 km		
RS-7 DERVENTA	B	1		42 km		
RS-2 KOTOR VAROS	B	2		35 km		Excluded
RS-4 DOBOJ	B	8		5 km		

Age A : less than 10 years, B : 10 - 15 years, C : more than 15 years

Category 5) Others

Equipment	Requested	Planning	Contents	
Computer	16	13	All 13 sites in RS	1 each
Needs for complete dental surgery	14	Excluded		

Dental surgical sets are requested by the Federation, this request is turned down. The reasons are that the priority for this item is set at the lowest and that private clinics are expected to grow in the field of oral surgery.

Computers shall be procured as requested by Srpska even though this item is not used for treating patients. In the field study, the need of computers was confirmed. The number of computers installed in Dom Zdravlja of Srpska is significantly smaller than that of the Federation. Computers are useful for keeping the clinical records of patients, and such records are helpful for preparing statistical analysis. The function of collecting medical data in the health care system has not been restored yet, so the procurement of computers will make a great contribution to creating medical statistics.

Tables 2-5 and 2-6 contrast the contents of the equipment plan of each Dom Zdravlja and outline of items of planned equipment in the project.

Table 2-5 : Equipment Plan of each Dom Zdravlja

		Federation of Bosnia and Herzegovina														
		1 BOSOVACA	2 ODZAK	3 KUPRES	4 GRADACAC	5 SIROKI BRIJEG	6 GORNJI VAKUF	7 OLOVO	8 TRAVNIK	9 ZAVIDOVICI	10 VOGOSCA	11 DRVAR	12 BIHAC	13 CELIC	14 GRUDE	Total
RTG apparatus	F 01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Film x-ray developing machine	F 02	1	1	1		1	1	1		1	1	1	1	1		11
Ultrasound	F 03	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Spirometer	F 04	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
ECG	F 05	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Biochemistry analyzer	F 06		1			1			1	1			1			5
Spectrophotometer	F 07							1			1	1		1	1	5
Blood cell counter	F 08						1	1	1	1	1		1	1		7
Microscope	F 09		1					1		1	1	1	1	1		7
Centrifuge	F 10				1	1	1	1	1	1	1	1	1	1	1	11
Sterilizer	F 11	1				1	1	1	1	1	1	1	1	1		10
Balance	F 12				1	1	1	1	1	1	1		1	1	1	10
Distiller	F 13	1			1	1		1	1	1	1		1	1	1	10
Ambulance vehicle	F 14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Defibrillator	F 15	1	1	1		1	1	1	1		1	1	1	1	1	12
Reanimation set	F 16		1	1	1	1	1	1			1	1	1	1	1	11
Laryngoscope	F 17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
Aspirator	F 18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14

		Republic of Srpska													
		1 CELINAC	2 KOTOR VAROS	3 MRKONJIC GRAD	4 DOBOJ	5 GRADISKA	6 MODRICA	7 DERVENTA	8 PALE	9 SOKOLAC	10 VISEGRAD	11 GACKO	12 BILECA	13 NEVESINJE	Total
RTG apparatus	S 01	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Film x-ray developing machine	S 02	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Ultrasound	S 03	1	1	1	1	1	1	1	1	1	1	1	1	1	13
ECG	S 04	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Spectrophotometer	S 05	1	1	1	1	1	1	1			1	1	1	1	11
Blood cell counter	S 06	1	1	1	1	1	1	1			1	1		1	10
Microscope	S 07	2	2	2	2	2	2	2	1	1	1	1	1	1	20
Centrifuge	S 08	2	2	2	2	2	2	2	1	1	1	1	1	1	20
Sterilizer	S 09	2	2	2	2	2	2	2	1	1	1		1	1	19
Balance	S 10	1	1	1	1	1	1	1	1	1				1	10
Distiller	S 11	1	1	1	1	1	1	1	1	1		1		1	11
Ambulance vehicle	S 12	1		1		1	1	1	1	1	1	1	1	1	11
Defibrillator	S 13	1	1	1	1	1	1	1	1		1	1		1	11
Reanimation set	S 14	1	1	1	1	1	1	1	1		1	1	1	1	12
Laryngoscope	S 15	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Aspirator	S 16	1	1	1	1	1	1	1	1	1	1	1	1	1	13
Computer	S 17	1	1	1	1	1	1	1	1	1	1	1	1	1	13

Table 2-6 : Outline of Items of Equipment

Equipment	HD	RS	Total	Component	Purpose
RTG apparatus	14	13	27	Fluoroscopy table, bucky stand, Floating bucky table Controll remote, local Floor loading support	Internal diseases, Borne fractures
Film x-ray developing machine	11	13	24	Table top type Processor, developer, fixer	Processing of X-ray film
Ultrasound	14	13	27	General purpose type Liner, convex, micro convex probe Printer	Diagnosis for obstetrics & gynecology, internal medicine
Spirometer	14	--	14	Portable type Measuring range 0 to ±15L Parameters VC, FVC, others Thermal printer	General examination Respiratory disease
ECG	14	13	27	3 channel Cable rack, mobile cart	Examination of heat function
Biochemistry analyzer	5	--	5	UV to Visual Continuos measuring (sipper) End point & kynetics	Blood or urine testing for function of kidney, liver
Spectrophotometer	5	11	16	UV to Visual Manual measuring (cuvette) End point & kynetics	Blood or urine testing for function of kidney, liver (for less number of testing)
Blood cell counter	7	10	17	8 parameters	Blood testing
Microscope	7	20	27	Eyepiece lens, objective lens Halogen lamp Adjustable light intensity Mechanical stage	Examination for anaemia, virus diseases
Centrifuge	11	20	31	Table top Approx. 5000rpm, angle roter	Separating of testing sample of blood, urine
Sterilizer	10	19	29	Dry heat type Capacity approx. 500 x 500 x 600mm Temparature range 10 to 250°C	Sterilizing of laboratory instruments
Balance	10	10	20	Range approx. 400g Readability 0.001g Digital Display	Preparation of reagents
Distiller	10	11	21	Backmann type Single distillation Approx. 5L/hour capacity	Washing of laboratory instruments Mixing reagents
Ambulance vehicle	14	11	25	Diesel engine type Displacement approx. 2400cc Stretcher, IV hook, oxygen inspirator	Transportation of patients
Defibrillator	12	11	23	Main unit, ECG monitor, printer Mobile cart	Resuscitating of heart stop
Reanimation set	11	12	23	Airway tube, Resuscitator, Foot suction, others	Resuscitating of emergent patients
Laryngoscope	14	13	27	Blades for adult and children Battery type	Insurtion of endotracheal tube
Aspirator	14	13	27	Capacity approx. 45L/min. Bottle approx. 3000ml x 1pc.	Suction of sputum or blood of emergent patient
Computer	--	13	13	Desk top IBM compatible, ink jet printer	Management of medical statistics

Chapter 3 Implementation Plan

Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Concept

This project shall be formally implemented in accordance with the system of the Japanese Government's Grant Aid Assistance after a grant for the project is approved by the Government of Japan, and an Exchange of Notes (E/N) is signed by the Government of Bosnia and Herzegovina and the Government of Japan.

After the signing of an E/N, an agreement for consultant services shall be signed between the Ministries of Health of the two entities of Bosnia and Herzegovina and a Japanese consultant firm who is recommended by the Japan International Cooperation Agency (JICA) in compliance with the system of the Japanese Government's Grant Aid Assistance. This agreement becomes effective after it is verified by the Government of Japan. Then, the consultant firm shall design this project in detail, prepare tender documents and biddings, and monitor the implementation of the project.

The procurement of the equipment planned for the project shall be carried out by a Japanese supplier who has won the bidding and has signed an agreement with the Ministries of Health of both the entities. This agreement also needs verification by the Government of Japan to become effective. The supplier shall carry out the procurement including the delivery and installation of the equipment. He shall also provide technical instructions for operation and maintenance of the equipment and shall prepare technical documents such as manuals and a list of manufactures and representatives, which are useful for maintaining the equipment in good condition.

The Ministers of Health of the two entities are the signers of the above mentioned agreements, and the executing agencies of the project are shown as below.

Federation of Bosnia and Herzegovina :	Department for Organization of Health Care, Federation Ministry of Health
Republic of Srpska :	Srpska Ministry of Health and Social Welfare

3-1-2 Implementation Conditions

The inland transportation and installation of the equipment is expected to take place in the winter. Heavy snowing might disturb the transportation of the equipment and the movement of engineers and workers who carry out the project, lowering the efficiency of performance. Therefore, each stage of the implementation shall be arranged to have a sufficient time period so that the project will complete smoothly by the completion date specified in the E/N.

3-1-3 Scope of Work

The Government of Japan:

① bears the cost for procuring the equipment on the project;
② bears the cost for transporting the equipment to each Dom Zdravlja including the cost for marine and land transportation;
③ bears the cost for installing and setting up the equipment; and
④ bears the cost for providing technical instructions on the test runs, inspections, operation, and maintenance of the equipment.

The Ministries of Health of both the entities of Bosnia and Herzegovina:

① provides information and data necessary for the installation of the equipment;
② removes the existing old equipment and prepare physical conditions of the rooms where the procured equipment shall be installed;
③ secure the unloading space of the equipment;
④ provides temporary storage for the equipment upon arrival until the installation; and
⑤ prepare the physical conditions of the entrance, doorways and others to carry the equipment in smotthly.

3-1-4 Consultant Supervision

After carrying out the bidding, which selects a Japanese supplier as mentioned above, the Japanese consultant shall provide supervisory work on the project to ensure smooth execution of the procurement and installation of the equipment.

This supervisory work includes, first of all, verification of the items which are supplied by the supplier. The consultant checks the items whether they are in compliance with the design documents of the agreement. Secondly, the consultant carries out pre-shipment inspections on the equipment, if necessary. As for transporting the equipment, it is important to pay attention to the days which are spent for packing and transporting the equipment and for clearing the customs. On this matter, the consultant provides guidance, advice, and supervision to the supplier. While the equipment is being installed, the consultant monitors the condition of the sites and provides advice and guidance to the executing agencies of the two entities of Bosnia and Herzegovina and to the supplier. Also, the consultant shall report the progress of the project to the authorities of the governments who are concerned on the project.

While the equipment is being installed, a small training session shall be held for staff members who are going to operate and maintain the equipment. In this training, instructions are given specifically on the items whose operation and maintenance requires such training. The consultant shall arrange this training session in consultation with the executing agencies of both the entities of Bosnia and Herzegovina and the supplier so that this training will be sufficient to bring out effective use of the equipment.

The consultant shall consist of five engineers including a project manager, an equipment planner, a facility planner, a cost estimation engineer, and an interpreter.

3-1-5 Procurement Plan

(1) Local Procurement

Having been studied the social condition as well as the market condition in Bosnia and Herzegovina, it is preferable that the ambulance vehicles and the computers be products made in Japan or in any other foreign country. These items are available through local representatives, so, by procuring them locally, some part of the cost otherwise spent for the transportation of the equipment shall be saved.

(2) Procurement from Other Countries

In consideration of the condition of the medical equipment market and products available in the market in Bosnia and Herzegovina, the items listed below shall be products of Japan or of any other country.

RTG apparatus	Film developing machine	Ultrasound	Biochemistry analyzer
Spectrophotometer	Blood cell counter	ECG	Defibrillator Spirometer
Ambulance vehicle	Computer		

(3) Transportation Period

The products made in Japan which are procured on the project shall be packaged separately for each Dom Zdravlja and shipped to Hamburg. From there, these products are transported over the land to each respective Dom Zdravlja. The products made in other countries shall be also gathered in Hamburg first and then transported to each respective Dom Zdravlja. It takes about five weeks to transport the equipment by sea from Japan to Hamburg. Then, about three weeks shall be needed for the land transportation from there to each Dom Zdravlja including the customs clearance of the equipment.

3-1-6 Implementation Schedule

(1) Detailed Design Work

The consultant starts designing the project in detail immediately after the agreement of consultant service which is signed by the Ministries of Health of both the entities of Bosnia and Herzegovina is verified by the Government of Japan. The consultant compiles a set of tender documents including detailed project design, technical specifications, and tender instructions in consultation with both the Ministries of Health. This set of tender documents shall be approved by the party of Bosnia and Herzegovina. This detailed design work takes about two and a half months.

(2) Tender-related Work

The preparation for a bidding to select the supplier and the actual bidding are carried out in the following order: publicizing the bidding, distributing the tender documents, receiving tenders,

evaluating the tenders, nominating a supplier, and signing an agreement with the supplier for the procurement. This procedure shall be carried out for each of the two entities, so this tender-related work takes about two months.

(3) Equipment Procurement and Installation Work

After the agreement signed between the Ministries of Health of both the entities and the supplier is verified by the Government of Japan, the supplier starts procuring the equipment. It will take about ten months from the start of the procurement to the handing of the equipment to the Ministries of Health of both the entities.

The implementation schedule of this project is diagrammed in the next page. In the schedule, the implementation of the project starts at the signing of an Exchange of Notes and ends at the handing of the equipment.

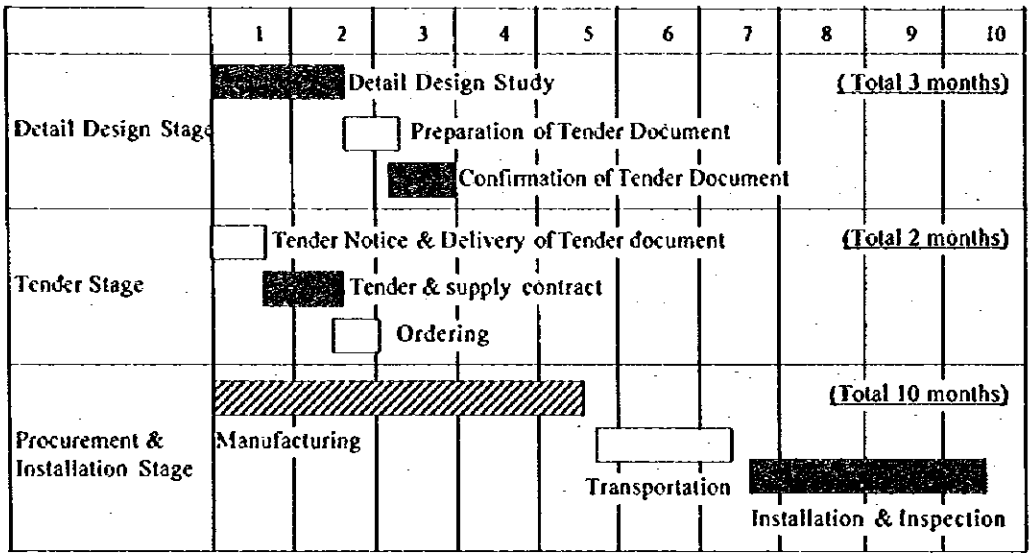

Figure 3-1 : Schedule of Implementation of the Project

3-1-7 Obligations of Recipient Country

The matters to be implemented for this project by the Bosnia and Herzegovina side are as follows.

① Presenting information and data necessary for the implementation of the project;
② Arranging smooth unloading, customs clearance and inland transportation of the equipment in Bosnia and herzegovina;
③ Exempting persons concerned with procurement of the equipment and related services from customs duties and various taxes;
④ Providing convenience to Japanese nationals who way bring in some equipment to carry out work and services on the project and taking security measures for them;
⑤ Bearing costs and expenses for Banking Arrangement (B/A) and Authorization to Pay (A/P) procedures;
⑥ Assigning personnel and appropriating funds for effective implementation of the project (to meet operation and maintenance cost of the equipment);

⑦ Providing technical training for the staff to handle the equipment effectively;
⑧ Granting permission, licenses and other certificates required for implementation of the project;
⑨ Bearing costs and expenses involved in the above duty and tax exemption;
⑩ Collecting data to report how the equipment is being used after the completion of the project; and.
⑪ Bearing costs and expenses which may arise while implementing the project and which have not been specified in this report.

3-2 Project Cost Estimation

The cost for implementing this project is shared by the Governments of the two entities of Bosnia and Herzegovina and the Government of Japan as follows.

Japanese side : Cost for designing the project in detail and procuring the equipment

Bosnia and Herzegovina side:

(Work cost on each DZ)	
(1) Removing of existing equipment	500 DEM
(2) Room adjustment	1,000 DEM
(3) Room cleaning	450 DEM
Amount	1,950 DEM
(Total Cost)	
Federation (1,950 DEM x 14 sites)	27,300 DEM
Srpska (1,950 DEM x 13 sites)	25,350 DEM
Total	52,650 DEM

Cost Estimation Conditions

Estimated in:	October 1997
Ordering method:	bundled in a lot
Others:	this project shall be implemented in compliance with the system of grant assistance of the Government of Japan.

3-3 Operation and Maintenance Cost

The annual cost for the operation and maintenance of main items; X-ray apparatus, Film developing machine, Ultrasoun, Biochemistry analyzer, Spectrophotometer and Blood cell counter; on this project is estimated as follows. The estimation of the annual cost is executed from the two aspects: the maintenance cost, which is spent to maintain the equipment; and the operation cost, which is spent to perform examinations with the equipment.

Maintenance Cost (including the cost for receiving after-sale service and spare parts)

The maintenance cost includes the cost for receiving maintenance service and the purchasing spare parts. The service shall be provided periodically once or twice a year by the manufacturers or their representatives and some parts are replaced as needed. The price of each part which should be replaced periodically is divided by the number of years, and then assigned to a respective year. The base of the estimation is shown in Table 3-1.

Table 3-1: Estimation Base of Maintenance Cost

Equipment	DEM conversion			Estimation (,000 Yen)					
	Total Cost a' + b'	Service Cost a'	Parts Cost b'	Service Cost a	Parts Cost b	item & period		per unit	per year
RTG apparatus	8,571.43	2,857.14	5,714.29	200.00	400.00	X-ray tune(2)	5	2,000.00	400.00
Film developing machine	1,000.00	714.29	285.71	50.00	20.00	Roller kit	5	50.00	10.00
						Gear kit	5	50.00	10.00
Ultrasound	7,142.86	1,428.57	5,714.29	100.00	400.00	Probe A	5	1,000.00	200.00
						Probe B	5	1,000.00	200.00
ECG	740.72	571.43	169.29	40.00	11.85	Patient cable	2	17.00	8.50
						Limb electrode	2	2.10	1.05
						Strap	2	2.40	1.20
						Chest electrode	2	2.20	1.10
Biochemistry analyzer	2,292.86	1,142.86	1,150.00	80.00	80.50	Ribbon	0.2	4.00	20.00
						Lamp	2	6.00	3.00
						Tangsten lamp	2	95.00	47.50
						Cell	10	17.00	1.70
						Cell holder	10	83.00	8.30
Spectrophotometer	2,292.86	1,142.86	1,150.00	80.00	80.50	Ribbon	0.2	4.00	20.00
						Lamp	2	6.00	3.00
						Tangsten lamp	2	95.00	47.50
						Cell	10	17.00	1.70
						Cell holder	10	83.00	8.30
Blood cell counter	1,880.00	1,142.86	737.14	80.00	51.60	Transducer	2	76.00	38.00
						Solenoid valve	2	20.00	10.00
						Thermostat	10	6.00	0.60
						Pinch Valve	10	10.00	1.00
						Vacuum pump	10	20.00	2.00

Operation Cost

The operation cost includes the cost of consumables to perform each examination. It is estimated from the general unit prices of consumables. The estimation base is shown in Table 3-2.

Table 3-2 : Estimation Base of Operation Cost

	DEM	Estimation (,000 Yen)					
		Total Price	Contents		Price	Unit	
			Amount per test			Spec	Price
RTG apparatus	6.43	0.450	Film	1 pc	0.450	1 pc	0.450
Film developing machine	0.14	0.010	Developer / Fixer		0.010		
Ultrasound	3.29	0.230	Gel	15 mg	0.180	250 mg	3.000
			Recording paper	3 pcs	0.050	200 pcs	3.500
ECG	0.41	0.029	Recording paper	0.5 m	0.028	250 m	14.000
			Cream	0.015 g	0.001	200 g	10.000
Biochemical analyzer	0.07	0.005	Recording paper	1 pc	0.005	2000 pcs	10.000
Spectrophotometer	0.07	0.005	Recording paper	1 pc	0.005	2000 pcs	10.000
Blood cell counter	0.66	0.046	Reagent- diluent	1 test	0.004	1600 tests	6.000
			cleaning	1 test	0.004	5000 tests	22.000
			lysing	1 test	0.002	5000 tests	10.000
			Calibration	1 test	0.008	1600 tests	13.000
			Recording paper	0.5 m	0.028	250 m	14.000

Tables 3-3 and 3-4 show the estimations which are made, on the basis, for the annual maintenance cost and the annual operation cost. The annual operation cost is estimated on the

assumption that the number of examinations performed by the Dom Zdravljas will increase by one and a half or two times the current number. Even though the actual number of examinations performed at each Dom Zdravlja differs from those of others, the same number is applied to the estimation here.

Table 3-3 : Estimation of Maintenance Cost (DEM)

Equipment	RTG	Developer	Ultrasound	ECG	B. analyzer	Spectro	B. C. C.	
Maintenance service	2,857	714	1,429	571	1,143	1,143	1,143	
Cost of parts	5,714	286	5,714	169	1,150	1,150	737	
Total cost	8,571	1,000	7,143	741	2,293	2,293	1,880	
Sites	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost
1 BOSOVACA	8,571	1,000	7,143					16,714
2 ODZAK	8,571	1,000	7,143	741	2,293			19,748
3 KUPRES	8,571	1,000	7,143	741				17,455
4 GRADACAC	8,571		7,143	741				16,455
5 SIROKI BRIJEG	8,571	1,000	7,143	741	2,293			19,748
6 GORNJI VAKUF	8,571	1,000	7,143	741			1,880	19,335
7 OLOVO	8,571	1,000	7,143	741		2,293	1,880	21,628
8 TRAVNIK	8,571		7,143	741	2,293		1,880	20,628
9 ZAVIDOVICI	8,571	1,000	7,143	741	2,293		1,880	21,628
10 VOGOSCA	8,571	1,000	7,143	741		2,293	1,880	21,628
11 DRVAR	8,571	1,000	7,143	741		2,293		19,748
12 BIHAC	8,571	1,000	7,143	741	2,293		1,880	21,628
13 CELIC	8,571	1,000	7,143	741		2,293	1,880	21,628
14 GRUDE	8,571		7,143	741		2,293		18,748
FD Total	119,994	11,000	100,002	9,633	11,465	11,465	13,160	276,719
1 CELINAC	8,571	1,000	7,143	741		2,293	1,880	21,628
2 KOTOR VAROS	8,571	1,000	7,143	741		2,293	1,880	21,628
3 MRKONJIC GRAD	8,571	1,000	7,143	741		2,293	1,880	21,628
4 DOBOJ	8,571	1,000	7,143	741		2,293	1,880	21,628
5 GRADISKA	8,571	1,000	7,143	741		2,293	1,880	21,628
6 MODRICA	8,571	1,000	7,143	741		2,293	1,880	21,628
7 DERVENTA	8,571	1,000	7,143	741		2,293	1,880	21,628
8 PALE	8,571	1,000	7,143	741				17,455
9 SOKOLAC	8,571	1,000	7,143	741				17,455
10 VISEGRAD	8,571	1,000	7,143	741		2,293	1,880	21,628
11 GACKO	8,571	1,000	7,143	741		2,293	1,880	21,628
12 BILECA	8,571	1,000	7,143	741		2,293		19,748
13 NEVESINJE	8,571	1,000	7,143	741		2,293	1,880	21,628
RS Total	111,423	13,000	92,859	9,633		25,223	18,800	270,938
Total	231,417	24,000	192,861	19,266	11,465	36,688	31,960	547,657

Table 3-4 : Estimation of Operation Cost (DEM)

Equipment	RTG	Developer	Ultrasound	ECG	B. analyzer	Spectro	B.C.C.	
Cost per test	6.43	0.14	3.29	0.41	0.07	0.07	0.66	
Number of test	480	480	240	240	600	600	600	
Cost for a year	3,086	67	790	98	42	42	396	
Sites	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Total
1 BOSOVACA	3,086	67	790	98				4,041
2 ODZAK	3,086	67	790	98	42			4,083
3 KUPRES	3,086	67	790	98				4,041
4 GRADACAC	3,086		790	98				3,974
5 SIROKI BRIJEG	3,086	67	790	98	42			4,083
6 GORNJI VAKUF	3,086	67	790	98			396	4,437
7 OLOVO	3,086	67	790	98		42	396	4,479
8 TRAVNIK	3,086		790	98	42		396	4,412
9 ZAVIDOVICI	3,086	67	790	98	42		396	4,479
10 VOGOSCA	3,086	67	790	98		42	396	4,479
11 DRVAR	3,086	67	790	98		42		4,083
12 BIHAC	3,086	67	790	98	42		396	4,479
13 CELIC	3,086	67	790	98		42	396	4,479
14 GRUDE	3,086		790	98		42		4,016
FD Total	43,204	737	11,060	1,372	210	210	2,772	59,565
1 CELINAC	3,086	67	790	98		42	396	4,479
2 KOTOR VAROS	3,086	67	790	98		42	396	4,479
3 MRKONJIC GRAD	3,086	67	790	98		42	396	4,479
4 DOBOJ	3,086	67	790	98		42	396	4,479
5 GRADISKA	3,086	67	790	98		42	396	4,479
6 MODRICA	3,086	67	790	98		42	396	4,479
7 DERVENTA	3,086	67	790	98		42	396	4,479
8 PALE	3,086	67	790	98				4,041
9 SOKOLAC	3,086	67	790	98				4,041
10 VISEGRAD	3,086	67	790	98		42	396	4,479
11 GACKO	3,086	67	790	98		42	396	4,479
12 BILECA	3,086	67	790	98		42		4,083
13 NEVESINJE	3,086	67	790	98		42	396	4,479
RS Total	40,118	871	10,270	1,274		462	3,960	56,955
Total	83,322	1,608	21,330	2,646	210	672	6,732	116,520

One of the policies of the basic design study is that consumables shall be included in the procurement, up to a degree that the need of consumables will be satisfied for the first six months with the consumables initially supplied with the equipment. Thus, any purchase of any consumable starts after the first six months. In addition, the maintenance cost for receiving maintenance service or for purchasing spare parts arises after the first year. Therefore, the annual cost is estimated separately for the first year and for the succeeding years, and an annual inflation rate of 7% is applied in the calculation. The annual operation and maintenance cost for

the first year and for the year thereafter is estimated for each of the two entities by referring to Table 3-5. The results are as follows.

Federation of Bosnia and Herzegovina	First year	36,000 DEM
	Second year and thereafter	441,000 DEM
Republic of Srpska:	First year	35,000 DEM
	Second year and thereafter	430,000 DEM

Table 3-5 : Summary of Maintenance Cost and Operation Cost

Federation

	Annual cost		First year (testing only)		Second Year and Thereafter			
	Maintenance	Testing	Total	Adjustment	Maintenance	Testing	Total	Adjustment
RTG apparatus	119,994	43,204	21,602	Inflation	119,994	43,204	163,198	Inflation
Developer	11,000	737	369	7% / year	11,000	737	11,737	7% / year
Ultrasound	100,002	11,060	5,530		100,002	11,060	111,062	
ECG	9,633	1,372	686		9,633	1,372	11,005	
B. analyzer	11,465	210	105		11,465	210	11,675	
Spectro	11,465	210	105		11,465	210	11,675	
Blood cell	13,160	2,772	1,386		13,160	2,772	15,932	
Total			29,783	36,485			336,284	440,800

Srpska

	Annual cost		First year (testing only)		Second Year and Thereafter			
	Maintenance	Testing	Total	Adjustment	Maintenance	Testing	Total	Adjustment
RTG apparatus	111,423	40,118	20,059	Inflation	111,423	40,118	151,541	Inflation
Developer	13,000	871	436	7% / year	13,000	871	13,871	7% / year
Ultrasound	92,859	10,270	5,135		92,859	10,270	103,129	
ECG	9,633	1,274	637		9,633	1,274	10,907	
Spectro	25,223	462	231		25,223	462	25,685	
Blood cell	18,800	3,960	1,980		18,800	3,960	22,760	
Total			28,478	34,887			327,893	429,801

On the basis of the above estimation, the size of the cost of the annual operation and maintenance can be compared against the annual expenditure of the 27 Dom Zdravljas. As shown in Table 3-6, the average rate of the estimated cost is about 4% for each entity. If these numbers are objectively seen, then it is clear that the procurement of the equipment carried out on the project will not strain the financial condition of both the entities. Possibly, the equipment procured will be operated and maintained effectively at each Dom Zdravlja.

Table 3-6 : Comparison of the Cost Increase and Budget Size of Dom Zdravljas

	Dom Zdravljas	Maintenance	Testing	Total	Income	Expenditure	Rate	Coverage
1	BUSOVACA	16,714	4,041	20,755	612,970	612,000	3%	13,500
2	ODZAK	19,748	4,083	23,831	745,355	772,677	3%	12,000
3	KUPRES	17,455	4,041	21,496	189,000	164,600	13%	9,000
4	GRADACAC	16,455	3,974	20,429	717,662	717,662	2%	40,000
5	SIROKI BRIJEG	19,748	4,083	23,831	1,209,300	1,078,368	2%	30,000
6	GORNJI VAKUF	19,335	4,437	23,772	310,769	416,393	5%	15,000
7	OLOVO	21,628	4,479	26,107	567,231	567,231	4%	17,000
8	TRAVNIK	20,628	4,412	25,040	99,471	127,175	19%	53,000
9	ZAVIDOVICI	21,628	4,479	26,107	927,227	815,906	3%	50,000
10	VOGOSCA	21,628	4,479	26,107				15,000
11	DRVAR	19,748	4,083	23,831	233,208	197,092	12%	12,000
12	BIHAC	21,628	4,479	26,107	1,223,155	1,223,155	2%	70,000
13	CELIC	21,628	4,479	26,107	238,325	237,627	10%	6,000
14	GRUDE	18,748	4,016	22,764	1,335,882	1,099,999	2%	17,000
	Total (Federation)			336,284		8,029,885	4%	
1	CELINAC	21,628	4,479	26,107	269,956	295,620	8%	20,000
2	KOTOR VAROS	21,628	4,479	26,107	175,000	460,000	5%	20,000
3	MRKONJIC GRAD	21,628	4,479	26,107	270,303	270,303	9%	25,000
4	DOBOJ	21,628	4,479	26,107	2,863,141	3,229,834	0%	75,000
5	GRADISKA	21,628	4,479	26,107	865,353	625,757	4%	60,000
6	MODRICA	21,628	4,479	26,107	298,016	399,400	6%	31,000
7	DERVENTA	21,628	4,479	26,107	815,108	816,706	3%	58,000
8	PALE	17,455	4,041	21,496	287,876	309,577	6%	45,000
9	SOKOLAC	17,455	4,041	21,496	371,876	371,876	5%	20,000
10	VISEGRAD	21,628	4,479	26,107	346,348	346,534	7%	22,000
11	GACKO	21,628	4,479	26,107	202,261	219,687	11%	12,000
12	BILECA	19,748	4,083	23,831	177,260	177,260	13%	19,000
13	NEVESINJE	21,628	4,479	26,107	158,566	133,680	19%	20,000
	Total (Srpska)			327,893		7,656,234	4%	

The rate in the table shows above 10% for some Dom Zdravljas, Travnik, Kupres, and Drvar of the Federation and Nevesinje, Gacko, Bileca and Mrkonjic Grad of Srpska. Ethnic friction caused by the war is serious in the areas where these Dom Zdravljas of the Federation, Travnik, Kupres, and Drvar, are located. However, the activities of these Dom Zdravljas are expected to be restored along with the stabilization of the social condition. Therefore, the Ministry of Health and the Department of Health of Canton of the Federation, which administer these Dom Zdravljas, should direct their efforts to developments on a long term basis. The above mentioned three Dom Zdravljas of Srpska, Nevesinje, Gacko and Bileca, are located in the south of the eastern region of the Republic of Srpska. This part of the country is most economically disadvantaged. The cost for the operation and maintenance of the equipment may seem a financial burden to these Dom Zdravljas. The Dom Zdravljas are administered directly by the Ministry of Health in Srpska. Such regional disadvantages should be alleviated by the Ministry of Health by providing more funds so that health care shall be equally available to all people.

Chapter 4 Project Evaluation and Recommendation

Chapter 4 Project Evaluation and Recommendation

4-1 Project Effect

4-1-1 Effects of the Project

The purpose of this project is to improve the functions of Dom Zdravljas, which are distributed on a regional basis throughout the country. Specifically, the functions to be improved are the diagnostic function which is essential to the provision of medical services (i.e., diagnostic imaging, specimen analysis, and physiological examination) and other functions which are especially needed in the current transitional condition of the country (i.e., emergency care such as first aid treatment and patient transportation in referral service). The items of medical equipment to be procured on the project are essential for maintaining these functions. The procurement will suffice the present shortage of medical equipment by supplying new equipment and will replace the items of the existing equipment which are in dilapidation or breakdown. In this way, the project will improve the diagnostic function of the Dom Zdravljas and will provide means for patient diagnosis, namely diagnostic imaging, specimen analysis, and physiological examination to the doctors of Dom Zdravljas as well as those who are working at the Ambulantas belonging to the respective Dom Zdravljas and those who are working in the family medicine team. Thus, the effect of the project, which improves the diagnostic functions of Dom Zdravljas on a regional basis, will have a wide spread improvement in the PHC service throughout the country.

4-1-2 Beneficiaries

This project improves Dom Zdravljas, each of which is located in a respective and serves as a diagnostic base for providing health care in the PHC service of Bosnia and Herzegovina. In the PHC service of each district, the radiology department and laboratory of a respective Dom Zdravlja provide the diagnostic activities which support not only the doctors of the Dom Zdravlja but also those working at the Ambulantas belonging to the Dom Zdravlja and those working in the family medicine team in performing appropriate consultations and treatments to patients. Therefore, the improved diagnostic function of the Dom Zdravljas, which is effected by the project, will benefit all the peoples in the municipalities where the respective Dom Zdravljas are improved. The project improves 27 Dom Zdravljas, which is about 20% of the total number (130 Dom Zdravljas). The population benefited through these 27 Dom Zdravljas totals about 800,000.

Table 4-1: Coverage of the Dom Zdravljas Improved on the Project (residentpopulation)

	population of municipalities in Federation			population of municipalities in Srpska	
FD-1	BOSOVACA	13,500	RS-1	CELINAC	20,000
FD-2	ODZAK	12,000	RS-2	KOTOR VAROS	20,000
FD-3	KUPRES	9,000	RS-3	MRKONJIC GRAD	25,000
FD-4	GRADACAC	40,000	RS-4	DOBOJ	75,000
FD-5	SIROKI BRIJEG	30,000	RS-5	GRADISKA	60,000
FD-6	GARNJI VAKUF	15,000	RS-6	MODORICA	31,000
FD-7	OLOVO	17,000	RS-7	DERVENTA	58,000
FD-8	TRAVNIK	53,000	RS-8	PALE	45,000
FD-9	ZAVIDOVICI	50,000	RS-9	SOKOLAC	20,000
FD-10	VOGOSCA	15,000	RS-10	VISEGRAD	22,000
FD-11	DRVAR	12,000	RS-11	GACKO	12,000
FD-12	BIHAC	70,000	RS-12	BILECA	19,000
FD-13	CELIC	6,000	RS-13	NEVESINJE	20,000
FD-14	GRUDE	17,000			
	Federation total	359,500		Srpska Total	427,000
	Total				786,500

4-1-3 Effects to the Plan for PHC Reform and Reconstruction

The diagnostic function of Dom Zdravljas, which is a core of the community health care service, is an important factor in the promotion of the plan for PHC reform and reconstruction. At present, the health ministries of each entity is providing training to the medical personnel and revising the curricula of the medical schools as preparation for the introduction of the above mentioned family medicine system. While the personnel are being developed, the model communities where the family medicine component is being tried are being added or expanded. At present, these model communities include only some urban areas such as Sarajevo. However, more communities are planned to be added as model communities, and more medical workers will be distributed as community medical teams. In this condition, the diagnostic function of Dom Zdravljas plays an important role in supporting the practical operation of the new system. Therefore, the effect of this project will be felt throughout the promotion of the plan for PHC reform and reconstruction since the project improves the infrastructure necessary for the introduction of the new system.

4-1-4 Soundness for Operation and Maintenance

It is estimated that the annual cost for the operation and maintenance of the medical equipment at each Dom Zdravlja will increase to about DEM 24,000 after the procurement which is carried out on the project. This increase is about 4% of the current annual expenditure, which is about DEM 600,000. In consideration of the current size of the budget for each Dom Zdravlja, this increase will be absorbable in the next budget without much difficulty.

4-2 Recommendation

4-2-1 Redesigning of Dom Zdravlja's Function

The health care policies of both the entities of Bosnia and Herzegovina address the need of reconstruction of the health care system. The health care system needs reform from the prior or present form in which hospitals are overemphasized to a new form in which emphasis is on PHC. For this redirecting of the health care system, the PHC service requires rehabilitation. Thus, efforts are made to improve the functions of the PHC facilities, to introduce the family medicine system, and to reposition the medical personnel appropriately. If the functions of the Dom Zdravljas are studied for reform, then it is clear that there are two aspects which can be redesigned. One is the diagnostic function which is carried out mainly at the radiology department and laboratory. This function needs improvement so that Dom Zdravljas can support the community PHC service. The other is the functions which require many specialists. Such funcitons might be transferred to higher level hospitals. With respect to these aspects, the functions of Dom Zdravljas can be reconstructed to produce a successful restoration and improvement of the health care system.

However, the current condition of health care varies from municipality to municipality throughout the country. Urban areas such as Sarajevo and Banja Luka are set as pilot models for the introduction of the family medicine system, and medical workers there are retrained to become doctors in community medical teams. On the other hand, no such actions are seen in the border regions or mountainous regions. These differences have occurred not only from the geographical differences but also from other factors such as whether each Dom Zdravlja has maintained medical service by holding a relatively large number of specialists, or has experienced a large staff reduction during the war, or has facilities and equipment necessary for treating a specific disease which is prevalent in the respective municipality. Also, the load of health care provided differs among Dom Zdravljas from several factors. A major factor is a difference in accessibility, resulting from the distribution of the population (i.e., whether the district is densely populated or depopulated) and from the patients' ability to pay their share of medical cost, which is a direct reflection of the economic condition of the respective region. Other reasons are the fluidity of the population, resulting from the return of displaced people and the friction among the ethnic groups in each district. The present condition makes it difficult for either entity to treat all the Dom Zdravljas in a uniform way.

Therefore, it is important for both the entities to study each Dom Zdravlja carefully before redesigning the functions of the Dom Zdravljas in the policy of reconstruction of the health care system. The health care service to the people cannot be halted for the redesigning, so the implementation needs a careful planning for each Dom Zdravlja.

4-2-2 Cordination of Programmes

As the society becomes stable and the introduction of market economy progresses, the economic condition of Bosnia and Herzegovina is expected to improve continuously. At present, unemployment is about 40%. It seems that a long time must elapse for the health care budget, which depends heavily on the health insurance fund, to show a conspicuous improvement. Therefore, foreign aid is continually allocated to the reconstruction and reform of the health care system.

International aid organizations such as the WHO, the World Bank, and the EU are actively involved in the field of health care in Bosnia and Herzegovina. However, the foreign aid provided by them until this time has been post-war emergency assistance. At the moment, few projects have been in line with the policy of the government, which is the reconstruction and reform of the health care system for future. This project is the first real project which cooperates in the health care policy of the government in a practical way. As for planning future projects in cooperation with such aid organizations, it is desirable that the Ministries of Health of each entity take the initiative to the donors in designing individual projects so that integrity is achieved among the projects. In the meantime, all possible efforts are made by the Ministries of Health of both the entities, and the organization and size of their staffs are being improved. This positive attitude shall be maintained continuously.

4-2-3 Disposal of Industrial Waste

There is no regulation which controls the disposal of industrial waste in Bosnia and Herzegovina. Under the law of the Federation of Bosnia and Herzegovina or the Republic of Srpska, the laws of the former Yugoslavia are effective. However, these laws do not include any rule which regulates the disposal of film developer solution. At present, developing fluid and fixing solution are discharged into sewage at each medical facility. Although there are silver-recovery businesses in Sarajevo and Zagreb, they are not in operation now. Moreover, since there is no regulation for such operation, these businesses are considered only as moneymaking business.

In this condition, it is desirable that the liquid waste discharged from the film developer procured on this project be diluted prior to discharge even though there is no regulation which restricts the film developers at present. During the field study of the basic design of this project, the study team asked the Ministries of Health of both the entities to instruct the Dom Zdravljas accordingly on this matter. The health ministers of both the entities understood the matter and promised to deal with this problem positively.

As the laws and regulations concerning environmental protection and building standards are being improved gradually in both the entities, it is preferable that some regulations be passed to guide the disposal of the liquid waste of film developers so that such waste will be disposed

properly by specialized waste disposers as industrial waste in compliance with respective regulations in the future.

4-2-4 Inoculation Activity

The regular vaccination in Bosnia and Herzegovina includes BCG, polio, DTP, measles, now, and the immunisation coverage in each Canton is estimated 40% to 80% in the Federation in 1996. The immunisation activity, which was terribly declined in the war time, seems to be recovered to some extent, though epidemiological evaluation or other relevant data and statistics. However the importance is not only the immunisation coverage but some measures to be taken with consideration on the actual conditions in the war time and situation of surrounding area now.

First of all, problem of the blood transfusion in the war time should be pointed out. Screening tests of blood to be transfused in emergence were definitely insufficient at those days. It is worried that there are certain number of people who has been infected with viral hepatitis. However, any relevant measures, such as vaccination for pregnant women preventing vertical infection between a mother and a baby, has not been taken yet, because the situation has not been studied practically yet.

The other importance which can be pointed out is the eradication of poliomyelitis. Since the outbreak is recently reported surrounding area of Bosnia and Herzegovina, and the magnitude of the problem is the global issue. The first national immunisation day, NID in Bosnia and Herzegovina was held in 1996, however the second one expected in 1997 was postponed.

It is necessary to improve the epidemiological evaluation and other base line data to take the effective measures. It is strongly recommended from the view point of the process of reconstruction and reform of the health care system, in which the reliable daily health care service should be kept constantly.

Appendices

1. Member List of the Study Team

Basic Design Study 1

Tomiaki ITOH	Leader Deputy Director, First Project Study Division, Grant Aid Project Study Department, Japan International Cooperation Agency (JICA)
Yoshitaro WATANABE	Leader (Srpska portion) Resident Representative, Austria Office Japan International Cooperation Agency (JICA)
Keiko HIRAGA	Technical Advisor Expert Division, Bureau of International Cooperation, International Medical Center of Japan, Ministry of Health and Welfare
Chiharu ABE	Project Manager / Operation and Maintenance Planner International Techno Center Co., Ltd.
Hiroshi TASEI	Equipment and Facility Planner I Overseas Engineering Service
Shigetaka TOJO	Equipment and Facility Planner II International Techno Center Co., Ltd.
Akio KANEKO	Procurement Planner International Techno Center Co., Ltd.
Namiko AKITSU	Interpreter International Techno Center Co., Ltd.

Basic Design Study 2

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Yoichi HORIKOSHI	Technical Advisor Expert Division, Bureau of International Cooperation, International Medical Center of Japan, Ministry of Health and Welfare
Chiharu ABE	Project Manager / Operation and Maintenance Planner International Techno Center Co., Ltd.
Hiroshi TASEI	Equipment and Facility Planner I Overseas Engineering Service
Namiko AKITSU	Interpreter International Techno Center Co., Ltd.

2. Study Schedule

Basic Design Study 1

No.	Date	Schedule	Technical Study at Dom Zdravlja
1	9-Jul Wed	Leaving Tokyo / Arriving at Vienna Meeting with JICA and Embassy of Japan	
2	10-Jul Thu	Leaving Vienna / Arriving at Sarajevo Meeting with Ministry of Foreign Affairs, BiH Meeting with WHO	
3	11-Jul Fri	Meeting with Federation MOH Visiting Vogosca Visiting Sarajevo Canton Office	
4	12-Jul Sat	Meeting with Federation MOH	
5	13-Jul Sun	Team Meeting	
6	14-Jul Mon	Meeting with World Bank Meeting with Federation MOH	
7	15-Jul Tue	Visiting Family Medicine Site in Sarajevo	
8	16-Jul Wed	Meeting with WHO Meeting with Federation MOH	
9	17-Jul Thu	Meeting with World Bank Meeting with Federation MOH	Olovo
10	18-Jul Fri	Meeting with Federation MOH	Busovaca
11	19-Jul Sat	Team Meeting (Leaving Tokyo for Frankfurt -- A. Kaneko)	
12	20-Jul Sun	Review of Data (Leaving Tokyo for Vienna -- S. Tojo)	
13	21-Jul Mon	Preparation of Minutes of Discussions (Arriving at Sarajevo -- A. Kaneko, S. tojo)	Vogosca
14	22-Jul Tue	Signing of Minutes of Discussion (Federation) (Leaving Sarajevo for Vienna -- K. Hiraga)	Travnik
15	23-Jul Wed	Meeting with WHO (Leaving Vienna for Tokyo -- K. Hiraga)	
16	24-Jul Thu	Meeting with Federation MOH (Arriving at Tokyo --K. Hiraga) (Leaving Sarajevo for Vienna -- T. Ito)	
17	25-Jul Fri	(Meeting with JICA and Embassy of Japan -- T.Ito) (Leaving Vienna for Tokyo -- T. Ito) Meeting with Ministry of Foreign Affairs	
18	26-Jul Sat	Review of Data (Arriving at Tokyo --T. Ito)	
19	27-Jul Sun	Review of Data	
20	28-Jul Mon		Gradacac Zavodovici
21	29-Jul Tue	Meeting with EU / ECHO (Leaving Sarajevo for Zagreb -- A. Kaneko)	Kpures Celic

No.	Date	Schedule	Technical Study at Dom Zdravlja
22	30-Jul Wed	(Visiting Local Agents at Zagreb -- A. Kaneko)	Gornji Vakuf
23	31-Jul Thu	(Leaving Vienna for Sarajevo -- Y. Watanabe) (Visiting Local Agents at Zagreb -- A. Kaneko)	Grude
24	1-Aug Fri	Meeting with Srpska MOH Meeting with Federation MOH (Leaving Sarajevo for Vienna -- Y. Watanabe) (Visiting Local Agents at Zagreb -- A. Kaneko)	Siroki Brijeg
25	2-Aug Sat	Team Meeting (Leaving Zagreb for Vienna -- A. Kaneko)	
26	3-Aug Sun	(Leaving Vienna for Bergrad - A. Kaneko)	Odzak
27	4-Aug Mon	(Visiting Local Agents at Bergrad -- A. Kaneko)	Drvar
28	5-Aug Tue	(Visiting Local Agents at Bergrad -- A. Kaneko)	Bihac Nevesinje
29	6-Aug Wed	Meeting with Federation MOH (Visiting Local Agents at Bergrad -- A. Kaneko)	Mrkonjic Grad Bileca
30	7-Aug Thu	Meeting with EU / ECHO Meeting with WHO Field Office in Banja Luka (Visiting Local Agents at Bergrad -- A. Kaneko) (Leaving Sarajevo for Vienna -- N. Akitsu)	Gradiska Derventa Gacko
31	8-Aug Fri	(Visiting Local Agents at Bergrad -- A. Kaneko) (Leaving Vienna for Tokyo -- N. Akitsu)	Doboj Modrica Visegrad
32	9-Aug Sat	Visiting Private Dom Zdravlja Meeting with Danish Mobile Hospital Meeting with Deputy Minister of Srpska MOH (Arriving at Tokyo -- N. Akitsu)	Celinac Kotr Varos Sokolac
33	10-Aug Sun	Team Meeting (Leaving Vieena for Sarajevo -- Y. Watanabe) (Leaving Bergrad for Vienna -- A. Kaneko)	
34	11-Aug Mon	Meeting with Srpska MOH (Visiting Agents in Vienna -- A. Kaneko)	Pale
35	12-Aug Tue	Meeting with Srpska MOH (Visiting Agents in Vienna -- A. Kaneko) (Leaving Vienna for Tokyo -- A. Kaneko)	
36	13-Aug Wed	Signing of Minutes of Discussion (Srpska) (Arriving at Tokyo -- A. Kaneko)	
37	14-Aug Thu	Meeting with Srpska MOH (Leaving Sarajevo for Vienna -- Y. Watanabe)	Pale
38	15-Aug Fri	Meeting with Srpska MOH	
39	16-Aug Sat	Review of Data	
40	17-Aug Sun	Leaving Sarajevo for Vienna	
41	18-Aug Mon	Meeting with JICA and Embassy of Japan	
42	19-Aug Tue	Leaving Vienna for Tokyo	
43	20-Aug Wed	Arriving at Tokyo	

Basic Design Study 2

No.	Date	Schedule
1	1-Oct Wed	Leaving Tokyo / Arriving at Narita
2	2-Oct Thu	Meeting with JICA and Embassy of Japan Leaving Vienna / Arriving at Sarajevo Meeting with Federation MOH Meeting with World Bank
3	3-Oct Fri	Meeting with Srpska MOH Meeting with Federation MOH Meeting with Ministry of Foreign Affairs, BiH Meeting with ECHO
4	4-Oct Sat	Meeting with Federation MOH / Institute of Health Meeting with Srpska MOH
5	5-Oct Sun	Review of Data (Leaving Tokyo for Vienna -- Y. Horikoshi)
6	6-Oct Mon	Meeting with Federation MOh Meeting with CESVI (Leaving Vienna for Sarajevo -- Y. Horikoshi) (Leaving Tokyo for Vienna -- T. Ito)
7	7-Oct Tue	Meeting with Srpska MOH (Leaving Vienna for Sarajevo -- T. Ito) Meeting with Ministry of Foreign Affairs
8	8-Oct Wed	Meeting with Srpska MOH Meeting with Federation MOH Meeting with Institute of Health
9	9-Oct Thu	Meeting with WHO Meeting with ECHO
10	10-Oct Fri	Signing of Minutes of Discussions
11	11-Oct Sat	Review of Data
12	12-Oct Sun	Team Meeting
13	13-Oct Mon	Meeting with Ministry of Foreign Affairs Leaving Sarajevo for Vienna
14	14-Oct Tue	Meeting with JICA and Embassy of Japan Leaving Vienna for Tokyo
15	15-Oct Wed	Arriving at Tokyo

3. List of Party concerned in Recipient Country

Ministry of Foreign Affairs, Bosnia and Herzugovina

Dept. for Reconstruction and International Assistance

Head of Dept.	Aziz Hadzimuratovic
Expert Associate for Japanese Assistance	Viladana Bijedic

Ministry of Health, Federation of Bosnia and Herzegovina

Minister of Health	Bozo Jjubic, MD, PhD, Associate Prof.

Dept. for Organization of Health Care

Director, Assistant to Minister	Drazenka Malicbegovic-Rados, MD, PhD

Dept. for International Relations, Information, and Redevelopment

Advisor to Minister	Boris Hrabac, MD, PhD

Institute of Public Health, Federation of BiH

General Director	Arif Smajkic, MD, SSM, MPH, PhD

Ministry of Health and Social Welfare, RS

Minister of Health and Social Welfare	Mirko Sosic, MD, PhD, Prof.
Deputy Minister	Milorad N Kuzmanovic, MD
Director, PIU	Miladin Babic, MD, PhD

MINUTES OF DISCUSSIONS
BASIC DESIGN STUDY
ON
THE PROJECT FOR IMPROVEMENT OF MEDICAL EQUIPMENT IN PRIMARY HEALTH CARE INSTITUTIONS
IN
BOSNIA AND HERZEGOVINA

In response to a request from the government of Bosnia and Herzegovina (hereinafter to as "the Government") , the government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Medical Equipment in Primary Health Care Institutions in Bosnia and Herzegovina (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Bosnia and Herzegovina a study team, which is headed by Tomiaki Ito, First Project Study Division, Grant Aid Project Study Department, JICA, and is scheduled to stay in the country from 10 to 24 July, 1997.

The team held discussions with the officials concerned of the Government and conducted a field survey at the study area.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets. The team will proceed to further works and prepare the Basic Design Study Report.

Sarajevo, 22 July, 1997

Mr. Tomiaki Ito
Leader,
Basic Design Study Team
JICA

Bozo Ljubic, MD, PhD, Associate Prof.
Ministerof Health,
Federation of Bosnia and Herzegovina

pp
Mr.Aziz Hadzimuratovic
Head of Department
of Reconstruction and International Assistance
on Behalf of
Ministry of Foreign Affairs of
Bosnia and Herzegovina

ATTACHMENT

1. Objectives of the Project

The objective of the Project is to improve the function of Dom Zdravljas by the upgraded medical activities in project sites, using the procured equipment under Japan's grant aid.

2. Project Sites

After the discussions with the team, Dom Zdravljas shown in Annex-I were requested as the project sites by the Government.

3. Responsible Ministry and Executing Agency

Responsible Ministry : - Ministry of Health of Federation of Bosnia and Herzegovina

Executing Agency - Department for Organization of Health Care,
Ministry of Health of Federation of Bosnia and Herzegovina

4. Items requested by the Government

After discussions with the team, the items shown in Annex-II were finally requested by the Government.

However, the final components of the Project may differ from the above items, if it is judged necessary after further studies.

5. Commnets by the Japanese side

Dom Zdravljas shown in Annex-I

It is considered based on the information given by the Ministry of Health that the facilities of Dom Zdravljas below may be insufficient regarding X-ray installation. The team requests the Ministry of Health to make a concrete plan to improve these facilities and to inform the Japanese side when the mission visits Sarajevo next time in September, 1997.

TRAVNIK,
ZAVIDOVICI,
SIROKI BRIJEG,
KLJUC, and
any other Dom Zdravljas in Annex-I where the result of field study shows the necessity of improvement.

The team conducts the field survey at each Dom Zdravljas listed in Annex-I in the rest of their stay, and the appropriateness of each Dom Zdravlja as the site of the Project should be judged based on the study result.

6. Japan's Grant Aid Programme

(1) The Government has understood the system of Japanese Grant Aid system explained by the team. (See Annex - III)

(2) The Government will take necessary measures, described in Annex-IV, for smooth implementation of the Project on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

7. Schedule of the Study

(1) The team will proceed further study in Bosnia and Herzegovina until August 5, 1997.

(2) JICA will dispatch a mission to Bosnia and Herzegovina in September 1997, in order to explain the result of analysis in Japan.

(3) In case that the contents of the above explanation is accepted in principle by the Government, JICA will complete the final report in English and send it to the Government by the end of December, 1997.

8. Monitoring of the Project

The executing agency has responsibility for monitoring the progress of all phases of the Project such as allocation of funds, training and maintenance and opration of Dom Zdravljas.

ANNEX

ANNEX-I	**Dom Zdravljas as Project Sites**
ANNEX-II	**List of Requested Equipment**
ANNEX-III	**Japan's Grant Aid**
ANNEX-IV	**Necessary Measures**

ANNEX-I **Dom Zdravljas as Project Sites**

Annex-I

Dom Zdravljas as Project Sites

1. BUSOVACA
2. CITLUK
3. KUPRES
4. GRADACAC
5. SIROKI BRIJEG
6. GORNJI VAKUF
7. OLOVO
8. TRAVNIK
9. ZAVIDOVICI
10. VOGOSCA
11. DRVAR
12. KLJUC
13. CELIC

ANNEX-II **List of Requested Equipment**

List of Requested Equipment

Descriptions / Dom Zdravlja	1 BUSOVACA	2 CITLUK	3 KUPRES	4 GRADACAC	5 SIROKI BRIJEG	6 GORNJI VAKUF	7 OLOVO	8 TRAVNIK	9 ZAVIDOVICI	10 VOGOSCA	11 DRVAR	12 KLJUC	13 CELIC
RTG apparatus	1	1	1	1	1	1	1	1	1	1	1	1	
Film x-ray developing machine	1	1	1		1	1	1	1	1	1	1		
Nagatoscope		1		1	1	1	2			2			
Blood cell counter		1	1	1		1	1	1			1		1
Biochemistry analyzer						1		1	1	1			
Spectrophotometer (up to 20.000 inhabitations)			1			1	1			2	1		1
Microscope				1		2	1	1	2	2			2
Centrifuge	1	1		2	1	1	1	2	2	4	1		1
Steriliser 30-100 L	1	2		1	1		1	1	1		3		1
Laborat. balance	1	1		1	1		1	1			1		
Destilator	1		1	1	1	1	1	1	1	2	1		1
Ultrasound	1	1	1	1	1	1	1	1	1	1	1		1
Spirometer	1	1	1	1		1	1	1	1	2	1		
defibrillator	1	1	1		1	1	1	1		2	1		1
Oxygen apparatus, mobile		1	1	1	1	1	1	3	1		3		1
ECG three-channels		1				1	1	2	1	2	1		
ECG single channel, mobile		1		1		1	1	1			1		1
Laryngoscope with incubation tubes	1	1		1	1		1	1	1		2		
Reanimation set		1		1	1	1	1	1	1		1		1
Otoscope		2		2	2	2	1	1			1		2
Aspirator		1		2	1	1	1	1	1		1		1
Aspirator mobile leg operated		1		2	1	1		1			1		1
Ambulance vehicle	1	2		2	1	2	1	2	2		2		1
Complete dental surgery	1	1	1	2	1	1	1	2	1	9	1		1