

Ministry of Health

The Former Yugoslav  
Republic of Macedonia

**BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT  
FOR  
EQUIPMENT SUPPLY  
FOR THE GENERAL HOSPITAL OF  
THE MEDICAL CENTER OF STIP  
IN  
THE FORMER YUGOSLAV  
REPUBLIC OF MACEDONIA**

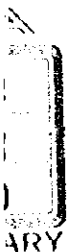
MARCH 1998

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**JAPAN INTERNATIONAL COOPERATION AGENCY  
CRC OVERSEAS COOPERATION Inc.**



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The Former Yugoslav  
Republic of Macedonia**

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1142301 (9)

## PREFACE

In response to a request from the Government of the Former Yugoslav Republic of Macedonia, the Government of Japan decided to conduct a basic design study on the Project for Equipment Supply for the General Hospital of the Medical Center of Stip and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Macedonia a study team from November 16 to December 21, 1997.

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

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

I wish to express my sincere appreciation to the officials concerned of the Government of the Former Yugoslav Republic of Macedonia for their close cooperation extended to the teams.

March, 1998



Kimio Fujita  
President

Japan International Cooperation Agency





March, 1998

**Letter of Transmittal**

We are pleased to submit to you the basic design study report on the Project for Equipment Supply for the General Hospital of the Medical Center of Stip in the Former Yugoslav Republic of Macedonia.

This study was conducted by CRC Overseas Cooperation Inc., under a contract to JICA, during the period from November 10, 1997 to March 31, 1998. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Macedonia 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,

金本 圭 司

Keiji HIMURA

Project manager,

Basic design study team on

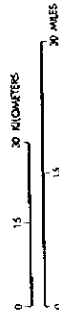
the Project for Equipment Supply for

the General Hospital of the Medical Center of Stip

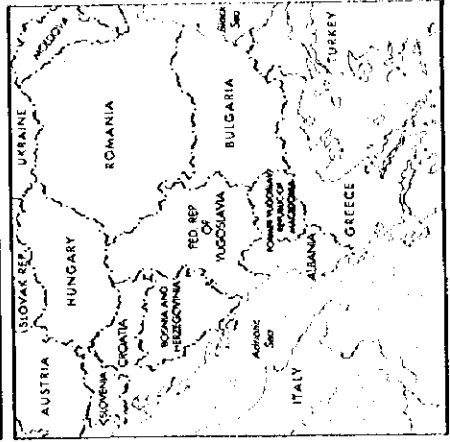
CRC Overseas Cooperation Inc.

# FORMER YUGOSLAV REPUBLIC OF MACEDONIA

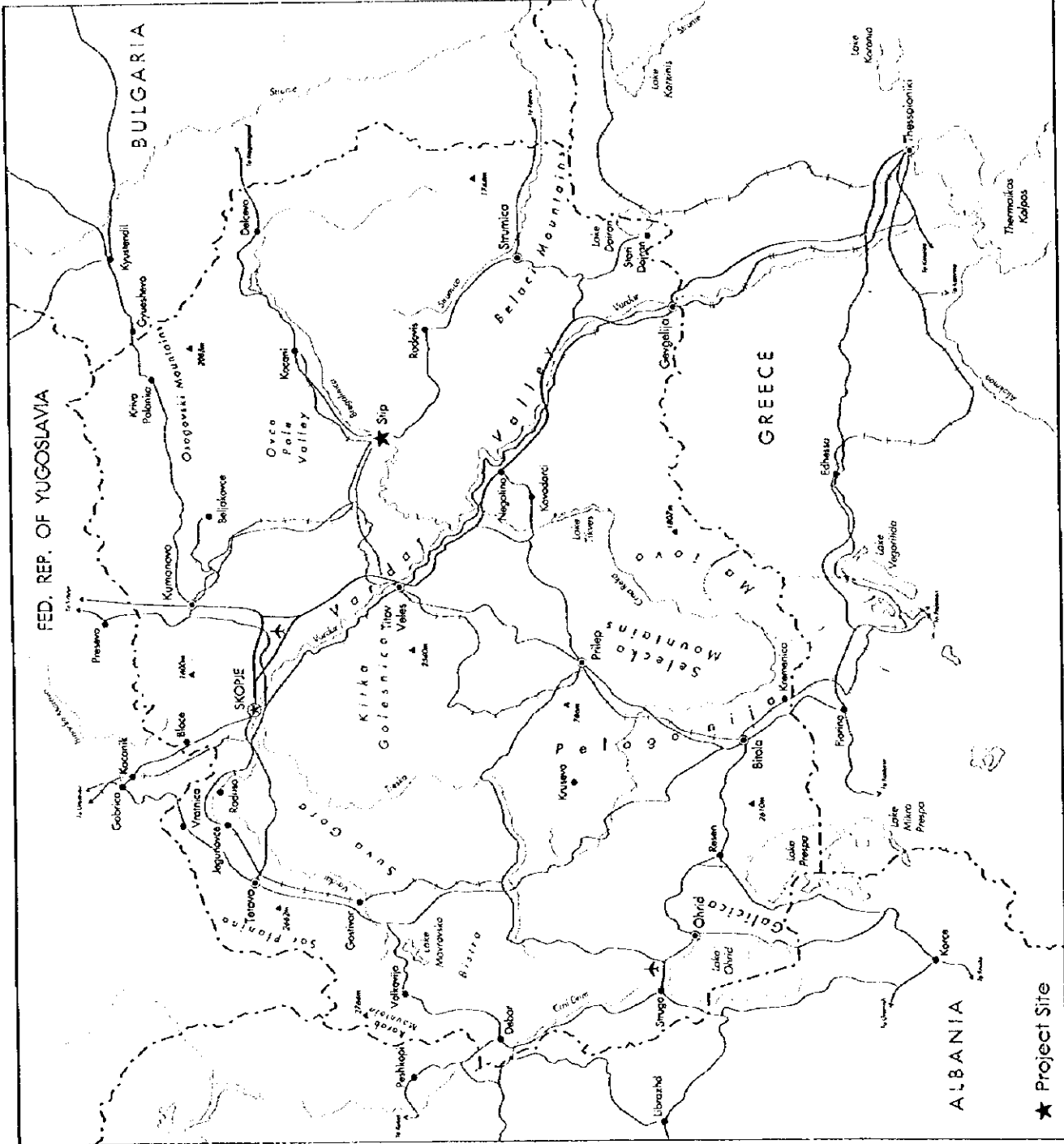
- ⊙ Major cities
- Selected cities
- ⊗ National Capital
- Primary roads
- Secondary roads
- Electrified railroads
- Other railroads
- ✈ Airports
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- Rivers
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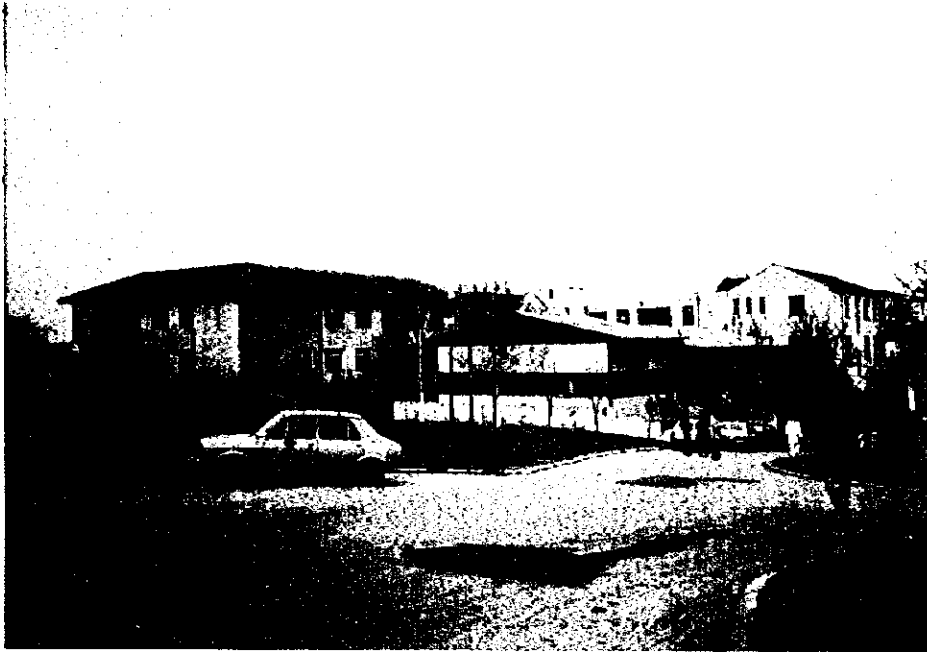


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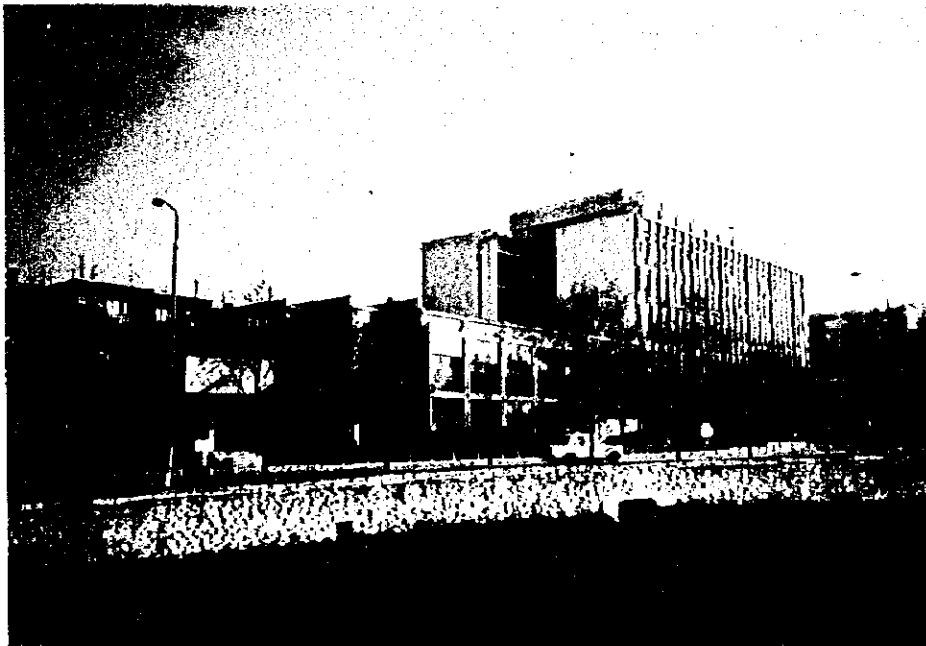


★ Project Site

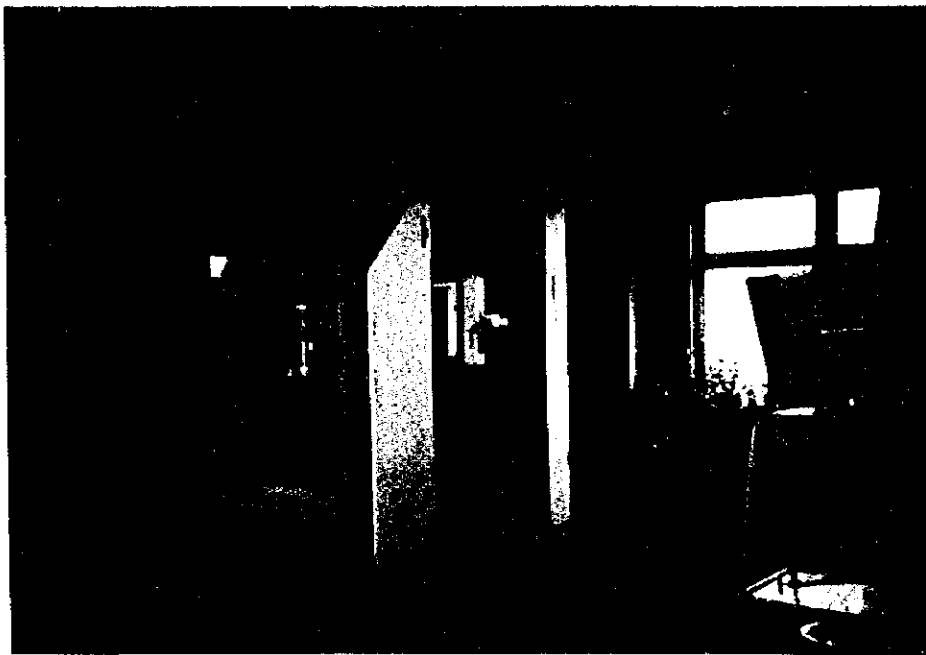
(Remarks : The World Bank) Map of the Republic of Macedonia



**Photo 1. The Hospital of the Medical Center of Stip  
(Building for Inpatient)**



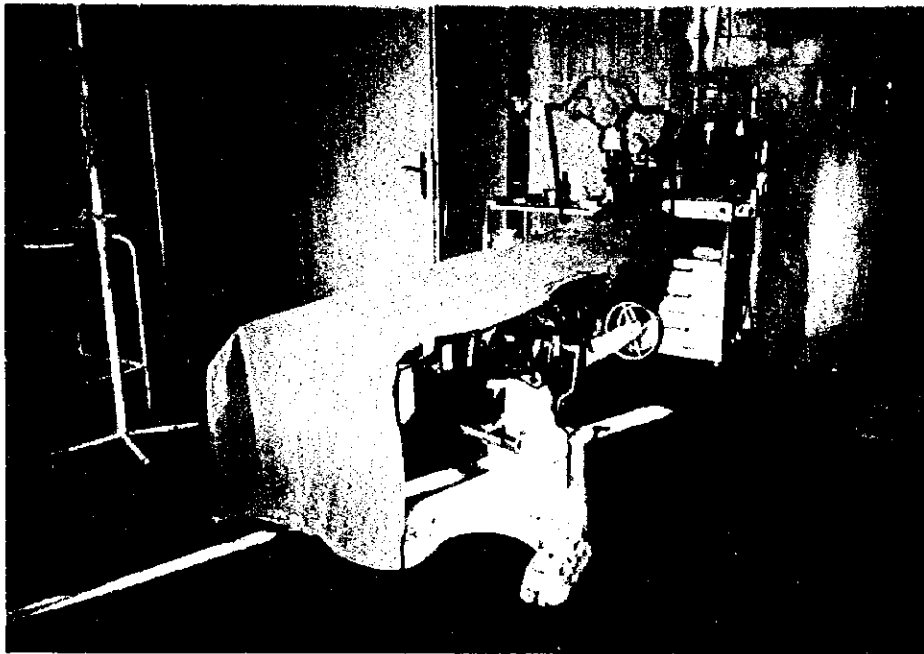
**Photo 2. The Hospital of the Medical Center of Stip  
(Building for Outpatient)**



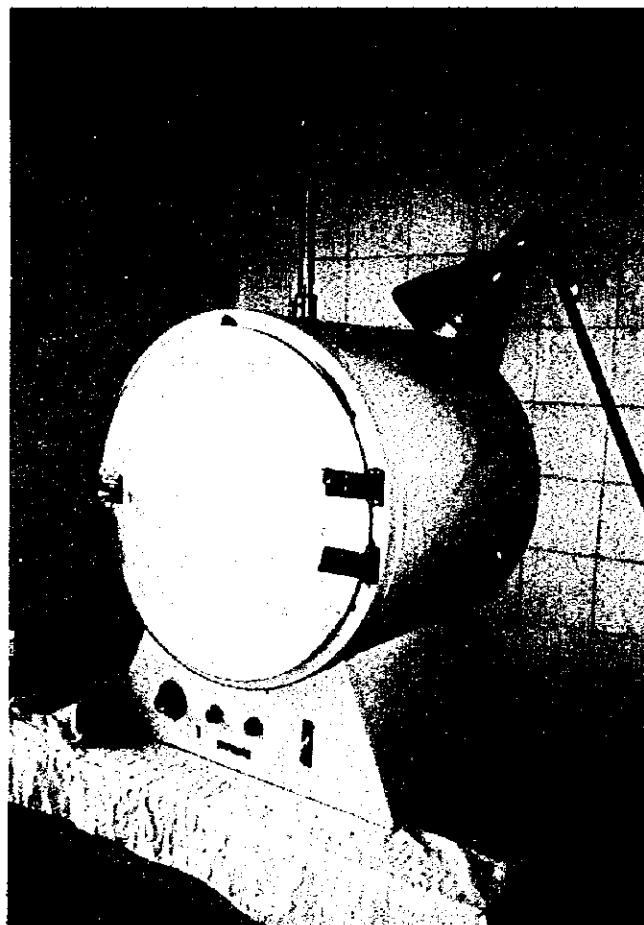
**Photo 3. Broken X-ray Unit**



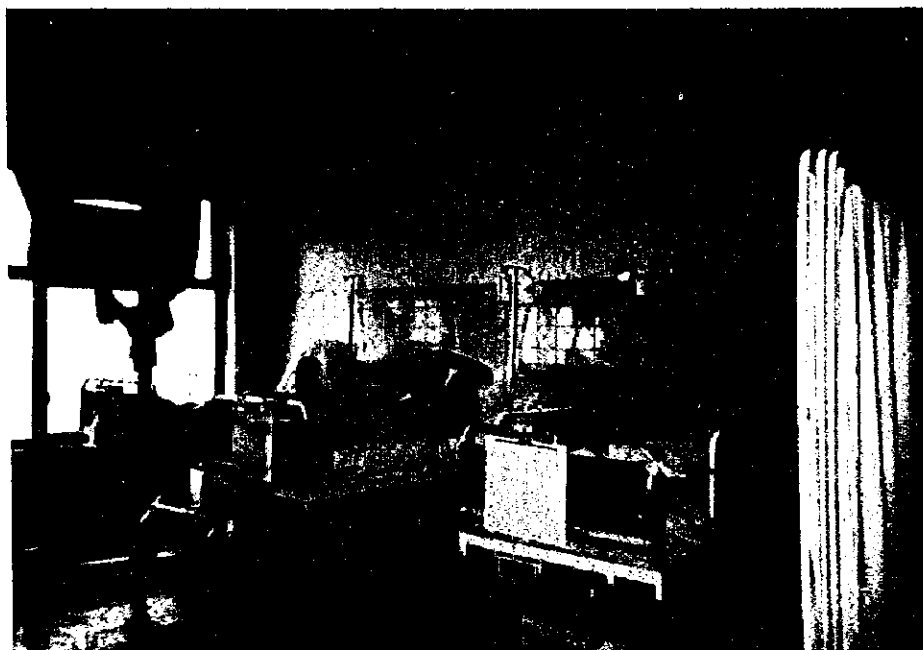
**Photo 4. Obsolete Ultrasound Apparatus**



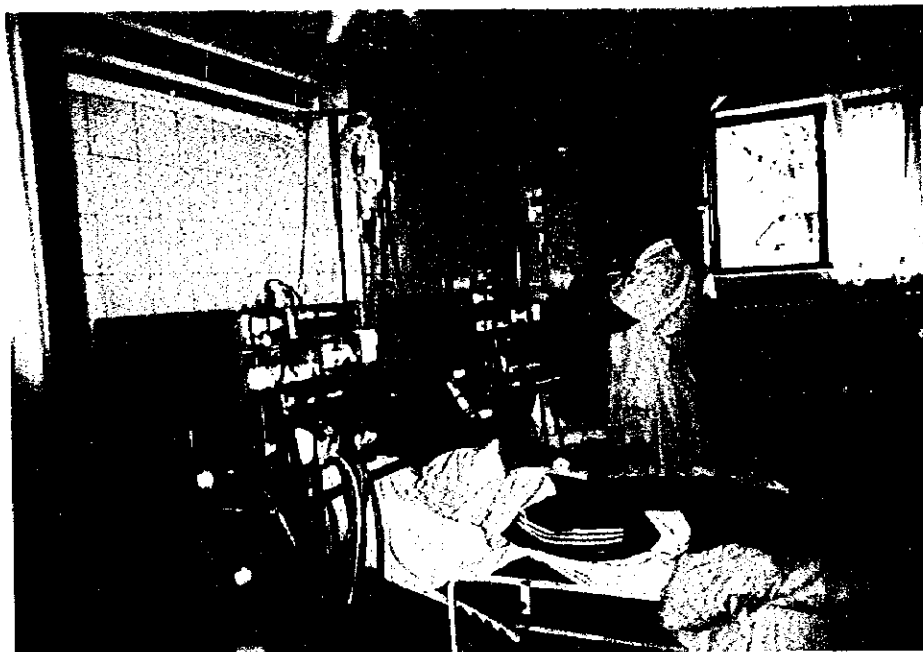
**Photo 5. Obsolete Operating Table**



**Photo 6. Obsolete Small Autoclave**



**Photo 7. Current status of ICU**



**Photo 8. Current status of Haemodialysis**

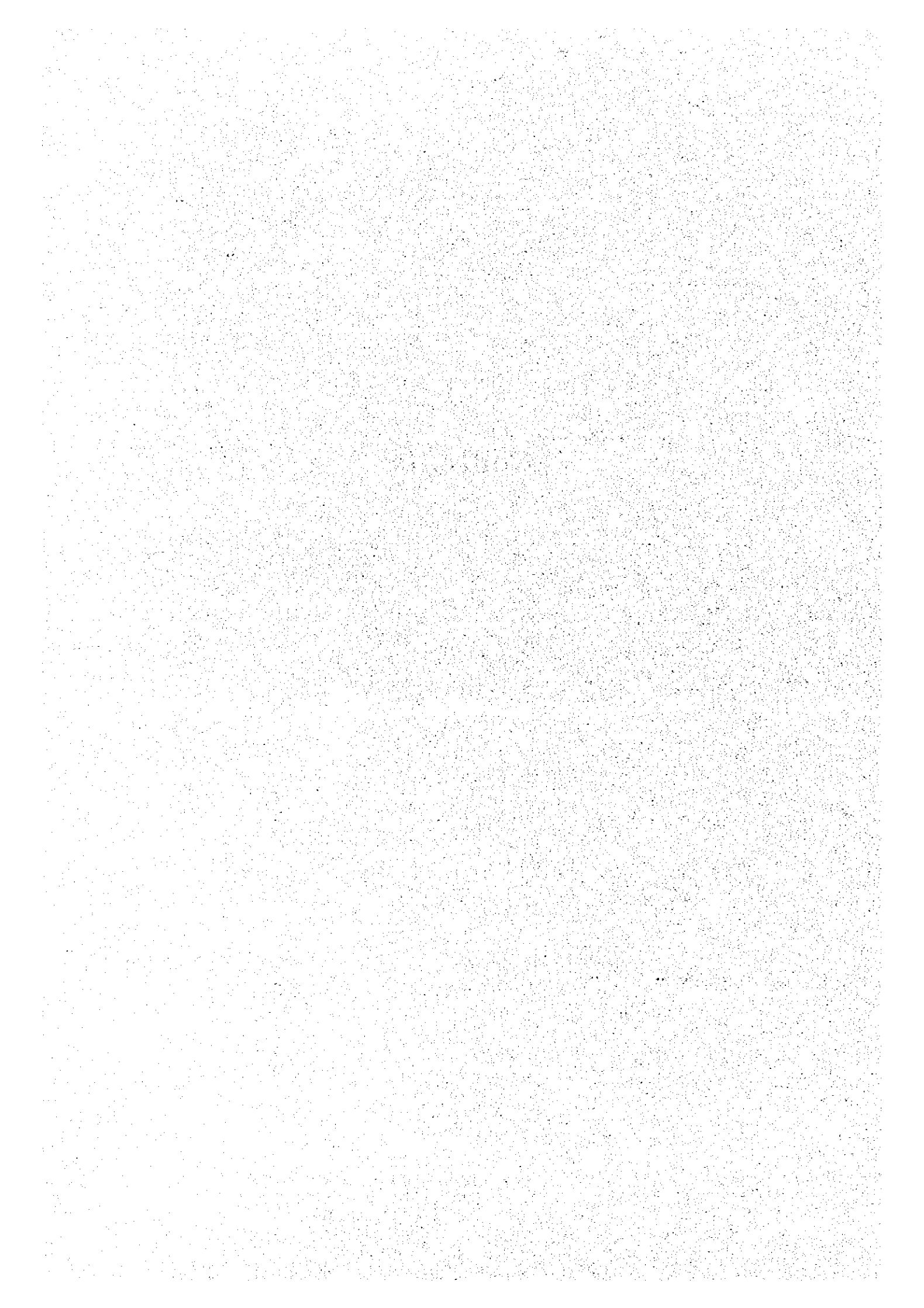
## Abbreviations

CCU	Coronary Care Unit
CT	Computed Tomography
DIN	Deutsch Industrie Norm
DM	Deutsch Marks
E/N	Exchange of Notes
ESWL	Extracorporeal Shock Wave Lithotripsy
GDP	Gross Domestic Product
HIF	Health Insurance Fund
IC/R	Inception Report
ICU	Intensive Care Unit
JICA	Japan International Cooperation Agency
M/D	Minutes of Discussion
MKD	Macedonia Denar
MOFA	Ministry of Foreign Affairs
MOH	Ministry of Health
MRI	Magnetic Resonance Imaging
NICU	Neonatal Intensive Care Unit
OECD	Organization for Economic Co-operation and Development
PHARE	Poland Hungary Aid for Restructuring of Economy
PHC	Primary Health Care
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
US\$	U.S. Dollar
WHO	World Health Organization





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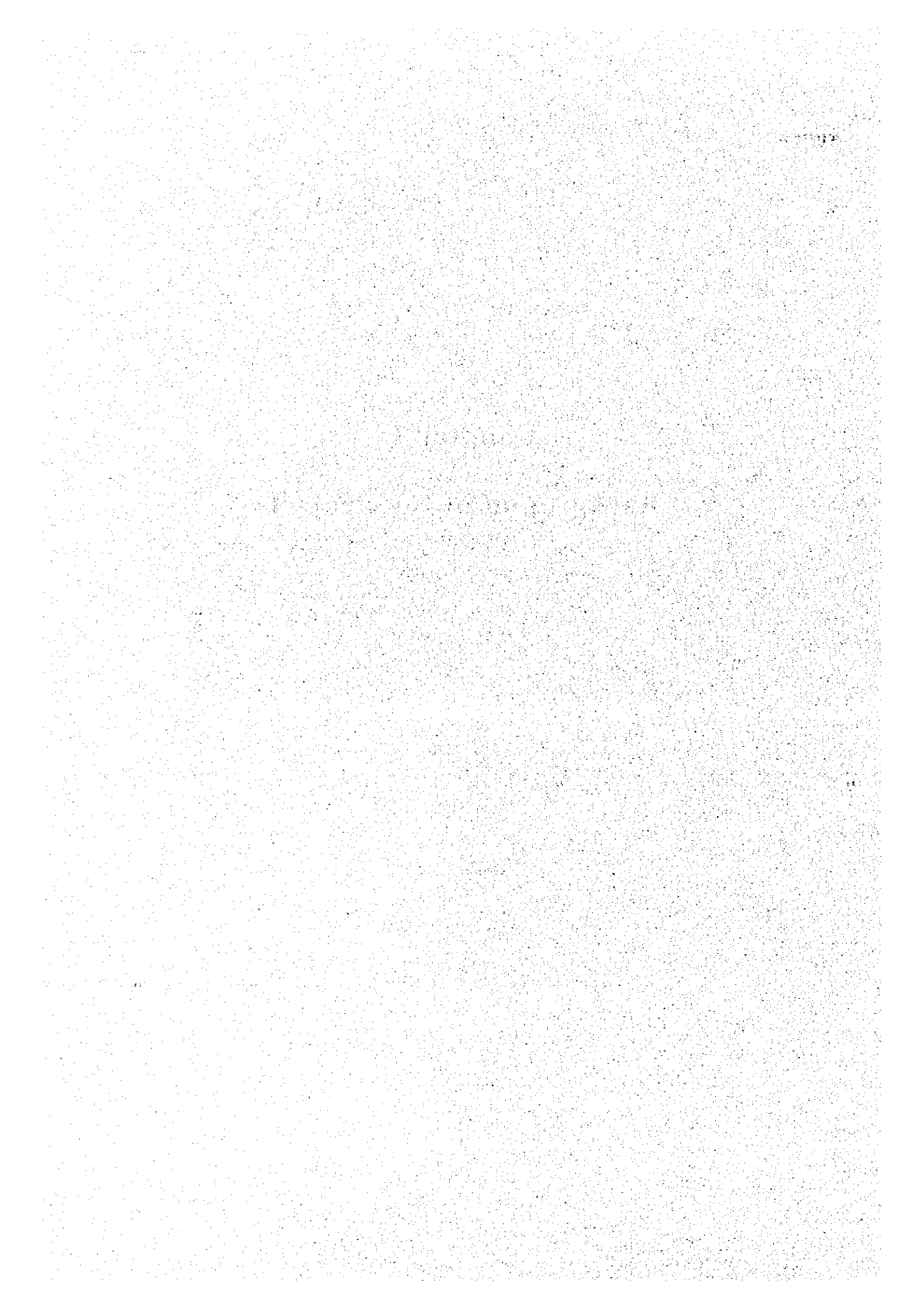
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- 1. Member List of the Survey Team**
- 2. Survey Schedule**
- 3. List of Party Concerned in the Recipient Country**
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# **Chapter 1**

## **Background of the Project**



# **Chapter 1 Background of the Project**

## **1-1 Background**

The Former Yugoslav Republic of Macedonia (hereinafter referred to as "the Recipient Country") is a landlocked nation in the Balkan Peninsula, bound by Albania, Bulgaria, Greece and Yugoslavia (Serbia and Montenegro), covering an area of 26,000 sq. km. The 2.1 million population is multi-racial in makeup, consisting of the predominant Macedonians, the Albanians, and various other minorities.

Political tensions in the Balkan Peninsula have blocked trade routes to former Yugoslavian markets, resulting in significant damage to the Macedonian economy. This, in turn, has hindered development of the social infrastructure, with particularly adverse effects on public health services. Although improvement of public health services is cited as a top priority in the national political agenda, the effort has received insufficient budget allocation. The consequent decline in the quality of medical services is rapidly becoming a significant social problem.

The overall level of Macedonian medical skills and technology is high; no qualitative or quantitative problem exists in terms of the human resources in medicine. However, because of the economical situation of this country, funds are insufficient for the badly needed modernization of equipment. The equipment currently available suffers a high rate of nonfunctionality that hampers effective medical service.

The Project for Equipment Supply for the General Hospital of the Medical Center of Stip (hereinafter referred to as "the Project") is targeted at the General Hospital of Medical Center of Stip (hereinafter referred to as "the Stip Hospital") in Stip, a major city in northeastern Macedonia, about 100 km from the capital, Skopje. The Stip Hospital is a regional general hospital covering fifteen provinces in the northeast region of the country (39% of overall land area) with a population of 470,000 (24% of the overall population). Established in 1968, it has 517 beds and is operated by a staff of 720: 71 specialists, 165 general practitioners, specialized nurses and other staff. Most of these medical workers are well-trained and possess a high level of technical skill.

In contrast, the number of such basic diagnostic facilities as X-ray apparatuses, ultrasonic diagnostic equipment, and endoscopes are absolutely insufficient. Compounding this problem, the existing equipment is old and malfunctions frequently. Examination equipment is also antiquated, resulting in a degradation of the hospital's processing capabilities. Despite the fact that the Stip Hospital is supposed to serve all of northeastern Macedonia, its diagnostic capabilities are severely limited by the lack of the equipment. In terms of treatment, the situation is not much better, as all the operation-related equipment, including operating tables and lights, are obsolete and do not function properly. In addition, basic operational instruments are not in good working order due to extended use. Autoclaves are also in poor condition; the central sterilizing room is equipped only with low-capability equipment, and the small autoclave in each operating room does not function properly. Many other basic facilities (e.g., aspirators and coagulating equipment) are also obsolete and hinder effective treatment. The ICU is not functional, with most equipment having been damaged. The number of hemodialysis apparatuses is also woefully inadequate, which has resulted in a long waiting-list of patients. The physiotherapy rehabilitation facilities are also quite outdated, negatively affecting operational ratios.

In conclusion, with most of the necessary equipment for diagnosis, examination, and treatment obsolete and functioning inadequately, the Stip Hospital cannot provide the level of medical service expected of a regional general hospital. As a result of this unfortunate situation, the northeast region, in addition to being the nation's least developed area, is also faced with an inadequate level of public healthcare.

Although Macedonia has placed requests with organizations in various countries for humanitarian aid to its public health sector, noteworthy results have so far resulted only from the two grants-in-aid from Japan (the Project for Upgrading the Medical Equipment in 1995; and the Project for Equipment Supply for City Hospital-Surgical Clinic in 1996), and from German aid providing a CT to Bitola General Hospital. For the Stip Hospital, the target of the present project, no foreign aid has yet been offered.

Faced with these difficulties, the Macedonian government has requested further aid from Japan which has twice provided grants for improving medical equipment for improving antiquated equipment and introducing new facilities in order to increase the quality of



medical services in the Stip Hospital, as well as the level of public healthcare in the northeastern Macedonia.

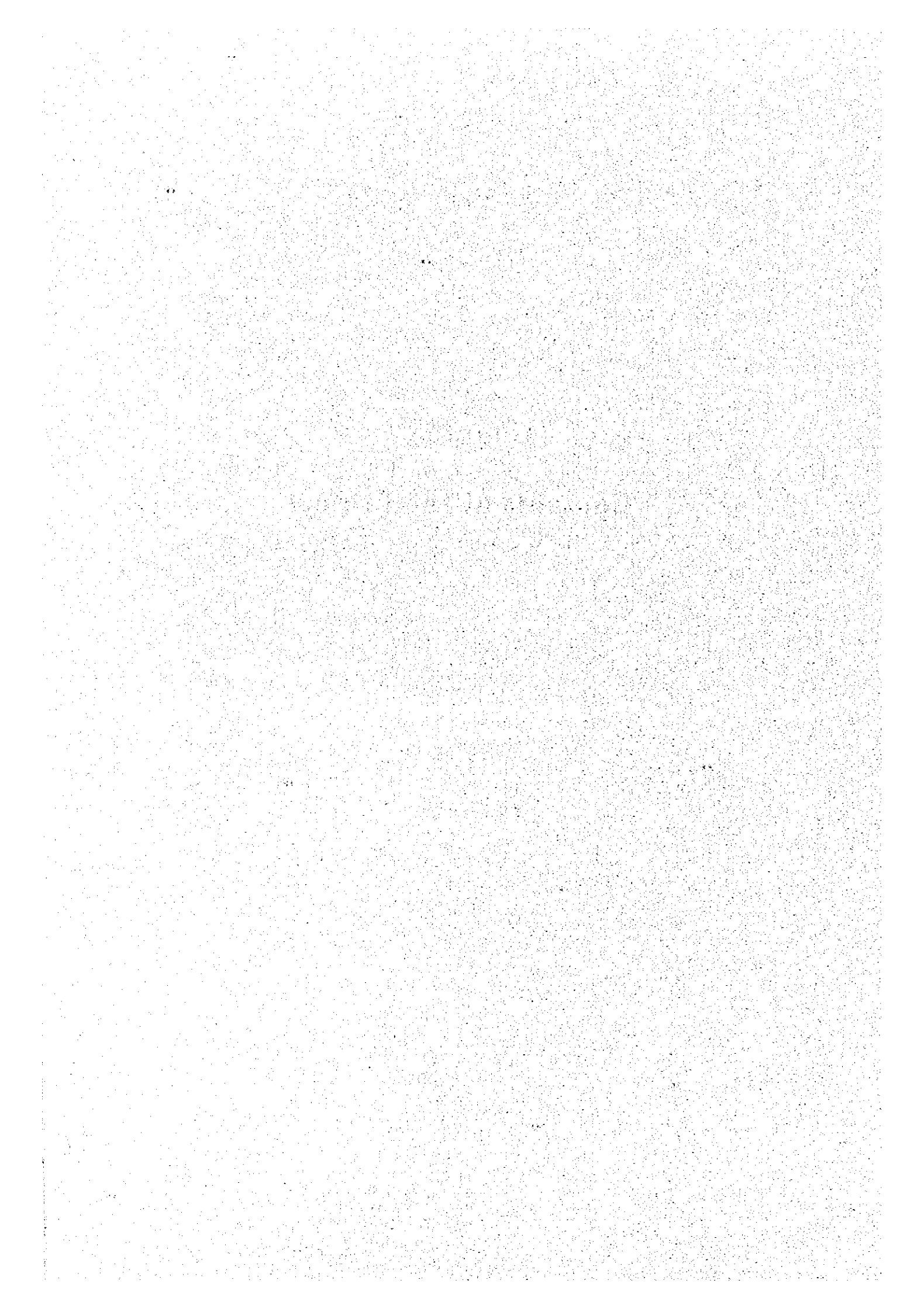
## **1-2 Outline of the Project**

- (1) Request** : A request was filed in April 1997
- (2) Authority concerned** : Ministry of Health,  
Government of the Former Yugoslav Republic of Macedonia
- (3) Responsible Agency** : General Hospital of the Medical Center of Stip
- (4) Contents** : Procurement and installation of medical equipment to be provided to the General Hospital of the Medical Center of Stip  
(Total number of 151 items)



## **Chapter 2**

### **Contents of the Project**



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

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

The aim of the Project is to improve basic diagnosis and treatment equipment at the Stip Hospital in order to return it to its function as regional general hospital. The Project will also go toward improving medical services throughout the northeast region, one of Macedonia's least developed in terms of medical facilities.

### **2-2 Basic Concept of the Project**

#### **2-2-1 Basic Concept**

Most of the equipment at the Stip Hospital encompassed by this project is obsolete or in disrepair, and incapable of providing adequate basic diagnosis and treatment. Hobbled by the condition of its medical equipment, the Stip Hospital is incapable of offering the medical services originally planned, and is unable to function as a regional general hospital for the northeast region. Currently, many patients are transferred to Skopje, the nation's capital. The purpose of the Project is to replace existing obsolete equipment and to introduce new facilities in order to permit the Stip Hospital to recover the functions and level of service required of a regional general hospital.

#### **2-2-2 Conclusion - Requested Equipment Investigation**

The requested equipment amounts to 151 items from four hospital sections: 83 items from the seven departments of surgery (General surgery, Urology, Anesthesia/ICU, Orthopedics, Obstetrics and Gynecology, Ophthalmology, and Oral); 41 items from the four departments of internal medicine (General internal medicine, Pediatric, Infectious disease, Physiotherapy); 21 items from the three diagnosis and examination departments (Radiology, Biochemical laboratory, Blood bank); and 6 items for shared use by multiple departments. An additional request has been made for ten other urgently required items from two departments. The final number of items to be funded by the project is 161.

In accordance with basic policy, the Basic Design Study Team (hereinafter referred to as "the Study Team") conducted studies to determine the validity of procurement for each item, considering the following points.

- Confirmation of the condition and utilization results of existing hospital equipment; as well as the level of technical skill of the medical worker.
- Evaluating each item using positive/negative points (detailed in the following table) for procurement validity.
- Confirming procurement validity in terms of technical skills required for, and the maintenance cost of certain highly sophisticated equipment (CT, ESWL).
- Studies of what work and expenses ought to be shouldered by the Stip Hospital, including repairs and renovations of buildings for the installation of X-ray apparatus.

Criteria for the priority of the requested medical equipment	
Positive points, the equipment to be included in the project	
P1	Equipment to be utilized for treatment of the common diseases including diagnostic treatment and prevention
P2	Equipment to be replaced with the existing equipment which is already deteriorating
P3	Essential equipment required for medical services of general hospital in north-eastern Macedonia.
Negative points, the equipment to be excluded from the Project	
N1	Equipment not required for health care services such as diagnosis treatment and prevention
N2	Simple equipment/furniture available locally
N3	Most advanced equipment to be utilized for research activities
N4	Equipment with some difficulties on installation/infrastructure conditions
N5	Expensive equipment less utilized because of small number of testing/less number of patients
N6	Equipment hazardous to environmental control
N7	Equipment only utilized with exclusive reagent kit available from the specific manufacturer
N8	Equipment with financial/marketing difficulties on the procurement of consumable and spare parts, etc.

The results of these studies were submitted to the Ministry of Health of Macedonia, and a priority list of the items to be procured was compiled with the collaboration of both parties, the Ministry of Health and the Study Team. The final agreement confirmed the simple procurement of 146 items (Priority A); 1 item (CT) to be procured after confirmation of financial resources for the operation and a maintenance service charge (Priority A'); 9 items (additional request items) that may be procured in case of the budget allowance (Priority B); and 5 items (including ESWL) excluded from the procurement items (Priority C). In order to avoid redundant installation and to promote effective equipment use, both parties agreed that the number of medical equipment items covered by the Project should be 156.

Priority A	(equipment to be provided in the project)	146
A'	(equipment to be provided in the project, after confirmation of financial resources for the operation and a maintenance service charge)	1
B	(equipment to be provided in case of the budget allowance )	9
Total		156

The list of the requested equipment by the Recipient Country with the priority is described in **Annex-1** of Minutes of Discussion, which is attached in this report.

### **(1) Basic medical equipment**

Except for selected highly sophisticated items (CT and ESWL) and the physiotherapeutic apparatus, most items belong to the category of basic diagnosis and treatment equipment, procured to replace existing obsolete and/or nonfunctional equipment. Since these items pose no problems in terms of use, management, maintenance, or installation, they have been judged as appropriate for procurement, following study on each department and item.

It was eliminated that three items of basic medical equipment from the procurement list. Given their infrequent use, Instruments for polypectomy and Micro-laryngoscope requested by the Oral department have been eliminated. Judged to be consumable, the transfusion sets requested by the Pediatrics department have also been eliminated.

### **(2) CT (Computer Tomography)**

Its lack of adequate general diagnostic apparatus has left the Stip Hospital unable to provide sufficient diagnosis of chest and abdominal ailments, or to undertake major surgery for the liver and pancreas, or to perform craniotomies, despite the rising number of cerebral hemorrhage and infarction cases. Currently, these ailments must be treated symptomatically. CT is useful not only for cerebral disorders, but for various other diseases. It is expected to serve as a central diagnostic tool. Despite its maintenance costs highest among the equipment requested, the device is urgently needed for the Stip Hospital and for the northeast region, which is currently the only region not equipped with a CT. Currently, many patients must be transferred to the capital of Skopje. As indicated in **Table 2-1**, the Stip Hospital meets installation standards for a CT, as specified by WHO. It is also expected to have a staff well-versed in operating a CT.

Although the procurement of the CT is judged a high priority for the reasons given, it will require not only replacement of its costly tube once every year or two years, but regular maintenance services. Therefore, due allowance must be made for an adequate technical service system following procurement. Additional funds and preliminary work are also required for partial modifications and repairs, for the installation of X-ray protection measures, and for a new control room in the inpatient ward where it is to be installed.

**Table 2-1 WHO Standard for CT and Actual Situation of the Stip Hospital**

WHO Standard	Actual Situation of the the Stip Hospital
<b>1. Activities of Radiology Department</b>	
1) Number of Radiographs : 50,000 / a year	44,115/year (1996), halved in a few years due to the deterioration of equipment. More than 100,000/year is expected.
2) General including Topography	Performed
3) Angiography	Partially performed except cardiac field
4) Photographing of spinal column	Partially Performed
5) Ultrasound Diagnosis (preferably performed in Radiology Dept.)	Performed in Radiology Dept.
6) Well-trained radiologist and engineer	2 radiologists, 6 engineers
<b>2. Activities of Hospital</b>	
1) 500 beds	517 beds
2) General Surgery	General hospital, which providing secondary care
3) Diagnosis in Brain Surgery	Performed
4) Out-Patient Service including Traumatology	Performed
5) Technical Surgery (Cardio-Surgery, Vascular Surgery, Orthopedic Surgery, Urology)	General hospital, which providing secondary care
6) Neuro-surgery	Performed
7) Oncology Tumor Unit (preferably treated by Radiology Dept.)	Patients of Oncology are transferred to the Medical Faculty of Skopje University
<b>3. Infrastructure</b>	
1) Stable Power Supply (Including Stabilizer, Compressor)	Applicable
2) Easy access to Air Conditioner	Applicable

(ref. : WHO Technical Report Series Vol 689, 1983.)

### (3) ESWL

Although ESWL was requested by the Stip Hospital, it is, like CT, quite expensive equipment. This equipment is now installed only at the Medical Faculty of Skopje University. This device is projected to treat approximately 100 patients annually only in the Stip Hospital; judging from the urgency, expected benefits, and high maintenance and



management costs, its procurement has been evaluated as currently unnecessary. Abdominal stones are still commonly removed through surgery; as an alternative, an ureteroscope, one of the requested items, will be considered for use in combination with instruments for lithotomy.

#### **(4) Physiotherapy apparatus**

Requested physiotherapy apparatus include Laser stimulator, Electrostimulator, Interferator, Infrared lamp, Ultraviolet lamp, Black light, Bath tank for melting of paraffin, Whirlpool, Hydropack tank, and Apparatus for massage. All these replace older counterparts, which currently operate at full capacity every day. Their procurement has therefore been judged reasonable. The requested Vasculator was eliminated, because it is now regarded as having doubtful efficacy (in Japan, its production has already been suspended). Since the Modern equipment for kinesi therapy is outmoded and urgently requires replacement, this procurement has been judged reasonable. Electromyography is basic to diagnosing functional recovery, its procurement is judged necessary.

### **2-3 Basic Design**

#### **2-3-1 Design Concept**

##### **(1) Policy concerning natural climatic conditions**

For medical equipment to be provided under the Project, no items would be directly affected by natural climatic conditions. However, temperatures at Stip can sometimes reach 37-38 degrees Celsius, and significant temperature swings can occur from day to night. Since medical facility rarely comes with temperature adjustment functions, due consideration should be given to temperature control.

##### **(2) Policy concerning procurement from third –party countries**

Ideally, the Ministry of Health of Macedonia can secure the procurement of technical services, spare parts, and consumable promptly and at low cost following equipment delivery. Since several neighboring countries are capable of providing high-quality medical equipment, plans should be made for procurement from these countries.

**(3) Policy concerning operational maintenance and management capability**

The Stip Hospital is adequately staffed with medical personnel with the necessary expertise for maintaining and managing the procured equipment. There is no need for special training, except for CT. Since this piece of equipment is not currently installed, the plan should provide for support from the experienced staff of the Medical Faculty of Skopje University, as well as technology transfer from the manufacturer.

**(4) Policy concerning equipment planning**

1) Basic policy for basic medical equipment

For basic medical equipment, the plan should judge the suitable quality and quantity in light of the condition of existing equipment, and by the principle that such equipment should be procured as is suitable for a regional general hospital. The specifications for each procured item should be determined after due consideration of the technical support system and maintenance capabilities after procurement.

2) Basic policy for X-ray apparatus and CT

Except for the mobile variety, the installation of X-ray apparatus was requested for the Radiology department. The project examined the current conditions of the department's X-ray apparatus, the number of diagnoses expected following procurement and their purpose, conditions of facilities for radiography, including utilities, and the necessity of radiation protection measures and other related construction. Based on the results, the plan consider the installation of necessary and appropriate X-ray apparatus permitting the Stip Hospital to serve effectively as a regional general hospital for the entire northeast area.

3) Basic policy for supply of the spare parts and consumable

The disrepair of many existing pieces of equipment at the Stip Hospital is due in part to an inadequate supply of parts and consumable. Plans must be put in place to ensure an adequate supply of expendable spare parts, consumable, and reagents for equipment procured in the Project to obtain their maximum usefulness.

## **(5) Policy concerning inland transportation**

The inland transportation route currently under consideration extends from the port of Thessaloniki in Greece to Stip. It is the shortest route, and is adequately maintained. But relations between Macedonia and Greece are not yet completely normalized, leaving open the possibility of further border blockades. Effective alternate routes must be considered, in case the current route cannot be used.

### **2-3-2 Basic Design**

#### **(1) Total concept of project planning**

Basic plan of the Project designs on the equipment of 156 items, which have been confirmed as appropriate for procurement. Since most procurement items replace existing equipment, installation will pose few difficulties. However, CT, the general-purpose X-ray apparatus, and Remote Control Fluoroscopy which will be installed in building for inpatient, will require partial interior modifications, including the installation of radiation protection measures. Mobile X-ray apparatus, Apparatus for developing X-ray films, Ultrasound, and Sterilizer are scheduled to be installed in the building for outpatient and inpatient to maximize usefulness.

The plan should provide for careful consideration of management, maintenance, inspection, and repair of equipment following delivery. It is also necessary to calculate the required supply of spare parts and consumable by estimating the frequency of use of each item, so that these figures may be reflected in the plan, which intended to prevent the expiration of effective dates and dead stocks. The plan should also provide for continuous supply systems for procuring technical services, spare parts, and consumable.

#### **(2) Equipment plan**

Table 2-2 lists the equipments to be procured in the Project.

**Table 2-2 Equipment List of the Project**

No.	Dept.	Equipment	Q'ty
1	Anesthesia	Anesthetic device with ventilator	6
2	Anesthesia	Patient monitor	6
3	Anesthesia	Laryngoscope	6
4	Anesthesia	ECG defibrillator	2
5	Anesthesia	Neuromuscular transmission monitor	2
6	Anesthesia	Aspirators	8
7	Blood Bank	Blood bank refrigerator	1
8	Blood Bank	Blood plasma freezer	1
9	Blood Bank	Cryoprecipitate freezer	1
10	Blood Bank	Centrifuge	4
11	Blood Bank	Microscope	2
12	Blood Bank	Plasma separator	1
13	Clinical Labo.	Plasmapheresis device (Electropheresis device)	1
14	Clinical Labo.	Spectrophotometer	2
15	Clinical Labo.	Analytical balance	3
16	Clinical Labo.	Fibrintimer	1
17	Clinical Labo.	Blood cell counter	1
18	Clinical Labo.	Electrolytes analyzer	2
19	Clinical Labo.	Blood gas analyzer	1
20	Clinical Labo.	Glucometer	1
21	Clinical Labo.	Centrifuge	1
22	Coronary care unit	ECG	3
23	Coronary care unit	CCU monitor	5
24	Coronary care unit	ECG defibrillator with pacemaker	1
25	Coronary care unit	Cardiopulmonary resuscitation bag	1
26	General	Washing Machine for Surgical instrument	1
27	General	Sterilizer for instrument (Formalin)	1
28	General	Sterilizer of the cloth	1
29	General	Washing machine for laundry	1
30	General	Autoclave	3
31	General	Central gas station (O <sub>2</sub> , N <sub>2</sub> O, Air, Vacuum)	1
32	GY.OB.	Curettage instruments set	6
33	GY.OB.	Amnioscopy instruments set	2
34	GY.OB.Del.room	Suction pump	2
35	GY.OB.Del.room	Infusion Pump	6
36	GY.OB.Del.room	Instruments set for episiotomy	5
37	GY.OB.Del.room	Delivery Monitor CTG	2
38	GY.OB.Del.room	Vacuum Extractor	2
39	GY.OB.Del.room	Forceps for delivery	2
40	GY.OB.Del.room	Incubator	4
41	GY.OB.Del.room	Delivery Bed	2
42	GY.OB.Del.room	Ultrasound with Vaginal Probe	1
43	GY.OB.Del.room	Gynecology examination table	2

No.	Dept.	Equipment	Q'ty
44	GY.OB.Del.room	Obstetric examination table	1
45	GY.OB.Ope.room	Operating Table	1
46	GY.OB.Ope.room	Operating Light, Ceiling Type	1
47	GY.OB.Ope.room	Electric suction pump	2
48	GY.OB.Ope.room	Abdominal hysterectomy instruments set	3
49	GY.OB.Ope.room	Vaginal hysterectomy instruments set	2
50	GY.OB.Ope.room	Cesarean section instruments set	3
51	GY.OB.Ope.room	Microchirurgye set for fertility	2
52	GY.OB.Ope.room	Bipolar diathermy	2
53	ICU	Critical care beds	8
54	ICU	Central Patient Monitor System (8 Beds)	1
55	ICU	Ventilator	8
56	ICU	ECG Defibrillator with Pacemaker	1
57	ICU	Infusion Pump	16
58	ICU	Syringe Infusion Pump	5
59	ICU	Bronchofiberscope	2
60	ICU	Blood Gas Analyzer	1
61	ICU	Cardio pulmonary resuscitation bag	5
62	ICU	Mobile ventilator for transport of critical ill patient	2
63	Internal Medicine	Ultrasound	1
64	Internal Medicine	Gastroscope	1
65	Internal Medicine	Colonoscope	1
66	Internal Medicine	Bronchoscope	1
67	Internal Medicine	Duodenoscope	1
68	Internal Medicine	Apparatus for coronary stress testing	1
69	Internal Medicine	Spirometer	1
70	Internal Medicine	Haemodialysis apparatus	10
71	Ophthalmology	Slit lamp with tonometer	2
72	Ophthalmology	Operation Microscope (Multi-Purpose)	1
73	Ophthalmology	Autorefractometer	1
74	Ophthalmology	Operation table	1
75	Ophthalmology	Ophthalmoscope	5
76	Oral	Bipolar coagulator	1
77	Oral	Bronchoscope (Right Type)	1
78	Oral	Oesophagoscope	1
79	Oral	Endotracheal tonsillectomy set	3
80	Oral	Instruments for microsurgery ear operation w/bone drill	1
81	Oral	Rhino septoplasty set	1
82	Oral	Instruments for operating paranasal sinuses	1
83	Oral	Sinus scope	1
84	Oral	Audiometer with tympanometer	1
85	Orthopedic	Operating table	1
86	Orthopedic	Operating table with extension	1
87	Orthopedic	Operating lamp ceiling type	1
88	Orthopedic	Thermocauter	1

No.	Dept.	Equipment	Qty
89	Orthopedic	Suction pump	1
90	Orthopedic	Mobile X-ray apparatus (C-arm TV System)	1
91	Orthopedic	Arthroscope set	1
92	Orthopedic	Bone drill set	1
93	Pediatric	Infant incubator	6
94	Pediatric	Mobile infant incubator	2
95	Pediatric	Suction pump for pediatric use	3
96	Pediatric	Ultrasound for Pediatric use	1
97	Pediatric	Reanimation set	3
98	Pediatric	ECG for pediatric use	2
99	Pediatric	Small Autoclave	1
100	Pediatric	Electric Balance	2
101	Pediatric	Patient Monitor	5
102	Pediatric	Infusion Pump for Pediatric Use	10
103	Pediatric	Phototherapy Unit	6
104	Physiotherapy	Laser Stimulator	1
105	Physiotherapy	Electrostimulator	2
106	Physiotherapy	Electromyography	1
107	Physiotherapy	Interferator	2
108	Physiotherapy	Black light	1
109	Physiotherapy	Apparatus for shortwave diathermy	1
110	Physiotherapy	Infraed lamp	3
111	Physiotherapy	Ultraviolet lamp	3
112	Physiotherapy	Apparatus for massage	2
113	Physiotherapy	Bath tank for melting of paraffin	2
114	Physiotherapy	Extension mat	1
115	Physiotherapy	Whirlpool	2
116	Physiotherapy	Hydropack tank	1
117	Physiotherapy	Modern equipment for Kinesi therapy	1
118	Surgery	Multi Purpose Laparoscope Set with Surgery Iustrument	1
119	Surgery	Gastrectomy instruments set	5
120	Surgery	Cholecstectomy instruments set	5
121	Surgery	Operating Table	2
122	Surgery	Operating Light, Ceiling Type	2
123	Surgery	Neurosurgical Instruments set	2
124	Surgery	Bipolar diathermy	2
125	Surgery	Monopolar diathermy	2
126	Surgery	Suction pumps	3
127	Surgery	Abdominal Surgery iastruments	2
128	Surgery	Thoracic Surgery Set	1
129	Surgery	Duodenofiberscope	1
130	Surgery	Plastic Surgery Instruments Set	1
131	Surgery	Dermatome	1
132	Surgery	Retractors Set	5
133	Surgery	Maxilla Facial Instruments Set	1

No.	Dept.	Equipment	Q'ty
134	Surgery	Osteotomy Instruments set for Maxillofacial surgery	1
135	Surgery	Recto-sigmoidoscope	2
136	Surgery	Mobile X-ray	1
137	Urology	Ureteroscope with stone punch	1
138	Urology	Resectoscope Set with Monitor	1
139	Urology	Uretero-reno-fiberscope	1
140	Infectious D.	Rectoscope	1
141	Infectious D.	Ultrasound	1
142	X-Ray unit	CT	1
143	X-Ray unit	Remote Control Fluoroscopy	1
144	X-Ray unit	X-ray Apparatus	1
145	X-Ray unit	Ultrasound	3
146	X-Ray unit	Mammography	1
147	X-Ray unit	Apparatus for developing X-ray films	4
148	Emergency	ECG	2
149	Emergency	Defibrillator	1
150	Emergency	Blood gas analyzer	1
151	Emergency	Reanimation set	2
152	Ophthalmology	Perimeter	1
153	Ophthalmology	Instrument set for operation of cataract	1
154	Oral	Laryngostroboscope	1
155	Dental	Dental unit	5
156	Internal Medicine	Microscope for hematology	2

The basic approach toward specification of each of the main items to be procured in the Project are discussed below, in order to help draw up an equipment plan suitable for the Stip Hospital, based on on-site studies.

#### 1) CT (Computer Tomography)

The Stip Hospital can currently provide only limited medical service, due to a lack of proper diagnostic equipment, often forcing it to transfer patients requiring sophisticated diagnoses to Skopje. The Stip Hospital is now required to improve medical services both qualitatively and quantitatively for patients not only in the city of Stip but in the northeast region of the country. To meet this need, the plan calls for the procurement of a spiral-type CT that can be used for multiple purposes and serve for the number of cases requiring CT diagnosis, which easily exceeds twenty cases daily. In Macedonia, spiral-type CTs are installed in the Medical Faculty of the Skopje University (tertiary care hospital), Skopje City Hospital-Surgical Clinic

(secondary care hospital), which procured with grant-in-aid from Japan in 1997, and Bitola General Hospital (secondary care hospital) in the south which procured with a German grant. Installing the same grade of CT as the others in the Stip Hospital is expected to greatly improve the overall diagnostic level of the northeast region.

CT is a powerful diagnostic tool, but requires the replacement of an expensive tube almost every year. It also requires technical maintenance service three to four times a year. Thus, we must consider conditions for regular technical service and its expenses, continuous supply system of spare parts and consumable (in particular, the procurement scheme and price for the X-ray tube). In considering the procurement of CT in the Project, thought should be given not only to the fixed price of the piece of equipment, but to operation and maintenance costs.

CT is a delicate mechanism for computer diagnostic imaging and is expected to be used frequently for different purposes. Provisions must be made for quick repairs in case of mechanical failure. Given the above requirements, a model that satisfies the following points should be given high priority.

- An agent of the manufacturer is located in Macedonia or in a neighboring country.
- The agent should have several engineers for repairing and checking the equipment and should have the authority to sign technical service contracts with the Ministry of Health of Macedonia for the repair and maintenance of the equipment.
- The agent should keep in stock general-purpose repair parts and consumable and be capable of supplying even specialized parts within five days.
- The agent should conduct three regular checkups annually, and provide clear notification of annual maintenance costs, including the cost of dispatching engineers.

The installation of CT in a room on the second floor of the building for inpatient poses no problems; the location is well-built and provides space well above the 25 sq. meters of floor area and 2.2 meters of height required for installation of the equipment. But it lacks walls that block radiation. Additionally, the room requires the



installation of a control room and other modifications, including a carrying-in route, power source, and air-conditioner.

2) General-purpose X-ray apparatus and Fluoroscope X-ray apparatus

Both X-ray apparatuses are required at the Stip Hospital for basic diagnosis and treatment. They will replace existing obsolete equipment. From an operational standpoint, the general-purpose X-ray apparatus should meet Bucky table/movable specifications, while the model intended for the fluoroscope X-ray apparatus should be remote-controlled. No problems are anticipated in terms of maintenance costs, but since adequate technical services following installation should be provided for, procurement from a neighboring country needs to be considered. Installation should pose no problems, since the procured equipment will be installed at existing equipment locations. However, current radiation protection measures are insufficient, making partial modification of the rooms necessary.

3) Mobile X-ray and Mammography

Mobile X-ray earmarked for the Orthopedics department is used for diagnosis during and following surgery, and therefore should meet the C-arm specification with TV. The model requested by the General surgery department is of general specification, to be installed in the building for outpatient. Mobile X-ray and Mammography seldom requires repairing, and does not require replacement of its X-ray tube. The equipment should present few maintenance problems; and since they are mobile, they should present few installation problems. Minimal additional requirements include X-ray protection panels, lead aprons, and several accessories. Mammography should be installed in the Radiology department to promote centralization of diagnostic devices.

4) Ultrasound

Equipment requested by the departments of Pediatrics, Infectious diseases, Obstetrics and Gynecology (with vaginal probe), and General internal medicine should meet general-purpose specifications with B/M mode image diagnosis capability. The three units requested by the Radiology department should be of the doppler type, capable of use for more general purposes, including diagnosis of circulatory organs.

Since maintenance costs will include printer paper, these should be of the black-and-white variety. Two units for the annual diagnosis of more than 60,000 patients annually at the departments of internal medicine and surgery will be installed in the building for outpatient and for screening those referred to the building for inpatient. One unit will be installed in the Radiology department in the building for inpatient. Central management of the procured Ultrasound should remain in the hands of the Radiology department, for both buildings for inpatient and outpatient, except for the department of Pediatrics and Infectious diseases, which are located in a separate building. The specification should allow the shared use of various probes. Multi-purpose probes should be selected, except for those used in the Obstetrics and Gynecology department.

5) Endoscope

The procured fiberscopes and rigid type endoscopes should permit shared use of various accessories for different purposes. To avoid unnecessary redundancy, the monitor and video equipment should be shared, with only one set provided for each of the department of General internal medicine, Urology, and General surgery department. An inexpensive halogen lamp should serve as the light source, in order to minimize maintenance costs following installation. Multi-purpose laparoscope and Arthroscope sets will be new additions; the accessory operating tool set should be of a standard type. Ureteroscope set should be equipped with instruments for removing abdominal stones, since ESWL will not be procured under this project.

6) Haemodialysis apparatus

Many patients currently await haemodialysis treatment; following procurement, the equipment is expected to operate at full capacity. For this reason, considerations for supply of consumable and regular maintenance checks should be given the highest priority. The selection of the equipment should be limited to the model for which currently produced consumable can be fully utilized and for which extended on-site services are available.

7) Operating table

The electrically lifting model is selected for maneuverability. In addition, depending on the department in which a table is installed, an appropriate traction device should be provided for head, torso, and upper and lower limbs. Installation poses few problems, since the procured model replaces an existing older unit. Utilities, including power, are also expected to pose no problems.

8) Autoclave / Sterilizer

Judging from the anticipated frequency of use, chamber capacity of Autoclave should be approximately 600-liter. The steam type of the same size should be selected for cloth sterilization, so that it can be used as to sterilize the instruments in case some trouble happened with Autoclave. For sterilization of plastic instruments, the formalin sterilizer of approximately 500-liter capacity, which presents no danger of toxicity, should be selected. For washing surgical instruments, an ultrasonic cleansing apparatus that can use both hot and cold water should be selected.

The six antiquated vertical cylinder-type steam sterilizers currently installed in the central sterilizing room and the small accident-prone sterilizers scattered about the operating rooms should all be removed. In order to promote central management of sterilization, all procured sterilizers should be installed in the central sterilizing room in the building for inpatient, except for one scheduled for installation in the building for outpatient. Despite the bulk of these sterilizers, no problems are expected in maneuvering them into proper position, since they are slated for installation on the first floor of each building.

9) Operating light

To ensure ample illumination during operating procedures, shadowless lamps with satellites will be selected. These can provide high maneuverability as well as appropriate illumination. Ceiling strength and utilities pose no problems.

10) Operating instrument sets

There is no prescribed specification for each type of operation. Based on the doctors' opinions obtained during on-site study, the standard sets commonly used in Japan will be selected.

#### 11) Anesthetic device

The Stip Hospital has no anesthetic devices with ventilators. Anesthesia is still provided manually, operations always involve the risk of oxygen depletion. The outmoded manual anesthetic devices that urgently need upgrading will be replaced with anesthetic devices with ventilators. Halothane vaporizers, which are the type most commonly used for anesthetic devices, should also be installed.

#### 12) Patient monitor

The monitors in the ICU, NICU, CCU, and operating theaters should be capable of measuring common parameters (expiration, electrocardiogram, NIBP, SaO<sub>2</sub>, and body temperature). The ICU and NICU should be equipped with bedside and central monitors. Bedside monitors are mainly used for treatment and monitoring of individual patients, and central monitors for simultaneous monitoring of multiple patients and recording their parameters. For the CCU where patients with circulatory ailments are treated, a wireless system with transmitters will be selected, since many of the patients are fully mobile.

#### 13) Central gas station

There is no centralized system for nitrous oxide, air, oxygen, or vacuum. New piping will be necessary. For structural reasons, the piping from the central gas station of the building for inpatient should be connected only to five operating rooms, the ICU, and the CCU. A stable supply of nitrous oxide can be expected at the site. No problems are posed in installing this equipment, including the compressors, but the connectors for the anesthetic devices, ventilators, and vacuum should be compatible with those of the procured equipment, in accordance with DIN standards.

#### 14) Analyzer for the Biochemical laboratory department

Since analyzers require frequent procurement of reagents, it is necessary to select types for which these can be adequately supplied.

Blood gas analyzer is a device for examination of oxidization conditions of arterial blood in external respiration and of carbon dioxide exhalation through the analysis of arterial blood gas. The equipment is essential not only for routine examinations at the laboratory, but for examining respiratory conditions of patients in,

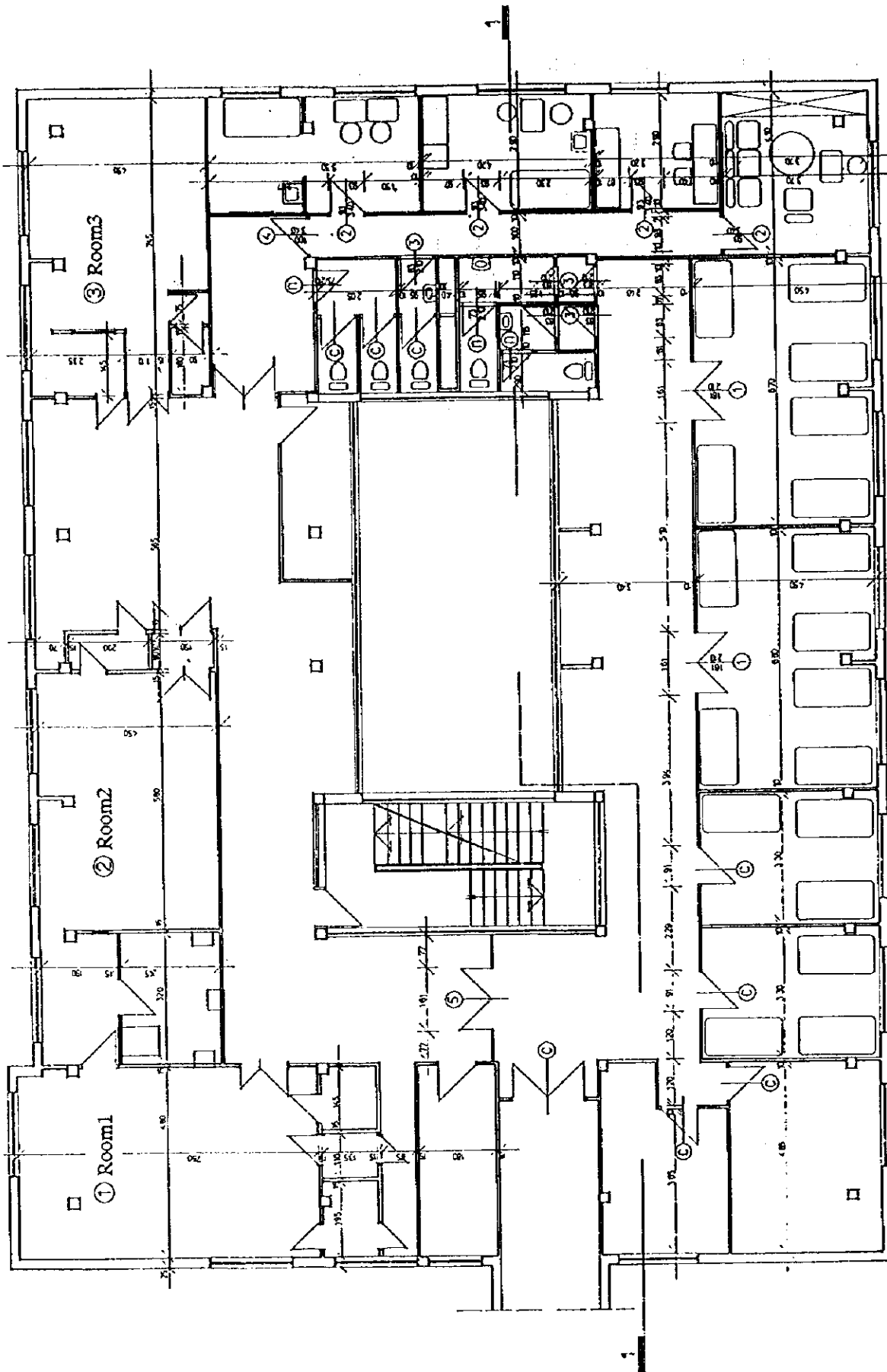
or requiring, emergency or intensive care. In addition to the laboratory unit, the ICU and the emergency care department should each be equipped with this device.

**15) Physiotherapy apparatus**

Physiotherapy apparatus will have similar basic specifications to the currently used models, taking into account the maneuverability of the apparatus for medical staff and patients. These items will replace the existing outmoded units, and pose no installation problems. For reasons having to do with building structures, the procured Modern equipment for kinesi therapy should be of the frame-assembly, rather than built-in type.

**(3) Improvement work required for installation of the equipment to be procured**

The equipment to be procured includes CT in the Radiology department, and Remote control fluoroscopy and X-ray apparatus in the building for inpatient. These items are scheduled to be installed in the rooms currently housing X-ray apparatus, some of which has been operational (refer to **Fig. 2-1 Location Map for X-ray apparatus**). Sufficient space in terms of height and area can be secured for the new equipment, but some improvements will be required such as installation of radiation protection walls due to the removal of windows and the addition of a control-room. These improvements should be included in the Project to facilitate its smooth implementation.

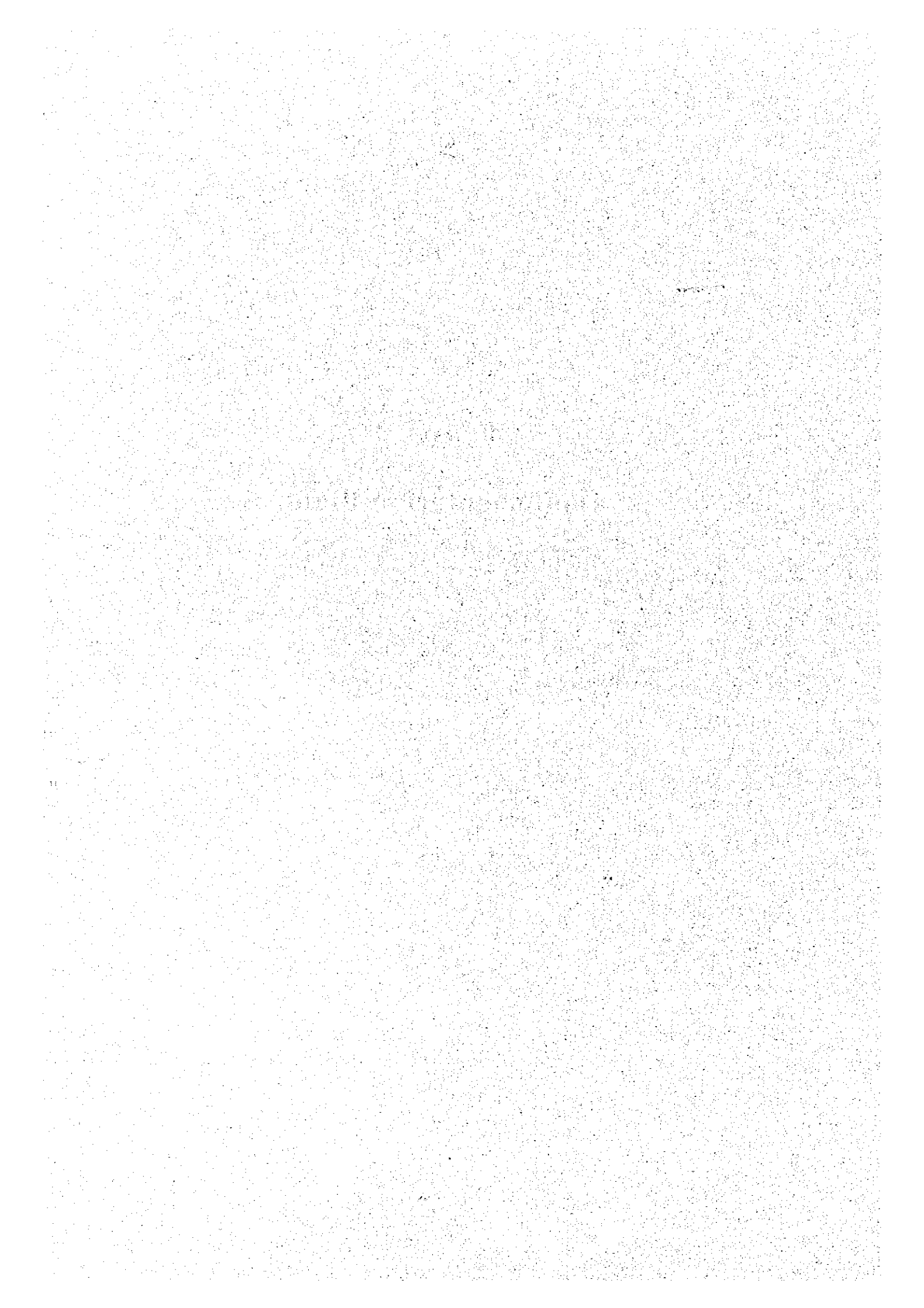


- ① Room1: CT
- ② Room2: X-ray apparatus
- ③ Room3: Remote control fluoroscopy

**Fig. 2-1 Location Map for X-ray apparatus**

# **Chapter 3**

## **Implementation Plan**





## **Chapter 3 Implementation Plan**

### **3-1 Implementation Plan**

#### **3-1-1 Implementation Concept**

Implementation of the Project will be carried out following the signing of the Exchange of Notes (E/N) by the governments concerned, and a Japanese national consulting corporation will manage and control all phases of work on behalf of the Ministry of Health of the Recipient Country, beginning with the detailed design study, preparation of tender documents, submission and evaluation of tenders, management and inspection of the process of transport/installation, and delivery.

On detailed design study, the convenience of operation, maintenance, inspection, and repair work following delivery should be fully taken into consideration. At the same time, the necessary quantity of spare parts and consumable shall be estimated. (The quantity shall be determined under the assumption that it will take approximately one year for the Ministry of Health to receive the spare parts and consumable from the date of order.) The type and quantity of each item will be determined by taking into account its frequency of use, conditions, and consumption. Manufacturers shall be held responsible for the trial run and operational guidance for certain types of equipment, while the maximum care shall be taken to ensure that factory tests and inspection are conducted prior to shipment.

Personnel including laborers required for the installation of equipment, shall be secured in the vicinity of the Stip Hospital, in principle, while engineers shall be dispatched from Japan and other countries to supply equipment requiring special skills and techniques of engineers. The equipment that requires the dispatch of engineers will be as follows; X-ray systems, medical gas piping system, sterilization apparatus, monitoring system, operating table and light, physiotherapy apparatus, endoscopes, laboratory equipments, and general equipments.

The procedure for test runs and adjustment of the equipment to be procured will be planned to allow enough time for technological transfers to the doctors and engineers concerned at the Stip Hospital. Concerning the technological transfers, consultations with

the Ministry of Health and the Stip Hospital in advance will be required.

The party responsible for the implementation of the Project, the consultant, and work involving the procurement of equipment shall be as follows:

**(1) Party responsible for the implementation of the Project**

The responsible party of the Recipient Country is the Ministry of Health. The Ministry of Health will act as the contracting party of the Recipient Country, and shall be responsible for implementing the Project. In implementing the Project, the Ministry of Health is required to cooperate in regard to the appointment of the responsible persons concerned for the Stip Hospital and work necessary for unpacking, delivery, and assembly/trial run of the equipment. The Stip Hospital will cooperate with regard to the following:

- Connection of utilities at the designated points for the equipment
- Preparation of a work schedule for the technological transfer concerning trial run/operational guidance/troubleshooting for the equipment
- Appointment of officials in charge of the above duties

**(2) Consultant**

Following the signing of the Exchange of Notes (E/N) between the governments concerned, the Ministry of Health shall sign a consultation agreement with a Japanese national consulting corporation for the detailed design of the equipment to be procured under the Project, and the work associated with tendering and supervision of project implementation. The agreement will be validated subject to approval by the Japanese Government. The consultant shall be responsible for implementation of the following work under the agreement:

1) Detailed design phase

Preparation of tender documents including general conditions, technical specifications, and other documents, preparation of the tender procedure; and preparation of contract documents

2) Tendering phase

Evaluation of the contents of the tender and assistance in concluding the contract

3) Implementation phase

Supervision of project implementation including control of the work schedule, inspections of equipment, supervision of transportation, supervision of installation work, and issuance of certificates.

**(3) Suppliers of the equipment**

Based on the Exchange of Notes (E/N) and in accordance with the “Guidelines for Procurement” under Japan’s Grant Aid Scheme, the Ministry of Health shall sign a procurement agreement with Japanese national suppliers that shall be determined on the basis of open tenders on the equipment to be procured. The agreement shall be validated subject to the approval of the Japanese Government. The suppliers shall implement the following under the agreement:

- Procurement, transport, and delivery of the equipment
- Installation of the equipment, and technical guidance concerning operation, maintenance, and repair

In addition, the suppliers shall be responsible for assistance with maintenance and spare parts procurement, as well as the provision of technical assistance during the free-of-charge warranty period following delivery.

**3-1-2 Implementation Conditions**

All possible measures shall be taken to ensure the implementation and a complete procedure for installation is required that will ensure the quick and efficient completion of the procurement, transport, delivery, and installation of the equipment. As the Project site is in the rural area of Macedonia, plans for transport and installation of the equipment and materials shall be carefully drafted. Therefore, consultations with officials concerned are essential prior to customs clearance, inland transportation, removal of old equipment, storage area for the procured equipment, route for carrying them in, etc.

### **3-1-3 Scope of Work**

The work necessary to implement the Project is divided between the Recipient Country and Japanese Grant Aids, as follows:

#### **(1) Work to be carried out by the Recipient Country**

- Removal of existing equipment
- Connection of utilities at the designated points for the equipment to be procured
- Preparation of storage area for the equipment to be procured until the time of installation

#### **(2) Work to be covered by Japanese Grant Aid**

- Procurement of the equipment to be procured
- Transport of the equipment to be procured
- Delivery, installation, and trial run of the equipment to be procured
- Technical transfer on operation and maintenance of the equipment to be procured

### **3-1-4 Consultant Supervision**

The Japanese national consulting corporation shall provide fair guidance, advice, and coordination throughout the detailed design phase, tendering phase, and implementation phase of the Project, and shall do whatever is necessary in order to ensure the smooth implementation of the Project in accordance with the Grant Aid Scheme of the Japanese Government and the Basic Design Study Report.

#### **(1) Details of Implementation Supervision**

##### **1) Design phase**

Preparation of tender documents, preparation of tender procedure, preparation of contract documents, and the approval of the Recipient Country is obtained.

##### **2) Tendering phase**

Implementation of a tendering, evaluation of the contents of the tender, and conclusion of a contract.

**3) Implementation phase**

Implementation supervision (inspection of equipment, shipment, supervision of transportation, guidance in supervision of installation, and supervision of work to be carried out by the counterpart), report on the state of progress, issuance of certificates, and the approval of the Recipient Country is obtained.

**4) Completion of work**

The consultant will be deemed to have completed its work when the equipment is completely installed, it is confirmed that all conditions of the contract have been met, the official delivery of the equipment is witnessed, and the approval of the Recipient Country is obtained.

**(2) Personnel Plan**

The consultants required for the supervision of detailed design/implementation shall be as follows:

**1) Project Manager**

**One (1)**

This project manager shall be responsible for the comprehensive supervision of work.

**2) Equipment Planner (I)**

**One (1)**

This person shall be responsible for the examination of the equipment to be procured and the preparation of specifications.

He or She shall be in charge of confirming on-site facilities and supplementary matters during the Basic Design Study.

He or She shall be responsible for the supervision of procurement work, including bidding and installation.

**3) Equipment Planner (II)**

**One (1)**

This person shall be responsible for the analysis and preparation of specifications.

He or She shall be in charge of examining on-site facilities and supplementary matters during the Basic Design Study.

He or She shall be responsible for the supervision of procurement work, including bidding and installation.

- 4) Equipment Planner (III) / Cost Planner                      One (1)

This person shall be responsible for the examination of the equipment to be procured, the preparation of specifications, and the estimation of project cost.

- 5) Interpreter    One (1)

This person shall be responsible for interpretation in the Recipient Country.

### **3-1-5 Procurement Plan**

#### **(1) Procurement of the equipment**

Procurement of the equipment under the Project shall in principle take place within Japan, but certain items that will require regular maintenance, frequent procurement of spare parts/consumable, or those that come with doctors' convenience such as operating instruments, etc., may be procured from third-party countries. Also, following the official delivery of the equipment, the Ministry of Health shall be promptly provided with technical services and spare parts/consumable at reasonable prices. The procurement plan for the equipment shall be drafted so to favor either manufacturers that have agents capable of providing technical services (repair and maintenance services) in the Recipient Country or in neighboring countries, or those that have a sufficient stockpile of spare parts/consumable.

#### **(2) Inland transportation route**

The inland transportation route currently under consideration extends from the port of Thessaloniki in Greece to Stip. It is the shortest route, and is adequately maintained.

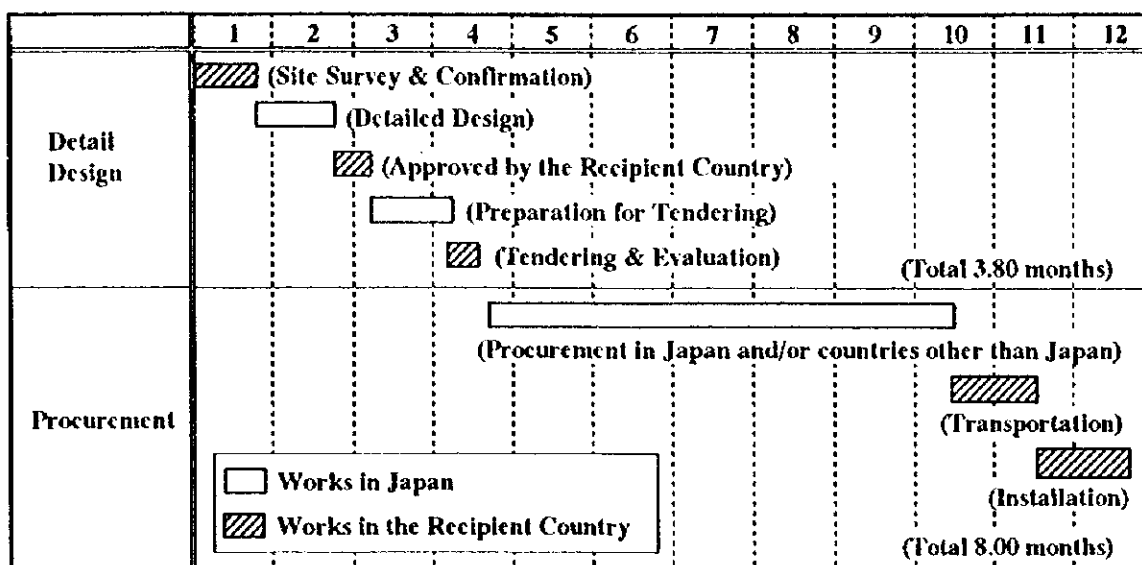
The following are the estimated periods required for transportation of the equipment.

- From Japan to the port of Thessaloniki    approx. 45-50 days
- From the port of Thessaloniki to Stip    approx. 1-7 days
- From Germany to Stip via inland route    approx. 7-9 days

### **3-1-6 Implementation Schedule**

The Project implementation schedule is given in **Table 3-1**.

**Table 3-1 Project Implementation Schedule**



### 3-1-7 Obligations of the Recipient Country

The Recipient Country shall work the following in accordance with the Exchange of Notes (E/N), for the smooth implementation of the Project.

- 1) To exempt customs duties, internal taxes, and other fiscal levies that may be imposed in the Recipient Country with respect to the supply of the equipment and the provision of services under the verified contracts.
- 2) To ensure prompt customs clearance in the Recipient Country and a procedure for internal transportation therein of the medical equipment brought from Japan and third-party countries.
- 3) To provide Japanese nationals and third-party country engineers working on the Project with every convenience to facilitate their entry into the Recipient Country and their stay therein.
- 4) To ensure the issuance of permits required by the laws of the Recipient Country for the implementation of the Project, and other permits, including tax exemption.

- 5) To ensure that the equipment procured under the Grant Aid Scheme is maintained and used properly and effectively for the Project.
- 6) To confirm that the Recipient Country bears all the expenses other than those covered by the Japanese government.

## **3-2 Project Cost Estimation**

### **3-2-1 Condition of Cost Estimation**

- Estimated as of : January, 1998
- Exchange rate : US\$ 1.00 = Yen 125.0  
: DM 1.00 = Yen 69.04  
(US\$: US Dollar, DM: Deutsche Mark)
- Implementation schedule : Refer to **Table 3-1**
- Others : The Project shall be implemented in accordance with Japan's Grant Aid Scheme.

### **3-2-2 Expenses Borne by the Recipient Country**

The Project is intended primarily to replace obsolete equipment. The installation site is nearly prepared, and basic conditions for the installation of utilities have been met. The work needed to the Project by the Recipient Country are; i) removal of existing equipment and ii) supply water, drainage, and electricity required for the operation of the equipment to be procured up to the designated points of connection. The expenses for this work by the Recipient Country amounts to be approximately 5,000 DM.

### **3-2-3 Operation and Maintenance Plan**

The Stip Hospital has a sufficient number of doctors, engineers, and nurses with the technical expertise necessary to operate the equipment to be procured in the Project. Furthermore, the dedicated staff of the general affairs and accounting departments, which are managed separately from the medical departments, are making every effort to ensure sound administration.

The costs of operation and maintenance, including spare parts/consumable, are expected to increase with the introduction of the new equipment. **Table 3-2** summarizes



the provisionally estimated management costs of the 12 main items to be procured. The estimation period is for eight years from 1999 through 2006; the operating ratio is 50% for 1999, 70% for 2000, 90% for 2001, and 100% for 2002 and thereafter. The annual management costs fluctuate because some equipment parts are replaced every three years.

**Table 3-2 Operation and Maintenance Cost**

		(thousand Denar)							
	year	1999	2000	2001	2002	2003	2004	2005	2006
1	Blood cell counter	0	271	348	387	387	387	387	387
2	Electrolytes analyzer	0	456	840	652	905	652	905	652
3	Blood gas analyzer	0	160	730	228	753	228	753	228
4	Glucometer	0	95	122	136	136	136	136	136
5	Infusion Pump	0	1,148	1,476	1,640	1,640	1,640	1,640	1,640
6	Ultrasound	0	1,225	1,405	1,496	1,496	1,496	1,496	1,496
7	Haemodialysis apparatus	0	3,998	5,141	5,712	5,712	5,712	5,712	5,712
8	Mobile X-ray apparatus	0	71	91	102	102	102	102	102
9	CT	0	6,323	6,558	6,676	6,676	6,676	6,676	6,676
10	Remote Control Fluoroscopy	0	765	887	1,582	948	948	1,582	948
11	X-ray apparatus	0	765	887	1,370	948	948	1,370	948
12	Mammography	0	8	11	12	12	12	12	12
Total		0	15,285	18,497	19,993	19,713	18,935	20,771	18,935

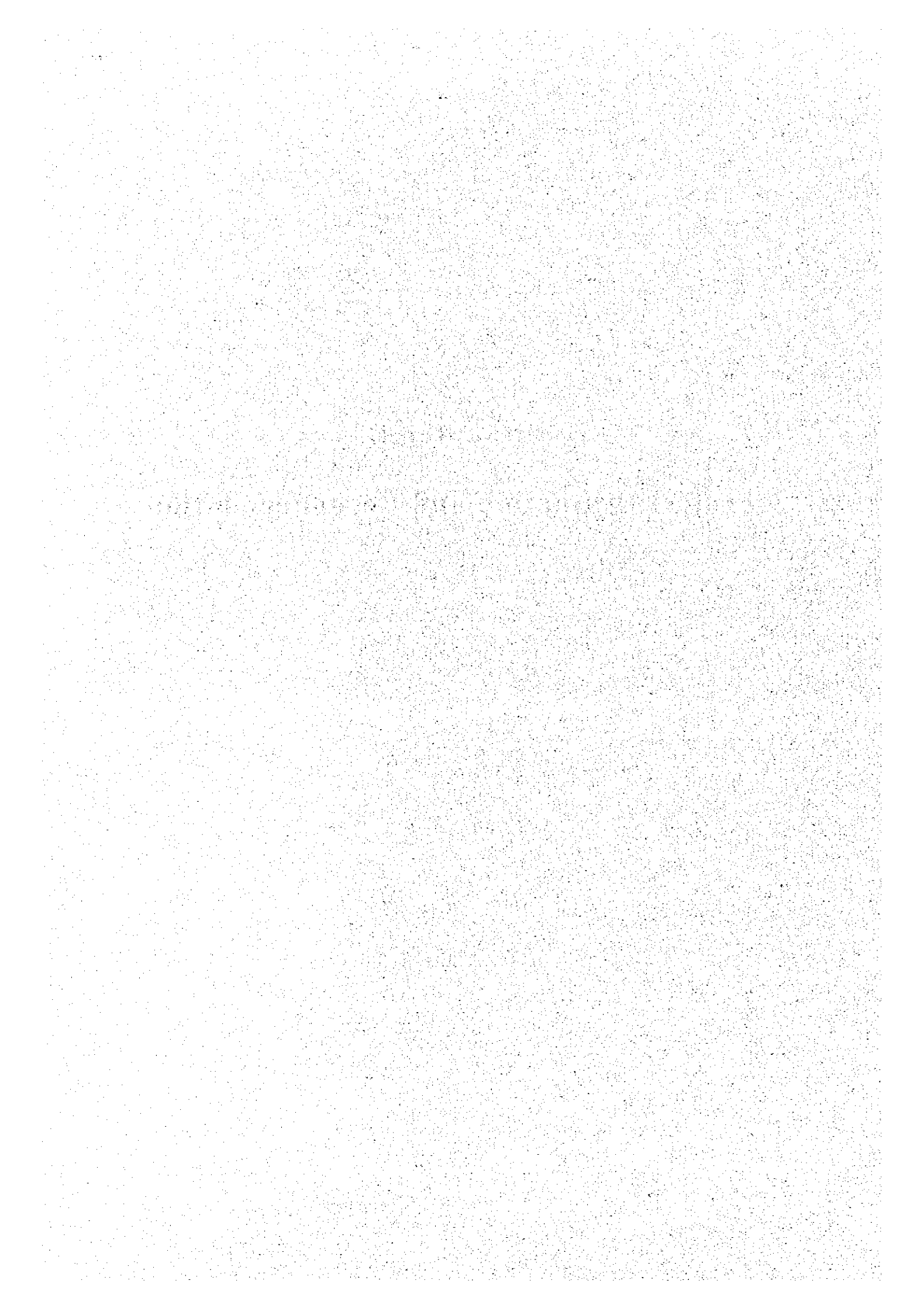
As the provisional estimates indicate, the management costs are expected to greatly increase due to the introduction of CT, the expensive X-ray tube of which needs to be replaced every year. To minimize the increase in management costs, it is essential to procure the X-ray tube at the lowest possible cost. For equipment that requires regular maintenance, such as CT, X-ray, and Ultrasound, it is desirable to utilize inexpensive maintenance services and spare parts/consumable from manufacturers' agents in Skopje, based on the experiences of the Medical Faculty of Skopje University and Skopje City Hospital-Surgical Clinic. In the case of Haemodialysis apparatus, which requires a large amount of consumable and as a result is second only to CT in terms of management cost, securing these consumable and maintenance services on site is crucial.

Provisional calculations indicate that the management costs can be comfortably covered by the income expected after installation of the new equipment. However, this all depends on the efforts of the Stip Hospital. It is therefore necessary to ensure maintenance and supply systems by taking account of the geographical conditions of Stip.



## **Chapter 4**

# **Project Evaluation and Recommendation**



## **Chapter 4 Project Evaluation and Recommendation**

### **4-1 Project Effect**

Based on the results of the Basic Design Study, the following effects are expected from the realization of the Project.

#### **(1) Enhancement of diagnosis and treatment capability of the Stip Hospital**

Once the necessary medical equipment for diagnosis and treatment is procured or improved as part of the current project, the Stip Hospital will be able to enhance its diagnostic and treatment capabilities, serve its original function as a regional general hospital, and regain the ability to provide proper medical services. Many of the patients transferred to hospitals in Skopje can also be diagnosed and treated at the Stip Hospital once it has been adequately equipped with facilities provided by the Project.

#### **(2) Increase in Macedonia's medical standards**

The Ministry of Health of Macedonia is currently undertaking reforms of the public health scheme, organizational restructuring, and the repair/renovation of medical facilities and equipment especially concentrate on the primary health care. Once the diagnostic and treatment capabilities of the Stip Hospital, which is the secondary care hospital, are enhanced via the improved medical facilities introduced by the Project, the level of medical services in northeastern Macedonia, or even in the entire nation, will be greatly increased on the synergistic effect with the other two Japanese Grant Aid project for the Medical Faculty of Skopje University (tertiary care hospital) and for Skopje City Hospital-Surgical Clinic (secondary care hospital).

### **4-3 Recommendation**

The following four points are recommended to ensure effective and efficient utilization of procured equipment of the Project.

#### **(1) Improvement of diagnostic and treatment systems**

When the treatment capability of the Stip Hospital is enhanced with the introduction of new equipment, diverse diagnostic and treatment needs are expected to arise. Although

the Stip Hospital is equipped with a sufficient number of highly skilled personnel, technical improvement efforts, including the reallocation of human resources and additional training in coordination with the medical staff of the Medical Faculty of Skopje University, will be necessary in order to establish more effective and efficient treatment systems.

#### **(2) Improvement of maintenance system**

Maintenance costs can be a heavy burden for hospital management. As the Stip Hospital is located in a rural town, manufacturers experience difficulties in providing prompt repair services in the event of mechanical failures in the medical equipment at the Stip Hospital. When the equipment breaks down, medical service itself may sometimes be forced to come to a halt. In order to correct this problem, staff members should be responsible for the maintenance of the equipment from their own department. Additionally, more effective allocation of personnel and the improvement of training workshops may also be important steps. These efforts would lead to a reduction in maintenance and management expenses for medical equipment, and enable quick response to mechanical failures.

#### **(3) Expansion of hospital facilities**

The medical equipment procured by the project covers only basic items; the Stip Hospital will need additional new equipment to enable it to perform the functions of a regional general hospital in the long term. However, most of the hospital facilities are outmoded and the available space is limited. More functional improvements will require facility improvements, i.e., the repair and refurbishment of the fundamental hospital facilities, including the building structures and locations.

#### **(4) Review of the health insurance fund system**

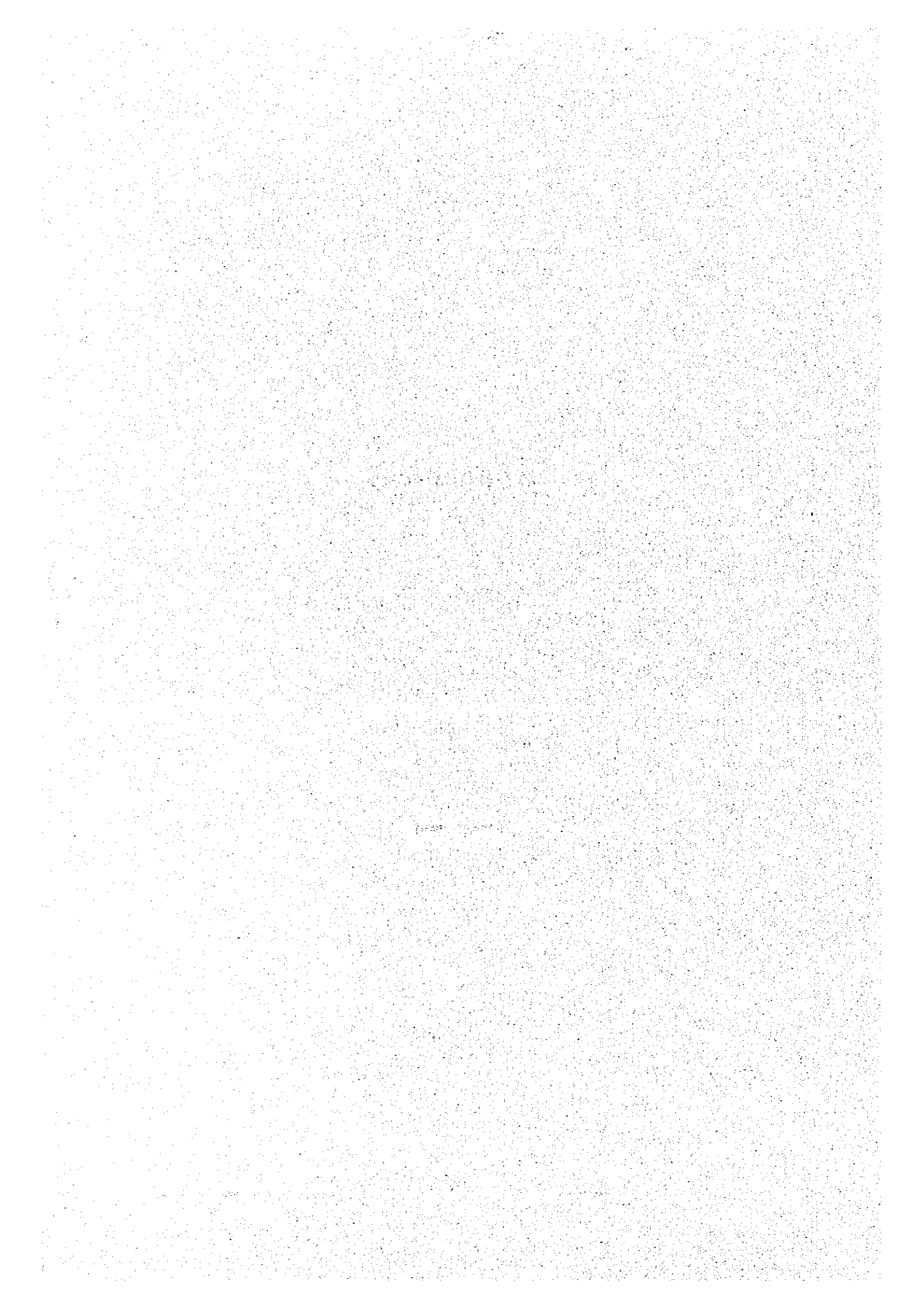
As the Stip Hospital is largely dependent on the Health Insurance Fund (HIF) for its operating expenses, efficient and secure transference of funds from the HIF is essential to its sound management. After implementation of the Project, the financial burden on the HIF is expected to increase due to the rise in operating expenses. To ensure the long-term success of the improvements introduced by the Project, therefore, it is necessary to improve management of the HIF. To that end, prompt fundamental reevaluations of the health insurance fund system should be conducted, which may include the stabilization of income

by reviewing the premiums and the prices paid by patients, and the reduction of expenses by cutting back on excess medical personnel.





## Appendices



### Appendices-1 Member List of the Survey Team

Mr. Masahiro ATSUMI	Leader	Grant Aid Division, Bureau of Economic Cooperation, Ministry of Foreign Affairs
Dr. Iwao TAKAKURA	Technical Adviser	School of Medicine, Tokai University
Mr. Yuichi SUGANO	Coordinator	First Project Study Division, Grant Aid Project Study Department, JICA
Mr. Keiji HMURA	Chief Consultant/ Maintenance & Operation Planner	CRC Overseas Cooperation Inc.
Dr. Shoji MATSUOKA	Facility Planner	CRC Overseas Cooperation Inc.
Mr. Yoshiharu HIGUCHI	Equipment Planner	CRC Overseas Cooperation Inc.
Mr. Manabu KOSHIMA	Procurement Planner / Cost Estimator	CRC Overseas Cooperation Inc.

## Appendices-2 Survey Schedule

	Date	Movement	Activities	Accommodation
1	Nov.16 (Sun.)	Tokyo 1255 - Zurich 1740 (SR169) Zurich 2005 - Vienna 2120 (SR016)		Vienna
2	Nov.17 (Mon.)	Vienna 1330 - Skopje 1520 (OS863)	Courtesy call on the Embassy of Japan, / JICA office in Vienna	Skopje
3	Nov.18 (Tue.)		Courtesy call on the MOFA, MOH	Skopje
4	Nov.19 (Tue.)		Meeting with the MOFA, MOH	<sup>(A)</sup> Skopje
	-13 -28 (Fri.)		Site Survey at Stip Hospital	<sup>(A,C,D)</sup> Stip
14	Nov.29 (Sat.)		Meeting with the study team	Skopje
15	Nov.30 (Sun.)	*Tokyo 1035 - Frankfurt 1450 (LH711) *Frankfurt 1645 - Vienna 1805 (LH3724)	Meeting with the study team	*Vienna Skopje
16	Dec.1 (Mon.)	*Vienna 1330 - Skopje 1520 (OS863)	*Courtesy call on the Embassy of Japan / JICA office in Vienna	Skopje
17	Dec.2 (Tue.)		Courtesy call on the MOFA, MOH Discussion of IC/R Discussion of M/D	- do -
18	Dec.3 (Wed.)		Site Survey at Stip Hospital	- do -
19	Dec.4 (Thu.)		Signing of M/D	- do -
20	Dec.5 (Fri.)		Visit the Medical Faculty of the Skopje University and the City Hospital-Surgical Clinic	- do -
21	Dec.6 (Sat.)		Site Survey at the port of Tessaloniki in Greece	- do -
22	Dec.7 (Sun.)		Meeting with the study team	- do -
23	Dec.8 (Mon.)	*Skopje 1700 - Vienna 1845 (OS864)	Visit the MOFA	*Vienna Skopje
24	Dec.9 (Tue.)		*Visit the Embassy of Japan / JICA Office in Vienna (Report on the study in Macedonia) Site Survey	*Vienna <sup>(A,C,D)</sup> Skopje <sup>(B)</sup> Stip
25	Dec.10 (Wed.)	*Vienna 1045 - Frankfurt 1215 (LH659) *Frankfurt 1330 - (LH710)	Site Survey	<sup>(A,C,D)</sup> Skopje <sup>(B)</sup> Stip
26	Dec.11 (Thu.)	*Tokyo 0830	- do -	- do -
27	Dec.12 (Fri.)	<sup>(C,D)</sup> Skopje 1700 - Vienna 1845 (OS864)	- do -	<sup>(A)</sup> Skopje <sup>(B)</sup> Stip <sup>(C,D)</sup> Vienna
28	Dec.13 (Sat.)	<sup>(C,D)</sup> Vienna 0925 - Zurich 1045 (SR003) <sup>(C,D)</sup> Zurich 1250 - (SR168)	- do -	<sup>(A)</sup> Skopje <sup>(B)</sup> Stip
29	Dec.14 (Sun.)	<sup>(C,D)</sup> - Tokyo 0840	- do -	- do -
30	Dec.15 (Sat.)		- do -	- do -
	-32 -17 (Wed.)			
33	Dec.18 (Thu.)	<sup>(A)</sup> Skopje 1700 - Vienna 1845 (OS864)	- do -	<sup>(A)</sup> Vienna <sup>(B)</sup> Skopje
34	Dec.19 (Fri.)	<sup>(B)</sup> Skopje 1700 - Vienna 1845 (OS864)	Visit the Embassy of Japan / JICA Office in Vienna (Report on the study in Macedonia)	<sup>(A,B)</sup> Vienna
35	Dec.20 (Sat.)	<sup>(A,B)</sup> Vienna 0925 - Zurich 1045 (SR003) <sup>(A,B)</sup> Zurich 1250 - (SR168)		
36	Dec.21 (Sun.)	<sup>(A,B)</sup> - Tokyo 0840		

\* Official Team <sup>(A)</sup>Project Manager <sup>(B)</sup>Equipment Planner <sup>(C)</sup>Facility Planner <sup>(D)</sup>Cost Planner

### Appendices-3 List of Party Concerned in the Recipient Country

Position & Specification	Name
<b>Ministry of Health</b>	
Minister	Dr. Peter M. ILIEVSKI
Deputy Minister	Dr. Ilir IJUMA
Undersecretary	Dr. Ilija PETRUSEVSKI
<b>Ministry of Foreign Affairs</b>	
Ambassador, Chief of the Aid Coordination Unit	Mr. Mito PEJOVSKI
Asia and Middle East Department	Mr. Dusko UZUNOVSKI
Bilateral Economic Relations	Mr. Slobodan UZUNOV
<b>Ministry of Development</b>	
Undersecretary	Mr. Tahir SHAKIRI
<b>Ministry of Agriculture, Forestry and Water Economy</b>	
Undersecretary	Mr. Bisto KRUNTOVSKI
Adviser	Mr. Zivko BRAJKOVSKI
<b>Ministry of Science</b>	
Office for International Scientific and Technical Cooperation	Mr. Zvezda GEORGIEVSKA
<b>Ministry of Urban Planning, Construction and Environment</b>	
Assistant Minister	Mr. Strahinja TRPEVSKI
<b>Statistical Office of Macedonia</b>	
Acting Director	Mr. Donco GERASIMOVSKI
<b>Stip Hospital</b>	
Director	Dr. Ivan RAMBABOV
Assistant Director of Internal Depts	Mr. Slave DIMITROV
Assistant Director of Surgical Depts	Dr. Pance PURDERLISKI
Department of Administration	Chief of Dept. Mr. Ristov JORDAN
Department of Finance	Chief of Dept. Ms. Trajanka SPASOVA
Department of Surgery	Dr. Georgi DENKOV Dr. Mitko RISTOV
Department of Urology	Chief of Dept. Dr. Todor IVANOVSKI
Department of Anesthesia/ICU	Chief of Dept. Dr. Stojanov VANCO
Department of Obstetric and Gynecology	Dr. Bojan NIKOLOV Dr. Kirco SUMANSKI
Department of Orthopedics	Chief of Dept. Dr. Ivan RAMBABOV
Department of Ophthalmology	Chief of Dept. Dr. Liojja IKONOMOVA Dr. Aleksandra SALEVA-BUTNEJSKA
Department of Oral	Chief of Dept. Dr. Bogoljub JOVEV Dr. Vlatko MITASEV Dr. Zoran MAKSIMOVIK
Department of Internal Medicine	Chief of Dept. Dr. Angel PANEV
Department of Infectious Disease	Chief of Dept. Dr. Nada BALOVA
Department of Pediatric	Chief of Dept. Dr. Blagorodna LAZANOVSKA
Department of Physiotherapy	Chief of Dept. Dr. Danica FICORSKA
Department of Radiology	Chief of Dept. Dr. Simeon EFREMOV Dr. Nada ALEKSOVA Dr. Srdan BAGOSOVA
Department of Clinical Laboratory	Chief of Dept. Mr. Mitashev JORDAN
Department of Blood Bank - Transfusion	Chief of Dept. Dr. Jordanka VITLAROVA
Department of Pharmacy	Ms. Biljana LAZAROVA

December 4, 1997

*Dr. Petar M. ILIEVSKI  
Minister of Health*

*Dear Dr. ILIEVSKI*

*I have the honor to refer to our recent discussions regarding the Project for Equipment Supply for the General Hospital of the Medical Center of Stip (hereinafter referred to as "the Project").*

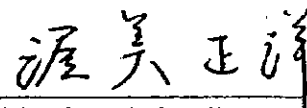
*In response to the request of the Government of the Former Yugoslav Republic of Macedonia (hereinafter referred to as "the Recipient Government"), the Government of Japan decided to conduct a Basic Design Study on the Project and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA"). JICA sent to Macedonia a study team headed by myself for examining the viability of the Project from November 16 to December 21, 1997.*

*The team held intensive discussions with the officials concerned and also conducted field surveys at the study area with the helpful assistance of the Ministry of Health.*

*In the course of discussions and field surveys, I believe that the main items described on the attached sheets have been confirmed. The team will proceed to further works and prepare the Basic Design Study Report.*

*On behalf of all the members of the team, I wish to express my sincere appreciation to the officials concerned of your government for their kind assistance and close cooperation extended to the team. I hope that the Project will contribute to the enhancement of friendly relations between our two countries.*

*Yours Sincerely,*



*Masahiro ATSUMI  
Leader  
Basic Design Study Team  
JICA*



*Republic of Macedonia*  
**MINISTRY OF HEALTH**

No. \_\_\_\_\_  
04. 12. 1997  
Skopje

*Dear Mr. ATSUMI*

*I have herein acknowledged your letter dated December 4, 1997, and have confirmed the contents of the attachment of the letter.*

*Your Sincerely,*

\_\_\_\_\_  
*Petar M. Ilievski m.d., ph.d.*  
*Minister of Health*  
*Government of the Republic of Macedonia*

*Mr. Masahiro ATSUMI*  
*Leader*  
*Basic Design Study Team*  
*JICA*

## ATTACHMENT

### 1. Objectives of the Project

This Project aims at improvement and upgrading of the hospital equipment. The equipment which is required concerns fast diagnosis, hospital admission, efficient and complete treatment of patients and further care for the General Hospital of the Medical Center of Stip is based on the policy of the Ministry of Health.

### 2. Project Sites

General Hospital of the Medical Center of Stip (Stip Hospital)

### 3. Responsible Ministry and Executing Agency

Responsible Ministry : Ministry of Health

Executing Agency : Ministry of Health - Department of Hospital Care

### 4. Items requested by the Recipient Government

After the discussions with the team, the items described in Annex-1 are finally requested by the Recipient Government.

The requested items shall be re-examined and referred to on finalizing the Basic Design Study Report.

### 5. Japan's Grant Aid System

- (1) The Recipient Government has understood the system of Japanese Grant Aid explained by the team. (See Annex-2).
- (2) The Recipient Government will take necessary measures, described in Annex-3, for smooth implementation of the Project on condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

### 6. Further Schedule

The team will make a final report in accordance with the confirmed items and send it to the Recipient Government by the end of March, 1998.

### 7. Monitoring

The Ministry of Health has responsibility to conduct periodical monitoring and evaluation of the progress of all phases of the Project such as allocation of funds and distribution, operation and maintenance of the equipment, manpower development of Stip Hospital.

### 8. Other relevant issues

The Recipient Government requests that the cost of the necessary modifications to the rooms for the installation of X-ray related apparatus including X-ray protection facilities will be covered by the Grant Aid.



- Annex-1 Equipment List**
- Annex-2 Japan's Grant Aid System**
- Annex-3 Necessary Measures to be taken by the Recipient Government**

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**EQUIPMENT LIST**

No.	Site	Name of Equipment	Qty	Remarks	Priority
1	Anesthesia	Anesthetic device with ventilator	6	P1,P2,P3	A
2	Anesthesia	Patient monitor	6	P1,P3	A
3	Anesthesia	Laryngoscope	6	P1,P2,P3	A
4	Anesthesia	ECG defibrillator	2	P1,P2,P3	A
5	Anesthesia	Neuromuscular transmission monitor	2	P1,P3	A
6	Anesthesia	Aspirators	8	P1,P2,P3	A
7	Blood Bank	Blood bank refrigerator	1	P1,P2,P3	A
8	Blood Bank	Blood plasma freezer	1	P1,P2,P3	A
9	Blood Bank	Cryoprecipitate freezer	1	P1,P3	A
10	Blood Bank	Centrifuge	4	P1,P2,P3	A
11	Blood Bank	Microscope	2	P1,P2,P3	A
12	Blood Bank	Plasma separator	1	P1,P2,P3	A
13	Clinical Labo.	Plasmapheresis device (Electropheresis device)	1	P1,P3	A
14	Clinical Labo.	Spectrophotometer	2	P1,P2,P3	A
15	Clinical Labo.	Analytical balance	3	P1,P2,P3	A
16	Clinical Labo.	Fibrin timer	1	P1,P2,P3	A
17	Clinical Labo.	Blood cell counter	1	P1,P2,P3	A
18	Clinical Labo.	Electrolytes analyzer	2	P1,P2,P3	A
19	Clinical Labo.	Blood gas analyzer	1	P1,P2,P3	A
20	Clinical Labo.	Glucometer	1	P1,P2,P3	A
21	Clinical Labo.	Centrifuge	1	P1,P2,P3	A
22	Coronary care unit	ECG	3	P1,P2,P3	A
23	Coronary care unit	CCU monitor	5	P1,P2,P3	A
24	Coronary care unit	ECG defibrillator with pacemaker	1	P1,P2,P3	A
25	Coronary care unit	Cardiopulmonary resuscitation bag	1	P1,P2,P3	A
26	General	Washing Machine for Surgical instrument	1	P1,P3	A
27	General	Sterilizer for instrument (Formalin)	1	P1,P3	A
28	General	Sterilizer of the cloth	1	P1,P3	A
29	General	Washing machine for laundry	1	P1,P2,P3	A
30	General	Autoclave	3	P1,P2,P3	A
31	General	Central gas station (O <sub>2</sub> , N <sub>2</sub> O, Air, Vacuum)	1	P1,P3	A
32	GY.OB.	Curettage instruments set	6	P1,P2,P3	A
33	GY.OB.	Amnioscopy instruments set	2	P1,P2,P3	A
34	GY.OB.Del.room	Suction pump	2	P1,P2,P3	A
35	GY.OB.Del.room	Infusion Pump	6	P1,P3	A
36	GY.OB.Del.room	Instruments set for episiotomy	5	P1,P2,P3	A
37	GY.OB.Del.room	Delivery Monitor CTG	2	P1,P3	A
38	GY.OB.Del.room	Vacuum Extractor	2	P1,P2,P3	A
39	GY.OB.Del.room	Forceps for delivery	2	P1,P2,P3	A
40	GY.OB.Del.room	Incubator	4	P1,P2,P3	A
41	GY.OB.Del.room	Delivery Bed	2	P1,P2,P3	A
42	GY.OB.Del.room	Ultrasound with Vaginal Probe	1	P1,P3	A
43	GY.OB.Del.room	Gynecology examination table	2	P1,P2,P3	A
44	GY.OB.Del.room	Obstetric examination table	1	P1,P2,P3	A
45	GY.OB.Ope.room	Operating Table	1	P1,P2,P3	A
46	GY.OB.Ope.room	Operating Light, Ceiling Type	1	P1,P2,P3	A
47	GY.OB.Ope.room	Electric suction pump	2	P1,P2,P3	A
48	GY.OB.Ope.room	Abdominal hysterectomy instruments set	3	P1,P2,P3	A
49	GY.OB.Ope.room	Vaginal hysterectomy instruments set	2	P1,P2,P3	A

## EQUIPMENT LIST

No.	Site	Name of Equipment	Q'ty	Remarks	Priority
50	GY.OB.Ope.room	Cesarean section instruments set	3	P1,P2,P3	A
51	GY.OB.Ope.room	Microchirurgye set for fertility	2	P1,P2,P3	A
52	GY.OB.Ope.room	Bipolar diathermy	2	P1,P2,P3	A
53	ICU	Critical care beds	8	P1,P3	A
54	ICU	Central Patient Monitor System (8 Beds)	1	P1,P3	A
55	ICU	Ventilator	8	P1,P2,P3	A
56	ICU	ECG Defibrillator with Pacemaker	1	P1,P2,P3	A
57	ICU	Infusion Pump	16	P1,P3	A
58	ICU	Syringe Infusion Pump	5	P1,P2,P3	A
59	ICU	Bronchofiberscope	2	P1,P3	A
60	ICU	Blood Gas Analyzer	1	P1,P3	A
61	ICU	Cardio pulmonary resuscitation bag	5	P1,P2,P3	A
62	ICU	Mobile ventilator for transport of critical ill patient	2	P1,P3	A
63	Internal Medicine	Ultrasound	1	P1,P2,P3	A
64	Internal Medicine	Gastroscope	1	P1,P2,P3	A
65	Internal Medicine	Colonoscope	1	P1,P3	A
66	Internal Medicine	Bronchoscope	1	P1,P3	A
67	Internal Medicine	Duodenoscope	1	P1,P3	A
68	Internal Medicine	Apparatus for coronary stress testing	1	P1,P3	A
69	Internal Medicine	Spirometer	1	P1,P2,P3	A
70	Internal Medicine	Haemodialysis apparatus	10	P1,P2,P3	A
71	Ophthalmology	Slit lamp with tonometer	2	P1,P2,P3	A
72	Ophthalmology	Operation Microscope (Multi-Purpose)	1	P1,P2,P3	A
73	Ophthalmology	Autorefractometer	1	P1,P2,P3	A
74	Ophthalmology	Operation table	1	P1,P2,P3	A
75	Ophthalmology	Ophthalmoscope	5	P1,P2,P3	A
76	Oral	Bipolar coagulator	1	P1,P2,P3	A
77	Oral	Bronchoscope (Rigit Type)	1	P1,P2,P3	A
78	Oral	Oesophagoscope	1	P1,P2,P3	A
79	Oral	Endotracheal tonsillectomy set	3	P1,P2,P3	A
80	Oral	Instruments for microsurgery ear operation w/bone drill	1	P1,P2,P3	A
81	Oral	Rhino septoplastic set	1	P1,P2,P3	A
82	Oral	Instruments for operating paranasal sinuses	1	P1,P2,P3	A
83	Oral	Instruments for polypectomy	1	Deleted by doctor	C
84	Oral	Sinus scope	1	P1,P2,P3	A
85	Oral	Audiometer with tympanometer	1	P1,P2,P3	A
86	Orthopedic	Operating table	1	P1,P2,P3	A
87	Orthopedic	Operating table with extension	1	P1,P3	A
88	Orthopedic	Operating lamp ceiling type	1	P1,P2,P3	A
89	Orthopedic	Thermocauter	1	P1,P2,P3	A
90	Orthopedic	Suction pump	1	P1,P2,P3	A
91	Orthopedic	Mobile X-ray apparatus (C-arm TV System)	1	P1,P2,P3	A
92	Orthopedic	Arthroscope set	1	P1,P3	A
93	Orthopedic	Bone drill set	1	P1,P2,P3	A
94	Pediatric	Infant incubator	6	P1,P2,P3	A
95	Pediatric	Mobile infant incubator	2	P1,P3	A
96	Pediatric	Suction pump for pediatric use	3	P1,P3	A
97	Pediatric	Ultrasound for Pediatric use	1	P1,P3	A
98	Pediatric	Reanimation set	3	P1,P2,P3	A

**EQUIPMENT LIST**

No.	Site	Name of Equipment	Q'ty	Remarks	Priority
99	Pediatric	Exchange transfusion set	10	P1,N5	C
100	Pediatric	ECG for pediatric use	2	P1,P2,P3	A
101	Pediatric	Small Autoclave	1	P1,P2,P3	A
102	Pediatric	Electric Balance	2	P1,P2,P3	A
103	Pediatric	Patient Monitor	5	P1,P3	A
104	Pediatric	Infusion Pump for Pediatric Use	10	P1,P3	A
105	Pediatric	Phototherapy Unit	6	P1,P2,P3	A
106	Physiotherapy	Laser Stimulator	1	P1,P2,P3	A
107	Physiotherapy	Electrostimulator	2	P1,P2,P3	A
108	Physiotherapy	Electromyography	1	P1,P3	A
109	Physiotherapy	Interferator	2	P1,P2,P3	A
110	Physiotherapy	Vasculator	2	N5	C
111	Physiotherapy	Black light	1	P1,P2,P3	A
112	Physiotherapy	Apparatus for shortwave diathermy	1	P1,P3	A
113	Physiotherapy	Infraed lamp	3	P1,P2,P3	A
114	Physiotherapy	Ultraviolet lamp	3	P1,P2,P3	A
115	Physiotherapy	Apparatus for massage	2	P1,P3	A
116	Physiotherapy	Bath tank for melting of paraffin	2	P1,P2,P3	A
117	Physiotherapy	Extension mat	1	P1,P2,P3	A
118	Physiotherapy	Whirlpool	2	P1,P2,P3	A
119	Physiotherapy	Hydropack tank	1	P1,P3	A
120	Physiotherapy	Modern equipment for Kinesi therapy	1	P1,P3	A
121	Surgery	Multi Purpose Laparoscope Set with Surgery Instrument	1	P1,P3	A
122	Surgery	Gastrectomy instruments set	5	P1,P2,P3	A
123	Surgery	Cholecstectomy instruments set	5	P1,P2,P3	A
124	Surgery	Operating Table	2	P1,P2,P3	A
125	Surgery	Operating Light, Ceiling Type	2	P1,P2,P3	A
126	Surgery	Neurosurgical Instruments set	2	P1,P2,P3	A
127	Surgery	Bipolar diathermy	2	P1,P2,P3	A
128	Surgery	Monopolar diathermy	2	P1,P2,P3	A
129	Surgery	Suction pumps	3	P1,P2,P3	A
130	Surgery	Abdoninal Surgery instruments	2	P1,P2,P3	A
131	Surgery	Thoracic Surgery Set	1	P1,P2,P3	A
132	Surgery	Duodenofiberscope	1	P1,P2,P3	A
133	Surgery	Plastic Surgery Instruments Set	1	P1,P2,P3	A
134	Surgery	Dermatome	1	P1,P2,P3	A
135	Surgery	Retractors Set	5	P1,P2,P3	A
136	Surgery	Maxilla Facial Instruments Set	1	P1,P3	A
137	Surgery	Osteotomy Instruments set for Maxillofacial surgery	1	P1,P3	A
138	Surgery	Recto-sigmoidoscope	2	P1,P2,P3	A
139	Surgery	Mobile X-ray	1	P1,P2,P3	A
140	Urology	ESWLC	1	P1,N5	C
141	Urology	Ureterscope with stone punch	1	P1,P3	A
142	Urology	Resectoscope Set with Monitor	1	P1,P3	A
143	Urology	Uretero-renofiberscope	1	P1,P2,P3	A
144	Infectious D.	Rectoscope	1	P1,P3	A
145	Infectious D.	Ultrasound	1	P1,P3	A
146	X-Ray unit	CT	1	P1,P3,N8	A'
147	X-Ray unit	Remote Control Fuluroscopy	1	P1,P2,P3	A

**EQUIPMENT LIST**

No.	Site	Name of Equipment	Q'ty	Remarks	Priority
148	X-Ray unit	X-ray Apparatus	1	P1,P2,P3	A
149	X-Ray unit	Ultrasound	3	P1,P2,P3	A
150	X-Ray unit	Mammography	1	P1,P2,P3	A
151	X-Ray unit	Apparatus for developing X-ray films	4	P1,P2,P3	A
152	Emergency	ECG	2	P1,P2,P3	B
153	Emergency	Defibrillator	1	P1,P2,P3	B
154	Emergency	Blood gas analyzer	1	P1,P2,P3	B
155	Emergency	Reanimation set	2	P1,P2,P3	B
156	Ophthalmology	Perimeter	1	P1,P2,P3	B
157	Ophthalmology	Instrument set for operation of cataract	1	P1,P3	B
158	Oral	Laryngostroboscope	1	P1,P3	B
159	Oral	Micro-Laryngoscope	1	P1	C
160	Dental	Dental unit	5	P1,P2,P3	B
161	Internal Medicine	Microscope for hematology	2	P1,P2,P3	B

A Equipment to be procured in the project

A' Equipment to be provided in the project,  
after confirmation of financial resources for the operation and a maintenance service charge

B Equipment to be provided in case of the budget allowance

C Equipment be excluded from the project

**Criteria for the priority of the requested medical equipment****Positive points, the equipment to be included in the project**

P1 Equipment to be utilized for treatment of the common diseases including diagnostic treatment and prevention

P2 Equipment to be replaced with the existing equipment which is already deteriorating

P3 Essential equipment required for medical services of general hospital in north-eastern Macedonia.

**Negative points, the equipment to be excluded from the Project**

N1 Equipment not required for health care services such as diagnosis treatment and prevention

N2 Simple equipment/furniture available locally

N3 Most advanced equipment to be utilized for research activities

N4 Equipment with some difficulties on installation/infrastructure conditions

N5 Expensive equipment less utilized because of small number of testing/less number of patients

N6 Equipment hazardous to environmental control

N7 Equipment only utilized with exclusive reagent kit available from the specific manufacturer

N8 Equipment with financial/marketing difficulties on the procurement of consumable and spare parts, etc.

## Japan's Grant Aid System

### 1. Grant Aid Procedures

(1) The Japan's Grant Aid Program is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Implementation	(The Notes exchanged between the Government of Japan and the recipient country)

(2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid.

If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

### 2. Basic Design Study

#### (1) Contents of the study

The aim of the Basic Design Study (hereinafter referred to as "the Study") conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Japanese Government. The contents of the Study are as follows:

- 1) Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- 2) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- 3) Confirmation of items agreed on by both parties concerning the basic concept of the Project.
- 4) Preparation of a basic design of the Project
- 5) Estimation of costs of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confined considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA select (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

3. Japan's Grant Aid Scheme

(1) What is Grant Aid ?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

(2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

(3) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as whether, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

(4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However the prime contractors, namely, consulting constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(5) Necessity of the "Verification".

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals.

Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(6) Undertaking required of the Government of the Recipient Country.

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

- 1) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.
- 2) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.
- 3) To secure buildings prior to the procurement in case the installation of the equipment.
- 4) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
- 5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.
- 6) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- 7) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

8) "Re-Export"

The products purchased under the Grant should not be re-exported from the recipient country.

9) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.



**Necessary Measures to be taken by the Recipient Government  
in case Japan's Grant Aid is executed.**

1. To secure the site for the Project
2. To clear the site prior to commencement of the installation
3. To provide facilities for distribution of electricity, water supply, telephone, drainage, sewage, and other incidental facilities to the Project site
  - (1) To secure building prior to the procurement in case the installation of the equipment
  - (2) Electricity distributing line to the site
  - (3) City water distribution to the site
  - (4) City Gas distribution to the site
  - (5) General furniture such as curtains, tables, chairs and others
  - (6) X-ray Protection facilities for X-ray related apparatus
4. To bear commissions to the Japanese foreign exchange bank for the banking services based upon Banking Arrangement
5. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought for the Project at the port of disembarkation
6. To accord Japanese Nationals whose services may be required in connection with the supply of products and the service under the verified contract such facilities as may be necessary for their entry into Macedonia and stay therein for the performance of their work
7. To maintain and use properly and effectively the equipment purchased under the Grant
8. To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the product under the Grant Aid

### Appendices-5 References

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