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MINISTRY OF HEALTH  
REPUBLIC OF INDONESIA

**BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT  
FOR  
STRENGTHENING DISTRICT HEALTH SERVICES  
IN  
SULAWESI  
IN  
THE REPUBLIC OF INDONESIA**

MARCH, 1996

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MARCH, 1996

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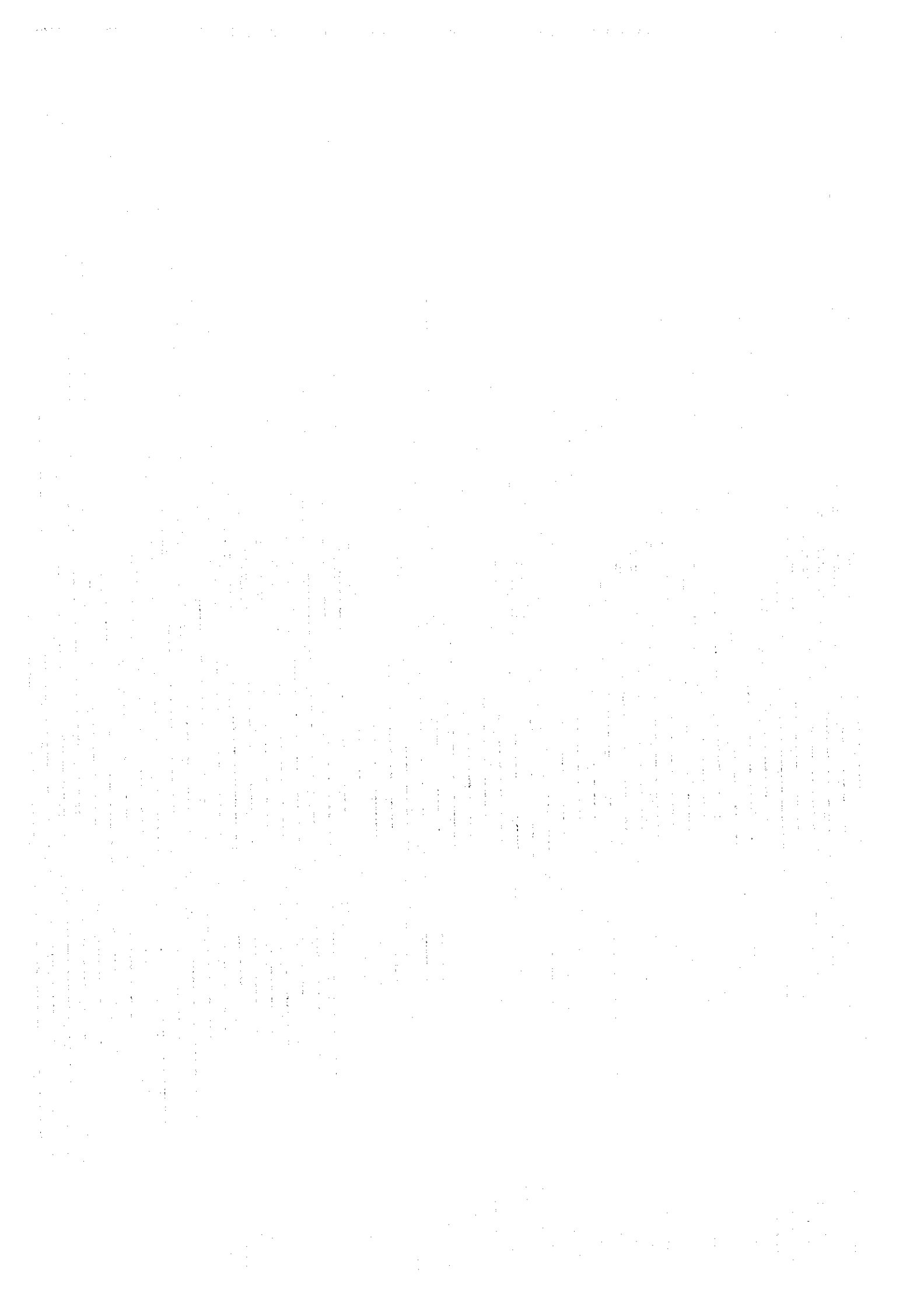
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## PREFACE

In response to a request from the Government of the Republic of Indonesia, the Government of Japan decided to conduct a basic design study on the Project for Strengthening District Health Services in Sulawesi and entrusted the study to the Japan International Cooperation Agency (JICA).

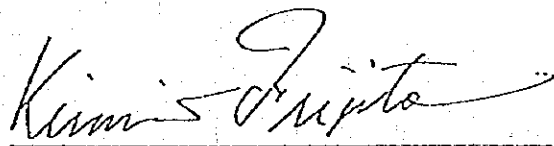
JICA sent to Indonesia a study team from November 15 to December 24, 1995.

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

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

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

March, 1996

A handwritten signature in cursive script, reading "Kimio Fujita", written in black ink. The signature is positioned above a horizontal line.

Kimio Fujita

President

Japan International Cooperation Agency





March 1, 1996

**Letter of Transmittal**

We are pleased to submit to you the basic design study report on the Project for Strengthening District Health Services in Sulawesi in the Republic of Indonesia.

This study was conducted by International Techno Center Co., Ltd., under a contract to JICA, during the period from November 10, 1995, to March 15, 1996. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Indonesia 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,



**Kiyoshi Kato**

**Project manager,**

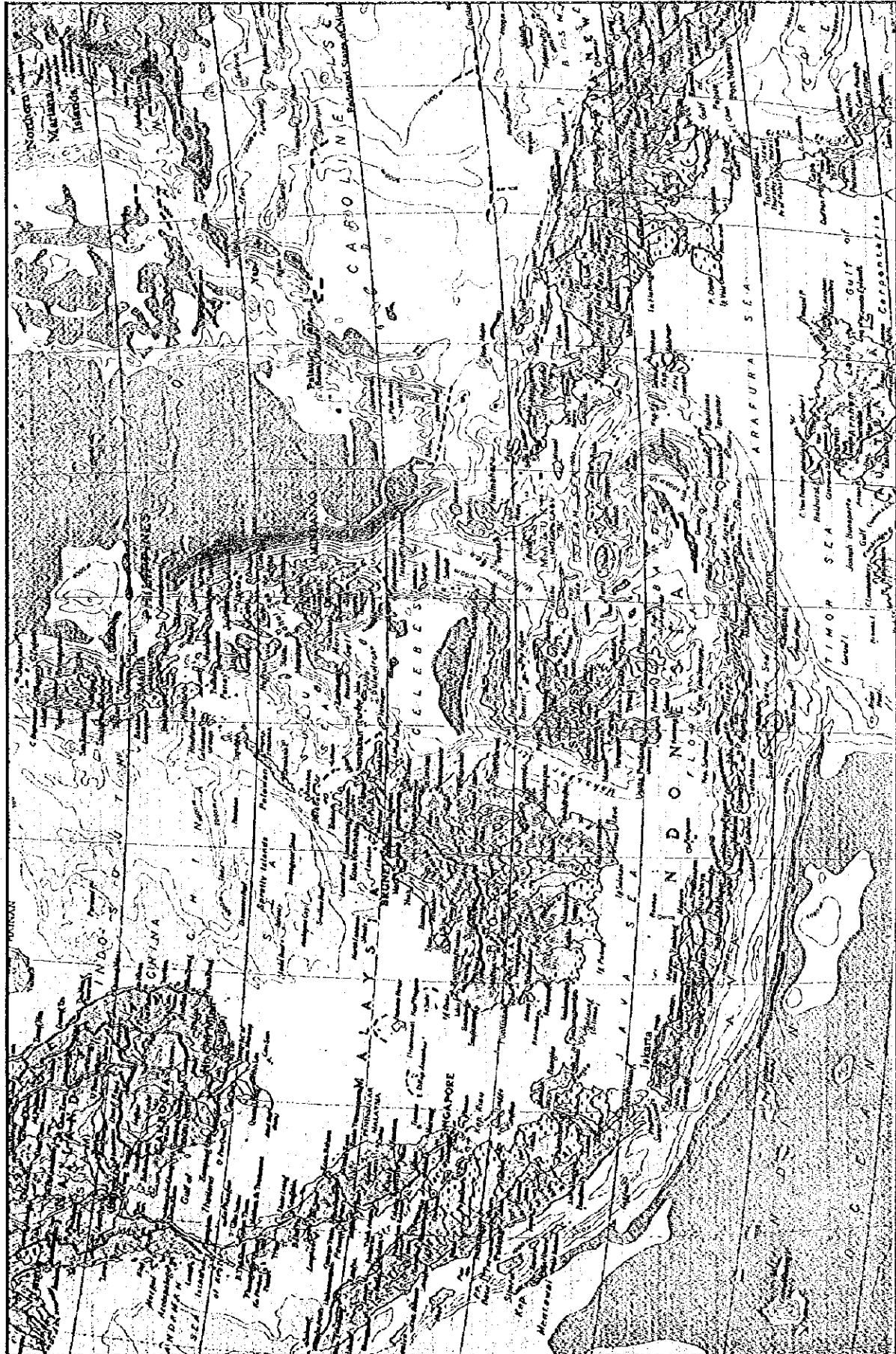
**Basic design study team on the Project for**

**Strengthening District Health Services in Sulawesi**

**In the Republic of Indonesia**

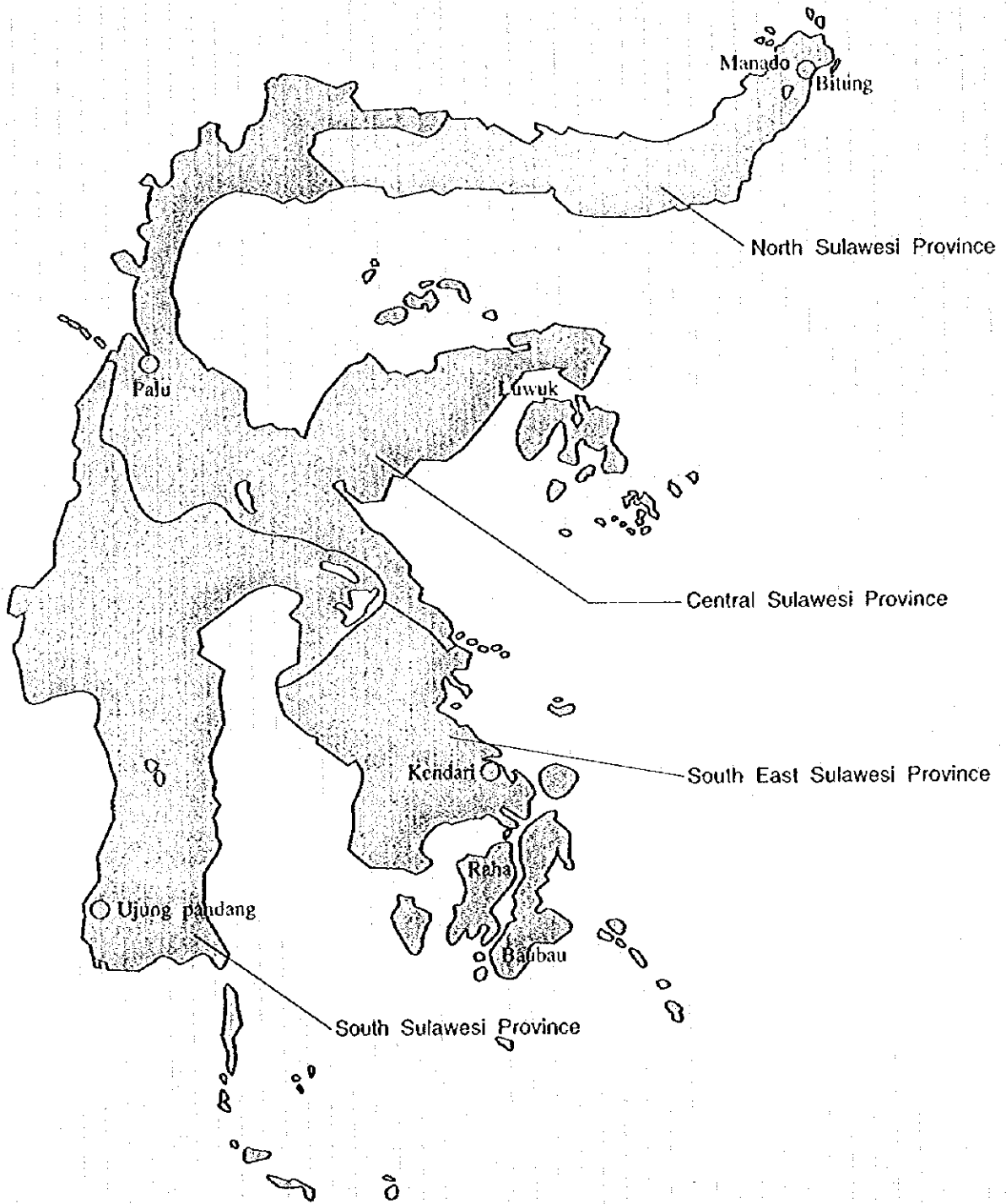
**International Techno Center Co., Ltd.**

General Map of Indonesia



# 4 Provinces of Sulawesi Island

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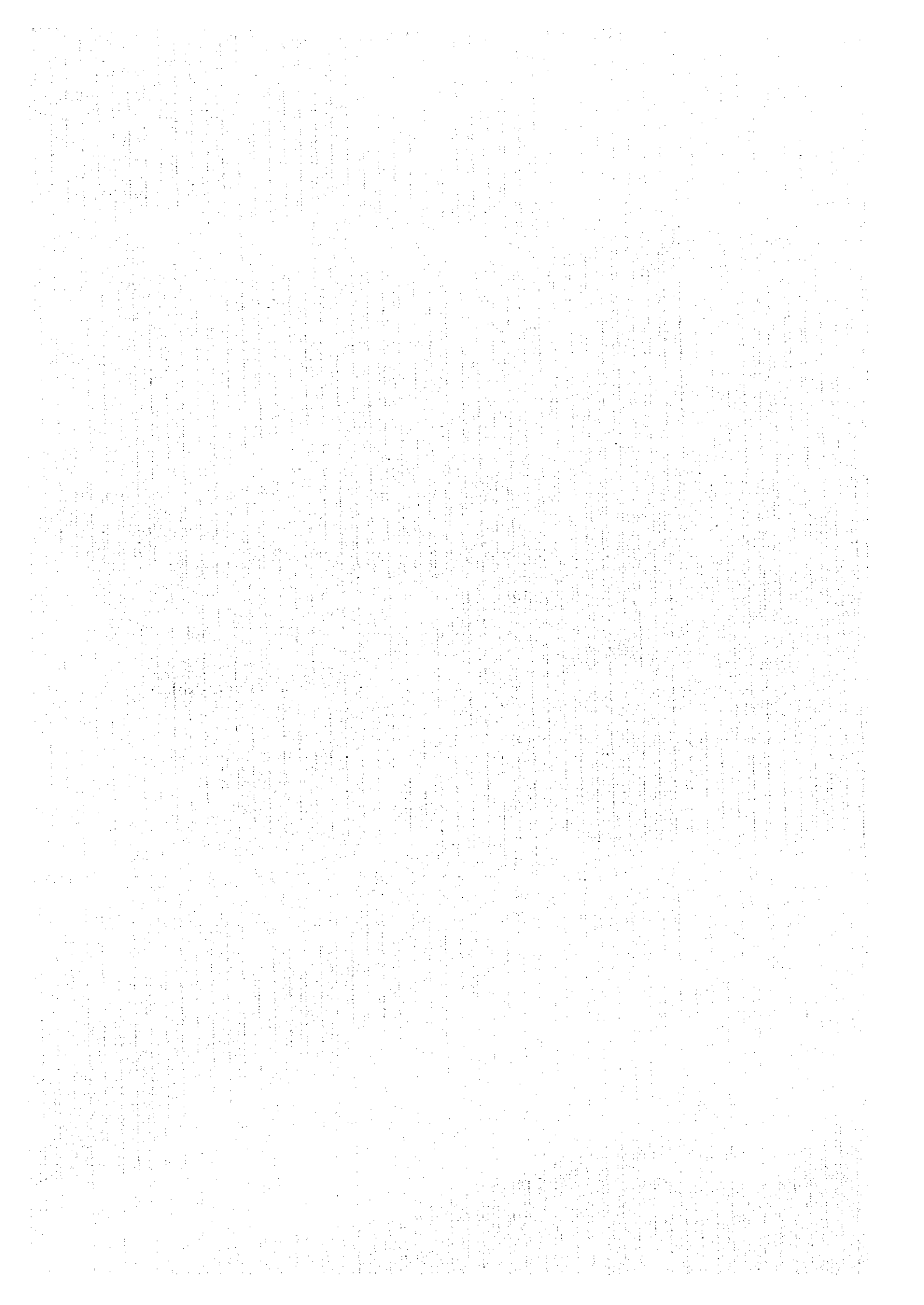
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## **Chapter 1 Background of the Project**





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

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

Indonesia has achieved a high level of economic growth. In fact, during the 5th 5-Year National Development Plan, the economic growth rate in Indonesia was as high as 6%. However, in spite of this economic success, there is still an uneven distribution of wealth in Indonesia, and the same can be said for the health care system. Regional inequality, cultural diversity, and rapid economic growth have created a gap in the quality of health care between the different social classes and geographical regions, in terms of facilities, equipment, supplies, and medical personnel. In particular, the eastern region of Indonesia still has a high mortality rate for some diseases which would not be considered fatal in other regions which have a higher level of economic growth and access to better medical services.

According to the Indonesian Health Profile 1994, the major fatal diseases in Indonesia (in order of highest fatality rate) were diarrhea, tuberculosis, diphtheria, measles, respiratory diseases, tetanus and malaria in 1986; and cardiovascular diseases, tuberculosis, respiratory infections, diarrhea, and perinatal complications in 1992.

In North Sulawesi, tuberculosis, pneumonia, diarrhea, malaria, tetanus, typhoid fever and hepatitis are the major fatal diseases. In Central Sulawesi, the major fatal diseases are acute infection of the upper respiratory tract, pulmonary tuberculosis, diarrhea, malaria, pneumonia, other infections of the upper respiratory tract, and hepatitis. Still births, circulatory diseases, pneumonia, high blood pressure, tuberculosis, typhoid fever, accidental death, premature birth, diarrhea, and tetanus are the leading causes of death in South Sulawesi; and pneumonia, tuberculosis, diarrhea, tetanus, typhoid fever, ARI (acute respiratory infection), dysentery, and malaria are the leading cases of death in the Southeast Sulawesi (from the Health Profile 1994 of each region).

Deaths caused by these diseases can be prevented by diffusing health education, extending regional medical care, and improving basic health services.

The current situation is caused by the fact that access to medical facilities is difficult for people living in mountains, isolated islands and in other rural areas in Sulawesi that lack the necessary infrastructure such as electrical service and means of transportation. Therefore, the quality of primary health care for people living in these rural areas is relatively low. Also shortages of essential medical supplies for medical facilities is another factor restricting quality basic health services.

Improving basic health services is considered to be the most important factor in the prevention of deaths caused by these diseases.

Under the situation that the basic equipment and staff training at health centers have still not reached a satisfactory level, the Ministry of Health of Indonesia (hereinafter referred to as "Ministry of Health") has made a guideline for the standardization of basic medical equipment to be used for regional health care. The Ministry of Health has been striving to provide these standardized equipment by an INP program (using an OECF sector program loan), however, satisfactory improvements have not yet been seen.

Taking into consideration the current situation, the Government of Indonesia has requested assistance from the Government of Japan in implementing their program. The request is to the Government of Japan to supply the necessary equipment to medical facilities that are playing an important role in rural areas, such as health centers, sub-health centers, village midwives POSYANDU and POS OBAT DESA. These facilities will be able to offer basic health services and upgrade the safe motherhood program which is essential for realizing an emergency delivery assistance and referral system to reduce the death of pregnant women who have not receive adequate medical treatment until now.

The equipment is necessary to prevent some of the major causes of death such as ISPA, malaria, tuberculosis, and to decrease the number of infant and mortality deaths. The equipment for the safe motherhood program is needed for the plan to establish a referral system from for village midwives to for hospitals. This project will also include the distribution of necessary equipment to related offices such as DINKES DATI Is and midwife schools to supervise and train the medical staff for improving the quality of basic health services.

In response to this request, the Japan International Cooperation Agency (JICA) dispatched a preliminary study team to Indonesia in August of 1995. As for the necessity and implementation of the request, DINKES DATI Is have gained experience in managing equipment distribution in a previous INP project, that is, the delivery and maintenance of equipment. Province health offices have planed and implement major programs (mother-and-child health care program, infectious disease control, health education, etc.) since 1994 and are responsible for the delivery of equipment, operating costs, and budget allocation for training programs for this project. The Ministry of Health and BAPPENAS have arranged for the acquisition of the necessary domestic budget. The training of medical staff for health centers and other facilities will be systematically carried out by the health manpower training institutes.

Since the above has met the requirements of the Japan's grant aid assistance system, a basic design study team was dispatched to Indonesia.

## **1-2 Relationship with GII**

The current world population of 5.7 billion is projected to reach 6.3 billion by the year 2000 and exceed 10 billion by the end of the 21st century. 95% or more of the world's population will be living in developing countries. This population explosion is seriously hampering the social and economic development of these countries. Also, many global environmental problems are related to this rapid population growth. Reduction of the population growth rate is an urgent problem which must be addressed in order to sustain development and protect the environment.

Another problem which must be addressed is AIDS, which is spreading rapidly throughout the world. According to a recent WHO report, the number of AIDS patients was over 0.85 million at the end of 1993, and the number of HIV carriers was estimated to be over 3 million at the end of 1994. Unless effective prevention measures are carried out, the annual infection rate in Asia will become higher than in Africa by the end of the century, and the number of HIV carriers will be between 3 and 4 million by the year 2000, with over 90% living in developing countries. AIDS affects not only individuals, but also social development.

In February of 1994, Japan announced that it would offer 3 billion dollars worth of cooperation to developing countries through ODA from 1994 to 2000, as a global initiative (GII) to deal with the problems of AIDS and overpopulation.

In GII, measures to address the problems caused by overpopulation include reducing the rate of population growth through wide spread family planning, as well as tackling the fundamental causes for overpopulation in developing countries such as a high infant mortality rate, unsanitary living conditions, low level of education, poverty, and a low social status for women. Taking this into consideration, Japan has drafted the following policies for offering direct and indirect cooperation in implementing aid programs for developing countries. Along with a direct approach for population control and family planning, an overall approach that includes improving basic health services for women and children, providing better education and raising the status of women is considered to be essential. Measures of direct and indirect cooperation are as follows.

1. Direct cooperation for population control and family planning
  - Mother and child health care / family planning
  - Family planning education and PR
  - Population statistics

2. Indirect cooperation for population control and family planning
  - Basic health care and medical services
  - Basic education
  - Vocational training and basic education for women

The following measures are to be carried out for AIDS prevention.

1. Education and PR for prevention
2. Transfer of examination techniques
3. Cooperation in AIDS surveys and research

As Indonesia is one of the 12 important countries in GII, a project formation study team for a population / AIDS project was dispatched in December of 1994 and in July of 1995. In Indonesia, family planning activities are comparatively widespread. Therefore, the focus of this project will be to improve the quality of life by providing better health care and education, reducing poverty, switching to sustainable family planning, and improving basic health services and family planning in outer areas where these services and plans have been slow to develop.

AIDS prevention measures have just started and a national action plan is now being prepared. For areas where the risk of AIDS infection is particularly high, a comprehensive approach that includes epidemiology investigations, education, examination system, safe blood transfusions and counseling is required. For areas where AIDS is still not very prevalent, wider coverage of primary health services including STD prevention is seen as the first step towards AIDS prevention. Based on the survey report, the following have been determined as the basic policies for completing a project scheme.

1. Japan selects the Sulawesi districts as the recipient of the aid programs and helps to promote the implementation of regional health and medical care programs.
2. Japan supports the implementation of population control and family planning.
3. Japan supports AIDS surveillance and the supply of safe blood.

The project to promote regional health and medical care in the Sulawesi, one of the projects for population control and family planning, will be carried out integrating technical cooperation, grant aid, and various assistance schemes.

The following requests listed below have been made for the promotion of regional health and medical care. For projects in which schedules have not yet been set, feasible items should be selected through technical cooperation and their appropriateness should be taken into consideration. Grant aid should be offered for urgent projects with the aim of

supplying essential equipment to health centers and the safe motherhood programs. Implementation of this aid is considered to be so significant that it is the first project of GII.

**(Reference) Issues for strengthening of district health services in Sulawesi**

1. Supplying equipment to health centers
2. Establishing training centers
3. Improving the safe motherhood programs
4. Improving the safe blood supply system
5. Improving the health information system
6. Promoting local educational activities
7. Developing manpower
8. Improving basic health services in remote areas
9. Improving main regional hospitals
10. Improving referral systems
11. Improving laboratory services
12. Strengthening district health care management

Note: Since the current project forms a part of "the project of strengthening of district health services in Sulawesi" so the project name of the current project is same.

### **1-3 Outline of the Request**

The following is an outline of the target facilities and the equipment to be supplied.

**Facilities:** in four Sulawesi provinces (North, Central, South, and Southeast)

DINKES DATI Is, DINKES DATI IIs, health centers with beds, health centers without beds, village midwives, POSYANDU (a community participation organizations for health care activities), POS OBAT DESA (local dispensaries operated by communities).

**Areas :** four provinces in Sulawesi

**Requested equipment:** basic equipment needed for health care activities at health centers, training equipment for the related above mentioned equipment, and equipment for supervisor and instruction executed by DINKES DATI Is and DINKES DATI IIs. Its equipment to be supplied is as follows.

**(KANWIL)**

Motor cars, photocopy machines, demonstration models for training, resuscitation sets (DINKES DATI Is)

Health education mobiles, sprayer can, fogging machines

(BKMM - Community Eye Care Institutes)

cataract surgery sets for medical rounds

(DINKES DATI IIs)

Video sets, personal computers, demonstration models for training, resuscitation sets, sprayer cans, fogging machines

(Health Centers without beds)

Adult weighing scales with height scale, baby weighing scales, eye diagnostic sets, emergency sets, microscopes, MCH kits, midwife kits, PHN kits, school health kits, health education kits, motorcycles (trail and bebek), vaccine carriers, sterilizers

(Health Centers with beds)

All of the items mentioned above for health centers without beds in addition to oxygen cylinder sets, curettage set, minor surgery set, operating lamps, operating tables, sterilizers, suction aspirators, vacuum extractors, incubators, ambulances

(Sub- Health Centers)

Adult weighing scales with height scale, baby weighing scales, stethoscopes for nurses, sphygmomanometers, hemoglobinometers Sahli, sound timers, PHN kits

(Midwives)

Weighing scales, Baby weighing scales, stethoscopes for nurses, sphygmomanometers, hemoglobinometers Sahli, flash lights, sound timers, motorcycles (bebek)

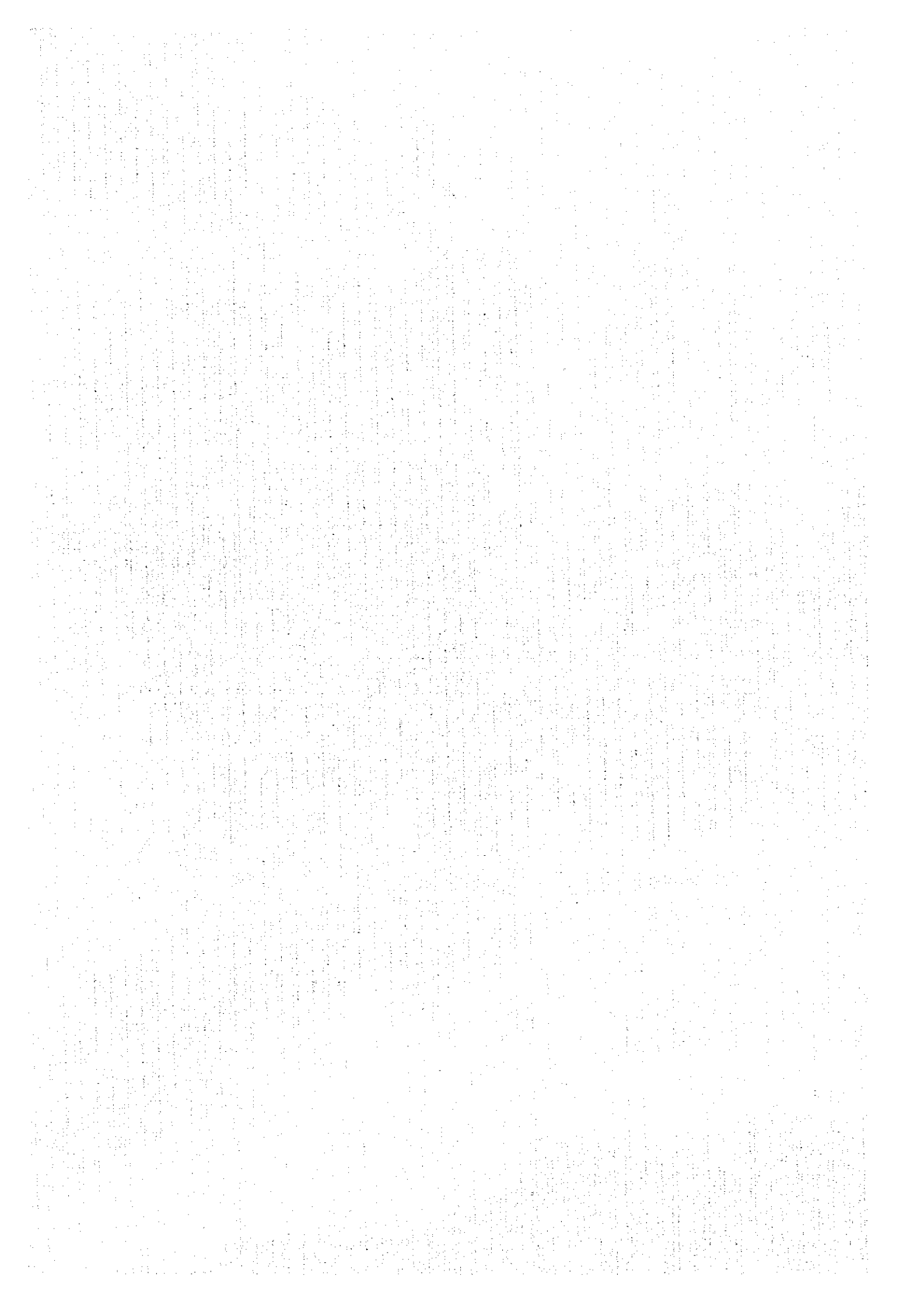
(POSYANDU)

Kader kits

(POS OBAT DESA )

POD kader sets

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





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

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

The project aims at improving regional basic health care services and upgrading safe motherhood programs. This objectives can be realized by supplying basic medical equipment to health centers and other medical facilities. Thus the objectives of this project are summarized as follows.

- 1) To secure the qualities of basic health care services for local residents**
- 2) To upgrade the functions of safe motherhood programs**
- 3) To strengthen the supervising and management capabilities of provinces and districts**

The project is designed as part of the GII(Global Issues Initiatives) on the population and AIDS problems.

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

#### **2-2-1 Principles in cooperation**

Through the domestic preliminary survey, the basic design study team has confirmed that the principle in the current cooperation is to promote regional health activities by supplying medical equipment to health centers and relevant facilities in the Sulawesi areas.

After explaining goals of this project to the Indonesia government, the basic study team conducted the field survey of the current medical conditions of health centers in Sulawesi, and then had talks with the government of Indonesian to agree to the following principles as well as to draw up the minutes. Based on the minutes, the basic design study team further conducted field surveys, talked with people concerned in the Ministry of Health, related agencies, provinces, and others, and finally has obtained the following results.

The number of health centers and related facilities has markedly increased since 1969 when their improvement started in the first long-term development plan aiming at constructing health and medical service networks. The contents of the improvement, however, are not always satisfactory because of insufficient budgets. In this country, a description of standard equipment for the health centers and sub-health centers (called Green Book 1993) has been prepared by Directorate of Health Center Development , Directorate General of Community Health, the Ministry of Health. The book lists the standard equipment that should be prepared in the national health centers and sub-health centers. In fact, the equipment has not been fully supplied because of short budgets.

Besides, considerable part of the equipment supplied in previous projects has become decrepit and requires renewal.

Among the standard equipment in the Green Book, there are some that should be reviewed based on the present conditions of health centers and sub-health centers. For facilities except for the health centers and sub-health centers, corresponding programs choose the standard equipment and revise its descriptions for village midwife, POSYANDU, POS OBAT DESA and others. So it was important to understand the policies of the relevant programs, the improvement plan of the equipment, and the needs of the districts, with reference to the Green Book, when determining the necessary equipment that is to be supplied in this project.

The scope of the current cooperation is the supply of the equipment of which necessity, priority, and validity as an object of the grant aid assistance system of the Government of Japan have been studied and then confirmed, with reference to the quantity indicated on the Green Book as well as the items/quantity requested by the Ministry of Health.

#### 2-2-2 Examination of the requests and its results

Indonesia's requests have been examined as follows based on the above principles on cooperation.

##### 1) General conditions of Indonesia

In the 1st-5th steps of the first long-term development plan(1967/70-1993/94), the Indonesian government has been committed to reducing major diseases such as infectious diseases, to constructing networks to provide medical service to all the people nationwide including those living in remote areas and isolated islands, to improving the quality of regional health service, to helping low-income families, to improving nutrition and sanitary conditions, and to supplying essential medical goods.; all of which eventually aim at emphasizing equality in receiving medical care, improving the quality of public service, as well as promoting community participation.

Consequently, some results have been attained: smallpox has been eliminated (WHO's declaration in 1974); the morbidity rates have decreased as well, the life span has become longer; the mortality rate of mothers and babies in delivery has reduced; the nutrition conditions have improved; and health care has been widespread. However, further effort is still necessary to solve the following problems:

- Large gaps among provinces and gaps between urban and rural areas
- High infection rates in low-income people and regional residents

- Industrialization-induced environmental problems such as air pollution, waste water, and industrial wastes; and increase in workers' accidents, and in occupational diseases
- Increase in welfare expenses because of the increase and aging of the population
- Malnutrition
- Insufficient sanitary facilities such as toilets and sewerage
- Immature medical products and equipment industry.

In terms of the diseases prevailing in whole Indonesia, the characteristics are different from urban to rural areas, according to a report of the Ministry of Health. The major diseases are classified into: infectious diseases (tuberculosis, ARI, diarrhea, malaria, hepatitis, etc.); non-infectious diseases (circulatory diseases, cancer, diabetes, etc.); under nourishment problems (lack of vitamin A, anemia, etc.). On average, the ratio of the infectious diseases is still high, particularly high in low-income people living in farm and urban areas. Especially in farm, the rate of the main cause of death is high in the four major infectious diseases (tuberculosis, ARI, diarrhea, and malaria). Therefore, the responsibility of regional medical activities is rather great.

## 2) Conditions in Sulawesi

The Sulawesi is made of a hundred and some islands, with the main Sulawesi island, and are divided into the four administrative provinces: North, Central, South, and Southeast provinces. There are 40 districts (Kabupaten and Kotamadia) in the four provinces; 7, 5, 23, and 5, respectively; and each district consists of wards (Kecamatan). With the whole population of 12,521,385 (according to the 1990 census), the total area is 189,216km<sup>2</sup> (according to the Indonesia Health Profile 1994) as large as the United Kingdom.

The main cities are the district capitals: Manado (in the North Sulawesi, 314,161 people); Palu (in the Central Sulawesi, 837,510 people in Donggala district including Palu); Ujung Pandang (in the South Sulawesi, 1,000,326 people); and Kendari (in the South-East Sulawesi, 135,044 people), where the population data source is the Health Profile 1994 published in each province.

## 3) Conditions of target facilities

The targets of this plan are the facilities for regional health care such as the health center and the province/district health offices that supervise these facilities. Table 2-2-1 shows the facilities that have made requests of equipment. The number of the listed facilities in the South-east Sulawesi is smaller than that of the total facilities there. It should be noted that in the table the number of DINKES DATI Is in the South-east Sulawesi is smaller than the total number of the existing offices there. It has also been confirmed that this is

because the requested equipment in Kotamadia Kendari, which was independent of Kabupaten Kendari in 1994, has been included in that requested in the Kabupaten, based on the province's decision.

Table:2-2-1 Number of Target Facility

Facility	North Sulawesi	Central Sulawesi	South Sulawesi	South-East Sulawesi	Total
KANWIL	1	1	1	1	4
DINKES DATI I	1	1	1	1	4
DINKES DATI II	7	5	23	5	40
Health center with beds	61	49	167	32	309
Health center without beds	138	125	330	125	718
Sub-health center	681	596	1077	440	2,794
Village midwife	295	183	416	254	1,148
POSYANDU	-	-	-	-	1,255
POS OBAT DESA	175	74	754	809	1,812

(Source: Information Bureau, Directorate General Community of Health, MOH)

The outline of each facility is following.

(1) Health Center (with and without beds)

Each Kecamatan has 1-3 (corresponding to its population) health centers, which are carrying out 18 programs. All the activities are directly relevant to the regional health care; particularly, outside activities (e.g., medical consultation such as visiting villages and schools periodically, supervision of regional health care, and community health education) are one of the important functions.

In most cases, a health center has a doctor, a dentist (in some cases he makes his rounds at a few centers), midwives, nurses, laboratory technicians, and clerks. There are two types of centers: health centers without beds and health centers with beds. Although the number of staff members and the organization structure differ from center to center, the basic organization is like Fig.2-2-1.

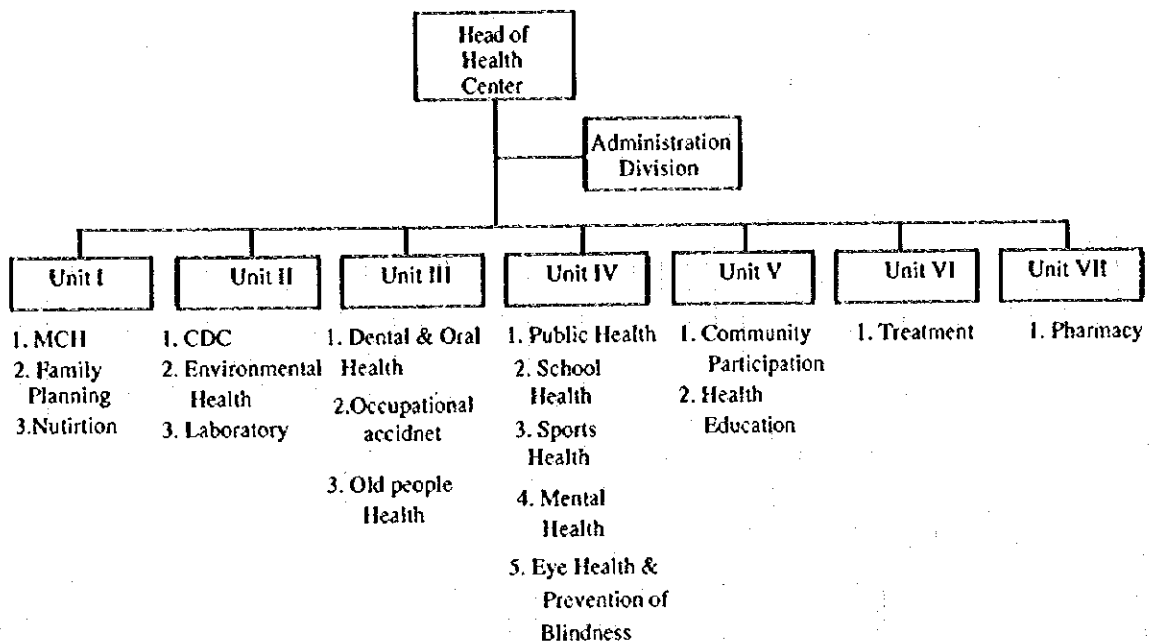


Fig.2-2-1 Health Center

**(2) Sub-health center**

The sub-centers provide the first medical examination and basic health services in local areas. There are 2-5 sub-centers per health center. In general, a couple of midwife and nurse are assigned.

**(3) Village midwife**

In the administrative classification, village (Desa) exists under ward (Kechamatan). The village midwives in each village take care of pregnant women and educate TBAs. They are also expected to contribute general medical and health care as the only medical staff in villages.

**(4) POSYANDU**

Different from the above medical facilities (1)-(3), POSYANDU is a community participate health activity. In most cases, the staff members gather in the village chief's house for their activities, but sometimes use small houses of their own. In POSYANDU, around five volunteers called Kader play major role, join with a medical team sent from the health center once a month, conduct mother and child health care, family planning instruction, nutrition improvement, oral infusion service promotion, and vaccination.

#### **(5) POS OBAT DESA**

This is another regional health activity which community participants, seen frequently in the Southeast Sulawesi. In principle, a patient visits a health center or a sub-center for medical treatment; however, in many cases a health center or a sub-center is too far away to get there for medical treatment. In these cases, the patient often gets worse, left untreated. To avoid this problem, they keep medicine there for malaria, tuberculosis, ARI, diarrhea, etc.; Kaders in charge give the proper medicine to the patient based on the hearing of the patient's conditions. So this is the village dispensary.

#### **(6) DINKES DATI II**

As agencies supervising district health policies, there are KANWIL (to be abolished) under control of the central government and the DINKES DATI IIs under control of the district government. Practically, all the health care activities in a district are carried out under control of the DINKES DATI IIs. Then the facilities that will be supplied the equipment in this project are the DINKES DATI IIs. The equipment to be supplied to health centers and other facilities will be once sent to the DINKES DATI IIs and handed over there from Japan to Indonesia. Later, the equipment will be distributed to health centers -- the final destinations, which the Government of Indonesia will take charge of.

#### **(7) DINKES DATI I**

This is an agency under control of the province government, supervising province health policies. The DINKES DATI I carries out practical work related to province health policies.

#### **(8) KANWIL**

This is an agency in a province under direct control of the Ministry of Health. Directed by the Ministry of Health, the agency sets up province policies for health care and organizes budget plans.

#### **4) Requested equipment**

The requested equipment in this project and its purposes of use are listed on Table2-2-2.

Table 2-2-2 Equipment of its purpose of use

No.	Equipment	Purpose of use	No. of request	No. of plan	Category
<b>Health center without beds</b>					
1	Adult weighing scale with hight scale	Measurement of patient's height and weight	183	166	S
2	Baby Weighing scale	Measurement of baby's weight	185	89	S
3	Syring & needle, 2cc	Injection for treatment (excluding vaccination)	56,313	11,112	S
4	Syring & needle, 5cc	Injection for treatment (excluding vaccination)	56,313	2,778	S
5	Infusion set	Infusion for treatment	1,215	1,124	S
6	Examination lamp	Gynecological examination and pediatrics treatment	185	176	S
7	Diagnostic set	General diagnosis (including for otorhinolaryngology)	120	118	S
8	Stethoscope	General diagnosis	191	191	S
9	Sphygmomanometer (Tensimeter)	General diagnosis	191	191	S
10	Sound Timer	Examination of acute respiration infection (infant)	2,025	1,796	N
11	Emergency Set	Resuscitation for adult patient	120	120	N
12	Hemoglobinometer, Sahli	Examination of anemia	185	180	S
13	Hb Talquist Book	Simple examination of anemia	404	391	S
14	Centrifuge	Examination of urine	70	28	S
15	Microscope	Urinal and hematology examination	135	120	S
16	Fetal Stethoscope (Monoaural)	Obstetrics diagnosis	182	181	S
		Obstetrics and gynecological diagnosis in outside of H.C.	115	111	S
17	MCH Kit	Child birth	808	469	S
18	Midwife Kit (Bidan Kit)	Child birth	8,080	15,318	S
19	TBA Kit (Dukun Kit)	Child birth	155	154	S
20	PHN Kit	Outside activities of health education	342	495	S
21	School Health Kit	Health education activities at school	190	170	S
22	Health Education Set	Outside activities of health education	285	213	S
23	Typewriter	Office use	41	53	S
24	Generator Set	Power supply (facilities without power supply)	347	37	S
25	Motorcycle (Trail)	Outside activities of health education	347	37	S
26	Motorcycle (Bebek)	Outside activities of health education	Including trail	59	S
27	Vaccine Carrier	Vaccination activities	4,151	3,234	S
28	Sterilizer	Sterilization of vaccination syringe at health center	782	782	S
29	B package	Vaccination activities	808	808	S
30	Microscope for TB	TB examination	249	249	S
31	Manchette for children	Dengue fever diagnosis	60	124	P
32	Laboratory Equipment for HC	General examination	173	157	S
33	Dental Statik Set	Dental treatment	45	16	S
34	Mobile Health Center (car)	Health education activities at local area	19	18	S
35	Mobile Health Center (boat)	Health education activities at local area	11	8	S
36	HC Kit for Mobile HC	Health education activities at local area	152	107	S
<b>HEALTH CENTER WITH BED</b>					
1	Adult Weighing Scale with Hight Scale	Measurement of patient's height and weight	150	114	S
2	Baby Weighing Scale	Measurement of baby's weight	150	89	S
3	Syring & Needle 2cc reusable	Injection for treatment (excluding vaccination)	14,000	11,520	S
4	Syring & Needle 5cc reusable	Injection for treatment (excluding vaccination)	14,000	3,840	S
5	Infusion set	Infusion for treatment	1,545	1,524	S
6	Examination Lamp	Gynecological examination and pediatrics treatment	124	104	S
7	Diagnostic Set	General diagnosis (including for otorhinolaryngology)	137	123	S
8	Stethoscope	General diagnosis	140	126	S
9	Sphygmomanometer (Tensimeter)	General diagnosis	140	126	S
10	Sound Timer	Examination of acute respiration infection (infant)	1,545	910	N
11	Emergency Set	Resuscitation for adult patient	137	121	N
12	Hemoglobinometer, Sahli	Examination of anemia	155	141	S
13	Hb Talquist Book	Simple examination of anemia	297	276	S
14	Centrifuge	Examination of urine	89	61	S
15	Microscope	Urinal and hematology examination	86	78	S
16	Fetal Stethoscope (Monoaural)	Obstetrics diagnosis	152	133	S
		Obstetrics and gynecological diagnosis in outside of H.C.	90	90	S
17	MCH Kit	Child birth	618	260	S
18	Midwife Kit (Bidan Kit)	Child birth	6,180	Including with beds	S
19	TBA Kit (Dukun Kit)	Child birth	120	94	S
20	PHN Kit	Outside activities of health education	235	372	S
21	School Health Kit	Health education activities at school	185	101	S
22	Health Education Set	Outside activities of health education	210	185	S
23	Typewriter	Office use	30	9	S
24	Generator Set	Power supply (facilities without power supply)	235	25	S
25	Motorcycle (Trail)	Outside activities of health education	Including trail	43	S
26	Motorcycle (Bebek)	Outside activities of health education	Including with beds	Including with beds	S
27	Vaccine Carrier	Vaccination activities	-	-	S
28	Sterilizer	Sterilization of vaccination syringe at health center	-	-	S
29	B package	Vaccination activities	-	-	S
30	Microscope for TB	TB examination	-	-	S
31	Manchette for Children	Dengue fever diagnosis	-	-	P

Table 2-2-2 Equipment of its purpose of use

No.	Equipment	Purpose of use	No of request	No of plan	Category
32	Eye Diagnostic Set	General ophthalmology examination (including lense set for eyesight measurement)	85	78	S
33	Oxygen Cylinder & Set	for obstetrics and asthma patient	309	309	N
34	Connetage Set	Treatment for miscarriage	120	57	N
35	Resuscitation Set	Resuscitation of new born baby	110	147	N
36	Cut-down Set (Venesection Set)	Treatment during infusion	170	148	S
37	Minor Surgery Set	Surgery treatment	170	148	S
38	Operation Lamp	Operation	94	51	S
39	Operation Table	Operation	59	26	S
40	Sterilizer	Sterilization of apparatus	70	40	S
41	Suction Aspirator	Suction of phlegm	100	88	S
42	Infusion Stand	For infusion	25	19	S
43	Vacuum Extractor	For vacuume extraction	152	121	S
44	Incubator	Treatment for low weight baby	309	137	S
45	Neonatal Thermometer	Treatment for low weight baby	-	363	P
46	Ambulance for HC	Transportation of patient	30	3	P
<b>SUB HEALTH CENTER</b>					
1	Adult Weighing Scale with Height Sca	Measurement of Patient's height and weight	960	1,013	S
2	Baby Weighing Scale	Measurement of baby's weight	960	1,184	S
3	Syring & Needle 2cc reusable	Injection for treatment (excluding vaccination)	37,800	15,048	S
4	Syring & Needle 5cc reusable	Injection for treatment (excluding vaccination)	37,800	4,470	S
5	Stethoscope, nurse	General examination	810	810	S
6	Sphygmomanometer (Tensimeter)	General examination	810	810	S
7	Fetal Stethoscope (Monoaural)	Obstetrics diagnosis	810	810	S
8	Hemoglobinometer, Sahli	Examination of anemia	810	810	S
9	1lb Takquist Book	Simple examination of anemia	810	993	S
10	Sound Timer	Examination of acute respiration infection (infant)	5,344	1,119	S
11	PIH Kit	Health education activities at local area	885	998	S
<b>VILLAGE MIDWIFE</b>					
1	Weighing Scale	Measurement of patient's weight	756	1,140	S
2	Baby Weighing Scale	Measurement of baby's weight	756	1,058	S
3	Stethoscope, nurse	General examination	756	756	S
4	Sphygmomanometer (Tensimeter)	General examination	756	756	S
5	Fetal Stethoscope (Monoaural)	Obstetrics diagnosis	756	756	S
6	Hemoglobinometer, Sahli	Examination of anemia	756	999	S
7	1lb Takquist Book	Simple examination of anemia	2,502	1,252	S
8	Battery Lamp	General examination	2,502	1,301	S
9	Sound Timer	Examination of acute respiration infection (infant)	-	1,148	N
10	Motorcycle (Bebek)	Transportation of village midwife	16	16	P
<b>POSYANDU</b>					
1	Kader Posyandu Kit	Health education activities by kader	4,600	1,255	S
<b>POS OBAT DESA</b>					
1	Kader POD Kit	Health education activities by kader	1,002	1,812	S
<b>DISTRICT</b>					
1	Video Set	For training	20	33	N
2	Computer Set	Preparation of administration data	39	30	N
3	Demonstration Model for Training	For training	38	49	-
4	Resuscitation Set	For training	-	49	-
5	Emergency Set	For training	-	49	-
6	Sprayercan	Malaria prevention activities	95	44	S
7	Fogging Machine	Dengue prevention activities	47	9	S
<b>PROVINCE</b>					
<b>(Kanwil)</b>					
1	Motor Car	Health education activities at local area	4	4	S
2	Photocopy Machine	Office use	4	4	-
3	Demonstration Model for Training	For training	-	4	-
4	Resuscitation Set	For training	-	4	-
5	Emergency Set	For training	-	49	-
<b>(DINKES DATII)</b>					
6	Motor Car	Health education activities at local area	-	4	S
7	Health Education Mobile	Mobile education activities	4	4	P
8	Sprayercan	Malaria prevention activities	-	40	S
9	Fogging Machine	Dengue prevention activities	-	20	S
<b>(BKMM)</b>					
10	Cataract Surgery Set	Cataract treatment activities	-	2	N



## **2-3 Basic Design**

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

As to formulation of an optimum plan for this project, it has been necessary to take into account Indonesia's natural and social conditions, the present state of the executive agency that will be implementing the project, its conditions and problems concerning procurement as well as the special features of the project itself. The policies concerning the different items have been formulated in the following manner.

#### **1) Basic Policy in Formulation of Basic Design**

The basic policy concerning the design of the project has been agreed to between the parties as follows in the preliminary study.

- (1) Equipment needed in order to be able to provide basic health and medical services**
- (2) Equipment needed in order to be able to carry out plans to strengthen the safe motherhood program**
- (3) Equipment needed in order for DINKES DATI Is and DINKES DATI IIs to be able to accomplish supervisory control and guidance of health facilities and training of health center staff and midwives.**
- (4) Equipment not included in this project**
  - (i) Equipment for which difficulties can be expected regarding installation and in connection with what facilities are available**
  - (ii) Equipment for which difficulties can be expected as regards supply of spare parts, consumables, etc.**
  - (iii) Equipment that can be expected to lead to redundancy as regards quantity**
  - (iv) Equipment for which plans for use are not clear**
- (5) Order of priority in selection of equipment**
  - (i) Necessary equipment recognized by the Indonesian Ministry of Health as standard equipment, particularly equipment needed for mother-and-child health and in the programs for dealing with the main infectious diseases in Sulawesi requiring preventive inoculation, such as tuberculosis and malaria**
  - (ii) Equipment needed in order to be able to reinforce safe motherhood programs at the regional level**

## 2) Policy Concerning Natural Conditions

A natural condition that has to be taken into consideration in implementation of this project is rain at the time of transportation of the equipment. If the equipment is transported during the rainy season, in some cases transportation within the island of Sulawesi could take longer than expected on account of temporary and partial blockage of, if not main roads, at least branch roads as a result of sweeping away of bridges, landslides, rock falls, etc. during and after heavy rains. Therefore, when transportation of the equipment inside the island of Sulawesi has to take place in during the rainy season it is necessary to make full preparations in advance to cope with possible difficulties. For one thing, past information on the condition of roads and other relevant infrastructure should be obtained from DINKES DATI Is and DINKES DATI IIs and the health centers themselves in order to formulate transportation tactics accordingly. Furthermore, information on the amounts of rainfall and road conditions at the actual time of transportation should be obtained as early as possible in Jakarta and from local transporters at the ports of unloading so as to be able to adjust the transportation schedules according and make other necessary arrangements. Finally, the sizes of the warehouses and possibilities as regards rain shelters should be explored in advance at the district level so as to be prepared in case of necessity.

## 3) Policy Regarding Social Conditions

The equipment to be supplied to this project includes tuberculosis microscopes, operation lamps, medical examination lamps, health education sets, dental examination sets, video sets, personal computers, copying machines, sterilizers, incubators and other equipment that requires electricity, and because of that the health centers that do not have a supply of electricity are to be provided with generators. Therefore in selection of the equipment to be supplied, it is necessary to take into account the relative difficulty of procuring spare parts for power distribution purposes.

## 4) Policy Concerning Utilization of Local Manufacturers and Local Equipment and Materials

All of the equipment requested in this project can be procured in Indonesia, and what is more, at a price of about one-fifth of what it would take to procure it in Japan. Nor are there any problems concerning quality in the case of the equipment covered by this project, and it has been confirmed that the companies from which the equipment is purchased are capable of providing maintenance services for it, some of them even having agencies and service networks in Sulawesi. Local procurement can, however, also be problematic. For instance, some local suppliers have trouble meeting delivery deadlines. Another possible problem is full meeting of all contract obligations and detailed instructions concerning delivery methods, packing methods, etc. Still another is

the amount of time it takes to handle claims as regards both the condition of the equipment at delivery and malfunctions after delivery. Therefore, in this project suppliers that are experienced in the kind of work involved and who have proven their capability to the Ministry of Health in the past will be selected in the tenders, and they will be required to submit concrete information on implementation methods, the responsible persons, detailed schedules, etc. so as to make sure that such problems will not arise. Therefore in this project the basic orientation of the planning will be local procurement of all of the equipment.

Looking at the most widely used models of the equipment requested in this project, in many cases they are products of third-party countries (countries other than Japan and Indonesia). However, they have agencies in Indonesia and are capable of providing maintenance services. Therefore, procurement of products of third-party countries will be considered for the equipment covered by this project, and when such equipment is adopted, it will be submitted to the Japanese Government for approval.

#### 5) Policy Regarding Coping With the Support and Supervisory Abilities of the executing agencies

Since the equipment requested in this is all basic equipment, training in how to use it at the time of delivery will not be necessary. Training in maintenance methods will, however, be necessary for equipment that often malfunctions, and it is planned to have the suppliers provide such training. Furthermore, training in Indonesia in use methods and clinical application will also be required for newly introduced equipment and pilot project equipment.

In the case of the equipment for which such training is necessary, provision of such training will be a condition for procurement of it in this project. Moreover, in the detailed design stage it will be necessary to confirm implementation of such training as scheduled in terms of both planning and budget allocations.

#### 6) Policy Concerning Setting of Scope and Grade of the Equipment

We have already confirmed that all of the requested equipment is basic equipment and suitable for activities in the health centers and other facilities for which they are meant and will also be discussing the details of the specifications in the detail design and later stages as well in order to make sure that it does not go beyond that scope. Since spare parts are purchased by the DINKES DATI IIs, it would appear that it is not necessary to include them in this project.

However, since it is expected that it will take six months to procure spare parts for the new equipment to be installed at the health centers and other facilities (the longest case

being that in which procurement is based on a tender procedure, i.e. one month for preparation of the tender documents, three months from announcement of the tender to submittal of bids and two months for delivery; when the quantities and the total amounts are small, of course, procurement need not be based on a tender), it has been decided to add spare parts which are quite likely to be needed before six months have passed (specifically, only lamps). As for consumables, the equipment scheduled to be procured in this project is equipment that is already being used at the different facilities in question, which means that DINKES DATI IIs already have them.

Therefore they will not be included in the scope of supply. Specifically, the necessary consumables are medicine, gauze and cotton actually used in medical treatment and testing reagents. For most of the equipment it is not necessary to provide instruction manuals and service manuals since they are already very familiar with it. However, arrangements will be made to include manuals in Indonesian for the sound timers and sphygmomanometers (tensimeters). The manual for the sound timers will be for diagnosis of ARI, and that for the sphygmomanometers will be on how to repair them.

#### 7) Policy Regarding Performance Time

In this project no particular construction or similar work on the Indonesian side is necessary, but it will be necessary to transport the equipment to the health centers after it is handed over to DINKES DATI IIs.

Therefore the most important aspects of implementation time will be the time that it takes to procure the equipment in Jakarta (delivery time) and the time that it takes to transport it to the different districts in a safe, sure and effective manner for handing over there. Such implementation time will be set on the basis of procurement and transportation plans that are fully feasible and that take into account actual conditions in Indonesia.

Furthermore, for the sake of sure transportation the packing will be done separately for each province and each district after sorting of the different kinds of equipment by provinces and districts.

#### 8) Consideration of the "The Project for Health Center Development" Evaluation

In 1993/94, Japan conducted the above mentioned project for the health centers in Central and Western Java by the Japan's grant aid. There are many similarities with the previous project and this project in terms of equipment and the target facilities. Therefore, this project must be structured by referring to the items to be improved from the previous project. Evaluation of the previous project was carried out by the local JICA office (consigned to a local consultant) in April of 1995.

Based on the items to be improved, we plan to use the following measures to improve this project.

1. Some of the procured equipment does not meet the particular needs of each health center, and some much needed equipment has not been supplied. Therefore, we will listen carefully to the opinions of officers of DINKES DATI IIs who have the best grasp of what equipment is need at each health center.

2. There are some minor quality problems.

Items which are most likely to have quality problems are the basic devices used for medical examinations such as adult weighing scale with height scale and sphygmomanometer. A preliminary study indicated the quality problem of adult weighing scales with height scale. In this basic design study, it was determined that the problem was rusting of the bar section of the scale. This rusting prevented smooth movement of the bar. We were able to confirm that normal operations were possible by either preventing rusting or by removing the rust regularly. It was decided that these methods should be explained when delivering the scales.

In fact, such problems are common at all health centers throughout Indonesia. Along with tackling these problems, this project will also strive to secure the highest level of quality possible through the detailed design stage and procurement stage.

3. The technology and budget for repairing equipment is insufficient. A management system must be established.

Both the DINKES DATI IIs and health centers have personnel in charge of maintaining health center equipment. However, a plan of operation has not been established and so the most effective use of equipment has not been achieved. The Ministry of Health has also recognized the importance of this problem, and has drafted a tentative plan to strengthen the registration of equipment ledgers and to establish a system to manage maintenance. We have confirmed that the Ministry of Health has a plan to execute these measures. In this study, we have recognized that there are faults with many of the sphygmomanometer at health centers and sub-health centers. Therefore, we are providing spare check valves and hoses for the valve through which air passes, as well as spare manchettes. In addition to this, we are also including instructions for simple maintenance such as unclogging valves. Also, we confirmed the minutes in which appropriate maintenance is made a condition for the procurement of sphygmomanometer. As for the budget for the maintenance of distributed equipment, we have request budgetary assistance even for BAPPENAS.

4. Some items can not be adequately installed by Ministry of Health officials.

The installation of dental units in this project will be entrusted to the Indonesian side. However, it was determined that installation upon delivery shall be contracted to the manufacturers scope of work (the Indonesian government has agreed to bear these costs). We are striving for quality control during installation.

5. Facilities, water, electricity and others must be improved.

In this project, there has been problems with using some of the equipment due to poor infrastructures such as facilities, water, and electricity. Along with removing such items from the procurement list, we are also considering measures such as providing small generators that can be used in dental examination rooms.

6. Technical training for repairs and installation must be carried out through a contract with the supplier.

In this project, the supplier is contracted to provide technical training at each district for making repairs of the equipment in which such training is deemed necessary. Such equipment include the previously mentioned adult weighing scales with height scale, sphygmomanometers as well as hydraulic operating tables. Decisions for other equipment will be made in the detailed design study.

#### 2-3-2 Policy Regarding Surveys for Equipment Selection and Survey Findings

The particular features of this project are the large number of facilities covered, the wide area over which they are distributed and the large number of types of equipment. Those features have been taken into account in the survey that has been carried out for the purpose of determining the specifications and quantities of the different kinds of equipment. At the time of the preliminary study confirmation was made of what was requested, and discussion were held on basic policy.

Furthermore the survey for equipment selection was also partly carried out. At the time of the basic design study additional work was done on equipment selection, and necessary survey work was done for confirmation of the basis of calculation of the requested quantities and for preparation of the allocation plans for the types and quantities of equipment to be supplied in this project. The following is a summary description of such survey work.

Since there was not enough time to directly survey all of the health centers, sub health centers, village midwives, POSYANDU and POS OBAT DESA covered by this project, the people in charge at the DINKES DATI IIs, who can be considered to best informed about the actual present state of the different health centers and other facilities, were

invited to collective meetings at which they filled out questionnaires and provided information on the basis of interviews. The questionnaires covered the present state of district health offices and the health centers and confirmation of the state of inventories of some equipment, and the interviews concerned the state of maintenance of main items of equipment and what equipment was needed.

Furthermore, the services of local consultants were later enlisted to carry out sampling surveys concerning equipment that could be expected to involve problems in use.

## 1) Functions and Roles of the Different Facilities in Question

### (1) Health Center without Beds

As already mentioned, the health centers have eighteen programs (mother-and-child health, infectious disease control, nutritional improvement, environmental sanitation, community health education, examination of patients, family planning, dental health, school health care and education, testing, mental health, public health nurse activities, eye health and prevention of blindness, sports health, traditional medical treatment, occupational health, senior citizen health and information management), and all of those activities are directly connected with community health. They include both examination and treatment activities at the facilities themselves and activities outside the facilities (periodical visits to villages, schools, etc. for examination and treatment, community health guidance and health education activities).

The examination and treatment activities at the health facilities themselves start with general oral questioning on individual health history and proceed to the general tests of measuring of height, weight, blood pressure, urine, stool, and etc., hematological tests for anemia, subsequent treatment, inoculation and dispensing. Furthermore, in the way of family planning activities, IUD's are inserted and contraception pills are dispensed. Some of the health centers have resident or regularly visiting dentists who engage in both treatment and preventive activities.

Activities outside the facilities include mobile health center activities, school health care and education activities, activities at POSYANDU, and etc. Such activities are carried out by teams of two-three medical personnel who periodically (1-2 visits a month) make the rounds of the different villages, schools, POSYANDU, etc. The main difference between health centers without beds and health centers with beds is that the latter have a simple operating room besides a ward or wards.

## **(2) Health Center with Beds**

Health center with beds are health centers far from the nearest hospital that have been provided with in-patient facilities and a simple operating room. The doctors at health centers without beds work there on the basis of a 3-year contract after they graduate, and the doctors at health centers with beds are given the opportunity of emergency on-the-job training in internal medicine, surgery, obstetrics and pediatrics. Sometime there are two doctors at the same health center. In-patient service is provided patients who require primary observation, such as those suffering from intestinal typhus, tuberculosis or diarrhea, women to be delivered and patients with chronic diseases that have gotten worse. The operations at such health centers with beds are limited to simple surgical treatment.

According, health centers with beds need over and above that need the equipment for surgical treatment and equipment needed in order to provide in-patient care if compared with health center without beds. The number of beds varies, but it is usually about ten, plus a simple operating room.

## **(3) Sub Health Center**

The sub health centers serve as outposts of the health centers for the purpose of providing medical services more closely linked with individual communities and well as serving as bases for the outside activities undertaken by the health centers. Their activities include examination, measurement of height and weight, simple treatment, inoculation and dispensing. They do not have testing rooms, but they do carry out tests for detection of anemia. Patients that cannot be treated here are sent to a health center or a hospital. They do not have a resident doctor, the treatment activities being accomplished by midwives and nurses. Each health center has from two to five such sub health centers under it.

## **(4) Village Midwife**

Village midwives engage mainly in community health activities and health education activities concerning mother-and-child health and in guidance and training of TBA.

## **(5) POSYANDU**

Unlike the above facilities, POSYANDU is based on volunteer activities with community participation of local people living in the community. Usually the volunteers meet and carry out their activities in the homes of prominent local people such as the village chief, but sometimes they have their own small house for that purpose. Such activities are carried out at regular intervals, either independently or with the participation and cooperation of health centers and other medical facilities. They have five main activities:



improvement of nutrition, family planning, oral infusioin promotion, mother-and-child health and vaccination.

**(6) POS OBAT DESA**

POS OBAT DESA is also based on volunteer work by community participation. In villages a long way off from health centers and even sub health centers this village dispensary arranges for medicine to be made available locally.

**(7) DINKES DATI II**

District health offices are responsible for planning and implementation of health administration in their respective districts. That includes supervision and guidance of the activities of the health centers and other lower-echelon facilities covered by this project.

**(8) KANWIL and DINKES DATI I**

KANWILs are responsible for planning on the provincial level in accordance with the instructions of the Ministry of Health, and the DINKES DATI Is are responsible for implementing such plans. The latter supervise and guide the activities of the health centers through the DINKES DATI IIs.

**2) Consideration of the Equipment**

The equipment requested in this project and its purpose of use are shown in Table2-2-2 and it can be classified into three categories:

**(1) Standard Equipment**

Standard equipment is the equipment that is needed for the activities of all the health centers (or, in the case of some items, all health centers that meet certain criteria), and in most cases it is listed in the Green Book. Some such items have not, however, been allocated in the necessary quantities because of budget limitations or, although already allocated, need to be replaced because they have become worn out in long use. It is the equipment listed in the Green Book that has already been allocated to and used at many health centers (marked "S" in Table2-2-2).

**(2) Newly Introduced Equipment**

In this category, the equipment that is already listed in the Green Book but in actual fact has not yet been allocated very much and therefore not yet allocated but which now has been defined anew as standard equipment for which there are definite plans to allocate it throughout the country (marked "N" in Table 2-2-2).

For the equipment listed in the Green Book but not often allocated, the state of maintenance, use and control has been checked by sampling surveys in view of the need to ascertain the actual need for it and ability to provide proper maintenance for it. In the case of such equipment for which training is necessary in order for it to be used, provision of such training by the Ministry of Health has been set as a condition for procurement of it.

Equipment relating to the safe motherhood program has been included in this category as new standard equipment. Vacuum extractors and the related equipment will be allocated as standard equipment to health centers designated under the obstetrics perinatal emergency referral system improvement project now being formulated by the Directorate of Mother-and-Child of the Ministry of Health. As for sound timers, although they are standard equipment of health centers, up to now they have not been procured in sufficient quantities. There is new standard equipment to be allocated to village midwives on the basis of joint approval by three entities: the Sub Directorate of Mother-and-Child Health, the Sub Directorate of Family Health and the ARI Control Section of the Communicable Disease Control (CDC).

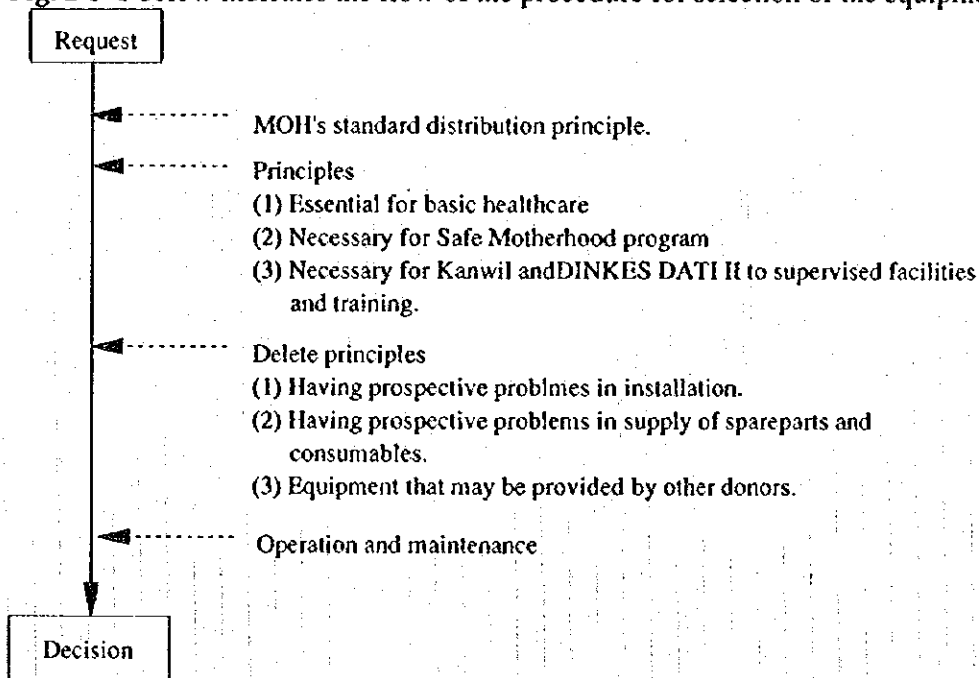
### (3) Pilot Project Equipment

This is equipment that will be procured for the first time for health centers of the Sulawesi region. Although allocation throughout the country as standard equipment has not yet been decided on the policy level, it has been requested as pilot project equipment in this project because the need for it is considerable and use of it will upgrade the functions of the health centers, but the quantity was appropriately limited in view of its pilot project nature (marked "P" in Table 2-2-2).

Of the above categories, the equipment in the "standard equipment" category is not expected to give rise to any problems in this case since it has already been considerably used in the past. It will be allocated in this case to coverage shortages and replace such equipment which has been worn out through long use. Since it has already been allocated to many facilities, a study has been carried out to substantiate the need for it at the facilities in question and determine whether or not the requested quantities are appropriate and whether or not they will result in any redundancy. As for the equipment to be newly introduced, a study was carried out to check the actual need for it and whether or not appropriate use of it will be possible. Lastly, regarding the pilot project equipment, it was considered to be necessary to check the purpose and significance of procurement thereof and the maturity of the planning on the province and district level and to clarify policy regarding selection of the facilities to which it is to be allocated.

In the survey work for this project a sampling was made of the health centers to determine the state of use of the particular equipment at facilities which have already received allocation and the need for it so as to be able to decide whether or not it is necessary to procure it and what types are most appropriate to select. Regarding the equipment involved in pilot procurement, considering the fact that it is the central authorities that have decided to introduce it, the survey consisted of interviews for the purpose of finding out the policy of the central authorities for allocation of it and the rules on the basis of which the facilities to which it will be allocated will be selected and interviews to determine whether or not proper use thereof will be possible on the provincial and district levels.

Fig. 2-3-1 below indicates the flow of the procedure for selection of the equipment.



Regarding calculation of the appropriate quantities of equipment, the study has been based on the indicated list of health centers to which it is to be allocated and comparison with the health centers to which equipment has already been allocated in the INP project as well as assistance from DINKES DATI IIs in the form of information concerning aspects constituting conditions for allocation, such as whether or not there as electricity or other infrastructure or related programs.

**(1) Standard Equipment**

**(a) Adult Weight Scales With Height Scale**

The preliminary report mentioned at this equipment item is plagued by a high frequency of technical trouble. Our team determined that the main trouble was with the chain of the

height measuring bar and that trouble can be avoided through regular maintenance. We also considered separate procurement of height scale and weighting scales in view of such trouble, but the original specification has been adopted considering the fact that the Ministry of Health has expressed strong preference for the specification that combines the two functions.

**(b) Diagnosis Set**

A 3-item set consisting of an otoscope, a rhinoscope and an ophthalmoscope was requested, but only the otoscope and the rhinoscope are actually being used, there not being much need for an ophthalmoscope. Furthermore, the set so far allocated has consisted only of an otoscope and a rhinoscope. Therefore, it has been decided to procure sets consisting only of an otoscope and a rhinoscope in this project as well.

**(c) Sphygmomanometer (Tensimeter)**

Since the preliminary study indicated that this item has a high frequency of malfunction and that many of the health centers have several of them on hand that are out of order, we looked into the situation. It was confirmed that many of the health centers have several sphygmomanometers that have something wrong with them. The trouble in many cases has to do with the check valve of the air intake and the rubber hoses and manchettes. In some cases, too, there was air leakage from the mercury column because of a faulty packing. Such trouble can be resolved by provision of replacement parts and reinforcing the maintenance system. Accordingly, in the present project it has been decided to make reinforcement of the maintenance system a condition for procurement of this equipment item and to have the sphygmomanometer accompanied by replacement parts and a maintenance manual in Indonesian.

**(d) Motorcycle**

Motorcycle is used as a means of going from place to place for the various activities of the health centers. Since there were some misgivings concerning the possibility of the motorcycles ending up practically as the personal property of some individuals, we checked the present state of use, the keeping of use records, etc. As a result, we found that the state of use and maintenance is good that they are being used for making rounds in activities outside the health centers and that records on their use are being properly kept.

**(e) Operation Lamp**

The possibility of procurement of halogen-type operation lamp was low Central Sulawesi. Further consideration will therefore be given to this matter in the detailed design stage, and a decision will be made regarding the specifications such that a situation in which equipment cannot be used because of a shortage of lamps will not arise.

**(f) Equipment Relating to EPI**

In the draft explanation stage newly requested quantities for the central authorities' EPI program and policy regarding allocation were presented, and although we were not able to corroborate the needs by our own survey, it has been decided to accept such request since we were told that the figures for the required quantities had been calculated on the basis of the EPI program's own inventory check recently carried out. Confirmation of the facilities scheduled to receive allocation will be made in the detail design stage.

**(g) Sprayer Can**

There were some difference in opinion on this matter between the central malaria program authorities and the provincial authorities, and we have decided to follow the policy of the provincial authorities in view of the Ministry of Health's policy of promotion of decentralization, i.e. of adopting measures based on the particular circumstances of the provinces.

**(2) Newly Introduced Equipment**

**(a) Sound Timer**

The sound timer is standard equipment for health centers, but up to now it has not been provided in sufficient quantities. Furthermore, Directorate of Health Center, Directorate of Family Health and the ARI Control Section of Directorate of CDC have agreed among themselves that it should now be allocated to village midwives, too, as standard equipment. As a result of provision of sound timers, ARI training of the staff of health centers will be promoted, and, in addition, in order to make it possible for them to be made use of in the interim while such training has not yet become prevalent, we have also decided to have them accompanied by manuals in Indonesian for diagnosis of ARI. As for use of them by village midwives, we have been informed that they have already received instruction on their use in their training curricula.

It was strongly requested that the POSYANDU also be furnished with them, but considering the higher priority of allocation to health centers and village midwives and the problem of training, it has been decided to include them in the Kader POSYANDU kits for Level-III POYANDU only.

**(b) Emergency Set**

The emergency, needed for emergency, lifesaving treatment, consists of an ambu bag, an air way and a mask. Although the set is not often used, in the past such sets have been procured for as many facilities as possible within budgetary limits as equipment that health centers ought to have available. In view, particularly, of the fact that traffic accidents are increasing in frequency and emergency obstetrical cases are also increasing, both the DINKES DATI Is and the DINKES DATI IIs would like to see this kit allocated as standard equipment. Considering, however, the fact that it takes some skill to fit the mask and insert the air way, it has been decided to provide the DINKES DATI Is and DINKES DATI IIs, too, with one set each as practical training equipment.

**(c) Microscope for TB**

A new policy that has been adopted is examination of slides for TB on the basis of either the PRM system, in which one of every several health centers is designated on the basis of joint evaluation with the WHO as a special measures health center and that health center collects the slides to be examined from the other health centers in the group for centralized higher-precision microscopic examination along with its own, or the PPM system, in which each health center is provided with an independent high-precision microscopic examination capacity in view of the fact that such health centers are in remote areas in which it would be difficult to transport slides from health center to health center. Plans have been finalized for retraining of microscopists for both the PRM system and the PPM system during the period of REPELITA-IV.

**(d) Oxygen Cylinder and Set**

The situation was surveyed regarding the system for supply of oxygen and inspection of the oxygen cylinders for safety. Each of the capital cities of the four provinces of the Sulawesi has an oxygen supplying company. It was also confirmed that there is an agency or direct branch office of those companies in each district in North Sulawesi (remote islands excepted), Central Sulawesi and South Sulawesi, that those agencies or branches are already supplying the district hospitals with oxygen and that purchase of oxygen from them is possible. In the remote islands of North Sulawesi (Sangihe Talalid district) and Kolaka, Muna and Buton districts in Southeast Sulawesi there are no agencies, and they have to go to the provincial capitals (Manado in the case of North Sulawesi and Kendari in the case of Southeast Sulawesi) to refill the cylinders. In Sangihe Talalid district, the district office has made a special budget appropriation covering the expense of traveling Manado for that purpose, including the cost of the oxygen, and therefore they have expressed the strong desire to receive allocation of such oxygen cylinders and sets. The same holds for those three districts in Southeast

Sulawesi: they have been promised funds to cover the cost of going to Kendari and refilling the cylinders.

It has been confirmed that the agencies carry out inspection of the oxygen cylinders from the viewpoint of safety at the time of refilling. As for the cart for moving the cylinder, which was at first requested as an independent piece of equipment, it has been decided to include it in the "oxygen cylinder and set" along with the tube and oxygen mask, flow meter, etc.

**(e) Curettage Set**

This equipment is used by a doctor to remove the contents of the uterus at the time of miscarriage, etc., but it appears that midwives are also using it in emergencies. In order to ensure that it is used only by doctors who have received the proper training, it has been decided to procure it only for health centers where training in obstetric perinatal emergencies is scheduled (i.e. health centers that will be allocated vacuum extractor sets).

**(f) Resuscitation Set**

This is a resuscitation set for newborn babies (ambu bag, mask and air way). Since training is needed for fitting of the mask and use of the resuscitation set, it has been decided to limit allocation to health centers where training in obstetric perinatal emergencies is provided, as in the case of the curettage set.

**(g) Video Set**

Up to now video sets were not used at facilities below the provincial level, but plans have been made for allocating them to all of the districts since they are considered to be necessary for training of the staffs of health centers and particularly for reinforcement of training concerning the safe motherhood.

Educational videos are prepared by the Ministry of Health for individual programs, but up to now they could not be used at the district level for lack of video sets. According to the results of a sample survey, districts have already been provided with about 7 (ARI, hygiene, etc.) educational tapes. In addition 7 video tapes for training of midwives are scheduled to be prepared in the safe-motherhood program with WHO assistance, 2 tapes of which have already been completed.

**(h) Personal Computer**

The policy has been adopted to furnish each DINKES DATI II with personal computers to make it possible for them to accomplish budget control and planning work as decentralization down to that level progresses. The accounting and planning personnel of

the district health offices have already received training in their use. We were also told that a pilot project for use of personal computers has already been implemented in one district in each province as model districts, that they are already experienced in maintenance of the personal computers and that there will therefore be no problems. Nevertheless, it is considered that the active support of the central and provincial health authorities in budgetary and technical terms will be indispensable for maintenance and effective use of them.

**(i) Cataract Surgery Set**

Initially it was requested that cataract surgery sets be allocated to the health centers for use by the visiting surgery teams when they came there, but in view of the fact that with such an arrangement the set would be used only one or twice a year, after discussing the matter with the Ministry of Health and those at the provincial level concerned with the project, it was concluded that it would be more effective to allocate portable sets to the BKMM's for use by the visiting cataract surgery teams. The BKMM's already have 1 set each, but sometimes two teams make the rounds at the same time, so with another set for each province, it will be possible to cover a larger number of health centers.

**(3) Pilot Project Equipment**

**(a) Manchette for Children (for health centers with and without beds)**

This equipment is used for diagnosis of dengue fever. Presently the manchettes for adults are folded in half for use by children, but the children's size was requested because they want ones that are more appropriate for diagnosis. They will be allocated to health centers of areas where dengue fever is an endemic disease.

**(b) Neonatal Thermometer (for health centers with beds)**

The request was for use of neonatal thermometers from the village midwife to the health center for control of low-weight (less than 2,400 g at birth) newborns in use of perinatal complications in connection with obstetric perinatal emergency care, but in view of the fact that they have not yet been used in Indonesia, it has been decided to procure them in this project only for health centers with a program for reinforcement of obstetric perinatal emergency care. But in order for it to be possible for them to be used not only by the health centers themselves but also by related village midwives, the health centers in question will each be furnished with three of them. Regarding the expenses involved in use thereof, the Sub Directorate of Mother-and-Child Health and BAPPENAS have promised to secure the necessary funds to cover them.



**(c) Ambulance (for health centers with beds)**

This equipment was requested for the purpose of securing means of transporting patients between intermediate referral health centers and hospitals for the sake of reinforcement of the safe motherhood program and particularly improvement of obstetric perinatal emergency care. According to the request, it was planned to provide a total of 30 ambulances for safe motherhood program reinforcement projects now being implemented or in the planning stage in one district in Central Sulawesi (Donggala-WHO) and three districts in South Sulawesi (Bone-World Bank, and Bulukumba and Takalar-UNICEF). However, since the possibility and effectiveness of use of ambulances at the health centers have not yet been ascertained, after discussions with the other donors it has been decided to provide one ambulance for each project, for a total of only three, for the sake of support to pilot projects.

**(d) Bebek**

The main activities of the village midwives are check-ups of expecting mothers at the POLINDES and home visits to expecting mothers and delivered mothers and newborns. Five days a week they engage in visits to homes, mainly on foot, and therefore there is strong desire for more appropriate means of transportation for them within the village. Furthermore, since in most cases women give birth at home, such means of transportation would be very useful in case of complications and other emergencies. Bicycles are usually the standard equipment, but "bebek" motorcycles have been strongly requested as necessary for cultural and topological reasons. In view of the fact that they have already been furnished in some other regions on the basis of the judgment of the DINKES DATI Is and the fact that the wish to have them is very strong at the province, district and local levels, the Ministry of Health intends to provide each province with only four of them in this project as a pilot project and to evaluate the effectiveness of their use.

**(e) Health Education Car (for the provinces)**

Presently members of the staff of health centers carry out community health education activities by visiting villages and POSYANDU and using their own voices, tapes, flip charts and other tools. In view of the stress laid in REPELITA-VI on the importance of community education, the Ministry of Health would like to start having audio-visual aids used in such activities, and in that connection it is planning to have health education cars make the rounds in such activities. The same method is being used by the BKKBM (Family Planning Coordination Committees) throughout the country and has proved to be effective in family planning. The provinces want one vehicle for every district, but in this present project the Ministry of Health has requested one for each province as a pilot project.

Table 2-2-2 below indicates those of the above equipment items that required training.  
**Table 2-2-2 Training Plans**

Equipment requiring training	Agency in charge	Plans
Emergency Set, Oxygen clinder and set, Curretge set, Resuscitation set, Vaccume extractor, Incubator, Neonatal thermometer	Mother and Child Health Program	To be included in 3-month training programs for provincial doctors and at the differnt hospitals (30 trainees at a time)
Laboratory test equipment set, Hemoglobinometer, Hb talquist book	LABKES (Central examination insitute)	Guidance to be included in basic and application courses (20 trainees each) each held twice a year at the LABKES of each province
BYE examination set	BKMM (Regional ophthalmological treatment research institutes)	Training in the use of this equipment is being provided by the BKMM in North and South Sulawesi. As for Central Sulawesi and Southeast Sulawesi, for the most part they send trainees of North and South Sulawesi.
Microscope for TB	CDC/Tuberculosis control and LABKES	Retraining plans for up to 1999 have been finalized in the PRM and PPM expansion project, and implementation thereof strated in 1994

### 2-3-3 Policy Regarding Confirmation of Basis of Calculation of Quantities of Equipment and Allocation

DINKES DATI IIs drew up requests based on the equipment needs of the health centers and submitted them to the DINKES DATI Is. DINKES DATI Is submitted their requests for equipment needed at the provincial level to the Ministry of Health along with the requests received from the DINKES DATI IIs. At the Ministry of Health they sorted out the total requests received from the different provinces and those of the different programs and, after making the necessary adjustments, submitted the final requests to our study team. We drew up a table comparing those final requests with the INP project equipment and, after sending that table back to the DINKES DATI IIs for confirmation of the contents, the names of the health centers and redundancy with the INP project, revised the table on the basis of the answers that we received from them.

The process flow up to finality of the quantities is indicated in Fig. 2-3-2 below.

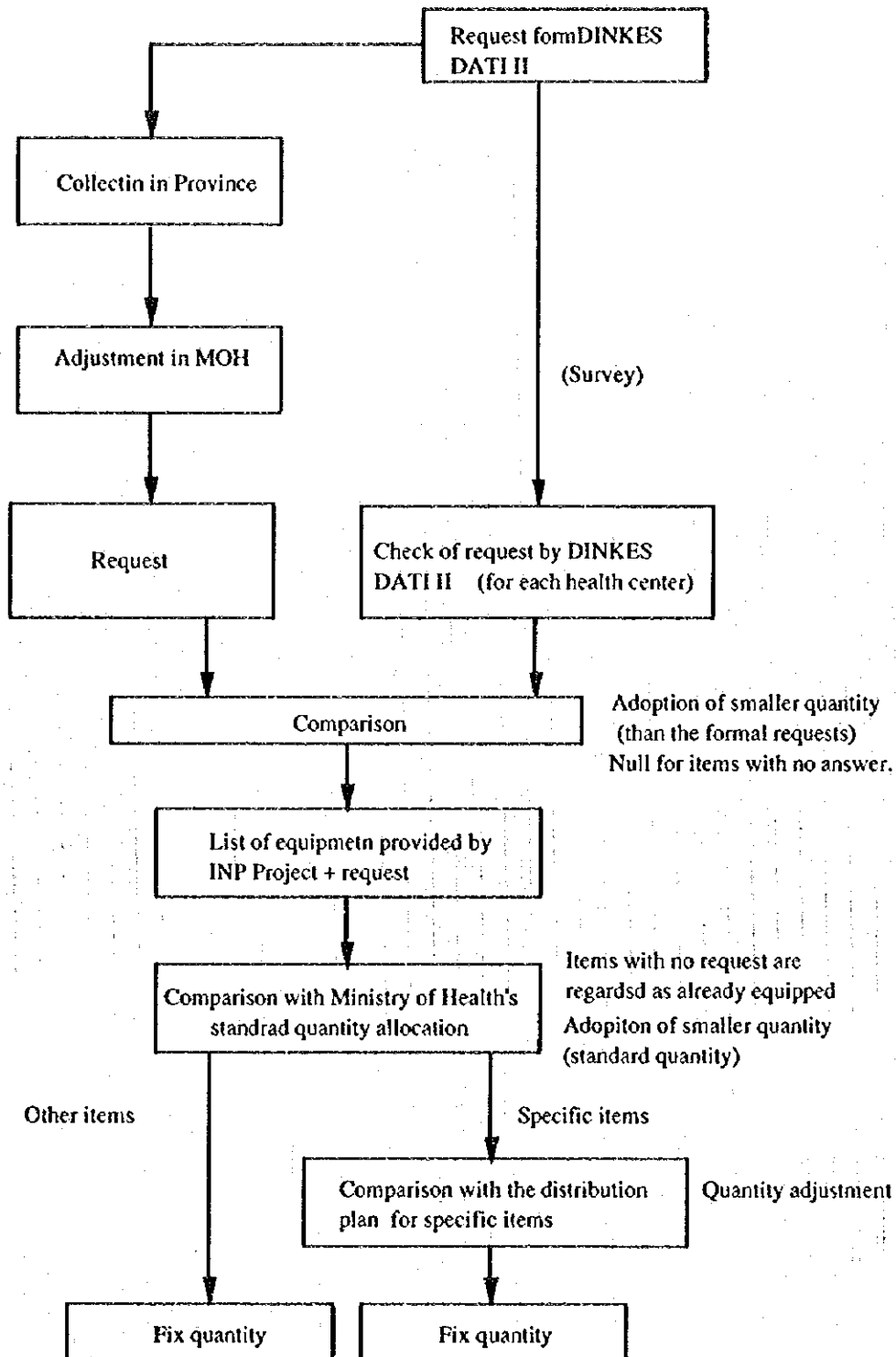


Fig. 2-3-2 Quantity Determination Flow

The standard quantity allocation of the facilities covered by this project are set by the Ministry of Health. In the case of many equipment items, that is the lowest possible quantity, i.e. one unit, and that is considered to be appropriate. As for equipment items for which the quantity is more than one unit, in most cases it has been confirmed that more than one unit is needed for operational reasons (because of the fact that they have to be used at different places in the health center or both at and outside the health center at the same time). According, it has been determined that the quantities of equipment requested by the Ministry of Health for each facility are not excessive.

The Ministry of Health submitted both the list of the quantities of equipment as broken down by districts and health centers and the list indicating the equipment furnished in the INP project and the places to which it has been allocated. Since there was some redundancy between the two lists, we made the necessary reductions in quantity to ensure that the sum of the quantity requested in this project and the quantity already procured in the INP project does not exceed the quantity required by each facility as set by the Ministry of Health. That was probably a reason that although they were sure at the district level of the quantities allocated up to 1994 in the INP project, they were not sure of those to be allocated in 1995. For some particular equipment items we discussed policy regarding allocation with the Indonesian side and determined the quantities in accordance with such allocation policy.

Points regarding newly introduced equipment and pilot project equipment are noted as follows:

**(1) Newly Introduced Equipment**

For equipment that has not been allocated in the past, it was necessary to confirm by survey the actual needs and maintenance possibilities for it. The maintenance and use conditions were confirmed by sampling survey. Furthermore, for equipment for which it was determined that training in methods of use is necessary, we made provision of such training by the Ministry of Health a condition for procuring it.

Most of the equipment that the Ministry of Health intends to newly add to the category of standard equipment as equipment to be allocated throughout the country is equipment relating to the safe motherhood program. Regarding that equipment, it was decided to supply it only to facilities that are scheduled to be designated as obstetric perinatal emergency intermediate referral centers and subject to the condition that training be provided concerning new work, and we calculated the necessary quantities on that basis.

### **(3) Pilot Project Equipment**

Since the quantities are limited, by the detailed design stage it will be necessary to reconfirm, at the provincial and district level, the final list of places to receive allocation. The method employed is explained in Figure 2-3-1 Flow of the procedure for selection of the equipment.

The matters to be confirmed as the basis for calculation of the necessary quantities are as follows for the main equipment items.

#### **(1) Standard Equipment**

##### **(a) TBA (Traditional Birth Attendant) Kit**

This set is to be handed over to the TBA at the time of training, and presently it is the village midwives who provide such TBA training. In our study we discovered that in the case of some districts, not only TBA who have not yet received training but even those who have received training have not been furnished with the sets, however, the number of TBA that have not yet received training has been decided to procure sufficient quantities to cover the training of all of them in this project.

##### **(b) School Health Kit**

There are two kinds of school health kit: the kind that is kept at the school and the kind that is taken to the school by the health center personnel. The quantity requested is meant to cover shortages in the kind being taken to the schools. Each school is visited once every one or two months as the standard frequency, and in cases in which a large number of schools have to be covered, the health center has to organize more than one team for the purpose of visiting them all. Therefore it has been decided to provide one kit in the usual case and two kits in the case of health centers that are responsible for a large number of schools (eleven or more).

##### **(c) Equipment for Sub Health Center**

Equipment for sub health centers is supplied to newly established sub health centers that have not yet been adequately equipped and for replacement of old equipment that is no longer in good enough condition for use. We have calculated the quantities of such equipment on the basis of the data furnished by the district health offices on actual needs, making sure that the calculated quantities do not exceed those needs. However, for all of the districts of North Sulawesi and three of the districts of South Sulawesi, for which the DINKES DATI Hs did not submit plans for allocation of the quantities among the sub health centers, the quantities have been calculated on the basis of the ratios between the number of sub health centers and the requested quantities of equipment in the case of the other districts. As for calculation of the necessary quantities of individual items of equipment, since the requested quantities have been accepted at face value, in the detailed

design stage it will be necessary to recheck the quantities needed at each sub health center since the tentatively determined quantities might be excessive in the case of durable equipment such as weighing scales.

#### **(d) Equipment for Village Midwife**

The village midwives have already supposed to have been furnished with the necessary kit at the time of their assignment, but it appears that recently transportation problems have held up such distribution in the case of some villages. The request in this project is based on the idea that since five years have passed since village midwives were originally assigned, some replacement of the equipment has become necessary.

Therefore it will be necessary to procure it in quantities that do not lead to redundancy in relation to the quantities that are to be allocated by the central health authorities. Furthermore, since the tentatively determined quantities are based on the figures concerning needs furnished by the people concerned with the mother-and-child health program on the provincial and district levels and in view of the possibility that some of the durable equipment does not need to be replaced, it will be necessary in the detailed design stage to determine more precisely the quantities needed in each district for replacement purposes.

#### **(2) Newly Introduced Equipment**

##### **(a) TB Microscope**

The number of health centers that have received PRM and PPM designation has been confirmed. The requested quantities are less than the total numbers of PRM and PPM health centers since some have already been provided with this equipment. In the detail design stage it will be necessary to confirm which health centers are to receive it.

##### **(b) Oxygen Cylinder and Set**

Oxygen inhalation is necessary for asthmatics, who are frequent out-patients, and for obstetric ARI and other emergencies, and the health center staff very much want it, but the biggest obstacle to wide use of such equipment has been the cost of the cylinders. Such equipment was requested for both health centers with beds and those without beds, but considering priorities and frequency of use, in this project it has been decided to furnish it only to health centers with beds that have good conditions for supply of oxygen for medical purposes.

#### 2-3-4 Design Conditions

This section considers the design conditions of the different types of facilities covered by this project on the basis of the design policy and survey results set forth in the preceding section.

##### 1) Equipment for Health Centers Without Beds

###### . Consideration of the Requested Equipment

The equipment requested in this project includes both equipment for use in health care activities at the facilities and equipment needed for activities outside the facilities. Among the equipment for health care activities at the facilities are the items adult weighing scales with height scale, baby weighing scales, stethoscope and sphygmomanometer. The equipment requested as needed for activities outside the facilities includes both standard equipment such as the items PHN kit, school health kit and health education set and means of transportation such as the items "trail" motorcycle (semi-off-road type for mountainous areas), "bebek" motorcycle (general type that can be ridden without the legs astride and therefore also by women), mobile health center (car) and mobile health center (boat). All such items are necessary for the basic operations of the health centers. We were able to fully confirm the need for such equipment in discussions with the Ministry of Health, other authorities concerned and the health centers themselves during the local survey.

Furthermore, we were able to confirm that the medical personnel at the different facilities are well versed in the methods of use and clinical application and that maintenance and management for the equipment is feasible in both budgetary and technical terms. However, there is some redundancy in the composition of the PHN kit, the MCH kit and the health center kit for mobile health center, and under the present circumstances of equipment shortages, such components are being used jointly instead of being kept apart in the different kinds of kits. Therefore, we considered the possibility of revising the composition of the kit components but in the end settled for what the Ministry of Health requested in view of the many different uses and the fact that the compositions of the kits have already been standardized.

On the basis of our judgment, as per the above considerations, that the requested equipment is, all things considered, appropriate it has been decided to adopt the equipment described in Table 2-3-3 as the equipment to be supplied. Regarding the initial request for the oxygen cylinder and set, although it is needed for asthma and at the time of obstetric delivery, it has been decided to procure it only for health centers with beds considering the frequency of use and present use conditions, and as for the IUD kit, after being told by BAPPENAS that it ought really to be furnished by BKKBN, the study

team discussed the matter with the Ministry of Health and in the end decided to eliminate it from the present project. Other equipment, too, such as solar equipment, has also been eliminated after discussing it with the Ministry of Health (see Table 2-3-5).

#### . Concerning the Ministry of Health's Standard Allocation Quantities

If some items of equipment have had a quantity of more than one unit decided on for them, that has been judged to be appropriate for the following reasons. In the case of the adult weighing scale with height scale, the stethoscope and the sphygmomanometer, it is because they are used in both the out-patient and the gynecology examination rooms, and in the case of the sound timer, the hemoglobinometer, the Hb talquist book, the motorcycle, the vaccine carrier and the sterilizer (single), it is because they are used both at the facilities themselves and outside them. For calculation formula for calculation of the quantity of syringes was provided us as the formula that is used by the Ministry of Health for drawing up its budget plans, and we used it as a reference since we considered it to be appropriate.

## 2) Equipment for Health Centers with Beds

### . Consideration of the Requested Equipment

The equipment requested for health centers with beds in this project is the same as that requested for health centers without beds in the case of 33 items. In addition to that, 14 other items relating to surgery and safe motherhood activities were requested for them. The equipment relating to the surgery room includes the minor surgery set, the operation lamp, the operation table and the sterilizer, and it is for making up shortages and replacing worn out equipment. Among the equipment relating to reinforcement of the safe motherhood program is the oxygen cylinder and set, the curettage set, the resuscitation set, the vacuum extractor, the incubator and the neonatal thermometer.

Equipment of health centers with beds includes the equipment related with the safe-motherhood programs for the following reasons.

Sub Directorate of Mother-and-Child Health in the Ministry of Health has adopted reinforcement of safe motherhood activities as a priority policy. That policy calls for reinforcement of health centers with beds in terms of both equipment and personnel capability as intermediate referral protection centers on a level between hospitals and general health centers and capable of coping with obstetric perinatal emergencies. The equipment requested in this project is meant to supply such plans on the equipment side.



. Concerning the Ministry of Health's Standard Quantity Allocation Basically, the same can be said as for the health centers without beds. In the case of the neonatal thermometer, the quantity has been set at three units in order to include the one to be used by the village midwife. As for syringes, the needed quantity is greater than for the health centers without beds because there is a higher incidence of cases requiring injections.

### 3) Equipment of Sub Health Centers

#### . Consideration of Requested Equipment

Since the requested equipment, i.e. adult weighing scale with height scale, baby weighing scale, syringe and needle, stethoscope, sphygmomanometer, etc., are all equipment need in basic diagnosis and treatment activities, we were able to fully confirm the need for it.

Furthermore, the medical staff of the facilities are very familiar with the methods of use and clinical application of it, and we were also able to confirm that maintenance and management of it is feasible.

Since for the above reasons it is judged, all things considered, that the requested equipment is appropriate, the equipment described in Table 2-3-3 has been adopted as the equipment to be furnished in the present project.

### 4) Equipment for Village Midwives

#### . Consideration of the Requested Equipment

The requested equipment includes weighting scales (adult and baby), stethoscope, sphygmomanometer and other standard equipment and the sound timer as a new item of standard equipment and the "bebek" motorcycle as pilot project equipment.

All of the standard equipment requested is basic equipment used by village midwives in their activities and necessary for them. The newly introduced equipment is equipment that is useful for diagnosis of ARI, and it is desirable that it become widely use. The need for such equipment was fully confirmed in our discussions with the Ministry of Health, other agencies concerned, etc. during the local survey. We were also able to confirm that the village midwives are fully trained in the methods of use and clinical application and that maintenance and management of such equipment will be accomplished through the health centers.

Most of the standard equipment for village midwives is allocated to each of them, on the basis of the Ministry of Health's budget, as the BIDES kit when they finish training. Although it appears that it is somewhat behind schedule in being allocated in some place

in the Sulawesi, the main purpose of requesting it is for replacement of equipment that has become worn out in use.

For all of the equipment items the quantity is the minimum quantity of one unit, and it has been judged that the standard quantity allocation is appropriate.

#### 5) Equipment for POSYANDU

##### . Consideration of the Requested Equipment

The kader kits requested in this project is the kader kits used in the Level-III POSYANDUs (the POSYANDUs being classified into levels I-IV on the basis of assessment of their state of activity). The present state of affairs is that the kits needed for POSYANDU activities are brought by the health center personnel with them when they visit the POSYANDUs, and the kader kit is the name given to the equipment kept at the POSYANDU themselves in order to make their activities possible on an everyday basis. They ought to be kept at all POSYANDUs, but that has not yet become very prevalent. In the present project it is planned to allocate them to only Level-III POSYANDUs which are quite active. The kit consists of such items needed in their activities as baby weighing scale, stethoscope, sphygmomanometer, light, thermometer and parasol. In discussions with the Ministry of Health, related agencies and others we were able to confirm the fact that the village midwives have received sufficient training in the methods of use and employment of the kits, and we have also been able to confirm that their maintenance and management is being accomplished through the health centers.

In view of the above considerations the requested equipment has been judged, all things considered, to be appropriate, and it has been decided to adopt it as the equipment to be supplied in this project.

#### 6) Equipment for POS OBAT DESA

##### . Consideration of the Requested Equipment

The equipment that has been requested is kader kits for the POS OBAT DESA (POD). It consists of a box in which the first-aid set (scissors, set of pins, etc.) for treating small external wounds and a sound timer and allocated medicine can be kept. This kit is basic equipment needed for POD activities. It has been confirmed in discussions with the Ministry of Health, related agencies and others that sufficient training is being provided in the methods of use and application, and we have also been able to confirm that maintenance and management of the kits is being accomplished through the health centers.

In view of the above considerations the requested equipment is judged, all things considered, to be appropriate, and it has been adopted as the equipment to be supplied in this project.

. Concerning the Ministry of Health's Standard Allocation Quantities

For all of the equipment the quantity is the minimum quantity of one unit, and the standard equipment allocation quantities have been judged to be appropriate.

7) Equipment for the DINKES DATI IIs

. Consideration of the Requested Equipment

The requested equipment is educational equipment (video set, demonstration models, resuscitation set), equipment for formulation of plans and management of information (personal computer) and equipment for malaria control activities (sprayer can and fogging machine). We were able to confirm in discussions with the DINKES DATI Is and DINKES DATI IIs that the educational equipment will be used in training. It has been decided to procure in this project with the condition that such training and the maintenance and management system are reinforced.

In view of the above considerations the requested equipment has been judged to be appropriate, all things considered, and therefore it has been adopted as the equipment to be supplied in this project. The resuscitation set and other practical training equipment will be used at the health departments and hospitals under the management of the DINKES DATI IIs and the demonstration model for training for training will be used in practical training at the midwife schools.

(8) Equipment for the DINKES DATI I

. Consideration of the Requested Equipment

The requested equipment is educational equipment (mobile health education car, motor car, resuscitation set), office equipment (photocopy machine), equipment for malaria control activities (sprayer can and fogging machine) and the cataract surgery set. Regarding the educational equipment, in discussions with the DINKES DATI Is we were able to confirm the existence of training programs in which it will be used. As for the photocopy machines, they presently place outside order for copying and therefore are planning to raise the efficiency of their work by having their own photocopy machines. In discussions with the DINKES DATI Is we were also able to confirm the fact that there will be no problems regarding use and application methods and maintenance and management of such equipment. As for the equipment for malaria control (sprayer can), since we noted some difference between the Ministry of Health and their local offices

regarding plans for using them, in the detailed design stage it will be necessary to make a final check of the specific required quantities of the provinces and the districts.

#### 9) Equipment for Related Programs

In the initial request equipment for vaccination and tuberculosis, malaria and other CDC related programs the quantities were requested by province, but since, with the exception of the equipment for malaria control, such equipment is allocated to the health centers (and sub health centers), it has been put in the individual equipment lists for respective facilities.

#### 2-3-4 Basic Design

The equipment to be furnished in this plan having been finalized in the above manner, we have prepared the particular equipment allocation standards for the present project on the basis of the design policy set forth in the preceding section (see Table 2-3-3), and on the basis of those standards the quantities for each of the facilities covered by the present cooperation project have been determined. The specifications of major equipment are also shown in Table 2-3-5.

Table 2-3-3 Design Policy

No.	Equipment	Category	Request (A)	MOH standard distribution amount	Comparison between request and MOH standard distribution amount	Check for identical equipment supplied by INP	No. of identical equipment from INP and/or No. MOH standard (B)	Distribution policy	Reduction by distribution policy (C)	Increase by distribution policy (C)	Calculation formula	Final distribution amount	Basic distribution policy	Remarks
Health center without beds														
1	Adult weighing scale with height scale	S	183	1 for each health center	○	○	17	-	0	0	A-B	166		Scales can measure weight and height (ruler type).
2	Baby Weighing scale	S	185	1 for each health center	○	○	96	-	0	0	A-B	89		
3	Syring & needle, 2cc	S	56,313	26 reusable for 30,000 patients	-	-	0	○	45,201		A-C	11,112	24 sets supplied to all health centers that issue a request.	
4	Syring & needle, 5cc	S	56,313	2 reusable for 30,000 patients	-	-	0	○	53,535		A-C	2,778	6 sets supplied to all health centers that issue a request.	
5	Infusion set	S	1,215	3 for each health center	-	-	0	○	91		A-C	1,124	3 sets supplied to all health centers that issue a request.	
6	Examination lamp	S	185	1 for each health center	○	○	2	○	7		A-B-C	176	Does not apply to health centers without a 24-hour power supply, without generators, and not designated to receive a generator in this project.	
7	Diagnostic set	S	120	1 for each health center	○	○	3	-	0	0	A-B	118		With or without ophthalmoscope.
8	Stethoscope	S	191	3 for each health center	○	○	0	-	0	0	A-B	191		
9	Sphygmomanometer (Tensimeter)	S	191	2 for each health center	-	○	0	○	0	0	A-B	191	Supplied on the condition that a maintenance system and a budget for maintenance are provided.	
10	Sound Timer	S	2,025	5 for each health center	-	-	263	○	229		A-B-C	1,796	2 timers supplied to all health centers.	Including an ARI diagnostic manual. Specifications conform to UNICEF standards.
11	Emergency Set	S	120	1 for each health center	○	○	0	○	0	0	A-B	120		Supplied on the condition that training is carried out.
12	Hemoglobinometer, Sahli	S	185	2 for each health center	-	○	5	-	0	0	A-B	180		
13	Hb Takust Book	S	405	5 for each health center	○	-	14	○	0	0	A-B	391	Limited to a maximum of 3 sets for each health center.	
14	Centrifuge	S	70	1 for each health center	○	○	42	○	0	0	A-B	28	Should not be the same as the equipment in the laboratory set.	Delivered to DINKES DAITI after being assembled and adjusted. Shall be carefully transported to health centers. Specifications shall conform to WHO standards.
15	Microscope	S	135	1 for each health center	○	○	15	-	0	0	A-B	120		
16	Fetal Stethoscope (Monaural)	S	182	1 for each health center	○	○	1	-	0	0	A-B	181		
17	MCH Kit	S	115	1 for each health center	○	○	4	-	0	0	A-B	111		
18	Midwife Kit (Bidan Kit)	S	808	1 for each health center	○	-	338	-	0	0	A-B	469		

Table 2-3-3 Design Policy

No.	Equipment	Category	Request (A)	MOH standard distribution amount	Comparison between request and MOH standard distribution amount	Check for identical equipment supplied by INP	No. of identical equipment from INP and/or No. exceeding MOH standard (B)	Distribution policy	Reduction by distribution policy (C)	Increase by distribution policy (C)	Calculation formula	Final distribution amount	Basic distribution policy	Remarks
19	TBA Kit (Dukun Kit)	S	8,040	1 for each TBA	○	○	0	○	0	1,056	A+C	15,216	A number is supplied to untrained TBAs or a large number selected of the request.	This quantity includes the portion for health centers with beds.
20	PRN Kit	S	155	1 for each health center	○	○	1	○	0	0	A-B	154	Supplied to all health centers that issue a request. If the center is responsible for 10 schools or less, 1 set is provided. If the center is responsible for more than 10 schools, 2 sets are provided.	Allocated to health centers.
21	School Health Kit	S	342	1 for each health center	○	○	33	○	0	186	A-B+C	495		
22	Health Education Set	S	190	1 for each health center	○	○	20	○	0	0	A-B	170		
23	Typewriter	S	285	1 for each health center	○	○	72	○	0	0	A-B	213		
24	Generator Set	S	41	1 for each health center	○	○	9	○	0	12	A-B+C	53	Supplied to all health centers that do not have 24-hour power supply and are without a generator.	
25	Motorcycle (Trail)	S	347	3 for each health center (includes Bebek)	○	○	58	○	327	0	A-B-C	37	Supplied to health centers in mountainous regions that do not have a motorcycle, or have only one motorcycle and 5 or more BIDES are located in mountainous areas.	Motorcycles shall be multipurpose.
26	Motorcycle (Bebek)	S	Including Trail	3 for each health center (include Trail)	○	○	0	○	0	0	A-B-C	59	Supplied to health centers in non-mountainous regions that do not have a motorcycle, or have only one motorcycle and 5 or more BIDES are located in non-mountainous areas.	same as above.
27	Vaccine Carrier	S	4,151	5 for each health center + 1 for each sub-health center	-	-	0	-	917	0	A-C	3,234	Amount already in stock is subtracted from the request.	This quantity includes the portion for health centers with beds.
28	Sterilizer	S	1,584	1 for each health center + 1 for each sub-health center	-	-	0	-	649	0	A-C	782	same as above.	same as above.
29	B package	S	808	1 for each health center + 1 for each sub-health center	-	-	0	-	0	0	A	808	same as above.	same as above.
30	Microscope for TB	S	249	1 for each health center (PPM or PRM)	-	-	0	○	0	0	A-C	249	Target health centers are PPM and PRM and training must be carried out.	Delivered to DINAKES DATA after being assembled and adjusted. Shall be carefully transported to health centers. Specifications shall conform to WHO standards.

Table 2-3-3 Design Policy

No.	Equipment	Quantity	Request (A)	MOH standard distribution amount	Comparison between request and MOH standard distribution amount	Check for identical equipment supplied by INP	No. of identical equipment from INP and/or No. exceeding MOH standard (B)	Distribution policy	Reduction by distribution policy (C)	Increase by distribution policy (C)	Calculation formula	Final distribution amount	Basic distribution policy	Remarks
31	Machete for children	S	124	1 for each health center	-	-	0	0	0	0	A-C	124	Equipment for examining dengue hemorrhagic fever is supplied to health centers in areas where dengue is prevalent.	
32	Laboratory Equipment for HC	S	173	1 for each health center	0	0	16	-	0	0	A-C	157		
33	Dental Stank Set	S	45	1 for each health center where there is a dentist	0	0	5	0	24	0	A-B-C	16	Supplied only to health centers with dentists on staff.	Indonesia shall provide installation and the necessary budget.
34	Mobile Health Center (car)	S	18	1 for each health center	0	0	0	0	0	0	A-B	18		
35	Mobile Health Center (boat)	S	11	1 for each health center that issues a request	0	0	0	0	3	0	A-B-C	8	One is supplied to all districts that issue a request.	
36	IHC Kit for Mobile HC	S	152	1 for each health center	0	0	45	-	0	0	A-B	107		
<b>HEALTH CENTER WITH RED</b>														
1	Adult Weighing Scale with Height Scale	S	150	2 for each health center	0	0	36	-	0	0	A-B	114		Scales can measure weight and height (ruler type).
2	Baby Weighing Scale	S	150	1 for each health center	0	0	61	-	0	0	A-B	89		
3	Syring & Needle 2cc reusable	S	14,000	26 reusable for 30,000 patients	-	-	0	0	2,480	0	A-C	11,520	36 sets supplied to all health centers.	
4	Syring & Needle 5cc reusable	S	14,000	2 reusable for 30,000 patients	-	-	0	0	10,160	0	A-C	3,840	12 sets supplied to all health centers.	
5	Infusion set	S	1,545	No description	-	-	0	0	21	0	A-C	1,524	9 sets supplied to all health centers that issue a request (based on MOH standard).	
6	Examination Lamp	S	124	1 for each health center	0	0	16	-	4	0	A-B-C	104	Does not apply to health centers without a 24-hour power supply, without generators, and not designated to receive generator in this project.	
7	Diagnostic Set	S	137	1 for each health center	0	0	14	-	0	0	A-B	123		Without ophthalmoscope.
8	Stethoscope	S	140	3 for each health center	0	0	14	-	0	0	A-B	126		
9	Sphygmomanometer (Tensimeter)	S	140	2 for each health center	-	0	14	0	0	0	A-B	126	Supplied on the condition that a maintenance system and a budget for maintenance are provided.	
10	Sound Timer	S	1,545	5 for each health center	0	0	405	0	635	0	A-B-C	910	Two timers for each health center	Including an ARI diagnostic manual. Specifications conform to UNICEF standards.
11	Emergency Set	S	137	1 for each health center	0	0	16	-	0	0	A-B	121	supplied on the condition that training is carried out	
12	Hemoglobinometer, Sahli	S	155	2 for each health center	0	0	14	-	0	0	A-B	141		
13	Hb Takquist Rook	S	309	5 for each health center	0	0	33	0	0	0	A-B	276	A maximum of 3 sets are supplied to each health center.	

Table 2.3-3 Design Policy

No.	Equipment	Category	Request (A)	MOH standard distribution amount	Compare in between request and MOH standard distribution amount	Check for identical equipment supplied by INP	No. of identical equipment from INP and/or No. exceeding MOH standard (B)	Distribution policy	Reduction by distribution policy (C)	Increase by distribution policy (C)	Calculation formula	Final distribution amount	Basic distribution policy	Remarks
14	Centrifuge	S	90 1 for each health center	90	<input type="radio"/>	<input type="radio"/>	29	-	0	0	A-B	61		Delivered to DINKES DATA area being assembled and adjusted. Shall be carefully transported to health centers. Specifications shall conform to WHO standards.
15	Microscope	S	86 1 for each health center	86	<input type="radio"/>	<input type="radio"/>	8	-	0	0	A-B	78		
16	Fetal Stethoscope (Monoural)	S	152 1 for each health center	152	<input type="radio"/>	<input type="radio"/>	14	-	0	0	A-B	138		
17	MCH Kit	S	90 1 for each health center	90	<input type="radio"/>	<input type="radio"/>	0	-	0	0	A-B	90		
18	Midwife Kit (Bidan Kit)	S	618 1 for each health center	618	<input type="radio"/>	<input type="radio"/>	353	-	0	0	A-B	260		
19	TBA Kit (Dukun Kit)	S	- 1 for each TBA	-	<input type="radio"/>	<input type="radio"/>	-	0	-	-	-	-		This quantity includes the number for health centers without beds.
20	PHN Kit	S	120 1 for each health center	120	<input type="radio"/>	<input type="radio"/>	26	-	0	0	A-B	94		
21	School Health Kit	S	235 1 for each health center	235	<input type="radio"/>	<input type="radio"/>	24	0	-	240	A+C	327	Allocated to health centers.	Supplied to all health centers that issue a request. If the center is responsible for 10 schools or less, 1 set is provided. If the center is responsible for more than 10 schools, 2 sets are provided.
22	Health Education Set	S	185 1 for each health center	185	<input type="radio"/>	<input type="radio"/>	94	-	0	0	A-B	101		
23	Typewriter	S	210 1 for each health center	210	<input type="radio"/>	<input type="radio"/>	25	-	0	0	A-B	185		
24	Generator Set	S	31 1 for each health center	31	<input type="radio"/>	<input type="radio"/>	7	0	15	-	A-B+C	9		Supplied to all health centers that do not have 24-hour power supply and are without a generator.
25	Motorcycle (Trail)	S	205 3 for each health center (including Bebek)	205	<input type="radio"/>	<input type="radio"/>	32	0	173	-	A-B-C	25		Supplied to health centers in mountainous regions that do not have a motorcycle, or have only one motorcycle and 5 or more BIDES are located in mountainous areas.
26	Motorcycle (Bebek)	S	43 3 for each health center (including Trail)	43	<input type="radio"/>	<input type="radio"/>	0	0	-	-	A-B-C	43		Supplied to health centers in non-mountainous regions that do not have a motorcycle, or have only one motorcycle and 5 or more BIDES are located in non-mountainous areas.
27	Vaccine Carrier	S	5 5 for each health center	5	<input type="radio"/>	<input type="radio"/>	-	-	-	-	-	-		This quantity includes the number for health centers without beds.
28	Sterilizer (Small)	S	2 2 for each health center	2	<input type="radio"/>	<input type="radio"/>	-	-	-	-	-	-		same as above



Table 2-3-3 Design Policy

No.	Equipment	Category	Request (A)	MOH standard distribution amount	Comparison between request and MOH standard distribution amount	Check for identical equipment supplied by INP	No. of identical equipment from INP and/or No. MOH standard (B)	Distribution policy	Reduction by distribution policy (C)	Increase by distribution policy (C)	Calculation formula	Final distribution amount	Basic distribution policy	Remarks
29	Sterilizer (Large)	S	-	1 for each health center	-	-	-	-	-	-	-	-	-	same as above
30	B package	S	-	1 for each health center	-	-	-	-	-	-	-	-	-	same as above
31	Microscope for TB	S	-	1 for each health center (PPM or PRM)	0	-	-	-	-	-	-	-	-	same as above
32	Manchette for Children	S	-	1 for each health center	0	-	-	-	-	-	-	-	-	same as above
33	Eye Diagnostic Set	S	85	1 for each health center	0	0	7	-	0	0	A-B	78	-	-
34	Oxygen Cylinder & Set	N	309	1 for each health center	-	-	0	0	0	0	A	309	-	2 cylinders per set.
35	Cumage Set	N	120	1 for each health center	0	-	17	0	46	0	A-B-C	57	-	Supplied to health centers that are supplied a vacuum extractor.
36	Resuscitation Set	N	110	1 for each health center	-	-	39	0	0	0	A-B+C	147	-	Supplied to high-priority health centers on the condition that training is carried out.
37	Cur-down Set (Venesection Set)	S	170	1 for each health center	0	-	22	-	0	0	A-B	148	-	-
38	Minor Surgery Set	S	163	1 for each health center	0	-	15	-	0	0	A-B	148	-	-
39	Operation Lamp	S	95	1 for each health center	0	0	41	0	3	0	A-B-C	51	-	Does not apply to health centers without a 24-hour power supply, without generators, and not designated to receive a generator in this project.
40	Operation Table	S	59	1 for each health center	0	0	33	-	0	0	A-B	26	-	-
41	Sterilizer	S	70	1 for each health center	0	-	30	0	0	0	A-B-C	40	-	Does not apply to health centers without a 24-hour power supply, without generators, and not designated to receive a generator in this project.
42	Suction Aspirator	S	100	1 for each health center	0	-	12	0	0	0	A-B	88	-	Manual type.
43	Infusion Stand	S	25	1 for each health center	0	-	6	-	0	0	A-B	19	-	-
44	Vacuum Extractor	S	152	1 for each health center	0	0	31	0	0	0	A-B-C	121	-	Supplied to high-priority health centers on the condition that training is carried out.
45	Incubator	S	309	1 for each health center	0	0	172	0	0	0	A-B-C	137	-	same as above
46	Nonnatal Thermometer	P	-	2 for each health center	-	-	0	0	78	0	A-C	363	-	These thermometers are included with each vacuum extractor.

Table 2-3-3 Design Policy

No.	Equipment	Category	Request (A)	MOH standard distribution amount	Comparison in between request and MOH standard distribution amount	Check for identical equipment supplied by INP	No. of identical equipment from INP and/or No. MOH standard (B)	Distribution policy	Reduction by distribution policy (C)	Increase by distribution policy (C)	Calculation formula	Final distribution amount	Basic distribution policy	Remarks
47	Ambulance for HC	P	30	1 for each health center	○	-	3	○	24	0	A-C	1,013	There are donor projects in Sulawesi sponsored by WHO, UNICEF, and World Bank. Ambulance shall be provided to health centers involved in these projects when the donor confirms the necessity of the ambulance.	
<b>SOS HEALTH CENTER</b>														
1	Adult Weighing Scale with Height Scale	S	960	1 for each sub health center	○	-	0	-	0	53	A+C	1,013		
2	Baby Weighing Scale	S	960	1 for each sub health center	○	-	0	-	0	224	A+C	1,184		
3	Syring & Needle (2cc reusable)	S	37,800	26 reusable for 30,000 patients	○	-	0	○	22,752	0	A-C	15,048	12 sets supplied to all PUSTU that issue a request.	
4	Syring & Needle (5cc reusable)	S	37,800	12 reusable for 30,000 patients	○	-	0	○	33,330	0	A-C	4,470	3 sets supplied to all PUSTU that issue a request.	
5	Stethoscope, nurse	S	810	1 for each sub health center	○	-	0	-	0	0	A	810		
6	Sphygmomanometer (Tensimeter)	S	810	1 for each sub health center	○	-	0	○	0	0	A	810	Supplied on the condition that a maintenance system and a budget for maintenance are provided.	
7	Fetal Stethoscope (Monotaural)	S	810	1 for each sub health center	○	-	0	-	0	0	A	810		
8	Hemoglobinometer, Sahli	S	810	1 for each sub health center	○	-	0	○	0	183	A+C	993		
9	Hb Takist Book	S	810	2 for each sub health center	○	-	0	○	0	309	A+C	1,119	One book is provided to each PUSTU that issues a request.	
10	Sound Timer	S	5,344	2 for each sub health center	○	-	0	○	2,631	0	A-C	2,713	One timer is supplied to all PUSTUS.	
11	PHN Kit	S	885	1 for each sub health center	○	-	0	○	0	113	A+C	998		
<b>VELLAGOR MIDWIFE</b>														
1	Weighting Scale	S	756	1 for each	○	-	0	○	0	384	A+C	1,140		
2	Baby Weighing Scale	S	756	1 for each	○	-	0	○	0	302	A+C	1,058		
3	Stethoscope, nurse	S	756	1 for each	○	-	0	○	0	0	A	756		
4	Sphygmomanometer (Tensimeter)	S	756	1 for each	○	-	0	○	0	0	A	756	Supplied on the condition that a maintenance system and a budget for maintenance are provided.	
5	Fetal Stethoscope (Monotaural)	S	756	1 for each	○	-	0	○	0	0	A	756		
6	Hemoglobinometer, Sahli	S	756	1 for each	○	-	0	○	0	243	A+C	999		
7	Hb Takist Book	S	2,502	1 for each	○	-	0	○	1,250	0	A-C	1,252		
8	Battery Lamp	S	2,502	1 for each	○	-	1	○	1,202	0	A-C	1,301		
9	Sound Timer	N	1	1 for each	○	-	0	○	0	193	A	1,148	One timer is supplied to all village midwives.	
10	Motorcycle (Betek)	P	16	16/1 project	○	-	0	○	0	0	A	16	Four motorcycles are supplied to each province.	

Table 2-3-3 Design Policy

No.	Equipment	Category	Request (A)	MOH standard distribution amount	Comparison between request and MOH standard distribution amount	Check for identical equipment supplied by INP	No. of identical equipment from INP and/or No. exceeding MOH standard (B)	Distribution policy	Reduction by distribution policy (C)	Increase by distribution policy (C)	Calculation formula	Final distribution amount	Basic distribution policy	Remarks
<b>POSYANDU</b>														
1	Kader Posyandu Kit	S	4,600	Based on No. of POSYANDU	-	-	0	0	3,345		A-C	1,255	These kits are for level III POSYANDU. Training for level III has been completed but the kits have not yet been supplied. Therefore, kits should be supplied to all level III POSYANDU.	
<b>Kader Posyandu Kit POS-OBAT DIASA</b>														
1	Kader POD Kit	S	1,002	Based on No. of POD	-	-	0	0		810	A+C	1,812	The number of PODs with use these kits is presented by the Directorate of Community Participation. Supply is based on this number.	
<b>DISTRIBUKSI</b>														
1	Video Set	N	43	1 for each district	-	-	0	0	10		A-C	33	One for each district that does not already have a set.	
2	Computer Set	-	39	2 for each district	-	-	0	0	9		A-C	30	One for each district that already has one set, and two for district that do not have any sets.	
3	Demonstration Model for Training	-	39	No description	-	-	0	0		10	A+C	49	Supplied to Dias Dab II (39 units) and midwife schools (10 units) where training is expected to be carried out.	Includes phantoms, vacuum extractor, incubator, and neonatal thermometer.
4	Resuscitation Set	-	39	No description	-	-	0	0		10	A+C	49	Same as above	
5	Emergency Set	-	39	No description	-	-	0	0		10	A+C	49	Same as above	
6	Sprayer/Can	S	95	4 for each province	0	-	0	0	11		A-C	44	Supplied to districts where malaria is prevalent.	The requested number includes the portion for the provinces.
7	Fogging Machine	S	47	4 for each province	0	-	0	0	18		A-C	9	Supplied to districts where dengue fever is prevalent.	Same as above.
<b>PROVINSI (Karnali)</b>														
1	Motor Car	S	4	No description	-	-	0	0	0		A-C	4	Ordinary automobiles. The minimum quantity of one vehicle is supplied to each province.	A 4WD-type vehicle.
2	Photocopy Machine	-	4	No description	-	-	0	0	0		A-C	4	Basic office copier. There is no quantity submitted by the MOH. The minimum quantity of one copier is supplied to each province.	
3	Demonstration Model for Training	-	4	No description	-	-	0	0	0		A-C	4	One is supplied to each provincial training center where training is expected to be carried out.	Includes phantoms, vacuum extractor, incubator, and neonatal thermometer.
4	Resuscitation Set	-	4	No description	-	-	0	0	0		A-C	4	Same as above	
5	Emergency Set	-	4	No description	-	-	0	0	0		A-C	4	Same as above	

Table 2-3-3 Design Policy

No.	Equipment	Category	Request (A)	MOH standard distribution amount	Comparison between request and MOH standard distribution amount	Check for identical equipment supplied by INP	No. of identical equipment from INP and/or No. exceeding MOH standard (B)	Distribution policy	Reduction by distribution policy (C)	Increase by distribution policy (C)	Calculation formula	Final distribution amount	Basic distribution policy	Remarks
(DINKES DATA)														
6	Mixer Car	S	4	No description	-	-	0	○	0	0	A-C	4	Ordinary automobiles. The minimum quantity of one vehicle is supplied to each province.	A 4WD-type vehicle.
7	Health Education Mobile	P	4/4 for each province	-	-	-	0	○	0	0	A-C	4	Equipment used for education local residents. This is the first time the MOH has had the opportunity to use this type of vehicle. One vehicle is supplied to each province as a pilot project.	
8	Sprayercan	S	Including 4 for each province district	-	-	-	0	○	0	0	A-C	40	Supplied to provinces where malaria is prevalent.	
9	Fogging Machine (BKMM)	S	same as 1 for each North and above, South	-	-	-	0	○	0	0	A-C	20	Supplied to provinces where dengue fever is prevalent.	
10	Contract Surgery Set	P	30	No description	-	-	0	○	0	28	A-C	2	Original Request was to supply 30 sets to each health center. After that, the request from MOH was changed 1 set for each BKMM (ophthalomology treatment center) in North and South Sulawesi. We confirmed that there will be now problem on management.	Excludes a vehicle.

S : 標準機材

N : 新調機材

P : パイロットプロジェクト機材

Table 2-3-4 Eliminated Equipment

Equipment	Target facility	Priority of Preliminary Study
Solar system	Health center without beds	C
IUD set	Health center without beds	B
IUD set	Health center with beds	B
Doppler fetus detector	Health center with beds	B
Motorcycle	Health center with and without beds (For vaccine program)	C
Truck	Health center with and without beds (For malaria program)	A
Boat	Village midwife	B
Teaching materials for PHN	POSYANDU	C
Teaching materials for motherhood	POSYANDU	C
Teaching materials for Kader	POS OBAT DESA	C
Medical card for pregnant woman and nursing mother	Province health office	C
Teaching materials of emergency delivery	Province health office	C
Teaching materials for safe-motherhood	Province health office	C
Teaching materials for mother-and-child health	Province health office	C
Teaching materials for mother	Province health office	C

Table 2-3-5 Specification of major equipment

Equipment	Components/ Specification	Purpose of use · Adequacy of equipment
Dental Static Set	<p>Dental Unit</p> <ol style="list-style-type: none"> <li>1) Lamp (55W)</li> <li>2) Table</li> <li>3) Drain bowl</li> <li>4) Treatment instruments.</li> </ol> <p>Dental Pantafraf type chair</p> <ol style="list-style-type: none"> <li>1) Hydraulic up/down</li> <li>2) Pedal type</li> <li>3) Recling type</li> <li>4) Build-in head set</li> <li>5) Micromotor</li> </ol> <p>Generator</p> <ol style="list-style-type: none"> <li>1) Gasoline engine / approx. 150cc</li> <li>2) 220V/1200W</li> </ol>	<p>A simple dental unit. It consists of patient reclining seat, clinic light and apparatus table. Water supply and drain facility or vaccum pump are not provided. Dental unit at the health center is mainly used for removal of tooth rataher than treatment. Therefore, equipment is limited to basic items. Since a micro-motor is used for the treatment before tooth removal, power supply is required at each facility. For installation, fixing of the patient reclining seat to the floor and connection of the clinic light plug to the electric outlet are required. A small power generataor is attached for daytime power failure.</p>
Mobile Health Center Car	<ol style="list-style-type: none"> <li>1) Engine Gasoline/4cycle/4serial Displacement 1600cc</li> <li>2) Transmission/4 speed manual</li> <li>3) Capacity /8 persons</li> <li>4) Instruments Speaker/ Stretcher</li> <li>5) 2 wheel drive</li> </ol>	<p>It is a important vehicle called PSULIN used for local health activities of the health center. A team of 3-5 persons, including doctor, nurse and driver, is organized for this vehicle which is involced in the health activities, called POSYANDU by local residents, and special programs such as prevention of malaria and health care for mother and child. Speakers for announcement and patient's stretcher are the standard equipment. the vehicle is 2 wheel drive and the paint color is ivory white with "BAKTIHUSADA" marking specified by the MOH.</p>
Mobile Health Center Boat	<ol style="list-style-type: none"> <li>1) Engine Gasoline/2cycle/4 serial Capacity/250cc</li> <li>2) Horse power/40 Hp</li> <li>3) Capacity/8 persons</li> </ol>	<p>A team of 3-5 persons, including doctor, nurse and driver, is organized for this ship which is involved in the helath activities. The ship is mainly used for transportation between the health center and sub-health centers over the sea or POSIANDO. It is also used for transportation of patients from the health center to nearby prefecture hospitals or clinics. The ship has two 40 hp external engines and the body is made of glass fiber. The paint color is ivory white with "BAKTI HUSADA" marking specified by the MOH.</p>

Equipment	Components/ Specification	Purpose of use · Adequacy of equipment
Motorcycle (Trail)	1) Engine Gasoline/4cycle/1 cylinder/Cell and kick start Displacement: 100 cc 2) Gasoline tank Apprx. 9 liters 3) Tire size Front /rear : 19"x18" 3) Accessory : A helmet for male and female	<p>This is indispensable to local health centers where public transportation services are limited. Especially, it is used for outdoor activities of a health center in mountain areas. It is very useful for movement on a foot path or forest path in which a vehicle cannot enter. Efficient use of a vehicle and motorcycle for local activities of health centers will save fuel. The displacement of the motorcycle is 100cc because it is practical in power and economical in mileage based on the past experiences.</p>
Motorcycle (Bebek)	1) Engine Gasoline/2cycle/1 cylinder/Cell and kick start Displacement: 100 cc 2) Gasoline tank Apprx. 4.5 liters 3) Tire size Front /rear : 17"x17" 3) Accessory : A helmet for male and female	<p>This is indispensable to local health centers where public transportation services are limited. Especially, it is used for outdoor activities of a health center. It is very useful for movement on a footpath or forest path in which a vehicle cannot enter. Efficient use of a vehicle and motorcycle for activities of health centers will save fuel. Bebek type motorcycle can allow easy driving for women. It is useful for activities of midwife. The displacement of the motorcycle is 100cc because it is practical in power and economical in mileage based on the past experiences.</p>
Microscope TB	1) Binocular type 2) Eye peice: x10 3) Objectives: x4, x10, x40, x100 (Oil) 3) Mechanical stage with gage 4) Antimold type 5) Halogen lamp	<p>The microscope is used at the satellite health centers under the TB prevention program called PRM and PPM. It is used to judge the quasi-positive slides of TB sent from health centers under control. Since clear view is required to check presence of virus, it is equipped with the mechanical stage and double halogen lamps. The light source is mainly based on the halogen light. Mirror is also used for emergency check during power failure. One halogen lamp is attached as a spare.</p>
Video Set	TV monitor 1) 29" 2) PAL Video 1) PAL 2) Beta	<p>The video tape is mainly used for re-education of midwives at a midwife school and designated prefecture hospital. Educational software is provided from support organization like UNICEF or created PKM of the MOH or mother--and -child care program.</p>

Equipment	Components/ Specification	Purpose of use • Adequacy of equipment
Operation Tabel	<ol style="list-style-type: none"> <li>1) Hydraulic up/down by manual</li> <li>2) Trendenbulg</li> <li>3) Reverse trendenbulg</li> </ol>	<p>The opeartion table is provided for the operation room of the health center with beds. It is used for simple surgery including visible injury . At a remote place without nearby hospitals, surgery operation like appendicitis has been done. fundamental positions such as Trendenbulg or reverse Trendenbulg are required. Considering the operation details and frequency, vertical movement is manually operated with hydraulic power. Accessories are minimized as described in the general specification.</p>
Ambulance for Health Center	<p>Ambulance</p> <ol style="list-style-type: none"> <li>1) Gasoline type/ apprx. 1600cc</li> <li>2) Tank/ approx. 60 liters</li> <li>3) Transmission/ 4~5</li> </ol> <p>Instruments</p> <ol style="list-style-type: none"> <li>1) Red light</li> <li>2) Silen</li> <li>3) Work lamp</li> <li>4) Stretcher</li> <li>5) Irrigator stand</li> <li>6) Sink unit</li> <li>7) Drain tank</li> <li>8) Oxygen set</li> <li>9) Emergency set</li> <li>10) Manual suction set</li> </ol>	<p>At the designated health center by the province, ambulance is used for program activities carried out by other donors. The purpose is to transport patients from the health center to nearby prefecture or national hospitals. It has three passenger seats other than the driver's seat. The vehicles is 2 wheel drive and the paint color is white with "BAKTI HUSADA" marking specified by the MOH.</p>
Personal Computer	<ol style="list-style-type: none"> <li>1) Windows</li> <li>2) 12MB/160HD</li> <li>3) 3.5"/5" floppy</li> </ol> <p>Printer</p> <ol style="list-style-type: none"> <li>1) Inject type</li> </ol> <p>Power supply</p> <ol style="list-style-type: none"> <li>1) AVR</li> <li>2) UPS</li> </ol>	<p>The computer is used for data analysisor documents processing. Personal computers are wide spread. Operating system (OS) is implemented in the computer and the ink-jet type printer which is reasonable in maintenance costs, is used. All computers are equipped with the constant voltage equipment and non-power failure device for memory backup due to unstagle voltage. Application software is three types; table calculation word processing and drawing.</p>



Equipment	Components/ Specification	Purpose of use · Adequacy of equipment
Demonstration Model for Training	1) Electric mobing type 2) Composition Main body, Embryo, Navel strings, Placenta, Films	The model is used in training to re-educate midwives. It is provided at the nursing school or prefecture hospital in each prefecture. It is used for instruction in not only normal delivery but also emergency actions for abnormal delivery. the model includes lower part of the body, fetus and placenta. In this way, the training can be very practical.
Foggy Machine	1) Output : 約18~19 kW/25~26Hp 2) Fuel tank : aprx. 1.4L 3) Fuel tankpressure : aprx. 0.08bar 4) Solution tank : aprx. 6.5L 5) Solution tank pressure : 約0.3~0.4 bar	This is to spray insecticide in a wide range. The device has a small engine.
Health Education Mobile	Mobile 1) Gasoline engine/ aprx. 1600cc 2) Fuel tank/ aprx. 60 liters 3) Transmission/4~5  Equipment 1) Video projector 2) Video player 3) Folding screen 4) Audio equipment 5) Loud speaker 6) Generator	The purpose of the vehicle is health education in the local area. The vehicle goes out to villages to provide public information to local residents. The vehicle is 2 wheel drive and the paint color is white with "BAKTI HUSADA" marking specified by the MOH.
Motor Car	Mobile 1) Gasoline engine/ aprx. 1600cc 2) Fuel tank/ aprx. 60 liters 3) Transmission/4~5	The vehicle is used to support local health activities of the province health agency or health center by the person of the province health agency. Speakers for announcement are the standard equipment. The vehicle is 2 wheel drive and the paint color is ivory white with "BAKTI HUSADA" marking specified by the MOH.

## **Chapter 3 Implementation of the Project**

## **Chapter 3 Implementation Plan**

### **3-1 Implementation policy**

This project will be implemented in accordance with the grant aid system of the Government of Japan. The grant aid assistance for this project will be commenced formally after its approval by the Government of Japan and the government of Indonesia and signing of the an Exchange of Notes (E/N) by the governments of both countries.

Subsequently, the Government of Indonesia will select a Japanese consultant firm to work out the detail design for the implementation of the project. When the detailed design documents are completed, procurement and transportation of equipment will be carried out by a Japanese company (or companies) which is selected through competitive tendering.

The outline of the implementing procedures and points to be noted are described in the following sections. It has been recognized that a large portion of the work of this project is occupied by sorting out the equipment items and transporting them to various provinces and districts thus, these operations are examined in more details.

### **3-2 Implementation Plan**

#### **3-2-1 Implementation system**

##### **1) Implementing agency and system**

The planning agency this project is the Bureau of Planning of Secretariat General, the executing agency is the Directorate General Community of Health and the actual work in charge of execution of the project is Bureau of Health Center belonging with the Directorate General Community of Health.

##### Executing agency of the Project

The Directorate General of the Community Health is in charge of procurement, allocation, recording, monitoring about supplied equipment, supervisor and follow-up under the support of the Central Executive Committee. Province Executive Committee and District Executive Committee assist Director General in his duties.

Explanation by the Ministry of Health on the organization structure of planning and implementing is as follows.

<planning and preparation stage>

#### **STEERING MEETING**

chairman: Vice-minister of the Ministry of Health of Indonesia  
committee member: ESRON-I (general secretary)

#### **CENTRAL PLANNING COMMITTEE**

chairman: Director of Planning Bureau  
committee member: ESRON-II (director)

#### **PROVINCE PLANNING COMMITTEE**

chairman: Chief of Provincial Health Office  
committee: Concerned Bureau

#### **DIRECT PLANNING COMMITTEE**

chairman: Director of District of Health Office  
committee: Concerned Bureau

<implementation stage>

#### **PROMOTION MEETING**

chairman: Director of General of Community Health

#### **CENTRAL EXECUTION COMMITTEE**

chairman: Director of Health Center Bureau  
committee: ESRON-II

#### **PROVINCE EXECUTIVE COMMITTEE**

chairman: Chief of Provincial Health Office  
committee member: Concerned Bureau

#### **DIRECT EXECUTIVE COMMITTEE**

chairman: Director of Health Center Bureau  
committee member: Concerned Bureau

Powers and responsibilities of the Ministry of Health of Indonesia and an implementing agency for this project are as follows.

1. Instruction of planning of the equipment
2. Budget application for distribution of the equipment to local governments

3. Plan and approval of additional budget for distribution born by the central government
4. Monitoring of the equipment to be supplied
5. Supervision for distribution process
6. Instruction for operation of the equipment

## 2) Consultant

Promptly after signing of the Exchange of Notes by the governments of Japan and Indonesia, a Japanese consultant firm will enter into a consultant service agreement with the Ministry of Health of Indonesia in accordance with the procedures under Japan's grant aid assistance system. Based on said agreement, which will become effective upon verification by the Government of Japan, the consultant firm will provide the following services:

- |                          |  |
|--------------------------|--|
| (1) Detail design stage: | Preparation of detail design documents and other technical documents           |
| (2) Tendering stage:     | Assistance with selecting and contracting companies to procure equipment       |
| (3) Procurement stage:   | Supervision of procurement, packing, transportation, and transfer of equipment |

Consultant firm consists of five numbers of Project Manager, Equipment Planner-I and -II, Transportation Planner, and Cost Estimation. Their respective assignments are described below. As transport operations take up a large portion of the project, one person is appointed to be in charge of transportation planning.

**Project Manager :** is responsible for supervision of all operations from the preparation of detail design through the completion of the project and for coordinating respective discussions with the governments of Japan and Indonesia.

**Equipment Planner-I:** is in charge of verifying the equipment specifications with the representatives of the Ministry of Health and manufacturers of the equipment and collecting information, based on which project cost is estimated, during the detail design stage. Subsequently, he shall prepare necessary documents, including detailed design specifications, to be submitted to governments of Japan and Indonesia. He is also responsible for inspecting the equipment in Jakarta.

**Equipment Planner-II :** serves as an assistant to the Equipment Planner-1 and is in charge of verifying the equipment specifications with the representatives of the Ministry of Health and manufacturers of the equipment and collecting information, based on which project cost is estimated, during the detailed design stage. Subsequently, he shall prepare necessary documents, including detailed design specifications, to be submitted to governments of Japan and Indonesia.

**Transportation Planner :** is responsible for supervising the sorting, packing, and transportation of equipment to various provinces and districts, and transfer as well as serving as an assistant to the Project Manager.

**Cost Estimation :** is responsible for reviewing in Japan the cost estimation documents that come out as a result of detailed design work as well as preparing relevant documents.

### 3) Supplier

An supplier, which will be selected through tender, will sign an agreement with the Ministry of Health of Indonesia. The supplier, in accordance with the agreement which will also be made effective by the verification of the Japanese government, will procure and sort out necessary equipment and pack them for each province and district, transport the packages via ocean or inland freight, and inspect the delivered equipment at each province and district. Subsequently, the supplier will tend problems that are attributable to the manufacturing process of the equipment during the one-year warranty period following the transfer of the equipment.

### 3-2-2 Points to be Noted during Implementation

#### 1) Indonesian side

Indonesian side bears the cost for the transportation of the equipment from each DINKES DATI IIs to each health center. As the equipment is scheduled to be delivered to each DINKES DATI IIs in March 1997, the cost needs to be allocated by the Ministry of Health of Indonesia in their 1997 budget.

#### 2) Japanese side

Since a large number of equipment items is to be delivered to various destinations, sufficient cautions need to be taken in order to avoid mistakes. Also, sufficient time

allowance shall be secured for the transportation of equipment during the rainy season in the Sulawesi.

### 3-2-3 Consultant Supervision

In accordance with the grant aid system of the Government of Japan, Japanese consultant firm will enter into a consultant service agreement with the executing agency of the Government of Indonesian, and will carry out detailed design and supervise the implementation. The objectives of the supervision of the above-mentioned works are to verify whether or not the equipment procurement is carried out according to the design documents and to improve qualities of the works by providing guidance, advice, and coordination throughout the project implementation phase from an impartial position in order to ensure that the procurement of the equipment will be carried out in strict accordance with the agreement. The supervisory activities include the following:

#### 1. Assistance with tender procedure and contracting

To select a Japanese company to undertake equipment procurement/transportation services, the consultant firm will prepare necessary tender documents, announce the tender publicly, accept application for participation in tender, issue tender documents to tenderers, accept tenders offered, examine the qualifications of applicants, evaluate the results, and give advice on the procurement of equipment to the Indonesian implementing agency and the chosen supplier.

#### 2. Guidance for the supplier

The consultant will examine the equipment plan, and provide guidance, advice, and coordination for the supplier.

#### 3. Examination and approval of working drawings and other documents

The consultant will examine the working drawings and other documents submitted by the supplier, and will give necessary guidance and approval.

#### 4. Confirmation and approval of equipment

The consultant will check the performance of the equipment to be procured by the supplier with the contracted documents, and approve the selection of said equipment.

#### 5. Factory inspection

The consultant will witness the equipment inspection at the manufacturer's site as necessary in order to ensure high quality and performance.

#### 6. Pre-shipment inspection

The consultant will, as necessary before shipment of equipment to each district, inspect the packing of equipment for proper protection against shocks, moisture, and high temperature during ocean and inland transportation.

#### 7. Reporting on the progress of work

The consultant will report the progress of the procurement work to the representatives of relevant organizations of both countries.

#### 8. Delivery inspection

The consultant will witness the transfer of equipment at each district, confirm that the equipment delivered is conforming to the descriptions of the contract documents, and submit a certificate of inspection completion to the Government of Indonesia.

The consultant will dispatch engineers to the sites for inspection, guidance, and coordination as needed according to the progress of the project. Also, the consultant will establish a back-up system in Japan, in which the engineers in charge will keep contact with and support the local counterparts. The consultant will report to the Japanese government agencies concerned on the progress of work, disbursement, transfer, etc. of the project. Four supervisors comprised of Project Manager, Equipment Planner I and II, and Transportation Planner will be dispatched to the sites to perform spot-supervision during execution of the project.

#### 3-2-4 Procurement Plan

The following points shall be noted when procuring equipment for this project:

##### 1) Local procurement

All the equipment items requested for the project are available in Indonesia. The qualities of locally obtainable equipment will pose no problems as long as they are to be used at health centers or other facilities. In addition, local distributors, some of which have agencies or service networks in Sulawesi, can provide maintenance services for all the products. Thus, in light of the above considerations, the project will be designed on the premise that all equipment will be procured in Indonesia.

##### 2) Procurement from third country

Many of the most popular brands of the equipment requested for the project are those of third-country manufacturers. Some types of instruments, certain sizes and shapes of forceps in particular, are not used in Japan. Agencies of such instruments that can provide maintenance support are established in Indonesia. Thus, for certain types of



instruments, third-country products will be examined, and for those to be procured from third countries, approvals by the Government of Japan will be obtained.

### 3-2-5 Transportation plan

#### 1) Policy

This equipment transportation is to transport approx. 106,000 pieces of equipment (approx. 6,500 m<sup>3</sup>) to 4 DINKES DATI Is and 38 DINKES DATI IIs. The transportation policy is as follows:

- a. The equipment lists of district health offices and health centers are drawn up and the equipment is considered to be packed every province and health center dependent on the contents of the equipment.
- b. The most inexpensive and fastest transportation method is used.
- c. The system to maintain close communication with equipment manufacturers or suppliers is organized. (For missing parts or complaints at the time of delivery)

#### 2) Transportation method

The following transportation plans are established based on the above policy.

- a. Sorting and packing in Jakarta for each province and district -> (Marine transportation) -> Distribution to each province and district
- b. Sorting and packing in Jakarta for each province and district -> Transportation Surabaya -> (Marine transportation) -> Each province and district
- c. Sorting and packing in Surabaya for each province and district -> (Marine transportation) -> Each province and district
- d. Sorting and packing in Ujung Pandang -> (Marine transportation) -> Each province and district

The method is confirmed the most accurate, inexpensive and effective. This transportation method will be used for the project. Reasons for not using methods b ~ d are as follows:

- b. It takes time (approx. 1 month) to carry out inland transportation from Jakarta to Surabaya. The transportation cost will be large. (It does not meet transportation policy b.)
- c. Close communication with manufacturers will not be realized. (It does not meet transportation policy c.)
- d. Close communication with manufacturers will not be realized. (It does not meet transportation policy c.) After investigation, we found that warehouses in Ujung

Pandang might not be obtained or workmanship might be a problem. (It does not meet transportation policy a.)

Transportation flow (Fig. 3-1-1) to province and district health office and details are shown below:

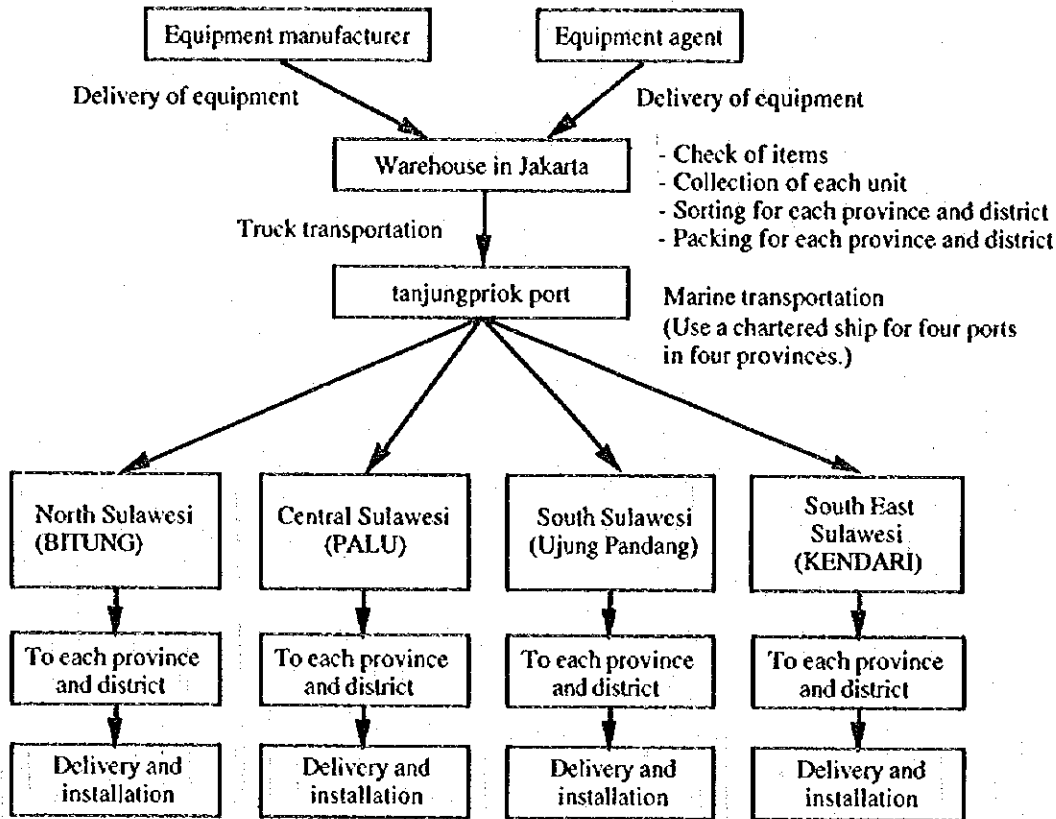


Figure 3-1-1 Transportation Flow

(1) Sorting and packing for province and district

All pieces of equipment are sorted and packed for 4 provinces and 38 districts. The packing mass of whole equipment will be approx. 6,500 m<sup>3</sup>. After inspection of the delivered equipment (number and external appearance), they are divided for provinces and districts. Approx. 3 months are required for sorting and packing for inland transportation. The equipment may not be manufactured at the same time due to numerous quantity. It is probable that the equipment will be delivered in several times, not one time. Therefore, the warehouse is required for approx. 3 months. It is essential that check, sorting and packing are carried out under Japanese supervisors. (1 person for general control, 2 persons for checking and sorting) There may be missing items and incorrect items on delivery. Approximately 40% of the whole equipment are sets consisted of more than ten components. It is necessary to collect components as a set. In

this way, smooth operation of these actions is an indispensable factor for accurate distribution of equipment.

**(2) Marine transportation**

After packing for provinces and districts at the warehouse in Jakarta, the items are transported to Tanjungpriok port, Jakarta. Then, on-board cargo is transported to Sulawesi. One 4,500-ton's ship is chartered for distribution of the equipment at 4 ports in 4 provinces. Three small ships are chartered for marine transportation directly from Jakarta to isolated islands (Sangille Talaud, Muna, Buton) and remote place (Banggai). As for these area, it is confirmed that direct transportation from Jakarta is less cost and shorter for time than transportation through a main port of each province.

**Unloading ports of a 4500-ton's ship:**

North Sulawesi	Bitung port
Central Sulawesi	Palu port
South Sulawesi	Ujung Pandang port
Southeast Sulawesi	Kendari port

**Unloading ports of small ships:**

North Sulawesi Province (Sangille Talaud District)	Tafuna port
Central Sulawesi Province (Banggai District)	Luwu port
Southeast Sulawesi (Buton and Muna Districts)	Buton and Muna ports

**(3) Inland transportation**

Each equipment cargo is stored at each port warehouse once. Then, it is sent to provinces or districts. Transportation with a 6-ton truck is available for many locations. (Use of containers is not feasible because of road width and paved conditions.)

Since Selayar District of South Sulawesi is an island separated from the Sulawesi mainland, another marine transportation is required. Passenger ship services to this district is available. Equipment will be transported with this ship. However, no mechanical devices are available for general cargoes. Loading and unloading will be done manually. Therefore, the package size for this district must be minimized as possible.

#### (4) Delivery

After arrival of equipment in provinces and districts, the equipment is unpacked and the number of items is checked. Some of the equipment is build and adjusted if necessary.

As mentioned above, distribution of equipment for provinces and districts is essential part of the work in this project. Seven and half months in total are required from the supplier contract to the distribution of equipment for each project site.

#### 3-2-6 Implementation Schedule

After the signing of an Exchange of Notes by the governments of Indonesia and Japan, the project implementation schedule will be divided into three stages: detail design, tender, and equipment procurement.

##### 1. Detail design

After execution of a consulting service agreement with the Indonesian project-implementing agency and verification of the agreement by the Government of Japan, the consultant will start the detail design study. At the detailed design stage, tender documents including technical specifications and a list of tender requirements are made. During this stage, the consultant will discuss with the Indonesian side on the content of the equipment and obtain the final approval of the tender documents from the Indonesian side. The time required for detailed design study is estimated at about 2 months.

##### 2. Tender

A supplier to undertake equipment procurement will be selected through tender. The tender will be carried out in the following order: public announcement of tender, distribution of tender documents, examination of qualifications of tender applicants, evaluation of tender offer, nomination of a winner of tender, approval by EKWASBAN, and signing of an supplier's contract. It is estimated that this stage will take about 3 months.

##### 3. Equipment procurement, transportation, and hand-over

After the signing of the supplier's contract and the verification by the Government of Japan, the equipment is started ordering. The time required for the completion of the work is estimated at 7.5 months as the result of on the calculation of work period which was made on the assumption that no force majeure would take place during the work period.

The project implementation schedule after the signing of an E/N until the hand-over of the project is shown in Figure 3-2-2.

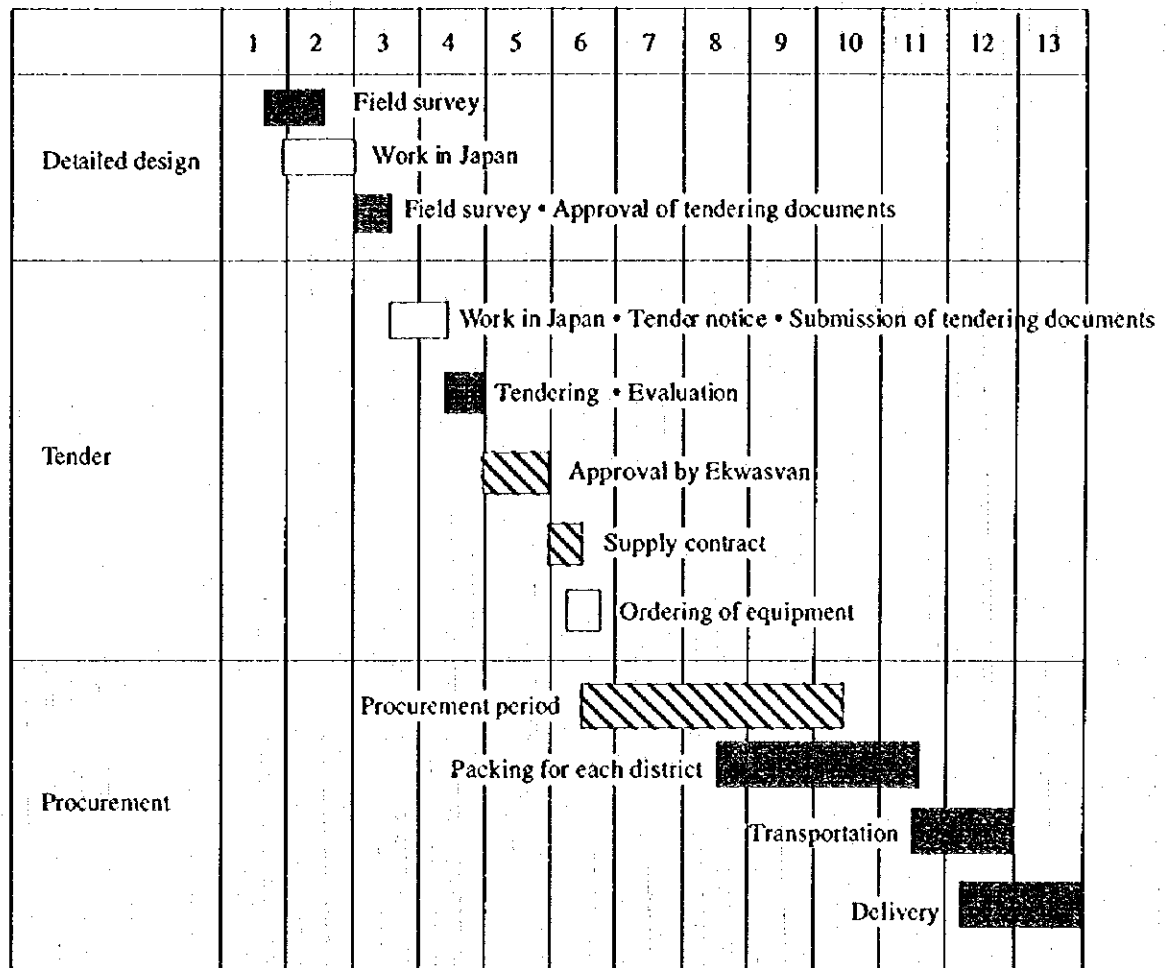


Figure 3-2-2 Implementation Schedule

### 3-3 Estimated Project Cost

#### 3-3-1 Responsibility

The current project is carried out by the cooperation of Japan and Indonesia in compliance with the grant aid assistance system of the Government of Japan. The responsibility of each country is as follows.

##### 1) Responsibility of Japan

###### a. Equipment

Procurement of the equipment prescribed in the survey report for the basic design as the responsibility of Japan

###### b. Relevant process

Packing, insurance, and transport of the equipment delivered from Jakarta to each province and district