

BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT FOR IMPROVEMENT OF  
MATERNAL AND CHILD HEALTH CARE SYSTEM  
IN  
THE SECOND LEVEL HOSPITALS  
IN  
THE REPUBLIC OF MOLDOVA

March, 2001

JAPAN INTERNATIONAL COOPERATION AGENCY

INTERNATIONAL TECHNO CENTER CO., LTD.

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## PREFACE

In response to a request from the Government of the Republic of Moldova, the Government of Japan decided to conduct a basic design study on the Project for Improvement of Maternal and Child Health Care System in the Second Level Hospitals and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Moldova a study team from August 30 to October 5, 2000.

The team held discussions with the officials concerned of the Government of Moldova, 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 Moldova in order to discuss a draft basic design, and as this result, the present report was finalized.

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

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

March, 2001



Kunihiko Saitou  
President

Japan International Cooperation Agency

March, 2001

### Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Improvement of Maternal and Child Health Care System in the Second Level Hospitals in the Republic of Moldova.

This study was conducted by International Techno Center Co., Ltd., under a contract to JICA, during the period from August 23, 2000 to March 30, 2001. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Moldova and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

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

Very truly yours,



Chiharu Abe  
Project Manager,  
Basic design study team on the Project for  
Improvement of Maternal and Child Health  
Care System in the Second Level Hospitals  
International Techno Center Co., Ltd.

# Republic of Moldova/ Project Site



## **Abbreviations**

A/P	Authorization to Pay
B/A	Banking Arrangement
CIS	Commonwealth of Independent States
DAC	Development Assistance Committee
E/N	Exchange of Notes
EU	European Union
GDP	Gross Domestic Product
IMF	International Monetary Fund
IMR	Infant Mortality Rate
LBW	Low Birth Weight
MCH	Maternal and Child Health
MMR	Maternal Mortality Rate
OSCE	Organization for Security and Cooperation in Europe
PHC	Primary Health Care
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Program
WHO	World Health Organization

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

### **1-1 General Situation**

The Republic of Moldova is an inland country surrounded by Romania and Ukraine. There is the Prute River along the border with Romania, and the Dnestr River near the border with Ukraine. The total area of the national land is 338,000km<sup>2</sup>, which is slightly smaller than the area of Kyushu Island of Japan. The central part of Moldova is a hilly land 300m above sea level covered with rich black earth, and the southern part is the steppes. The population is 4,281,500 (as of January 1, 2000.)

Moldova was one of the countries constituting the USSR after World War II. After the collapse of the USSR, it changed its' name to the Republic of Moldova in May 1991 and declared independence on August 27th of the same year. In December 1991, Moldova became one of the members of the Commonwealth of Independent States (CIS). After becoming an independent country, it has consistently proceeded with a democratic policy. An ethnic dispute of Dnestr broke out in 1992, but it was mediated by Russia, Ukraine, and Organization for Security and Cooperation in Europe (OSCE). The political situation of Moldova is stable now.

The steady economic policy of Moldova after its independence is highly evaluated by other countries and various international organizations including the IMF and the World Bank have supported Moldova actively. The government of Moldova introduced its own currency "lei" in November 1993 and has been putting efforts towards the introduction of a market economy. The growth of GDP was marked in 1997 for the first time after the independence. However, the Asian currency crisis at the end of 1997 and the devaluation of the Russian ruble in 1998 affected the Moldovan economy, and the rate of interest on the bond market rose and the lei dropped suddenly. Especially the economy of Russia, which is the largest market of Moldova, gave significant influence. The production in Moldova dropped greatly because of the decrease of demand from Russia. The indications of the recovery of the Moldovan economy have been barely observed since 1999.

The main industry of Moldova is agriculture, which accounts for more than 50% of its GDP. Fruits such as grapes are cultivated on a large scale and brewed alcohol has the large share in the export. The future subject is the development of quality products having a competitive power in the international market. It is also desirable for Moldova to grow out of the past export structure depending much on Russia, and to expand the trade with the East European

countries and EU. The stabilization and diversification of energy supplies are also significant subjects in future, though Moldova imports almost 100% of fuel and energy resources from Russia and other CIS countries so far.

The Moldovan administrative organizations at the republican level consist of 14 ministries and six departments. In 1999, Moldova adopted a decentralization policy, in which the administration was transferred to the local governments largely. The governor, the county council, and the administrative departments and divisions are assigned in each local government and they lay down rules and regulations as well as implement the administrative services in their respective sectors.

As for the health and medical sector, the medical facilities other than the republican hospitals are under supervision of the Department of Health of each local government. The County Council issues its bylaw to provide the amount of medical expense, following the decision of the Republican Parliament to charge it partially to the patients. The present administrative divisions are Kishinev Municipality, ten counties, and one autonomous territory. The population of Moldova as of the end of 1999 is shown in Table 1-1.

**Table 1-1: Population of Moldova (1999)**

Kishinev Municipality	780,700
Kishinev County	382,300
Edinets County	284,900
Soroca County	277,900
Beltsi County	505,300
Orhei County	303,400
Ungheni County	258,900
Lapshna County	282,200
Kagul County	190,800
Tighina County	169,300
Taraclia County	46,400
Autonomous Territory of Gagauz	161,400
Total	3,643,500
Dnestr	638,000
Total	4,281,500

Source : Republica Moldova 1999, Department for Statistical and Sociological Researches

## 1-2 Health Policy

The living standard and the state of health of Moldova strongly reflect its economic difficulty so far. There have been many problems caused by insufficient intake of nutrition, alcoholism, or drug abuse. As for the Maternal and Child Health (MCH), the nutritious state of pregnant women and nursing mothers has worsened and the rate of pathological neonates is increasing. On the other hand, the service system of perinatal care has been not efficient so far, and the activity of medical facilities went down because they are lacking the essential medical equipment. MCH related indices show this worsened health situation. For example, the infant mortality rate (IMR) rose to 22.6 per 1000 live births in 1996, although it was below 20.0 just after Moldova became independent.

The government of Moldova developed the Strategy for Reform of the Health Care System in the Republic of Moldova under New Economic Conditions for Years 1997 - 2003 with the support of the WHO. Now they are making great effort of health reform. Their strategy emphasizes the provision of efficient health services, the reconstruction of health finance, and the change of health system to one that places more importance on the primary health care (PHC). The health reform has been promoted by the decentralization policy in 1999. Each local government specified a county hospital, combined or abandoned small hospitals, made the number of hospital beds into proper size, re-trained the hospital doctors and transferred them to PHC facilities.

The MCH is one of the priority sectors in the health reform. The Ministry of Health has started the Program for Strengthening of Perinatal Health Care with the slogan that "mother's health for the child's health, and child's health for the national health". The Ministry tries to improve the service system of perinatal care, and provides the training courses for doctors, nurses, mid-wives and other health staffs in the perinatal field. The obstetrics and neonatal departments of the main hospitals of each 11 administrative entities have been decided as the perinatal centers, when the administrative division was reformed in 1999. The national guidelines of perinatal care were developed in 2000. The perinatal service system is under reform in order that the services for the safe delivery, the antenatal care, and neonatal care would be provided securely and properly.

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

While the health reform is being proceeded in Moldova, the medical equipment at hospitals and other facilities is severely deteriorated and insufficient in number causing trouble in providing essential services and activities. The medical equipment has been hardly replaced during the ten years since Moldova became independent. The health and medical administration is being improved by the change of the budget flow after decentralization, the collection of medical expenses partially borne by patients, and the adjustment of the number of hospitals and hospital beds. However, purchasing of medical equipment with foreign currency is difficult now, from the financial standpoint. Under these circumstances, this project was requested as the grant aid cooperation of the Japanese government for procurement of the medical equipment in the perinatal centers with the purpose of improving the perinatal service system of the secondary level. The confirmed request included 48 items of medical equipment for obstetrics and neonatal services and related laboratory examinations at all the 11 Perinatal Centers.

**Table 1-2: Requested Equipment**

<b>Perinatal Centers</b>	Kishinev Municipal Hospital No.1	Kishinev Municipality
	Edinets County Hospital	Edinets County
	Soroca County Hospital	Soroca County
	Beltsi County Hospital	Beltsi County
	Orhei County Hospital	Orhei County
	Ungheni County Hospital	Ungheni County
	Hincheshti County Hospital	Lapshna County
	Chadir-Lunga Hospital	Autonomous Territory of Gagauz
	Kagul County Hospital	Kagul County
	Kausheni County Hospital	Tighina County
	Taraclia County Hospital	Taraclia County

**Requested Equipment**

1 Sphygmomanometer Set (Infant/Child)	25 Forceps Delivery Set
2 Sphygmomanometer Set (Adult)	26 Syringe Pump
3 Stethoscope (Neonate)	27 Bedside Monitor (Neonate/Infant)
4 Weighing Scale	28 Bedside Monitor (Adult/Child)
5 Oxygen Inhalation Set (Neonate)	29 Examination Light
6 Oxygen Inhalation Set (Neonate/Adult)	30 Operating Table
7 Oxygen Hood	31 Operation Lamp
8 Ultrasonic Nebulizer	32 Anesthesia Apparatus
9 Aspirator	33 Vaginal Speculum Set
10 Resuscitation Set (Neonate)	34 Obstetric Laparotomy Instrument Set
11 Laryngoscope Set (Infant)	35 Embryotomy/ Craniotomy Set
12 Infant Radiant Warmer A	36 Ventilator (Infant)
13 Infant Radiant Warmer B	37 Ventilator (Child/Adult)
14 Newborn Reanimation Table	38 Hot Air Sterilizer
15 Incubator	39 Refrigerator
16 Phototherapy Unit	40 Microscope (Binocular)
17 Vacuum Extractor	41 Centrifuge
18 Ultrasound Scanner	42 Blood Gas Analyzer
19 Ultrasound Scanner (Mobile)A	43 Spectrophotometer
20 Ultrasound Scanner (Mobile)B	44 Bilirubin Analyzer
21 X-ray apparatus (Mobile)	45 Blood Cell Counter
22 Delivery Table	46 Newborn Cot
23 Suction Unit	47 ICU Bed
24 Cardiotocograph	48 Instrument Cabinet

## Chapter 2 Contents of the Project

## Chapter 2 Contents of the Project

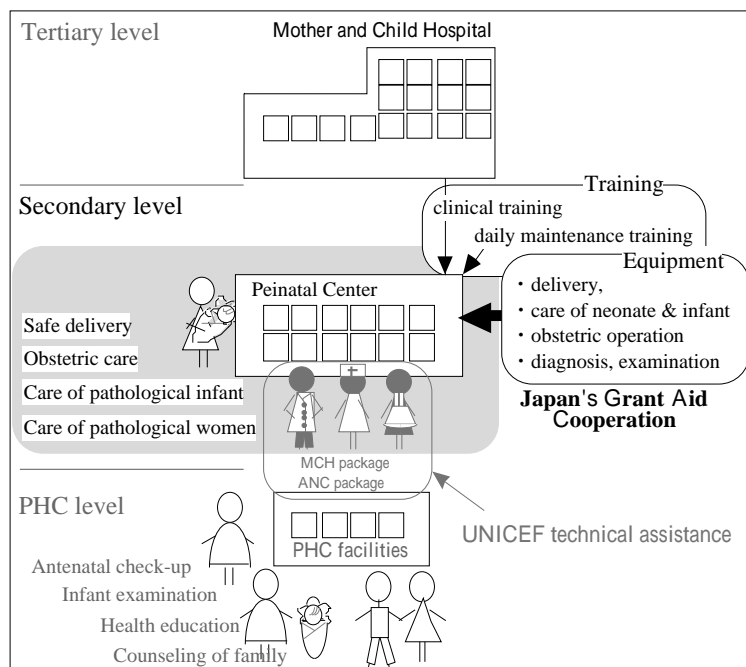
### 2-1 Objectives of the Project

The MCH is the most important subject in the health policy of Moldova. The Ministry of Health has started the training courses of the perinatal care at the perinatal centers all over the country. At the same time, the national guidelines on the perinatal services through the PHC to the secondary and the tertiary levels were developed. However, the medical equipment is so severely deteriorated and insufficient at all the facilities, that the medical activities are significantly hindered. There are not many opportunities to enlighten the medical staffs on the modern medical services, and they have been familiar with the old style of practice. The project has been designed to improve the secondary level perinatal service with providing the essential equipment for the perinatal centers. In addition, the clinical training and the daily maintenance training regarding the equipment shall be included. The goal and the objectives of the project are shown below.

Goal: To improve the perinatal medical services in Moldova  
 Project objective: To improve the secondary medical services of obstetrics and neonatology  
 Benefit: Improvement of the medical services of the perinatal centers

### 2-2 Basic Concept of the Project

The perinatal centers, namely the secondary level facilities of obstetrics and neonatology, provide safe delivery, antenatal care, and neonatal care. The Project shall procure the essential equipment used for delivery, treatment before and after delivery, care of neonates and infants, obstetric operation, and diagnosis and examination at the 11 perinatal centers, and shall support the clinical training and the daily maintenance training.



**Figure 2-1: Perinatal Service System in Moldova and the Project**

The county hospitals where the perinatal centers are located mainly treat the hospitalized patients. As shown in Table 2-1, 19,627 general pregnant women and nursing mothers, 9,544 pathological pregnant women and nursing mothers, 16,323 gynecology patients, and 20,361 pediatric patients were treated there in 1999. 14,820 deliveries out of total 33,610 in Moldova took place at the perinatal centers. The ratio of the deliveries at the perinatal centers is considered to increase as the service system improves along the national guidelines. The project aims at improving the quality of medical services at the perinatal centers, and will benefit all the women and children being treated at all the 11 perinatal centers.

**Table 2-1: The number of deliveries and patients at the county hospitals (1999)**

Administrative Division*	Population	Live Birth	Hospital (Perinatal Center)	Live Birth	Still Birth	Cesarean Section	pregnant women		gynecology patients	pediatrics patients
							general	patho-logical		
Kishinev M.	780,700	6,015	Kishinev Municipal Hospital No.1	3,142	22	307	5,833	2,638	4,323	2,187
Kishinev C.	382,300									
Edinets C.	284,900	2,618	Edinets County Hospital	879	8	72	2,306	1,401	1,656	1,848
Soroca C.	277,900	2,526	Soroca County Hospital	912	5	42	825	463	763	1,581
Beltsi C.	505,300	5,413	Beltsi County Hospital	2,295	18	234	2,394	1,233	3,017	5,406
Orhei C.	303,400	3,307	Orhei County Hospital	1,407	14	92	2,990	1,107	2,988	1,560
Ungheni C.	258,900	3,252	Ungheni County Hospital	1,272	9	46	859	692	728	342
Lapshna C.	282,200	3,109	Hincheshti County Hospital	1,355	8	44	991	677	563	4,204
Gagauz A. T.	161,400	2,319	Chadir-Lunga Hospital	900	3	50	703	487	675	941
Kagul C.	190,800	2,040	Kagul County Hospital	1,160	5	88	948	378	626	1,108
Tighina C.	169,300	2,501	Kausheni County Hospital	982	9	52	986	145	523	711
Taraclia C.	46,400	516	Taraclia County Hospital	516	0	34	432	323	461	473
	3,643,500	33,616		14,820	101	1,061		9,544	16,323	20,361

\* M=municipality, C=County, A.T.= Autonomous Territory

## 2-3 Basic Design

### 2-3-1 Design Concept

#### (1) Grade and Specification of Equipment

The equipment to be procured shall be adequate for the secondary level perinatal services; safe delivery, basic obstetric operation, examination and treatment of pathological pregnant women and nursing mothers, low birth weight (LBW) babies, and pathological babies. At the same time, the grade and the specification shall be adequate for the doctors, nurses, and laboratory technicians of the facilities.

#### (2) Quantity of Equipment

The quantity of each equipment item shall be determined based on the number of deliveries of the respective facilities to satisfy the minimum request. The quantity of some of the equipment was determined for each perinatal center based on the number of deliveries of it. The quantity of other equipment was determined to be same for the facilities those that have same demand size. The details will be explained in “2-2-2 Basic Design, (2) Equipment Plan.”

### **(3) Consideration of Operation and Maintenance**

It was taken into consideration that a large amount of operation and maintenance cost required by some of the laboratory equipment would be a burden on the management of the respective hospitals. A blood gas analyzer, which needs a considerable sum of cost, shall be procured for the only facilities having large demands, certain maintenance ability, and needing blood gas analyzing as indispensable laboratory service for the county and surroundings. Other laboratory equipment, such as a blood cell counter or a spectrophotometer shall be the ones of which the consumables can be easily obtained in Moldova.

### **(4) Training to be included by the Project**

The project includes the clinical training and the daily maintenance training regarding the equipment to be procured with the purposes to promote a better understanding of the clinical significance of the equipment by the staffs of the perinatal centers, to enlightening them in practice, and to make a system of proper use and daily maintenance of the equipment. The trainers of the clinical training shall be the staffs of the Mother and Child Republican Hospital and the trainers of daily maintenance training shall be the equipment engineers. The trainees are the staffs of the hospitals covered by the project. The project dispatches a supervisor and several equipment engineers. The details of the training included by the project shall be explained in "Chapter 3, 3-1-8 Soft Component Plan".

### **(5) Local Procurement and Procurement from Third Countries**

As the medical equipment to be procured in the project is not manufactured in Moldova, the equipment shall be procured from Japan in principle. However, in case none of Japanese products can satisfy the equipment specification, the products of third countries shall be procured. In case a few Japanese manufacturers have satisfying products, existence of their local agents in Moldova and neighboring countries and the supply of consumables shall be taken into consideration, and the products from third countries would be procured if necessary.

### **(6) Packaging and Transportation**

The equipment made in Japan shall be transported to Constantza Harbor, Romania by sea, and then transported to Kishinev by train. The equipment made in third countries shall be collected at Hamburg, Germany and transported to Kishinev by trucks. All the equipment shall be transported to each hospital after clearing the customs at Kishinev. The equipment shall be packaged separately for each perinatal center at Yokohama or Hamburg in advance of transportation for the safe and secure delivery to the project sites.



## **(7) Work Schedule**

The entire period of the project shall be assumed as 11 months with a schedule under the Japanese fiscal year system from April to March. The equipment can not help but arrive at the respective facilities in winter season, so that the snow maybe lowers the efficiency of the set-up and inspection work. It is important to proceed the every stage of the execution of the project immediately and smoothly after conclusion of the E/N between the Japanese government and Moldovan government.

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

#### **(1) Total plan**

The Project shall procure the equipment used for delivery, treatment before and after delivery, examination and treatment of neonates and infants, obstetric operation, post-operation management, and laboratory examination for the perinatal centers in Moldova. The Project shall include the clinical training and the daily maintenance training.

The Project covers the perinatal centers located in the hospitals below.

- Kishinev Municipal Hospital No.1
- Edinets County Hospital
- Soroca County Hospital
- Beltsi County Hospital
- Orhei County Hospital
- Ungheni County Hospital
- Hincheshti County Hospital,
- Chadir-Lunga Hospital
- Kagul County Hospital
- Kausheni County Hospital
- Taraclia County Hospital

The number of delivery or treatment rooms of the hospitals in Moldova is rather large just like the medical facilities in the former USSR. However, the project determines the amounts of equipment based on the demand shown by the number of delivery, and equips the most appropriate rooms of the respective facilities.

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

The details of the equipment plan are explained below for each use. The list of the equipment including the amount for each facility is shown at the end of this Section.

**(a) Equipment used for delivery and treatment before and after delivery**

The following 15 items shall be procured as the equipment used for delivery and treatment before and after delivery. These are the items used at delivery (delivery table, operation lamp, forceps delivery set, vacuum extractor), the items used for examination and treatment before and after delivery (cardiotocograph, sphygmomanometer, examination light, vaginal speculum set), and the items used for neonates care immediately after delivery (infant radiant warmers A and B, newborn reanimation table, stethoscope, weighing scale).

The above mentioned items mainly used in the delivery block. The amount of each item is determined based on the concept as explained before. The amount of delivery table is determined based on the average number of deliveries of each hospital, and one each delivery table shall be equipped in one delivery room. The other 14 items are also used in a delivery room or neonate treating room attached to the delivery room. However, operation lamps, hot air sterilizers, and infant radiant warmers shall be procured in the numbers that can be used not only in the delivery block but also in the obstetric operation room and the neonatal block. As for forceps delivery sets and vacuum extractors, the same amount shall be procured for the facilities with same demand. Among the above mentioned items, the cardiotocographs for two facilities (Orhei and Hincheshti) were excluded from the project because they receive cardiotocographs by the technical supports of the UNICEF. The models and the specifications of the equipment shall be those proper for general use at the delivery rooms of the perinatal centers. Especially the models of infant radiant warmer and newborn reanimation table shall be those that can secure safety and stability. The planned items are below with No. of Table2-2.

No.22 Delivery Table	To be used for ordinal delivery, forceps delivery or vacuum extraction, and should be manual type.
No.31 Operation Lamp	To be used for delivery and operation, and should be floor stand type considering the efficiency of usage in the delivery section. The quantity of these items determined by the average number of deliveries per day at each hospital.
No.25 Forceps Delivery Set	A set of basic forceps to be used for the delivery. 2 sets each for Kishinev and Beltsi. 1 set each for other 9 hospitals.
No.17 Vacuum Extractor	To be used when the emergency delivery is required 2 sets each for Kishinev and Beltsi. 1 set each for other 9 hospitals.
No.24 Cardiotocograph	To monitor the contraction and fetal heart rate. It is essential to judge the necessity of vacuum extraction and /or Caesarean section. 4 sets for Kishinev, 2 sets for Beltsi, 1 set each for other 7 hospitals except Orhei and Hincheshti.
No.2 Sphygmomanometer(adult)	To measure the blood pressure of pregnant woman. Portable and aneroid type. 2 sets each for Kishinev and Beltsi, 1 set each for other 9 hospitals
No.29 Examination Lamp	To be used for treatment before and after delivery. 4 sets each for Kishinev and Beltsi, 1 set for Taraclia, 2 sets each for other 8 hospitals

- No.33 Vaginal Speculum Set To be used for treatment before and after delivery, at delivery room and recovery room, and should be Cusco type. The quantity was determined by the average number of deliveries per day at each hospital.
- No.14 Reanimation Table To be used with No.12 Infant Radiant Warmer A. It should be well-balanced type (without caster) considering the safety of patient. The quantity was determined by the average number of deliveries per day at each hospital.
- No.12 Infant Radiant Warmer A To be used with No. 14 Reanimation Table in delivery room and neonatal block to prevent body temperature falling of neonate, and should be mobile type with casters. The quantity was determined by the average number of deliveries per day at each hospital.
- No.13 Infant Radiant Warmer B To be used at emergent transfer from delivery block to neonatal block. Type with a reanimation table attached. 1 set each for all 11 hospitals
- No.3 Stethoscope (Neonate) Stethoscope exclusive for neonate. The quantity was determined by the average number of deliveries per day at each hospital.
- No.4 Weighing Scale (Neonate) Weighing scale exclusive for neonate. 2 sets each for all 11 hospitals.
- No.6 Oxygen Inhalation Set (Neonate/Adult)  
Portable oxygen cylinder set to be used for neonate or mother to inhale oxygen at the delivery room or operation room. 1set each for all 11 hospitals.
- No.38 Hot Air Sterilizer To be used for sterilization of the small instruments. 3sets each for all 11 hospitals (1 set each for delivery block, operation block and neonatal block)

#### **(b) Equipment used for the care of neonates and infants**

The care of LBW and pathological babies is most important concept in this project. The following 14 items shall be procured as the equipment used for the care of neonates and infants. These items are mainly used in the neonatal block of the respective perinatal centers.

Incubators and syringe pumps are essential for the care of LBW babies. The study result shows that the neonates who need the said equipment account for approximately 10% of the total delivered babies. Although the number of days that one baby uses an incubator differs by the birth weight and the symptoms, the amount was determined, assuming that 10% of neonates needs the incubator for six days on average at each facilities. The numbers of bedside monitor (neonate/infants) and phototherapy unit for each facility were determined assuming that the number of days for continuous use is two. Ventilators and ultrasonic nebulizers shall be procured in the same numbers for the group of facilities having large demand and the group of other facilities. However, as for the ventilators (neonate) for two facilities (Orhei and Hincheshti) were excluded with same reason as the cardiotocograph. A ventilator (infant/child) shall be procured only for the facilities having a large burden of pediatric medical services. Although newborn cots are often considered to have lower importance compared with other equipment for diagnosis and treatment, it is difficult to

obtain in Moldova and the old baby beds with iron guards, which are not safe for neonates, are used in the facilities. Carefully considering this point, the project includes newborn cots, and procures in the same amount for all 11 facilities, as the amount needed at the Taraclia County Hospital having the smallest demand.

No.15 Incubator	To be used in the intensive care for LBW and pathological neonates. The quantity was determined by the number of LBW and pathological neonates, on the assumption of 6 days use for a baby.
No.26 Syringe Pump	To apply cardiotoxic, antihypertensive drug and others at the constant speed with constant quantity, which requires precise control for the application in very small quantity. The same quantity as No.15 Incubator.
No.27 Bedside Monitor(Neonate/Infant)	To monitor ECG, Temperature, Respiration and other vital signs of LBW and pathological neonates. The quantity was determined by the number of LBW and pathological neonates, on the assumption of 2 days use for a baby.
No.16 Phototherapy Unit	To be used for the therapy of neonatal jaundice by irradiation of the light. The quantity of was determined in accordance with the number of LBW and pathological neonates, on the assumption of 2 days use for a baby.
No.36 Ventilator (Neonate)	To assist the breathing of the neonate (especially LBW and pathological) by the mandatory ventilation. 2 sets for Kishinev, 1 set for other 8 hospitals except Orhei and Hincheshti
No.37 Ventilator (Infant)	To assist the breathing of infant by the mandatory ventilation 1 set each for 4 hospitals (Kishinev, Beltsi, Orhei and Kagul)
No.8 Ultrasonic Nebulizer	To nebulize the aerosol particles of medicine or water for the patient (neonate and/or infant who has the respiratory disorder) to inhale. 2 sets each for Kishinev and Beltsi, 1 set each for other 9 hospitals.
No.5 Oxygen Inhalation Set (Neonate)	Portable oxygen cylinder set to be used for neonate to inhale oxygen, at NICU and during patient transportation. 1 set each for all 11 hospitals.
No.1 Sphygmomanometer (Infant/Child)	To measure the blood pressure of infants and/or children. 1 set each for all 11 hospitals.
No.7 Oxygen Hood	To maintain the high oxygen concentration. One small hood to be used in an incubator, and the other in medium size 2 sets each for Kishinev and Beltsi, 1 set each for other 9 hospitals
No.9 Aspirator	To suck in pus and/or amniotic fluid from mouth and nose of neonates 4 sets for Kishinev, 3 sets for Beltsi, 2 sets each for other 9 hospitals
No.10 Resuscitation Set (Neonate)	To be used for the resuscitation at cardiac arrest or apnea 3 sets for Kishinev, 2 sets each for other 10 hospitals
No.11 Laryngoscope Set (Infant)	To maintain the airway in the endotracheal intubation 3 sets for Kishinev, 2 sets each for other 10 hospitals
No.46 Newborn Cot	A small bed in box shape exclusive for neonate 5 sets each for all

**(c) Equipment used for obstetric operation and post-operation management**

Seven basic items related to operation and ICU beds shall be procured. A perinatal center has 1 to 3 operations in a day,

The study result shows that the rate of Caesarean section at the perinatal centers account for 5 to 12 % of all deliveries, and that the deliveries in a day is around 10 cases even at the Kishinev Municipal Hospital No.1 having the largest number of deliveries. Therefore, a perinatal center is considered to have 1 to 3 operations in a day, although they have more than one operating room just like the delivery rooms. The project shall equip one obstetric operation room with the said seven items. The number of ICU beds was determined based on the number of operations, assuming one patient needs careful post-operation treatment for seven days in average.

No.30 Operation Table	Operation table for the obstetric operation theatre
No.32 Anesthesia Apparatus	To be used for the general anesthesia in the obstetric operation
No.23 Suction Unit	To suck in amniotic fluid and/or blood in the obstetric operation
No.28 Bedside Monitor (Adult)	To monitor ECG, Temperature, Respiration and others of patient 1 set each of above 4 items for all 11 hospitals.
No.34 Obstetric Laparotomy Instrument Set	Operation instruments for abdominal obstetric operation. 2sets each for all 11 hospitals
No. 35 Embryotomy/Caraniotomy Set	Instruments for embryotomy and craniotomy to remove the fetal corpse from uterine. 1set each for all 11 hospitals.
No.48 Instrument Cabinet	To store the instruments clean after the sterilisation. 1 set each for all 11 hospitals.
No.47 ICU Bed	A bed for patient care after the Caesarean section or abdominal operation.

**(d) Equipment related to laboratory examination and diagnosis**

The ultrasound scanner is very important as the diagnostic device of perinatal care. The extremely deteriorated existing devices shall be replaced in the perinatal centers, and further improvement of the ultrasound diagnosis is strongly desired. Thus, one ultrasound scanner shall be procured for each facility. For the two facilities having especially large demand (Kishinev and Beltsi), additional two models convenient for moving within the block shall be procured. An X-ray apparatus (mobile) shall be used for taking the X-ray images of neonates that are difficult to be moved to the radiology department and shall be procured only for the two facilities having large demand (Kishinev and Beltsi).

As for the laboratory equipment used for clinical examination, consumables such as reagents are indispensable, which causes maintenance burden in general. The Project has an intention to secure the minimum laboratory functions by considering the operating state of each facility and shall procure one each spectrophotometer, blood cell counter, and bilirubin analyzer to each facility. For the measurement of blood gas and electrolytes, the blood gas analyzer that can measure three items of blood gas (partial pressure of oxygen, partial pressure of carbon dioxide, and pH) and three items of electrolytes (sodium, potassium, and calcium) is preferable in terms of cost performance. It shall be procured for the two facilities (Kishinev and Beltsi) having certain maintenance abilities, and the perinatal center in Kagul City where the early diagnosis needs to be secured for the serious patients in the southern part of the country. The amounts of microscope, refrigerator and centrifuge for each facility are determined based on the number of laboratory examinations.

No.18 Ultrasound Scanner	To be used at the examination for pregnant women or nursing mothers to diagnose fetal condition, abdominal organs and uterine. 1 set each for all 11 hospitals
No.19 Ultrasound Scanner (Mobile) A	To be mainly used in the neonatal block to diagnose neonatal condition
No.20 Ultrasound Scanner (Mobile) B	To be mainly used in the delivery room and neonatal block to diagnose the condition of neonate and pregnant woman 1 set each of above 2 items for Kishinev and Beltsi
No.21 X-ray Apparatus (Mobile)	To be used for diagnosis of pneumonia, malformation and fracture at the bedside of a patient of whom transportation is difficult. 1 set each for Kishinev and Beltsi
No.43 Spectrophotometer	To be used for routine manual biochemistry analysis.
No.45 Blood Cell Counter	To calculate the number of red blood cells, white blood cells, hemoglobin and others with a small quantity of sample.
No.44 Bilirubin Analyzer	To measure bilirubin unit with a small quantity of blood sample taken from earlobe or heel of patient for the diagnosis of jaundice. 1 set each of above 3 items should be provided for all 11 hospitals.
No.42 Blood Gas Analyzer	To measure the PO <sub>2</sub> , PCO <sub>2</sub> , pH, Na, K, Ca in the blood. 1 set each for Kishinev, Beltsi and Kagul
No.40 Microscope (Binocular)	To be used for urine analysis, venereal disease examination, differential counts of white blood cell and others
No.39 Refrigerator	To store reagents
No.41 Centrifuge	To be used for separation of samples such as blood and urine. The quantity of above 3 items was determined in accordance with the number of examinations at each hospital.

**Table 2-2: Equipment Plan**

KishinevMunicipalHospitalNo.1      EdinetsCountyHospital      SorocaCountyHospital  
 BeltsiCountyHospital      OrheiCountyHospital      UngheniCountyHospital  
 HincheshtiCountyHospital      Chadir-LungaHospital      KagulCountyHospital  
 KausheniCountyHospital      TaracliaCountyHospital

No.												Total
1	Sphygmomanometer Set (Infant/Child)	1	1	1	1	1	1	1	1	1	1	11
2	Sphygmomanometer Set (Adult)	2	1	1	2	1	1	1	1	1	1	13
3	Stethoscope (Neonate)	7	3	3	5	4	3	3	3	3	3	39
4	Weighing Scale(Neonate)	2	2	2	2	2	2	2	2	2	2	22
5	Oxygen Inhalation Set (Neonate)	1	1	1	1	1	1	1	1	1	1	11
6	Oxygen Inhalation Set (Neonate/Adult)	1	1	1	1	1	1	1	1	1	1	11
7	Oxygen Hood	2	1	1	2	1	1	1	1	1	1	13
8	Ultrasonic Nebulizer	2	1	1	2	1	1	1	1	1	1	13
9	Aspirator	4	2	2	3	2	2	2	2	2	2	25
10	Resuscitation Set (Neonate)	3	2	2	2	2	2	2	2	2	2	23
11	Laryngoscope Set (Infant)	3	2	2	2	2	2	2	2	2	2	23
12	Infant Radiant Warmer A	7	3	3	5	4	3	3	3	3	3	39
13	Infant Radiant Warmer B	1	1	1	1	1	1	1	1	1	1	11
14	Newborn Reanimation Table	7	3	3	5	4	3	3	3	3	3	39
15	Incubator	7	2	2	5	3	3	3	2	3	3	35
16	Phototherapy Unit	3	1	1	2	1	1	1	1	1	1	14
17	Vacuum Extractor	2	1	1	2	1	1	1	1	1	1	13
18	Ultrasound Scanner	1	1	1	1	1	1	1	1	1	1	11
19	Ultrasound Scanner (Mobile) A	1	0	0	1	0	0	0	0	0	0	2
20	Ultrasound Scanner (Mobile) B	1	0	0	1	0	0	0	0	0	0	2
21	X-ray Apparatus (Mobile)	1	0	0	1	0	0	0	0	0	0	2
22	Delivery Table	6	2	3	4	3	2	3	3	3	3	33
23	Suction Unit	1	1	1	1	1	1	1	1	1	1	11
24	Cardiotocograph	4	1	1	2	0	1	0	1	1	1	13
25	Forceps Delivery Set	2	1	1	2	1	1	1	1	1	1	13
26	Syringe Pump	7	2	2	5	3	3	3	2	3	3	35
27	Bedside Monitor (Neonate/Infant)	3	1	1	2	2	2	2	1	2	2	19
28	Bedside Monitor (Adult)	1	1	1	1	1	1	1	1	1	1	11
29	Examination Light	4	2	2	4	2	2	2	2	2	2	25
30	Operating Table	1	1	1	1	1	1	1	1	1	1	11
31	Operation Lamp	7	3	3	5	4	3	3	3	3	3	39
32	Anesthesia Apparatus	1	1	1	1	0	1	0	1	1	1	9
33	Vaginal Speculum Set	20	6	6	16	10	8	8	6	8	8	100
34	Obstetric Laparotomy Instrument Set	2	2	2	2	2	2	2	2	2	2	22
35	Embryotomy/ Craniotomy Set	1	1	1	1	1	1	1	1	1	1	11
36	Ventilator (Neonate)	2	1	1	1	0	1	0	1	1	1	10
37	Ventilator (Infant/Child)	1	0	0	1	1	0	0	0	1	0	4
38	Hot Air Sterilizer	3	3	3	3	3	3	3	3	3	3	33
39	Refrigerator	2	1	1	2	1	1	1	1	1	1	13
40	Microscope (Binocular)	5	3	3	5	4	3	4	3	3	4	40
41	Centrifuge	3	2	2	3	2	2	2	2	2	2	24
42	Blood Gas Analyzer	1	0	0	1	0	0	0	0	1	0	3
43	Spectrophotometer	1	1	1	1	1	1	1	1	1	1	11
44	Bilirubin Analyzer	1	1	1	1	1	1	1	1	1	1	11
45	Blood Cell Counter	1	1	1	1	1	1	1	1	1	1	11
46	Newborn Cot	5	5	5	5	5	5	5	5	5	5	55
47	ICU Bed	8	3	4	6	4	3	4	4	4	4	46
48	Instrument Cabinet	1	1	1	1	1	1	1	1	1	1	11

## Chapter 3 Implementation Plan



## **Chapter 3 Implementation Plan**

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

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

The project shall be formally implemented in accordance with the grant aid framework of the Japanese government, after the project has been approved by both the governments of Japan and Moldova and an Exchange of Notes (E/N) is concluded.

After conclusion of an E/N by both governments, a Japanese consultant recommended by the Japan International Cooperation Agency (JICA) shall in accordance with the grant aid framework of the Japanese government, conclude a consultant agreement with the Moldovan government. This agreement shall come into effect on verification by the Japanese government, and based on this the consultant shall carry out the work relating the tender and supervision.

Procurement of equipment shall be undertaken by a Japanese supplier chosen by tender who will conclude a contract with the Moldovan government. This agreement shall also come into effect on verification by the Japanese government. The supplier shall undertake the procurement, transportation, and setting up the equipment and provide basic instruction in the operation and maintenance of the equipment. In addition, the supplier shall prepare a list of manufacturers and agents, manuals, and other necessary information needed for maintenance of the equipment.

The responsible ministry of the project is the Ministry of Health. The Ministry of Economy and Reform is in charge of making the Banking Arrangement (B/A) and issuance of an irrevocable Authorization to Pay (A/P), since the ministry is assigned to coordinate the overseas assistance in the Moldovan government. Therefore, the Ministry of Health and the Ministry of Economy and Reform shall sign the consultant agreement and the supplier contract.

#### **3-1-2 Implementation Condition**

Since the inland transportation of the procured equipment shall be carried out in winter, it is afraid that snow and dense fog will hinder the transportation and the engineers' work, and lower the efficiency of implementation. In addition, there are many holidays in January in Moldova. Therefore, the project as a whole should have enough duration, in order that it would be completed within the time limits of the E/N.

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

#### **(1) Japanese government**

- Costs related to the procurement of the equipment
- Costs related to overseas and inland transportation to the project sites
- Costs related to set-up of the equipment
- Costs related to test run, inspection, and basic instruction of operation and maintenance

#### **(2) Moldovan government**

- Provision of information and materials necessary for transportation and set-up
- Preparation of the rooms where the new equipment will be placed
- Securing of a place to unload the procured equipment
- Provision of a place to store the equipment before set-up
- Securing of delivery routes for the procured equipment

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

The consultant shall supervise the equipment procurement and other works of the supplier after the tender. The consultant confirms that the equipment procured by the supplier is consistent with the descriptions laid down in the contract, and pay attention to packing and the duration needed for transportation and custom clearance. The consultant shall instruct and supervise the supplier on these matters. In addition, the consultant shall endeavor to have a constant grasp of the situation at the work regarding delivery, test runs, and inspection at the sites. The consultant also provides proper advice and instruction to the executing agency in Moldovan side and the supplier, and report on the state of progress to the relevant organizations of the governments of both countries. The consultant shall organize a team consisting of a project manager, equipment planners, and a training supervisor to supervise the project.

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

#### **(1) Local Procurement**

None of the medical equipment to be procured in the project is manufactured in Moldova and therefore cannot be procured locally.

#### **(2) Procurement from Third Countries**

Judging from trends in the medical equipment market in Moldova and the results of the survey of manufacturers and agents, some items of the equipment shall be procured from third countries. When an item is not manufactured in Japan or only few Japanese manufacturers

have local agents in and nearby Moldova, products manufactured in third countries can be procured. The items below shall be procured from either Japan or third countries.

Incubator	Infant Radiant Warmer A	Oxygen Hood	Cardiotocograph
Anesthesia Apparatus	Ventilator (Infant/Child)	Ventilator (Neonate)	
Operating Table	Bedside Monitor (Adult)	Bedside Monitor (Neonate/infant)	
X-ray Apparatus (Mobile)	Blood Gas Analyzer	Blood Cell Counter	Spectrophotometer
I CU Bed	Newborn Cot		

As for the procurement of equipment from third countries, the Moldovan government shall submit an application for procurement and obtain the approval of the Japanese government before the tender.

### **(3) Transportation Period**

The equipment shipped from Japan shall be packaged for each site before loading, unloaded at Constanta in Romania, and transported to Kishinev by train. The equipment procured from third countries shall be collected at Hamburg in Germany, packaged for each site, and transported to Kishinev by trucks. They both clear customs in bulk at Kishinev and then all the equipment shall be transported to each site by trucks. It is estimated that the overseas transportation of the equipment from Japan to Constanta takes approximately five weeks, and that the railway transportation to Kishinev requires another week including the procedures at the harbor and railway station. The equipment from third countries shall be delivered to Hamburg around when the equipment shipped from Japan arrives at Constanta. The overland transportation from Hamburg to Kishinev takes approximately one week. The custom clearance and the final transportation to the sites take approximately two weeks.

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

### **(1) Final Confirmation**

The concept of the project shall be confirmed based on the Basic Design. As for the procurement of equipment from third countries mentioned above, the Moldovan government should submit an application for procurement and obtain the approval of the Japanese government at this stage.

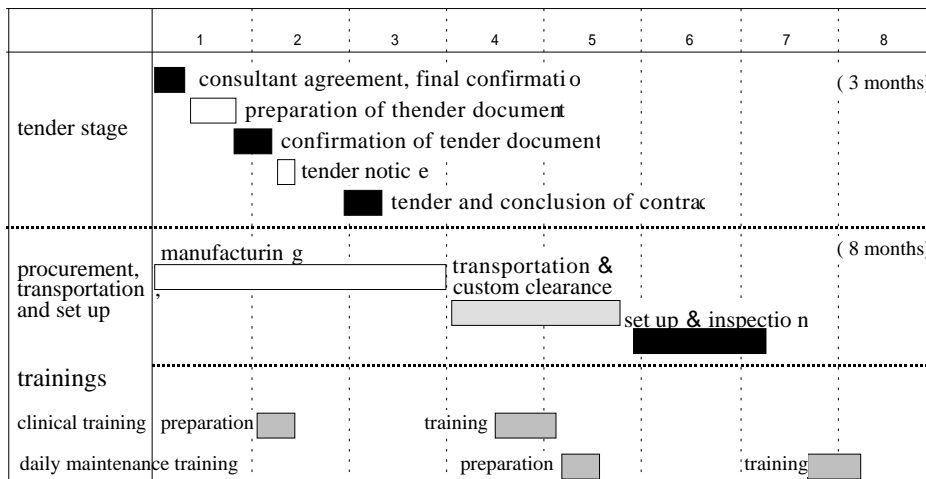
### **(2) Tender**

The consultant shall start the tender related operations after the Japanese government verifies the consultant agreement with Moldovan side. The consultant shall prepare a set of tender

documents and obtain the approval of the Moldovan government for these documents. Then the tender notice, distribution of the tender documents, tendering, evaluation of the tender result, negotiation, and signing of the contract between the Moldovan government and the Japanese supplier shall be conducted. The period of necessary for the tender related operations is approximately three months.

**(3) Procurement of Equipment**

The Japanese supplier shall begin their work after the Japanese government verifies the contract between the Moldovan government and the Japanese supplier. The period of approximately eight months is will be needed for the ordering of the equipment, manufacturing, transporting, setting-up, inspecting, and handing over to the recipient side. The implementation schedule of the project is shown in Figure 3-1.



**Figure 3-1: Implementation Schedule**

**3-1-7 Obligations of Recipient Country**

All the equipment shall be set up in the delivery rooms, obstetric operation rooms, neonatal rooms, and laboratories of the perinatal centers. The equipment does not require any reconstruction or remodeling of those rooms from the present state of the buildings. The preparatory works by the recipient side such as removal of the existing equipment are not necessary, because the equipment does not need a large-scale installation work. There are sufficient indoor and outdoor spaces at the hospitals where the perinatal centers are located for unloading, unpacking, and storing the equipment. The Health Departments of each local government shall be requested the safekeeping of the equipment under their responsibilities

until the supplier start opening the packages and set up the equipment. Concerning the clinical training, the accommodation and food expenses of the participants and local trainers shall be borne by the Moldovan side.

### **3-1-8 Training activities**

The medical equipment in Moldova has hardly been replaced since the country became independent. Especially local facilities have only old equipment and have to conduct laboratory examinations manually by simple method. Generally, the main causes of troubles of the medical equipment are the erroneous operations at the initial stage of using new equipment, the insufficient daily inspection, or the damage caused by human error. In order to prevent these troubles to occur, the Ministry of Health in association with the Perinatal Medical Association plans to implement the short term training for the staffs of the perinatal centers. The contents of training are the clinical training by the staffs of the Mother and Child Republican Hospital, and the daily maintenance training by the engineers of the equipment. They plan to have the clinical training in advance to the equipment arrives, and the daily maintenance training after they start using the new equipment. Both training activities are very significant to produce the better effect of the project, and the relation between the secondary and tertiary levels of perinatal services in Moldova will be strengthened as well. Therefore, the project includes the support for these training activities as one of the Japanese grant aid program.

#### **(1) Objectives of Training**

The objectives are to make the staffs of the perinatal centers understand deeply the clinical significance of the equipment, to enlighten them in practice, and to make a system of proper use and daily maintenance of the equipment.

#### **(2) Benefit**

- The rate of live-discharge of LBW babies improves.
- The Perinatal Centers' staffs obtain the basic knowledge of the equipment.
- The daily inspection at the perinatal centers improves technically.
- The linkage of the Mother and Child Republican Hospital and Perinatal Centers is activated

#### **(3) Outline of Training Concept**

The contents of the training, time and duration, trainers and trainees, materials, and relating equipment are shown below.

### **Clinical Training**

Contents:	General functions, operating method, notes on operation, and clinical significance of the equipment shall be trained through lectures and practice at the Mother and Child Republican Hospital.
Trainers:	Staffs of the Mother and Child Republican Hospital
Trainees:	Doctors, nurses, laboratory technicians and anesthesiologist of the perinatal centers, 10 to 14 members per a center.
Duration:	2 to 3 days for 7 groups of trainees.
Place:	The Mother and Child Republican Hospital in Kishinev
Equipment:	Neonatology: incubator, syringe pump, bedside monitor, ventilator, and ultrasound scanner Anesthesiology: anesthesia apparatus, ventilator Obstetrics: cardiocograph, vacuum extractor, infant radiant warmer, bedside monitor, ultrasound scanner, anesthesia apparatus, and ventilator Clinical examination: blood gas analyzer, blood cell counter, and spectrophotometer

### **Instruction on maintenance**

Contents:	Lecture on the daily care and inspection of equipment, and the replacement method of parts as well as the practical instruction shall be given by using the procured equipment.
Trainers:	Engineers of the agent of the equipment manufacturers
Trainees:	Medical staffs, maintenance staffs, and administrative officers of the perinatal centers, 5 to 15 members per a center
Duration:	2 to 3 days for each 3 groups of trainees
Place:	3 of the perinatal centers; in Kishinev, northern and southern parts
Equipment:	Perinatal care: incubator, infant radiant warmer, phototherapy unit, and ultrasonic nebulizer, syringe pump, bedside monitor, cardiocograph Anesthesia: ventilator, anesthesia apparatus Image diagnosis: Ultrasound scanner, x-ray apparatus Analyzers: Blood gas analyzer, blood cell counter, and spectrophotometer

### **(4) Input by Japanese Side**

One operating manager and six engineers of manufacturers' agents in Ukraine or Romania shall be assigned to implement the training. The scope of work of those staffs is shown below.

#### **Operating Manager (1 person)**

- Collecting the manufacturers' data for the textbook and preparing for translation
- Assisting the Moldovan side to develop the training schedule and curriculum, and to compile the textbook
- Managing the training course
- Supervising the local engineers to be trainers of the daily maintenance training
- Reporting the result to both governments

### **Local Engineers (6 person)**

- Lecturing the basics on daily inspection of the equipment
- Practical training on daily care, maintenance and inspection, replacement of parts  
(The above training will be held at Kishinev, northern part, and southern part)
- Each engineer takes charge of a category below, and performs 2 days training at each site
  1. Neonatal care : incubator, infant radiant warmer, phototherapy unit, syringe pump, ultrasonic nebulizer
  2. Patient monitoring: bedside monitor, cardiocograph
  3. Anesthesia: anesthesia apparatus, ventilator
  4. Image diagnosis: ultrasound scanner, X-ray apparatus (mobile)
  5. Analyzing apparatus A: blood gas analyzer
  6. Analyzing apparatus B: blood cell counter, spectrophotometer

### **(5) Responsibility of Moldovan Side**

The clinical training will be held at the Mother and Child Republican Hospital in Kishinev. Some trainees need accommodation to stay at Kishinev. The accommodation or allowance for food for them shall be borne by the Moldovan side. The necessary cost can be estimated as follows.

Number of trainees of the clinical training:	approximately 130 in total
Number of trainees who needs to stay in Kishinev:	approximately 70 in total
Number of days of stay:	2 days
Accommodation:	15 lei x 70 persons x 2 days = 2,100 lei
Allowance for Food:	30 lei x 130 persons x 2 days = 7,800 lei
Total:	9,900 lei

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

Japanese side	Cost for procuring the equipment and assisting the training activities
Moldovan side	Accommodation and allowance for trainees of the training 9,900 lei

Estimate conditions	
Estimate conditions	December, 2000
Exchange rate	1US\$= ¥108.71
Construction period	12 months
Ordering method	Bundled in a lot
Others	This project shall be implemented in compliance with the system of grant aid cooperation of the government of Japan.

### 3-3 Operation and Maintenance Costs

The operating cost of the main items of equipment is estimated as shown in Tables 3-1 and 3-2, and the annual amount of them is estimated 2,016,300 lei as the total of all the 11 Perinatal Centers.

**Table 3-1: Estimation Bases**

No	equipment	consumables	unit price lei	consumption / year	amount lei	total lei	remarks
15	Incubator	air filter access port cover	367 / pc 45 / pc	4 pcs 4 pcs	1,468 180	1,648	replaced every 3 months replaced every 3 months
16	Phototherapy Unit	fluorescent lamp	8 / pc	5 pcs	40	40	life of lamp 3000 hrs
18	Ultrasound Scanner	ultrasound gel recording paper	50 / lit 5 / m	30 lit 600 m	1,500 3,000	4,500	10ml / patients, 10patients / day 20cm / patients, 10patients / day
19	Ultrasound Scanner (Mobile) A	ultrasound gel recording paper	50 / lit 5 / m	30 lit 600 m	1,500 3,000	4,500	10ml / patients, 10patients / day 20cm / patients, 10patients / day
20	Ultrasound Scanner (Mobile) B	ultrasound gel recording paper	50 / lit 5 / m	30 lit 600 m	1,500 3,000	4,500	10ml / patients, 10patients / day 20cm / patients, 10patients / day
21	X-ray Apparatus (Mobile)	film	5 / sheet	1,200 sheets	6,000	6,000	4 - 5 patient/ day, 100 films / month
24	Cardiotocograph	recording paper gel	1 / m 50 / lit	180 m 3 lit	180 150	330	60 cm / patient, 1patient / day 10 ml / patient, 1patient / day
27	Bedside Monitor (Neonate/Infant)	electrode	7 / pc	900 pcs	6,300	6,300	3 pcs / patient, 1patient / day
28	Bedside Monitor (Adult)	electrode	4 / pc	900 pcs	3,600	3,600	3 pcs / patient, 1patient / day
29	Examination Lamp	lamp	18 / pc	1 pcs	18	18	life of lamp 1000hrs
31	Operating Lamp	lamp	18 / pc	5 pcs	90	90	life of lamp 1000hrs
32	Anesthesia Apparatus	soda lime halothane  nitrous oxide	69 / lit 1 / ml  12 / kg	30 lit 11,520 ml  720 kg	2,070 11,520  8,640	22,230	replaced every 2 year 48ml/hrs, 10patientsx2hrs/month 3 lit/hrs, 10patients x2hrs/month
42	Blood Gas Analyzer	electrode /membrane kit reagent kit accessory kit recording paper	25 / test	3,000 tests	75,000	75,000	10 tests/day
44	Bilirubin analyzer	capillary tube	7 / pc	3,000 pcs	21,000	21,000	10 tests/day
45	Blood Cell Counter	reagent kit	8 / test	12,000 tests	96,000	96,000	40 tests/day

**Table 3-2: Estimation of the maintenance costs of each facility**

Annual cost of each equipment	Kishinev		Edinets		Soroca		Beltsi	
Incubator	1,648	7 11,500	2 3,300	2 3,300	5 8,200			
Phototherapy Unit	40	3 100	1	1	2 100			
Ultrasound Scanner	4,500	1 4,500	1 4,500	1 4,500	1 4,500			
Ultrasound Scanner (Mobile) A	4,500	1 4,500	0	0	1 4,500			
Ultrasound Scanner (Mobile) B	4,500	1 4,500	0	0	1 4,500			
X-ray Apparatus (Mobile)	6,000	1 6,000	0	0	1 6,000			
Cardiotocograph	330	4 1,300	1 300	1 300	2 700			
Bedside Monitor (Neonate/Infant)	6,300	3 18,900	1 6,300	1 6,300	2 12,600			
Bedside Monitor (Adult)	3,600	1 3,600	1 3,600	1 3,600	1 3,600			
Examination Lamp	18	4 100	2	2	4 100			
Operating Lamp	90	7 600	3 300	3 300	5 500			
Anesthesia Apparatus	22,230	1 22,200	1 22,200	1 22,200	1 22,200			
Blood Gas Analyzer	75,000	1 75,000	0	0	1 75,000			
Bilirubin analyzer	21,000	1 21,000	1 21,000	1 21,000	1 21,000			
Blood Cell Counter	96,000	1 96,000	1 96,000	1 96,000	1 96,000			
		269,800	157,500	157,500	259,500			



Annual cost of each equipment		Orhei		Ungheni		Hincheshti		Chadir-Lunga	
Incubator	1,648	3	4,900	3	4,900	3	4,900	2	3,300
Phototherapy Unit	40	1		1		1		1	
Ultrasound Scanner	4,500	1	4,500	1	4,500	1	4,500	1	4,500
Ultrasound Scanner (Mobile) A	4,500	0		0		0		0	
Ultrasound Scanner (Mobile) B	4,500	0		0		0		0	
X-ray Apparatus (Mobile)	6,000	0		0		0		0	
Cardiotocograph	330	0		1	300	0		1	300
Bedside Monitor (Neonate/Infant)	6,300	2	12,600	2	12,600	2	12,600	1	6,300
Bedside Monitor (Adult)	3,600	1	3,600	1	3,600	1	3,600	1	3,600
Examination Lamp	18	2		2		2		2	
Operating Lamp	90	4	400	3	300	3	300	3	300
Anesthesia Apparatus	22,230	0		1	22,200	0		1	22,200
Blood Gas Analyzer	75,000	0		0		0		0	
Bilirubin analyzer	21,000	1	21,000	1	21,000	1	21,000	1	21,000
Blood Cell Counter	96,000	1	96,000	1	96,000	1	96,000	1	96,000
			143,000		165,400		142,900		157,500

Annual cost of each equipment		Kagul		Kausheni		Taraclia	
Incubator	1,648	3	4,900	3	4,900	2	3,300
Phototherapy Unit	40	1		1		1	
Ultrasound Scanner	4,500	1	4,500	1	4,500	1	4,500
Ultrasound Scanner (Mobile) A	4,500	0		0		0	
Ultrasound Scanner (Mobile) B	4,500	0		0		0	
X-ray Apparatus (Mobile)	6,000	0		0		0	
Cardiotocograph	330	1	300	1	300	1	300
Bedside Monitor (Neonate/Infant)	6,300	2	12,600	2	12,600	1	6,300
Bedside Monitor (Adult)	3,600	1	3,600	1	3,600	1	3,600
Examination Lamp	18	2		2		1	
Operating Lamp	90	3	300	3	300	2	200
Anesthesia Apparatus	22,230	1	22,200	1	22,200	1	22,200
Blood Gas Analyzer	75,000	1	75,000	0		0	
Bilirubin analyzer	21,000	1	21,000	1	21,000	1	21,000
Blood Cell Counter	96,000	1	96,000	1	96,000	1	96,000
			240,400		165,400		157,400
Total amount of all Perinatal Centers				2,016,300			

Out of 11 hospitals where the perinatal centers are located, three hospitals call the agent in the area or in Kishinev each time their equipment is in trouble. The other eight hospitals have the regular maintenance or on-call service by the agents on the contracts with them.

The equipment to be procured by the project has one-year guarantee after the handing-over, and it is desirable for all hospitals to have the maintenance contract with the agents before the expiration of said one-year guarantee. It is considered possible that the hospitals to receive the maintenance service by an agent for each category of the equipment, in the same manners as they have done so far. The contract cost shall be estimated at 5,000 lei for ultrasound scanners,

5,000 lei for bedside monitors, 10,000 lei for the equipment related to infant care, 10,000 lei for laboratory equipment including blood gas analyzer, 5,000 lei for laboratory equipment excluding blood gas analyzer, and 5,000 lei for anesthesia equipment. These are the costs to be paid from the hospital budget. The actual expenses of the hospitals in 1999 shows that each hospital paid 20,000 ~ 30,000 lei in a year and it is assumed possible for them to pay these amounts. Table 3-3 shows the comparison of their budget in 2000, and the cost increments for the equipment to be procured by the project. The costs for using the equipment (d in Table) shall be paid from year 2002 when the project is completed. This increments is estimated an average of 5.8% of the budget in 2000. The contract cost for maintenance after one-year guarantee (e in the Table) is around 1% of it.

**Table 3-3: Cost Increments by the Project against Hospital Budget in FY2000**

	a. budget*	b. medical fee	total c=a+b	consumables		maintenance	
				d.amount	d/c	e. amount	e/c
Kishinev Municipal Hospital No.1	2,329,000	804,000	3,133,000	269,000	8.6%	35,000	1.1%
Edinets County Hospital	2,621,000	72,000	2,693,000	157,000	5.8%	30,000	1.1%
Soroca County Hospital	3,261,000	516,000	3,777,000	157,000	4.2%	30,000	0.8%
Beltsi County Hospital	8,544,000	2,040,000	10,584,000	259,000	2.4%	35,000	0.3%
Orhei County Hospital	4,035,000	804,000	4,839,000	143,000	3.0%	25,000	0.5%
Ungheni County Hospital	2,352,000	936,000	3,288,000	165,000	5.0%	30,000	0.9%
Hincheshti County Hospital	3,130,000	1,260,000	4,390,000	142,000	3.2%	25,000	0.6%
Chadir-Lunga Hospital	855,000	1,032,000	1,887,000	157,000	8.3%	30,000	1.6%
Kagul County Hospital	1,980,000	408,000	2,388,000	240,000	10.1%	35,000	1.5%
Kausheni County Hospital	2,808,000	576,000	3,384,000	165,000	4.9%	30,000	0.9%
Taraclia County Hospital	1,581,000	264,000	1,845,000	157,000	8.5%	30,000	1.6%
				average	5.8%	average	1.0%

\* budget excluding personnel expenses

The cost increment for the equipment operation is equivalent to 10% of the budget FY2000 at Kagul County Hospital. This ratio is bigger than other hospitals. It is caused by the equipment plan for the perinatal center in Kagul County Hospital, including a blood gas analyzer. The blood gas analyzer for Kagul is strongly requested by the Moldovan side, because they think it necessary to secure the early diagnosis of serious patients in the southern area of the country at Kagul, main city in that area. It was confirmed that the Department of Health of Kagul County has the intention to take the budgetary measures by considering the above mentioned maintenance cost.

It is expected that the efficiency of health budget of each local government improves as the health reform proceeds as it is planned, and that amount of medical fee paid by the patients increases for several years as the new system works well. It is prospected that the increments of operation and maintenance cost can be borne by the recipient side.

## Chapter 4 Project Evaluation and Recommendations

## **Chapter 4 Project Evaluation and Recommendations**

### **4-1 Project Effects**

The project will provide the essential equipment to the perinatal centers located at the main hospitals of the 11 administrative entities, in order to improve the secondary services of the perinatal care. The perinatal centers are positioned as the lower referral facilities of the Mother and Child Republican Hospital, and have the roles to provide the good services for safe delivery, diagnosis, treatment, and maternal and child care. The number of deliveries at the perinatal centers is expected to increase as the health reform proceeds, and the perinatal centers shall play roles that are more important. The project directly benefits the mothers and children in every county where each perinatal center is located. The effect of the project can be expected as follows, and it shall contribute the improvement of the MCH of Moldova.

#### **Improvement of the service system of obstetrics and neonatology of the secondary level**

The national guidelines of perinatal care show that deliveries and Caesarean sections should be covered at the secondary level and only critical cases should be transferred to the tertiary level. The improvement of the service activities of the perinatal centers, the secondary level of obstetrics and neonatology, promotes the preferable state of perinatal care according to the national guidelines. It can be expected that more than 70% of the total deliveries will take place at the perinatal centers in three years according to the direction of the national guidelines.

#### **Improvement of service quality provided for pregnant women, nursing mothers and neonates**

The safe delivery care and reliable medical services will be provided to the pregnant women, nursing mothers, and neonates all over the country with the improvement of the perinatal centers within 50km distance from the most remote villages in any county.

#### **Improvement of live-discharge of LBW babies**

The live-discharge rate of LBW and pathological neonates will increase with improving the equipment and providing the clinical training, especially live-discharge of LBW babies at the perinatal centers is expected to improve as follows.

weight at birth	live-discharge rate at present(%)	live-discharge rate 3 years later(%)
	whole Moldova, 1998	Perinatal Centers
- 1000g	13.5	30
1000g - 1499g	65.5	80
1500g - 1999g	89.1	90
2000g - 2499g	96.9	97

### **Improvement of the daily maintenance technique**

Daily maintenance, regular inspection, and replacement of parts of the equipment will be done smoothly and safely as the result of the daily maintenance training. When the staffs obtain the better knowledge and technique, not only the new equipment but also the other equipment of the hospitals can be maintained better. It will lead effective use of the medical equipment and efficient maintenance cost for long term.

### **Strengthening of the linkage between the tertiary and the secondary levels**

The communication between the Mother and Child Republican Hospital and the perinatal centers will be more activated through the clinical training course of the project. It promotes the improvement of referral system of the perinatal medical service in Moldova.

### **Reduction of the infant mortality rates (IMR)**

Although this index is affected by outbreak of an infectious disease or worsened state of undernourishment, it is expected that the IMR 22.6 in 1996 improves to 18 or below as the project and other perinatal programs are implemented.

## **4-2 Recommendations**

The project is expected to contribute to the improvement of health and medical services for women and children of Moldova, and the various effects can be expected. However, it is recommended that the government of Moldova make more effort as follows for the health development in future.

### **Improvement of the medical insurance system**

Moldova is proceeding comprehensive measures for securing and fulfilling the necessary national medical services while keeping the payment of medical expenses within an appropriate range from the standpoints of both the demand and supply. After the administrative reform, the budgetary measures were completely transferred to local

governments. Thus, the budget on the operation and management of medical facilities to be covered by the project is paid from the financial sources of each local government. The financial sources of the medical facilities covered by the project are paid from the distributed budget and the income collected from the medical system that charges some part of medical expenses to the patients, which was introduced in 1999. In the coming several years, the amount to be collected from the patients is considered to increase. However as the long-term prospect, establishment of a stable system that can supplement the weak foundation of medical financial sources is considered necessary. For this reason, establishment of a legal regulation on the medical insurance system and the promotion of the foundation for insurance basis are desired.

### **Improvement of emergency medical system**

During the twenty-four hours after the delivery, hemorrhage shock such as atonic hemorrhage occurs easily. For this reason, the facilities providing the obstetric services usually provide emergency functions. A system in which the blood for transfusion can be secured, the emergency situation can be promptly handled such as lifesaving measures, and the patients can be transferred to special medical facility depending on the condition of the patients must be made promptly. However, in Moldova at present, the emergency function to transfer the patients has not been improved yet, and the above mentioned situations are difficult to handle. Thus, the establishment of an emergency medical system is strongly desired throughout the country. In the future, improvement of patient transferal system and emergency medical information system that can handle the acceptance of patients from the perinatal centers are expected to be systematized for each district.

### **Fulfillment of maternal and child health service**

The living standard of Moldova has been lowered because of the stagnant economy after the independence and the per capita amount of nutrition intake has dropped. The problem of Moldova which is now in the transition period to the market economy, is that while the educational achievement is kept almost at the same level as that of the advanced countries, the income difference between cities and agricultural villages is large. Especially in the farming villages where the cash income is low, residents must self-support the foods that are few in numbers. The main meal consists of carbohydrates such as wheat or corn and lacks in protein, minerals, and vitamins. Especially the fact that the people in their adolescence and prime age who have important roles in pregnancy, delivery, and nurturing have unbalanced meals and do not take essential nutrients affects the generation and bringing up of the next generation. From

this fact, provision of nutritious instruction in the maternal and child health field not only transmits the knowledge on nutrition intake but also helps to improve the maternal health by motivating women to take proper nutrition. In order to change the living habits, reform of the entire society at the community level is important. As the future measures, it is desired to develop the agricultural extension introducing new species for the crops for the self-support foods as well as to provide the instruction that promotes the balanced meals and food ingredients as the local health activities in the agricultural villages.

[ Appendices ]

1. Member list of Study Team
2. Study Schedule
3. List of Party concerned in Recipient Country
4. Minutes of Discussions
5. References



## 1. Member List of the Survey Team

### (1) Basic Design Study

Iwao TAKAKURA, M.D.	Team Leader Professor Emeritus, Tokai University
Chiharu MORITA	Project Coordinator Second Project Management Div., Grand Aid Management Dept, Japan International Cooperation Agency
Chiharu ABE	Project Manager International Techno Center Co., Ltd.
Naoki MIMURO	Equipment Planner I International Techno Center Co., Ltd.
Nahoko KITAMURA	Equipment Planner II International Techno Center Co., Ltd.
Hiroshi TASEI	Facilities and Utilities Planner International Techno Center Co., Ltd.
Shuichi MURASHITA	Cost and Procurement Planner International Techno Center Co., Ltd.
Hiromi WATANABE	Ineterpreter International Techno Center Co., Ltd.

### (2) Explanation of Draft Final Report

Iwao TAKAKURA, M.D.	Team Leader Professor Emeritus, Tokai University
Masaru KOZONO	Project Coordinator Second Project Management Div., Grand Aid Management Dept, Japan International Cooperation Agency
Kazuhiro ABE	Project Manager International Techno Center Co., Ltd.
Naoki MIMURO	Equipment Planner I International Techno Center Co., Ltd.
Nahoko KITAMURA	Equipment Planner II International Techno Center Co., Ltd.
Shuichi MURASHITA	Cost and Procurement Planner International Techno Center Co., Ltd.
Hiromi WATANABE	Ineterpreter International Techno Center Co., Ltd.

## 2. Survey Schedule

### (1) Basic Design Study

	Date		Official	Project Manager	Equipment Planner 1	Equipment Planner 2	Facility Planner	Procurement/Cost	Interpreter	
1	30-Aug	WED.		Leaving Tokyo/Arriving at Frankfurt						
2	31-Aug	THU		Leaving Frankfurt/Arriving at Kishinev			Leaving Frankfurt/Arriving at Kiev			
3	1-Sep	FRI		Courtney call-Mother and Child Republican Hospital(M.C.H)			Courtney call-Embassy of Japan in Ukraine			
4	2-Sep	SAT		Team Meeting						
5	3-Sep	SUN		Team Meeting						
6	4-Sep	MON		Survey at M.C.H						
				Meeting with WHO,UNICEF						
7	5-Sep	TUE		Meeting with Ministry of Health (MOH)						
8	6-Sep	WED		Meeting and Survey at Kishinev No1.Hp.						
9	7-Sep	THU		Meeting with Hincheshthi Hp.	Survey at Kishinev No.1 Hp.					
10	8-Sep	FRI		Meeting with Orhei and Ungheni Hp.	Survey at Hincheshthi Hp.					
11	9-Sep	SAT	Leaving Tokyo /Arriving at Frankfurt	Meeting with Ministry of Health (MOH)	Survey at Hincheshthi Hp.					
12	10-Sep	SUN	Leaving Frankfurt /Arriving at Kishinev	Team Meeting						
13	11-Sep	MON	Meeting with Ministry of Economy and Reform(MOER)	Survey at Orhei Hp.						
			Meeting with MOH							
14	12-Sep	TUE	Visiting at M.C.H and Kishinev No.1 Hp.			Survey at Orhei Hp.				
15	13-Sep	WED	Visiting at Ungheni Hp.			Survey at Ungheni Hp.				
16	14-Sep	THU	Meeting about Minutes with MOH and MOER							
17	15-Sep	FRI	Sign of Minutes							
18	16-Sep	SAT	Team Meeting							
19	17-Sep	SUN	Move to Beltsi from Kishinev							
20	18-Sep	MON	Leaving Kishinev /Arriving at Kiev	Meeting and Survey at Edinets Hp./Soroca Hp.						
21	19-Sep	TUE	Leaving Kiev /Arriving at Frankfurt	Meeting and Survey at Edinets Hp./Soroca Hp.						
22	20-Sep	WED	Leaving Frankfurt	Meeting and Survey at Beltsi Hp.						
23	21-Sep	THU	Arriving Tokyo	Meeting and Survey at Beltsi Hp. /Move to Kishinev from Beltsi						
24	22-Sep	FRI		Meeting and Survey at Kausheni Hp.						
25	23-Sep	SAT		Team Meeting ,Review of Data						
26	24-Sep	SUN		Team Meeting ,Review of Data						
27	25-Sep	MON		Move to Kagul from Kishinev/Meeting and Survey at Kagul Hp.						
28	26-Sep	TUE		Meeting and Survey at Chadir-Lunga Hp.						
29	27-Sep	WED		Meeting and Survey at Taraclia Hp./Move to Kishinev						
30	28-Sep	THU		Review of Data						
31	29-Sep	FRI		Reporting to MOH and MOER/Meeting with UNICEF						
32	30-Sep	SAT		Meeting with MOH						
33	1-Oct	SUN		Review of Data						
34	2-Oct	MON		Leaving Kishinev/Arriving at kiev . Reporting to Embassy of Japan in Ukraine						
35	3-Oct	TUE		Leaving Kiev/Arriving at Frankfurt						
36	4-Oct	WED		Leaving Frankfurt						
37	5-Oct	THU		Arriving Tokyo						

## (2) Explanation of Draft Final Report

	Date		Official	Project Manager	Equipment Planner 1	Equipment Planner 2	Procurement/Cost	Interpreter	
1	25-Nov	SAT		Leaving Tokyo/Arriving at Frankfurt				With Prpject Manager	
2	26-Nov	SUN		Leaving Frankfurt/Arriving at Kishinev					
3	27-Nov	MON		Meeting with Ministry of Health (MOH) /Ministry of Economy and Reform (MOER) Meeting with UNICEF					
4	28-Nov	TUE		Courtey call-Mother and Child Republican Hospital (M.C.H)					
5	29-Nov	WED		Meeting with MOH					
6	30-Nov	THU		Meeting with MOH					Survey Local agentin Kishinev
7	1-Dec	FRI		Meeting with MOH					
8	2-Dec	SAT		Meeting with MOER					
9	3-Dec	SUN	Leaving Tokyo / Arriving at Vienna	Team Meeting , Review of Data					
10	4-Dec	MON	Leaving Vienna /Arriving at Kishinev	Meeting with MOH					
11	5-Dec	TUE	Meeting about Minutes with MOH and MOER						
12	6-Dec	WED	Sign of Minutes						
13	7-Dec	THU	Visiting at Hincheshiti Hp. Visiting at M.C.H						
14	8-Dec	FRI	Visiting at Kishinev No.1 Hp.						
15	9-Dec	SAT	Team Meeting						
16	10-Dec	SUN	Review of Data	Leaving Kishinev /Arriving at Frankfurt Leaving Frankfurt					
17	11-Dec	MON	Leaving Kishinev	Arriving Tokyo					

### **3. List of Party Concerned in the Recipient Country**

#### Ministry of Economy and Reform

Andrei CUCU	Dupty Prime Minister
Gheorghe GABERI	Deputy Minister
Vareriu BINZARU	Deputy Head of Division Dept. for Foreign Economy Relations

#### Ministry of Health

Vasile PARASCA	Minister
Maria TSERUSH	Director Dept. for Mother and Child care

#### Mother and Child Republican Hospital

Petru STRATULAT	Prime Vice Director
Mihail STERATILA	Vice Director

#### WHO

Andei Moshniaga, M.D.	WHO Liaison Officer in Moldova
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#### UNICEF

Giovanna BARBERIS	Assistant Representative
Octavian BIVOL	Assistant Project Officer, Health

Kishinev Municipal No.1 Hospital

Gheorghe BEREGOI

Director

Victor SOLVIN

Director,Division of Health  
Kishinev Municipal Office

Edinets County Hospital

Victor RADICO

Director

Vladimir MARAGAT

Director,Division of Health  
Edinets County Office

Soroca County Hospital

Ecaterina TROFIMOV

Director

Victor OLARU

Director,Division of Health  
Soroca County Office

Beltsi County Hospital

Grigore CHETORI

Director

Serghei OSTAPOV

Vice Director,Division of Health  
Beltsi County Office

Orhei County Hospital

Constantin BOTNARU

Director

Vasile PASCAL

Director,Division of Health  
Orhei County Office

Ungheni County Hospital

Victor UNCUTA

Director

Iurie CRASIUC

Director,Division of Health  
Ungheni County Office

Hincheshi County Hospital

Shtephan VACERIYA

Director

Gheorghe TURCANU

Director,Division of Health  
Lapshuna County Office

Chadir--Lunga Hospital

Valentina CONSTANTINOVA

Director

Vasile SHEVCIUC

Minister of Health  
UTA Gagauz Office

Kagul County Hospital

Gheorghe ANTOHI

Director

Boris SPANU

Vice Director,Division of Health  
Kagul County Office

Kausheni County Hospital

Ilie CALALB

Director

Elena ROSCA

Director,Division of Health  
Tighina County Office

Taraclia County Hospital

Leonid PERONCOV

Director,Hospital  
Director,Division of Health  
Taraclia County Office

#### 4. Minutes of Discussion

(1) Basic Design Study

MINUTES OF DISCUSSIONS  
ON THE BASIC DESIGN STUDY ON THE PROJECT  
FOR  
IMPROVEMENT OF MATERNAL AND CHILD HEALTH CARE SYSTEM  
IN THE SECOND LEVEL HOSPITALS  
IN THE REPUBLIC OF MOLDOVA

In response to a request from the Government of the Republic of Moldova ( hereinafter referred to as "the Moldova" ), the Government of Japan decided to conduct a Basic Design Study on the project for Improvement of Maternal and Child Health Care System in the Second Level Hospitals ( hereinafter referred to as "the Project" ) and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA") .

JICA sent to the Moldova the Basic Design Study Team (hereinafter referred to as "the Team" ), which is headed by Dr. Iwao Takakura , Professor Emeritus ,Tokai University, and is scheduled to stay in the country from August 31 to October 2,2000.

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

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

Chisinau, September 15, 2000



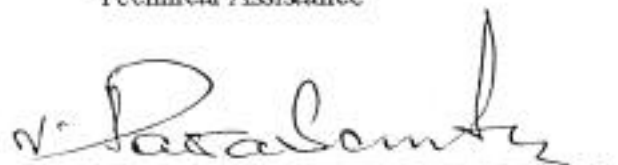
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Iwao TAKAKURA  
Leader  
Basic Design Study Team  
Japan International Cooperation Agency



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Gheorghe GABERI  
Deputy Minister,  
Ministry of Economy and Reforms,  
National Coordinator of  
Technical Assistance



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Vasile PARASCA  
Minister,  
Ministry of Health

## ATTACHMENT

### 1. Components of the Draft Report

The Government of Moldova agreed and accepted in principle the components of the draft report explained by the Team.

### 2. Items requested by the Government of Moldova

After explanation on the draft report and discussion with the Team, the items described in Annex were finally requested by the Moldavian side. JICA will assess the appropriateness of the final request and will recommend to the Government of Japan for approval.

### 3. Japan's Grant Aid scheme

The Moldova side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Moldova as explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both parties on September 15, 2000.

### 4. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Moldova around April 2001.

### 5. Other relevant issues

5.1 Both parties confirmed the draft of the training plan of proper operation and maintenance for personnel.

5.2 The Moldavian side will organize an executive committee to decide the training plan. The executive committee shall be composed of the Ministry of Health and the Perinatal Medical Association.

5.3 The Moldavian side requested the following technical assistance as one of components of the Japan's Grant Aid.

a) Operation and Maintenance on the equipment related to Perinatal Care, Laboratory and Anesthesiology.

b) Activities of the executive committee.

c) Preparation of a text for clinical application training in local language.

5.4 Both sides agreed the draft-detailed specification of the equipment. This draft specification is confidential and should not be duplicated or released to any other parties.

5.5 Due to the heavy raining in the northern part of Moldova this November, the environment of power supply has come to be unstable in all area. Therefore the Moldavian side requested to equip voltage stabilizer with the equipment which will need in actual usage.





## ANNEX-1

### The Requested Hospitals

No.	Hospital	
1	Kishinev Municipal Hospital No.1	(Spitalul Municipal Clinic NI, Chishinev)
2	Edinets Regional Hospital	(Spitalul Judetion, Edinet)
3	Soroca Regional Hospital	(Spitalul Judetion, Soroca)
4	Beltsi Regional Hospital	(Spitalul Judetion, Balti)
5	Orhei Regional Hospital	(Spitalul Judetion, Orhei)
6	Ungheni Regional Hospital	(Spitalul Judetion, Ungheni)
7	Hincheshti Regional Hospital	(Spitalul Judetion, Hincesti)
8	Chadir-Lunga Regional Hospital	(Spitalul Judetion, Cadir-Lunga)
9	Kagul Regional Hospital	(Spitalul Judetion, Cahul)
10	Kausheni Regional Hospital	(Spitalul Judetion, Causeni)
11	Taraclia Regional Hospital	(Spitalul Judetion, Taraclia)

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## ANNEX-2

### The Requested Equipment

No.	Equipment	No.	Equipment
1	Sphygmomanometer Set (Child)	26	Bedside Monitor (Neonate/Infant)
2	Sphygmomanometer Set (Adult)	27	Bedside Monitor (Adult/Child)
3	Stethoscope (Neonate)	28	Pulse Oximeter
4	Weighing Scale	29	Examination Light
5	Blood Pressure Monitor	30	Operating Table
6	Oxygen Inhalation Set	31	Operation Lamp
7	Oxygen Hood	32	Anesthesia Apparatus
8	Oxygen Monitor	33	Vaginal Speculum Set
9	Ultrasonic Nebulizer	34	Obstetric Laparotomy Instrument Set
10	Aspirator	35	Embryotomy/ Craniotomy Set
11	Resuscitation Set (Neonate)	36	Ventilator (Infant)
12	Laryngoscope Set (Infant)	37	Ventilator (Child/Adult)
13	Infant Radiant Warmer	38	Hot Air Sterilizer
14	Newborn Reanimation Table	39	Refrigerator
15	Incubator	40	Microscope (Binocular)
16	Phototherapy Unit	41	Centrifuge
17	Vacuum Extractor	42	Blood Gas Analyzer
18	Ultrasound Scanner	43	Electrolyte Analyzer
19	Ultrasound Scanner (Mobile)	44	Spectrophotometer
20	X-ray apparatus (Mobile)	45	Bilirubin Analyzer
21	Delivery Table	46	Blood Cell Counter
22	Suction Unit	47	Newborn Cot
23	Cardiotocograph	48	ICU Bed
24	Forceps Delivery Set	49	Instrument Cabinet
25	Syringe Pump		

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V. Parashankar

## Japan's Grant Aid Scheme

### 1. Grant Aid Procedures

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

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

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

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

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

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

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

### 2. Basic Design Study

#### 1) Contents of the Study

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

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

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V. Parasaram



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

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

## 2) Selection of Consultants

For the smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry (ies) out the Basic Design Study and write(s) a report, based upon terms of reference set by JICA. The consulting firm(s) used for the Study which is (are) recommended by JICA to the recipient country also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

## 3. Japan's Grant Aid Scheme

### 1) What is Grant Aid ?

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

### 2) Exchange of Notes (E/N)

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

3) "The period of the Grant Aid" means the one fiscal year in which the Cabinet approves the Project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed. However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

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

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

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

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✓ Parashant 

#### 5) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

#### 6) Undertakings required of the Government of recipient country

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

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

#### 7) "Proper Use"

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

#### 8) "Re-export"

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


#### 9) Banking Arrangements (B/A)

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

## Major Undertakings to be taken by Each Government

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		●
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		●

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v. Perarabandi 

(2) Explanation of Draft Final Report

MINUTES OF DISCUSSIONS  
ON BASIC DESIGN STUDY ON THE PROJECT  
FOR IMPROVEMENT OF MATERNAL AND CHILD HEALTH CARE SYSTEM  
IN THE SECOND LEVEL HOSPITALS  
IN THE REPUBLIC OF MOLDOVA  
(EXPLANATION ON DRAFT REPORT)

In September 2000, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Improvement of Maternal and Child Health Care System in the Second Level Hospitals (hereinafter referred to as "the Project") to the Republic of Moldova (hereinafter referred to as "Moldova"), and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult the Moldova on the components of the draft report, JICA sent to Moldova the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Dr. Iwao TAKAKURA, Professor Emeritus, Tokai University, from November 26 to December 10, 2000.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Chisinau, December 6, 2000



Iwao TAKAKURA  
Leader  
Basic Design Study Team  
JICA



Andrei CUCU  
Deputy Prime Minister,  
Minister of Economy and Reforms



Vasile PARASCA  
Minister, Ministry of Health

## ATTACHMENT

### 1. Components of the Draft Report

The Government of Moldova agreed and accepted in principle the components of the draft report explained by the Team.

### 2. Items requested by the Government of Moldova

After explanation on the draft report and discussion with the Team, the items described in Annex were finally requested by the Moldavian side. JICA will assess the appropriateness of the final request and will recommend to the Government of Japan for approval.

### 3. Japan's Grant Aid scheme

The Moldova side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Moldova as explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both parties on September 15, 2000.

### 4. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Moldova around April 2001.

### 5. Other relevant issues

5.1 Both parties confirmed the draft of the training plan of proper operation and maintenance for personnel.

5.2 The Moldavian side will organize an executive committee to decide the training plan. The executive committee shall be composed of the Ministry of Health and the Perinatal Medical Association.

5.3 The Moldavian side requested the following technical assistance as one of components of the Japan's Grant Aid.

a) Operation and Maintenance on the equipment related to Perinatal Care, Laboratory and Anesthesiology.

b) Activities of the executive committee.

c) Preparation of a text for clinical application training in local language.

5.4 Both sides agreed the draft-detailed specification of the equipment. This draft specification is confidential and should not be duplicated or released to any other parties.

5.5 Due to the heavy raining in the northern part of Moldova this November, the environment of power supply has come to be unstable in all area. Therefore the Moldavian side requested to equip voltage stabilizer with the equipment which will need in actual usage.





## ANNEX Equipment List

- ① Kishinev Municipal Hospital No. 1    ② Edineț Regional Hospital    ③ Soroca Regional Hospital  
 ④ Bălți Regional Hospital    ⑤ Orhei Regional Hospital    ⑥ Ungheni Regional Hospital  
 ⑦ Hîncești Regional Hospital    ⑧ Chadir-Lunga Regional Hospital    ⑨ Kagul Regional Hospital  
 ⑩ Kausheni Regional Hospital    ⑪ Taraclia Regional Hospital

No.	Equipment	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	Total
1	Sphygmomanometer Set (Infant/Child)	1	1	1	1	1	1	1	1	1	1	1	11
2	Sphygmomanometer Set (Adult)	2	1	1	2	1	1	1	1	1	1	1	13
3	Stethoscope (Neonate)	7	3	3	5	4	3	3	3	3	3	2	39
4	Weighing Scale (Neonate)	2	2	2	2	2	2	2	2	2	2	2	22
5	Oxygen Inhalation Set (Neonate)	1	1	1	1	1	1	1	1	1	1	1	11
6	Oxygen Inhalation Set (Neonate/Adult)	1	1	1	1	1	1	1	1	1	1	1	11
7	Oxygen Hood	2	1	1	2	1	1	1	1	1	1	1	13
8	Ultrasonic Nebulizer	2	1	1	2	1	1	1	1	1	1	1	13
9	Aspirator	4	2	2	3	2	2	2	2	2	2	2	25
10	Resuscitation Set (Neonate)	3	2	2	2	2	2	2	2	2	2	2	23
11	Laryngoscope Set (Infant)	3	2	2	2	2	2	2	2	2	2	2	23
12	Infant Radiant Warmer A	7	3	3	5	4	3	3	3	3	3	2	39
13	Infant Radiant Warmer B	1	1	1	1	1	1	1	1	1	1	1	11
14	Newborn Resuscitation Table	7	3	3	5	4	3	3	3	3	3	2	39
15	Incubator	7	2	2	5	3	3	3	2	3	3	2	35
16	Phototherapy Unit	3	1	1	2	1	1	1	1	1	1	1	14
17	Vacuum Extractor	2	1	1	2	1	1	1	1	1	1	1	13
18	Ultrasound Scanner	1	1	1	1	1	1	1	1	1	1	1	11
19	Ultrasound Scanner (Mobile) A	1	0	0	1	0	0	0	0	0	0	0	2
20	Ultrasound Scanner (Mobile) B	1	0	0	1	0	0	0	0	0	0	0	2
21	X-ray apparatus (Mobile)	1	0	0	1	0	0	0	0	0	0	0	2
22	Delivery Table	6	2	3	4	3	2	3	3	3	3	1	33
23	Suction Unit	1	1	1	1	1	1	1	1	1	1	1	11
24	Cashtocograph	4	1	1	2	0	1	0	1	1	1	1	13
25	Forceps Delivery Set	2	1	1	2	1	1	1	1	1	1	1	13
26	Syringe Pump	7	2	2	5	3	3	3	2	3	3	2	35
27	Bedside Monitor (Neonate/Infant)	3	1	1	2	2	2	2	1	2	2	1	19
28	Bedside Monitor (Adult)	1	1	1	1	1	1	1	1	1	1	1	11
29	Examination Light	4	2	2	4	2	2	2	2	2	2	1	25
30	Operating Table	1	1	1	1	1	1	1	1	1	1	1	11
31	Operation Lamp	7	3	3	5	4	3	3	3	3	3	2	39
32	Anesthesia Apparatus	1	1	1	1	0	1	0	1	1	1	1	9
33	Vaginal Speculum Set	20	6	6	16	10	8	8	6	8	8	4	100
34	Obstetric Laparotomy Instrument Set	2	2	2	2	2	2	2	2	2	2	2	22
35	Embryotomy/ Craniotomy Set	1	1	1	1	1	1	1	1	1	1	1	11
36	Ventilator (Neonate)	2	1	1	1	0	1	0	1	1	1	1	10
37	Ventilator (Infant/Child)	1	0	0	1	1	0	0	0	1	0	0	4
38	Hot Air Sterilizer	3	3	3	3	3	3	3	3	3	3	3	33
39	Refrigerator	2	1	1	2	1	1	1	1	1	1	1	13
40	Microscope (Binocular)	5	3	3	5	4	3	4	3	3	4	3	40
41	Centrifuge	3	2	2	3	2	2	2	2	2	2	2	24
42	Blood Gas Analyzer	1	0	0	1	0	0	0	0	1	0	0	3
43	Spectrophotometer	1	1	1	1	1	1	1	1	1	1	1	11
44	Bilirubin Analyzer	1	1	1	1	1	1	1	1	1	1	1	11
45	Blood Cell Counter	1	1	1	1	1	1	1	1	1	1	1	11
46	Newborn Cot	5	5	5	5	5	5	5	5	5	5	5	55
47	ICU Bed	8	3	4	6	4	3	4	4	4	4	2	46
48	Instrument Cabinet	1	1	1	1	1	1	1	1	1	1	1	11

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Dr. Prodan

## 5. References

Title	Source	Year
1 Questionarie and Answer	Ministry of Health of Moldova All the Perinatal Centers in Moldova	2000
2 Strategy for Reform and Developpent of the Health Care System in the Republic of Moldova Under New Economic Condition for Years 1997 - 2003	Government of the Republic of Moldova	1997
3 National Perinatology Guide B	Ministry of Health of Moldova	2000
4 Annual Report	Ministry of Health of Moldova	2000
5 Statistical Pocket Book	Department for Statistical and Sociological Researchs of the Republic of Moldova	1999
6 Republica Moldova	Department for Statistical and Sociological Researchs of the Republic of Moldova	2000
7 Strengthening of Perinatal Health Care	Ministry of Health of Moldova UNICEF	1997
8 Hospital Restructuring in Moldova Mission Report	WHO	1999
9 Human Development Report for Central and Eastern Europe and the CIS,1999	UNDP	1999