

**KYRGYZ REPUBLIC
MINISTRY OF HEALTH**

**PREPARATORY SURVEY REPORT
FOR
THE PROJECT FOR
THE IMPROVEMENT OF MEDICAL
EQUIPMENT IN TERTIARY HOSPITALS
OF
BISHKEK CITY**

JUNE 2024

**JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)**

INTEM CONSULTING, INC.

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PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey for the Project for the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City and entrust the survey to INTEM Consulting, Inc.

The survey team held a series of discussions with the officials concerned of the Government of the Kyrgyz Republic from October 2023 to June 2024 and conducted field investigations. As a result of further studies in Japan, 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.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Kyrgyz Republic for their close cooperation extended to the survey team.

June 2024

Haruko Kamei
Director General
Human Development Department
Japan International Cooperation Agency

SUMMARY

SUMMARY

1 Overview of the Country

The Kyrgyz Republic is a landlocked country in Central Asia, bordering China, Kazakhstan, Uzbekistan and Tajikistan with an area of 200,000 km², which is approximately half that of Japan. The population is approximately 7 million, of which 78% are the Kyrgyz, 14% Uzbek, 4% Russian, 1% Dungan, 0.9% Tajik, 0.5% Uyghur and 0.4% Kazakh¹ in ethnic origin. Mountains above 3,000 m in height occupy 40% of the country's territory, and most of the population lives in the northern foothills of the Trans-Ili Alatau, which cross the Chui Oblast from east to west, and in the Fergana Valley where the city of Osh is located.

In the Kyrgyz Republic, approximately 80% of deaths are due to Non-Communicable Diseases (hereinafter referred to as “NCDs”), and the financial burden of treating NCDs and the socio-economic impact of the high number of deaths among young people have become an issue. In response to this issue, the Government of the Kyrgyz Republic has been taking actions against NCDs as a priority area of its health policy and is promoting efforts to improve the health and medical service for early detection and treatment of NCDs.

2 Background of the Project

Although the Kyrgyz Republic experienced a decline in the quality and quantity of health and medical services after independence in 1991 due to political instability and economic recession, the country achieved Millennium Development Goal 4 (reduction of infant mortality) through the implementation of health sector reforms and made progress in terms of infectious disease control such as polio and malaria eradication. On the other hand, the high mortality rate (about 80%) of NCDs has been a longstanding challenge with nearly 30% of health sector expenditures spent on the treatment of the four major NCDs (cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases)^{2,3}. Cardiovascular diseases account for more than half of all deaths, and cancer, the second most common cause of death, has increased from 8.8% in 2010 to 12.2% in 2022⁴. The population growth and the aging are expected to continue in the Kyrgyz Republic due to the increase in the life expectancy and decrease in the birth rate. However, preventive activities against risk factors of NCDs such as smoking, unhealthy diet and lack of exercise have not been sufficiently successful, and patients' compliance with treatment plans have been poor. Hence, the financial burden associated with increased prevalence of NCDs has been a concern, and there is an urgent need to strengthen the diagnosis and treatment system for NCDs. In the Kyrgyz Republic, the service delivery system of medical facilities has not yet reached a sufficient level to meet the required diagnosis and treatment of NCDs in terms of either quality or

¹ Statistical Yearbook of the Kyrgyz Republic (National Statistical Committee of the Kyrgyz Republic)

² National Statistics Committee of the Kyrgyz Republic, Government budget expenditures

³ The Development Program of the Kyrgyz Republic for the period 2018-2020 <Unity, Trust, Creation>

⁴ Population Health and Activity of Health Care Organization of the Kyrgyz Republic 2022 (e-Health Center)

quantity.

To address these issues, the Government of the Kyrgyz Republic has set a goal of reducing the number of members of the youth population dying from NCDs by one-third in its long-term national strategy, the “National Development Strategy of the Kyrgyz Republic for 2018-2040”. Thus, the measures against NCDs have been positioned as a priority area of the national health strategy in the Kyrgyz Republic. In the health sector, the Government of the Kyrgyz Republic has been making efforts to reduce the burden caused by the concentration of patients at tertiary hospitals making the hospitals situations better to focus on patients with serious conditions through provision of medical equipment to primary and secondary hospitals and strengthen of their healthcare system. At the same time, however, tertiary hospitals are facing a shortage of necessary medical equipment as well as deterioration of existing equipment, making it difficult to provide timely and sufficient health and medical services to patients with serious conditions.

Considering this background, the Project for the Improvement of Medical Equipment in Tertiary Hospitals in Bishkek⁵(hereinafter referred to as "the Project") is intended to procure medical equipment necessary for diagnosis and treatment of cardiovascular diseases and cancers in the top referral hospitals which are the center of public medical service provision in Bishkek and throughout the Kyrgyz Republic. Thus, the Project is positioned as a high priority project essential to the improvement of the healthcare system, which is an aim of the Government of the Kyrgyz Republic.

3 Outline of the Survey Results and Description of the Project

For a Preparatory Survey of the Project, the survey team was dispatched to the Kyrgyz Republic from 11th of November to 8th of December in 2023 and had discussions with the Government officials of the Kyrgyz Republic, and the team conducted field survey in the targeted areas. After the review and analysis in Japan, the team visited the Kyrgyz Republic as the explanatory mission of the Preparatory Survey report from 25th of February to 9th of March in 2024. After that, the Preparatory Survey report was compiled. The outline of the Project is as follows.

3-1 Target Area

The Project procures medical equipment for diagnosis and treatment of cardiovascular diseases and breast cancer for the National Center of Cardiology and Internal Medicine named after Academician M.Mirrahimov (hereinafter referred to as “NCCIM”), the Scientific Research Institute of Heart Surgery and Organ Transplantation(hereinafter referred to as “SRIHSOT”) and the National Center of Oncology and Hematology (hereinafter referred to as “NCOH”).

3-2 Equipment Plan

The table below outlines the equipment to be installed under the Project.

⁵ The name of the Project was changed from “the Project for the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City” to “the Project for the Improvement of Medical Equipment in Tertiary Hospitals in Bishkek”.

Table 1 Outline of Planned Equipment (NCCIM)

| Target Department | Equipment |
|-------------------------------|--|
| Diagnostic Imaging Department | Angiography, Intra-aortic balloon pump (IABP), Ultrasound machine with transesophageal echocardiography (TEE) probe, Defibrillator, etc. |
| ICU Department | Patient monitor, Central monitor, Ventilator, Defibrillator, Extracorporeal Membrane Oxygenation (ECMO), etc. |
| Clinical Laboratory | Microplate ELISA washer, Immune - enzyme analyzer, Semi-automatic biochemistry analyzer, Blood gas analyzer, etc. |
| Outpatient Department | Holter Electrocardiograph |

Table 2 Outline of Planned Equipment (SRIHSOT)

| Target Department | Equipment |
|---------------------------------------|---|
| Department of X-Ray Surgery and Acute | Computed tomography (CT) scan, Angiography, Anesthesia machine, etc. |
| ICU | Ultrasound machine with TEE Probe, Patient monitor, ECMO, etc. |
| Surgery | Heart lung machine, Ventilator, Anesthesia machine, Operating table, etc. |
| Specialty Consultations | Ultrasound machine for echocardiogram |
| Congenital Heart Disease Surgery | External pacemaker (dual channel), Electrocardiograph (ECG) (12 channel) |

Table 3 Outline of Planned Equipment (NCOH)

| Target Department | Equipment |
|----------------------------|--------------------------------|
| Breast Oncology Department | 3D mammography, 2D mammography |

3-3 Soft Component (Short-term Technical Assistance)

The equipment planned for this Project is mainly for renewal of existing equipment due to deterioration, which means the doctors, nurses and/or technicians in the hospitals already have maintenance experience for the medical equipment. These maintenance experiences are, however, only for the daily maintenance. According to the recommendation from the manufacturer of the advanced medical equipment, the maintenance activities of such equipment is generally done by the local distributors of manufactures rather than the end-users. Thus, the maintenance service contract for the advanced equipment will be planned in the Project, and maintenance for advanced equipment will be performed by the local agents of the manufacturers under the maintenance service contract.

Regarding other equipment not covered with maintenance service contract, although the need for a short-term technical assistance, so-called “Soft Component”, was acknowledged in discussions with the hospitals, it was considered that the hospital staff will be able to maintain the equipment at a certain level by alternative methods such as the confirmation of daily inspection items and practical trainings during initial operational guidance and operation training at installation by manufacture or local agent’s engineers. Hence, it was concluded that Soft Component is not planned in the Project.

For equipment which have maintenance service contracts, follow-up and feedback will be conducted during the periodic inspection visits in order to ensure that daily maintenance is properly implemented in addition to the above initial trainings at installation.

3-4 Maintenance Service Contract of the Equipment

In the Project, the maintenance service contract will cover the periodic inspections (including daily maintenance training) and on-call service by local agent's engineers for 2 additional years after the expiration of a 1-year manufacturer's warranty for the expensive, lifesaving and/or sensitive equipment that requires long-term maintenance. In addition, during the periodic inspection by the local agents, the maintenance engineers of the hospitals and the end-user of the equipment such as doctors, nurses, and/or laboratory technicians, will be re-trained on the daily maintenance methods and practical inspection trainings, if necessary. The cost of repair and replacement parts will be covered in the Project, but all consumables such as reagents and disposable parts are to be borne by the Kyrgyz republic side.

4 Project Schedule and Cost Estimation

The implementation schedule of the Project will be about 4 months for detailed design and approval of bid documents after the contract with a consultant is made, about 2 months for the bid and supplier contract and about 15 months for the procurement and installation of the equipment. The total amount to be borne by the Kyrgyz Republic for the Project is estimated as 1.8 million yen. The exchange rate : 1 EUR = 160.78 yen, 1 USD = 150.10 yen (as of December 2023).

5 Project Evaluation

5-1 Relevance

(1) Beneficiaries of the Project

The direct beneficiaries of the Project will be the users of the equipment, in other words, the patients who receive outpatient care, inpatient care, examinations and surgeries at the NCCIM and SRIHSOT, and the patients who receive mammography examination at the NCOH. The total number of patients is calculated to be approximately 90,000.

In addition to the patients explained above, these hospitals are the top referral hospitals in the fields of cardiology and oncology and accept patients from all over the Kyrgyz Republic, which will indirectly benefit about 300,000 patients with cardiovascular diseases⁶ and 700 patients with breast cancer⁷ currently registered in the national patient database. Hence, the contribution of the Project through strengthening of NCDs measures in the Kyrgyz Republic to the reduction in the mortality and burden on the medical finance due to NCDs is significant.

⁶ Public Health and Health Organization Activities in the Kyrgyz Republic 2022 (e-Health Center)

⁷ National Oncology and Hematology Center Malignant Neoplasms Epidemiology and Prevention Report 2022

(2) Consistency with the Kyrgyz Republic's Development Plans

The Government of the Kyrgyz Republic has set a goal of reducing the mortality rate related to NCDs among the young generation to one-third as a health sector priority in the national long-term strategy, the “National Development Strategy of the Kyrgyz Republic for 2018-2040”, as well as in the “Program of the Kyrgyz Republic Government on Public Health Protection and Health Care System Development for 2019-2030” established under the national development strategy. However, many public hospitals in the Kyrgyz Republic are inadequate in providing timely and appropriate health and medical services due to a lack of equipment, aging equipment and malfunction equipment even though NCDs are diseases for which early detection and early treatment can directly lead to a reduction in mortality. Considering these situations, through medical equipment procurement for the diagnosis and treatment of cardiovascular diseases and breast cancer, this Project will strengthen the diagnosis and treatment systems of the NCCIM, the SRIHSOT, and the NCOH which are the top referral hospitals in the Kyrgyz Republic for the examination and treatment of NCDs. Therefore, this Project is consistent with the strategy of the Kyrgyz Republic Health Sector, and its priority is considered high.

(3) Consistency with Japan's Aid Policy

According to the “Country Development Cooperation Policy (April 2022) for the Kyrgyz Republic”, it was stated in the priority area of “Improvement of Administrative and Social Services” that Japan will promote cooperation based on the needs of the Kyrgyz Republic side to strengthen social services, by putting the healthcare system center, as the healthcare system with limited capacity of the country was exposed by the spread of the new coronavirus infection. In addition, the JICA Country Analysis Paper for the Kyrgyz Republic (March 2020) analyzes the importance of improving health and medical services including updating aging healthcare infrastructure (facilities and equipment) and strengthening maintenance capability in the development issues “Improvement of Social Services”. In addition, JICA's Global Agenda for Health addresses strengthening of diagnosis and treatment at core hospitals of the area as one of the cooperation policies to the Kyrgyz Republic. This Project matches these policies, and it is therefore appropriate to implement the cooperative project by Japan's Grand Aid.

5-2 Effectiveness

The target values expected from the implementation of the Project are as follows.

(1) Quantitative Effects

The quantitative outputs expected from the implementation of the Project are summarized below. The year 2022 is set as the base year and the year 2029, three years after the completion of the Project (2026), is set as the target year. Expected outputs are as follows.

Table 4 Output Indicators of the Project (NCCIM)

| Indicator | Base value [Actual value in 2022] | Target value (2029) [3 years after the Project completion] |
|--|--------------------------------------|---|
| Number of angiography examination and treatment (cases/year) | 1,789 | 2,200 |
| Number of radiofrequency ablation treatment (cases/year) | 216 | 400 |

Table 5 Output Indicators of the Project (SRIHSOT)

| Indicator | Base value [Actual value in 2022] | Target value (2029) [3 years after the Project completion] |
|--|--------------------------------------|---|
| Number of CT examination (cases/year) | 0 | 500 |
| Number of angiography examination and treatment (cases/year) | 581 | 1,500 |

Table 6 Output Indicator of the Project (NCOH)

| Indicator | Base value [Actual value in 2022] | Target value (2029) [3 years after the Project completion] |
|--|--------------------------------------|---|
| Number of mammography examination (cases/year) | 1,507 | 3,000 |

(2) Qualitative effects

- 1) The quality of medical services at the target hospital is improved
- 2) Patient and healthcare professional satisfaction at the target hospitals is improved

In conclusion, as described above, the relevance of the Project as well as its effectiveness are expected to be high.

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Location Map of the Project Site and Hospitals



Site Location in Bishkek City

A detailed map of Bishkek City with three numbered locations marked. Location 1 is in the north, location 2 is in the center, and location 3 is in the south. Each location is accompanied by a photograph of the corresponding hospital building.

- 1. National Center of Cardiology and Internal Medicine named after Academician M. Mirrakhimov**
- 2. Scientific Research Institute of Heart Surgery and Organ Transplantation**
- 3. National Center of Oncology and Hematology**

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Abbreviations

| | |
|---------|---|
| A/P | Authorization to Pay |
| ACT | Activated Clotting Time |
| AVR | Automatic Voltage Regulator |
| B/A | Banking Arrangement |
| CE | Conformité Européenne (European Conformity) |
| CT | Computed Tomography |
| DAC | Development Assistance Committee |
| DICOM | Digital Imaging and Communications in Medicine |
| DX | Digital Transformation |
| E/N | Exchange of Notes |
| EAEU | Eurasian Economic Union |
| ECG | Electrocardiogram |
| ECMO | Extracorporeal Membrane Oxygenation |
| G/A | Grant Agreement |
| GOJ | Government of Japan |
| IEC | International Electrotechnical Commission |
| ICU | Intensive Care Unit |
| JICA | Japan International Cooperation Agency |
| JIS | Japanese Industrial Standards |
| LAN | Local Area Network |
| MOH | Ministry of Health |
| NCCIM | National Center of Cardiology and Internal Medicine named after Academician M. Mirakhimov |
| NCDs | Noncommunicable Diseases |
| NCOH | National Center of Oncology and Hematology |
| ODA | Official Development Assistance |
| OECD | Organization for Economic Co-operation and Development |
| PACS | Picture Archiving and Communication System |
| PMR | Project Monitoring Report |
| SRIHSOT | Scientific Research Institute of Heart Surgery and Organ Transplantation |
| TEE | Transesophageal Echocardiography |
| UPS | Uninterruptible Power Supply |
| VAT | Value Added Tax |
| WHO | World Health Organization |

CHAPTER 1 BACKGROUND OF THE PROJECT

Chapter 1. Background of the Project

1-1 Background, History and Outline of the Japanese Grant Aid project

Although the Kyrgyz Republic experienced a decline in the quality and quantity of health services after independence in 1991 due to political instability and economic recession, the country achieved Millennium Development Goal 4 (reduction of infant mortality) through the implementation of health sector reforms and made progress in terms of infectious disease control such as polio and malaria eradication. On the other hand, Non-Communicable Diseases (hereinafter referred to as “NCDs”) account for approximately 80% of causes of deaths among the population including the young generation in the Kyrgyz Republic, which is higher than the global average (approximately 70%)⁸. Among all NCDs, the proportion of the causes of death represented by cardiovascular diseases is particularly high (51.6%)⁹. Furthermore, the share of cancer as a cause of death has increased from 8.8% in 2010 to 12.2% in 2022¹⁰, and breast cancer has the highest incidence rate among cancers (20.5 per 100,000)¹¹. The 5-year survival rate for breast cancer patients in the Kyrgyz Republic is approximately 45% (approximately 90% in Japan)¹², and approximately 40% of them are in stage III or higher cancer (approximately 15% in Japan)¹³.

However, not only the issues on the prevention of risk factors that cause NCDs (smoking, alcohol, obesity, hypertension, etc.), but also the service delivery system of medical facilities to provide appropriate examination and treatment to each stage of NCDs for early detection, diagnosis and treatment have remained as challenges in the Kyrgyz Republic; the healthcare system has not reached a sufficient level to meet the required diagnosis and treatment of NCDs in terms of either quality or quantity.

To address these issues, the Government of the Kyrgyz Republic aims to make the healthcare system responsive to the needs of the population in accordance with its long-term national strategy, the “National Strategy of Development of the Kyrgyz Republic (2018-2040)”, and the Government of the Kyrgyz Republic has set a goal of reducing the number of members of the youth population dying from NCDs by one-third by 2030 in its sectoral strategy, the “Program of the Kyrgyz Republic Government on Public Health Protection and Health Care System Development for 2019-2030”, which was developed in 2019. Thus, the measures against NCDs have been positioned as a priority area of the national health strategy in the Kyrgyz Republic. Regarding measures against cardiovascular diseases, the “Project program emergency cardiology 2023-2027” was approved by the Ministry of Health (hereinafter referred to as “MOH”) of the Kyrgyz Republic and outlines roles including prevention and awareness activities of medical institutions at each level as well as the scope of diagnosis and treatment. Also, the plan has currently set a goal of reducing the annual death cases of approximately 20,000 by 25% by 2027. Regarding cancers, as delay of detection and treatment have resulted in the high mortality rate, the Government of the Kyrgyz Republic aims to strengthen early detection, diagnosis, and treatment in medical institutions at all levels and to increase the number of cancer patients found and registered at stages I and II cancer by 80% according to the “Strategies

⁸ WHO Mortality Database (2021)

⁹ National Statistical Committee of the Kyrgyz Republic (2021)

¹⁰ Public Population Health and Activities of Health Care Organizations of Activities in the Kyrgyz Republic 2022 (e-Health Center)

¹¹ National Oncology and Hematology Center Malignant Neoplasms Epidemiology and Prevention Report 2022 (National Oncology and Hematology Hospital (Cancer Center))

¹² Cancer Statistics in Japan 2023 (Foundation for Promotion of Cancer Research)

¹³ Hospital based cancer registries Nationwide statistics 2021 (National Cancer Center Japan, Institute for Cancer Control)

for the control and prevention of cancer in the Kyrgyz Republic for 2021-2025”.

Considering this background, the Project for the Improvement of Medical Equipment at Tertiary Hospitals in Bishkek¹⁴ (hereinafter referred to as “the Project”) is intended to procure medical equipment necessary for diagnosis and treatment of cardiovascular diseases and cancers in the top referral hospitals which are the center of public medical service provision in Bishkek and throughout the Kyrgyz Republic. Hence, the Project is positioned as a high priority project essential to the improvement of the healthcare system, which is an aim of the Government of the Kyrgyz Republic .

1-2 National Condition

The city of Bishkek where the Project sites are located is in the northern valley of the Trans-Ili Alatau and has a mediterranean climate with little rainfall in summer. The temperature in summer can exceed 40°C, and the air is dry, while it can reach -20°C in winter, and there is heavy snowfall from time to time. However, as the equipment to be installed in the Project will be used mainly indoors, the operating environment (temperature and humidity) will have little effect on the equipment.

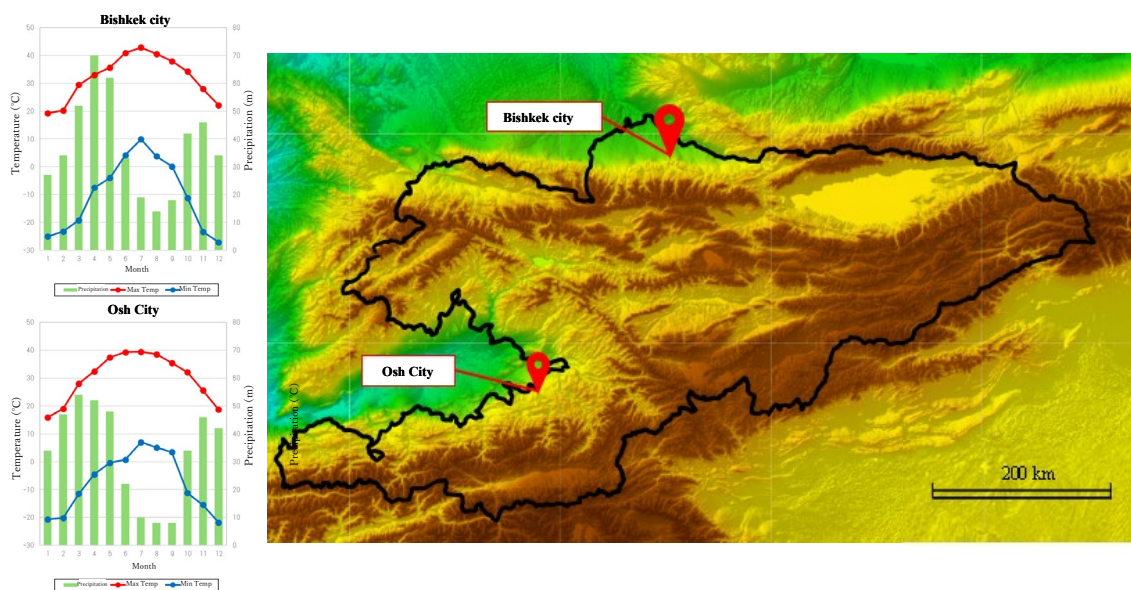


Figure 1-1 Temperature, Precipitation, and Elevation of the Kyrgyz Republic

Source : World Meteorological Organization, Geographical Survey Institute

1-3 Environmental and Social Considerations

There are no anticipated environmental and social impacts due to procurement of medical equipment by the Japan side or removal of existing equipment, renovation and facility work by the Kyrgyz Republic side. Hence, the Project is categorized as Category C (a project likely to have minimal or no adverse environmental impacts) according to Japan International Cooperation Agency (hereinafter referred to as “JICA”) Guidelines for Environmental and Social Considerations” (January 2022).

¹⁴ The name of the Project was changed from “the Project for the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City” to “the Project for the Improvement of Medical Equipment in Tertiary Hospitals in Bishkek”.

CHAPTER 2 CONTENTS OF THE PROJECT

Chapter 2. Contents of the Project

2-1 Basic Concept of the Project

The Project aims to strengthen diagnosis and treatment system by providing equipment for the diagnosis and treatment of cardiovascular diseases and breast cancer to the tertiary hospitals in Bishkek, the National Center of Cardiology and Internal Medicine named after Academician M.Mirрахimov (hereinafter referred to as “NCCIM”), the Scientific Research Institute of Heart Surgery and Organ Transplantation (hereinafter referred to as “SRIHSOT”) and the National Center of Oncology and Hematology (hereinafter referred to as “NCOH”), which are the top referral hospitals, thereby contributing to the improving the quality of health and medical services. The equipment in the Project is also be planned in accordance with these overall goals. Although e-Health Center under the Government of the Kyrgyz Republic plans to introduce Picture Archiving and Communication System (PACS) in the near future, detailed and specific requirements for the system have not been concreated yet. For this reason, PACS is not included in the Project. However, imagery equipment for diagnostics which is planned in the Project is designed to obtain digital images (Digital Imaging and Communications in Medicine (DICOM) standard), and this equipment plan will then support the operation of PACS.

(1) Equipment

The equipment planned for the Project is outlined below.

Table 2-1 Outline of the Equipment Plan (NCCIM)

| Target Department | Equipment |
|-------------------------------|--|
| Diagnostic Imaging Department | Angiography, Intra-Aortic Balloon Pump (IABP), Ultrasound machine with TEE probe, Defibrillator, etc. |
| ICU Department | Patient monitor, Central monitor, Ventilator, Defibrillator, etc. |
| Clinical Laboratory | Microplate ELISA washer, Immune-enzyme analyzer (ELISA), Semi-automatic coagulator, Blood gas analyzer, etc. |
| Outpatient Department | Holter Electrocardiograph |

Table 2-2 Outline of the Equipment Plan (SRIHSOT)

| Target Department | Equipment |
|---------------------------------------|--|
| Department of X-Ray Surgery and Acute | Computed Tomography (CT) scan, Angiography, Anesthesia machine, etc. |
| ICU | Ultrasound machine with TEE Probe, Patient monitor, Extracorporeal Membrane Oxygenation (ECMO), etc. |
| Surgery | Heart lung machine, Ventilator, Anesthesia machine, Operating table, etc. |
| Specialty Consultations | Ultrasound machine for echocardiograph |
| Congenital Heart Disease Surgery | External pacemaker (dual channel), ECG (12 channel) |

Table 2-3 Outline of the Equipment Plan (NCOH)

| Target Department | Equipment |
|----------------------------|--------------------------------|
| Breast Oncology Department | 3D mammography, 2D mammography |

(2) Maintenance Service Contract of the Equipment

In the Project, the maintenance service contract will cover the periodic inspections (including daily maintenance training) and on-call service by local agent’s engineers for 2 additional years after the expiration of a 1-year manufacturer’s warranty for the expensive, lifesaving and/or sensitive equipment that requires long-term maintenance. In addition, during the periodic inspection by the local agents, the maintenance engineers of the hospitals and the end-user of the equipment, such as doctors, nurses, and/or laboratory technicians, will be re-trained on the daily maintenance methods and practical inspection trainings, if necessary. The cost of repair and replacement parts will be covered in the Project, but all consumables such as reagents and disposable parts are to be borne by the Kyrgyz republic side.

2-2 Outline Design of the Japanese Assistance

2-2-1 Design Policy

(1) Basic Principles

The Project aims to strengthen diagnosis and treatment system by providing equipment for the diagnosis and treatment of cardiovascular diseases and breast cancer to the tertiary hospitals in Bishkek which are the top referral hospitals, thereby contributing to improving the quality of health care services.

(2) Policy on Natural Conditions

Bishkek city has a Mediterranean climate, with clear skies 322 days out of the year, and average daytime temperatures of -3°C in winter from November to February, and 31°C in summer from June to August. In winter, the temperature drops to -20°C, with occasional heavy snowfall, making for a very cold climate. In summer, the temperature rises to 40°C, and the air is dry due to very little precipitation. Since the equipment to be installed in the Project will be used mainly indoors, the operating environment (temperature and humidity) will not affect the equipment.

(3) Policy on Socioeconomic Conditions

Electricity in the Kyrgyz Republic is supplied by three-phase 380 V and single-phase 220 V. Electricity is preferentially distributed to hospitals and other public facilities, and no hospital has experienced power outages due to problems with power plants and transmission lines except for one to two outages per year. In addition, each hospital has installed generators to supply power to operation theatres ICUs and clinical laboratories in case of power outages.

Voltage fluctuations in Bishkek city were measured during the survey. Measurements were taken in Bishkek city at one-minute intervals over a 24-hour period from 28th of November 2023, at 8:00 a.m. to 29th of November 2023, at 8:00 a.m. The highest value was 239.1 V at 12:40 a.m. on 28th of November, and the lowest value was 225.6 V at 8:30 a.m. on 29th of November. The standard supply voltage is within 220V ±10% for single-phase 220V, and the measured values were within the standard supply range.

However, the voltage sometimes exceeded the standard voltage in winter and summer. Therefore, the main components in the equipment plan for the Project are equipped with AVRs and UPSs as part of the equipment components to avoid as much as possible the interruption of medical activities due to power outages and the breakdown of equipment due to voltage fluctuations.

(4) Policy on Procurement Conditions

The procurement plan will be based on the condition that there is a local agent in the country or neighboring countries that can provide after-sales service, and the condition for country of origin will be expanded to include not only Japanese products but also third-country products. In the case that allows third-country product, it should be possible to procure the product inside of the Kyrgyz market. Also, the system for after-sales service by the local agents is considered important, and the products will not be selected only because of their prices. In addition, the headquarters of the manufacturers should be located in OECD countries. These restrictions will be set to ensure the same quality as that of Japanese product and secure the quality of the equipment.

(5) Policy on Utilization of Local Agent

There are several local agents of manufacturers of equipment to be serviced in Bishkek city, and technicians and/or engineers with sufficient skills and experiences in operating and installing the equipment are assigned. In addition, they were trained and certified by the manufacturers when necessary. These local agents also provide spare parts and after-sales service, and they can maintain the equipment to be procured in the Project. Even if the equipment is procured in Japan or a third country, repairs and spare parts can be procured properly by limiting the use to manufacturer with a local agent in the Kyrgyz Republic.

On the other hand, regarding advanced equipment such as CT, some manufacturers work with a local agent in neighboring countries such as Kazakhstan and Uzbekistan and provides after-sales services for the Kyrgyz Republic. However, from the viewpoints of efficiency and promptness of after-sales services, the local agent in neighboring countries must have a local agent which can be able to be contacted within the Kyrgyz Republic.

(6) Policy on Operation and Maintenance Capacity

The equipment planned for the Project is mainly to replace existing equipment which has become obsolescent. For all equipment, maintenance engineers, doctors, nurses and laboratory technicians will be provided with initial operational guidance and operation training by the engineer of the local agent and manufacturer at the time of installation. At that time, they will be instructed not only on how to use the equipment, but also on daily maintenance.

In addition, in order to ensure the proper operation and maintenance of the equipment, the maintenance service contract including on-call service and periodic maintenance is planned for additional 2 years after the expiry of a 1-year manufacturer's warranty for the necessary equipment such as expensive equipment, lifesaving equipment and precision equipment. Under this two-year maintenance service contract, the hospital staff can contact the contracted local agent directly for on-call service to confirm the malfunction and repair the equipment and to conduct periodic inspections at a frequency determined for

each unit of equipment. During the periodic inspections, the engineer of the local agent will check that the situation of daily maintenance is being carried out properly by the end-users and provide re-instruction if necessary.

(7) Policy on Grade Setting for Equipment

The grade of the equipment will be set based on the medical service levels required for the targeted hospitals and the situations of existing equipment use, etc. In addition, in order for the equipment to be used appropriately and sustainably, the maintenance system and skill level of local agents as well as the procurement channel of spare parts and consumables will be carefully examined.

The requested equipment includes not only replacement equipment, but also equipment that the hospital will use for the first time, such as ECMO at the SRIHSOT and NCOH, and CT scan at the SRIHSOT. The Kyrgyz Republic side agrees to assign medical staff who can use such equipment properly after implementation of clinical training abroad and/or within the Kyrgyz Republic on the equipment.

Regarding CT scan for the SRIHSOT, it is confirmed that there would be no problem in staffing and clinical/technical training, since CT scan are already widely used in other hospitals in the Kyrgyz Republic, and it is possible to receive clinical/technical trainings from the NCCIM and SRIHSOT .

Procurement of ECMO will be the first time for the Kyrgyz Republic since there is no public and private hospital that has ECMO now in the country. Therefore, it is necessary to conduct on the job training in hospitals in third countries under the support of supplied manufacturers or local agents. The training costs will be borne by the Japanese side, and the cost of air travel, daily allowance and accommodation costs will be borne by the Kyrgyz Republic side. It was confirmed during the survey that local agents in the Kyrgyz Republic can provide training in hospitals in countries where the manufacturer is located, in an environment where ECMO is actually used on patients, and that the manufacturer includes such training as part of the scope of works. Therefore, these clinical trainings will be included as a condition of procurement of ECMO. Furthermore, both hospitals are planning to provide overseas training for medical staffs by themselves. The SRIHSOT has already sent one ICU doctor to Turkey in January 2024 for clinical training for about three weeks, including technical training in the use of ECMO. The NCCIM also plan to send at least two doctors abroad before the installation of the equipment.

Additionally, since some medical staff at the hospitals already have experience in the use of heart lung machine using techniques, similar to ECMO, it is considered possible to make appropriate use of the equipment through the clinical and technical trainings.

(8) Policy on Procurement Method and Schedule

Regarding equipment procurement, it is important to select the equipment which can secure the required quality and accuracy, and installation and adjustment will be done by experts who have knowledge and expertise for each type of equipment. Also, for implementation of the Project, the procurement will be done by a Supplier with sufficient experience in medical equipment procurement of Japanese grant aid projects. In addition, it is necessary to secure the space for equipment installation and to conduct pre-installation work, and the schedule needs to be carefully planned according to the progress of the preparatory work and pre-installation work by the Kyrgyz Republic side.

As a result of the survey regarding import, distribution of medical equipment and local agents in the Kyrgyz Republic, it was determined that it would be difficult to import the equipment only for the Project, so it was decided to procure a radiofrequency ablation machine with 3D navigation for the NCCIM in a separate lot from other equipment.

2-2-2 Basic Plan (Equipment plan)

(1) Overall Plan

The medical equipment will be procured under this Project contributing for the diagnosis and treatment of cardiovascular diseases and breast cancer at tertiary hospitals in Bishkek city which are top referral centers for the provision of public medical services.

(2) Equipment Plan

1) Examination of Requested Equipment

Based on the initial list of requested equipment, the careful discussions had been held with the hospital directors, the managers of each department, and the medical staffs. The selection of equipment was conducted based on the overall plan of the Project and the following evaluation criteria; 1) the priority given by the hospitals, 2) the conditions of existing equipment and 3) the results of procurement surveys that were given to manufacturers and local agents.

Table 2-4 Evaluation Criteria of Equipment Selection

| Evaluation Criteria of Equipment Selection |
|---|
| 1. Equipment is compatible with the currently envisioned medical activities of the hospital |
| 2. Equipment that is expected to have eligible patients who need the equipment for their treatment |
| 3. Equipment for which operation and maintenance are technically feasible |
| 4. Equipment that does not require excessive budgetary burden for operation |
| 5. Equipment for which spare parts and consumables are easily accessible in the local market |
| 6. Rooms and spaces are prepared for equipment installation, or renovation work must be carried out at the expense of the client. |
| 7. Equipment that is in accordance with the current existing equipment (future procurement plan should be confirmed, and duplication should be avoided) |

2) Examination of Equipment Quantity

For the planned equipment selected based on the above criteria, the quantity of each type of equipment was drafted giving consideration concerning the frequency of use, future medical activities, and the size of main rooms, etc.

3) Planned Equipment

As a result of above study, the following equipment had been selected .

Table 2-5 Planned Equipment List (NCCIM)

| Equipment No. | Equipment List | Quantity |
|---------------|--|----------|
| C-1 | Angiography | 1 Set |
| C-2 | Radiofrequency ablation machine with 3D navigation | 1 Set |
| C-3 | External pacemaker dual channel | 2 Sets |
| C-4 | Intra-Aortic Balloon Pump (IABP) | 1 Set |
| C-5 | Ultrasound machine with TEE probe | 2 Sets |
| C-6 | Defibrillator | 2 Sets |
| C-7 | Ventilator | 1 Set |
| C-8 | Electrosurgical unit | 1 Set |
| C-15 | Central monitor for 18 beds | 2 Sets |
| C-16 | Patient monitor with Invasive BP | 3 Sets |
| C-17 | Patient monitor with non-invasive BP | 42 Sets |
| C-18 | External pacemaker, single channel | 6 Sets |
| C-19 | External pacemaker, dual channel | 6 Sets |
| C-20 | Ventilator | 6 Sets |
| C-21 | Defibrillator with external pacing function | 4 Sets |
| C-22 | Extracorporeal Membrane Oxygenation (ECMO) | 1 Set |
| C-23 | ICU bed | 45 Sets |
| C-24 | High-flow oxygen therapy machine | 4 Sets |
| C-25 | Electrocardiograph | 10 Sets |
| C-26 | Syringe pump | 52 Sets |
| C-27 | Suction machine | 6 Sets |
| C-30 | Immuno-enzyme analyzer (ELISA) | 1 Set |
| C-31 | Microplate ELISA washer | 1 Set |
| C-32 | Semi-automatic biochemistry analyzer | 1 Set |
| C-33 | Blood gas analyzer | 2 Sets |
| C-34 | Semi-automatic coagulator | 1 Set |
| C-35 | Automatic urinary analyzer | 1 Set |
| C-36 | Binocular microscope | 4 Sets |
| C-38 | Holter Electrocardiograph | 10 Sets |
| C-39 | Stretcher | 6 Sets |
| C-40 | Wheel chair | 11 Sets |

Table 2-6 Planned Equipment List (SRIHSOT)

| Equipment No. | Equipment List | Quantity |
|---------------|---|----------|
| T-1 | CT scan | 1 set |
| T-2 | Angiography | 1 set |
| T-3 | Ultrasound machine for echocardiograph | 1 set |
| T-4 | Ultrasound machine with TEE Probe | 2 sets |
| T-5 | Patient monitor for adult | 8 sets |
| T-6 | Heart lung machine | 2 sets |
| T-7 | Ventilator for adult | 5 sets |
| T-8 | Anesthesia machine | 3 sets |
| T-9 | Extracorporeal Membrane Oxygenation (ECMO) | 1 set |
| T-10 | Hemodialysis machine | 1 set |
| T-11 | Operating table | 2 sets |
| T-12 | Cerebral oximetry | 2 sets |
| T-13 | Anesthesia depth measuring device | 2 sets |
| T-14 | Electrosurgical unit | 1 set |
| T-15 | Cardiovascular surgery tool set for pediatric | 2 sets |
| T-16 | Cardiovascular surgery tool set for adult | 1 set |
| T-17 | Open heart surgery tool set for adult | 1 set |
| T-18 | Operating lamp | 2 sets |
| T-19 | ACT analyzer | 2 sets |
| T-20 | Blood gas analyzer | 1 set |
| T-21 | Syringe pump | 9 sets |
| T-22 | Ventilator for infant | 5 sets |
| T-23 | Patient monitor for pediatric and infant | 7 sets |
| T-24 | External pacemaker dual channel | 10 sets |
| T-25 | Defibrillator for operation theatre | 2 sets |
| T-26 | Defibrillator for ICU | 1 set |
| T-27 | Electrocardiograph, 12 channel | 4 sets |
| T-28 | Electrocardiograph, 12 channel for pediatric | 1 set |
| T-29 | ICU bed for adult | 6 sets |
| T-30 | ICU bed for pediatric | 7 sets |
| T-31 | Anesthesia cart | 2 Sets |
| T-32 | Nitric oxide inhalation machine | 1 Set |

| Equipment No. | Equipment List | Quantity |
|---------------|--|----------|
| T-34 | Infant warmer | 4 Sets |
| T-35 | Portable suction pump | 4 Sets |
| T-36 | Bed side cabinet | 10 Sets |
| T-37 | Laryngoscope set | 3 Sets |
| T-38 | Instrument table | 2 Sets |
| T-39 | Mayo table | 4 Sets |
| T-40 | Tool cabinet | 2 Sets |
| T-41 | Cabinet for medicines | 2 Sets |
| T-42 | Stainless cabinet for preparation room | 2 Sets |
| T-43 | Suction machine | 4 sets |

Table 2-7 Planned Equipment List (NCOH)

| Equipment No. | Equipment List | Quantity |
|---------------|----------------|----------|
| O-1 | 3D mammography | 1 Set |
| O-2 | 2D mammography | 1 Set |

4) Maintenance Service Contracts after Expiration of the Warranty Period

In order to prevent the situation in which the equipment is left unattended due to equipment failure in relatively early stage after the handover, a maintenance service contract for additional 2 years after the expiry of the 1-year manufacture's warranty is included under the Project. The maintenance service contract of the Project includes the periodic inspection and on-call service for selected equipment. During these periods, the repair parts and replacement parts will be provided without any charges, but all consumables such as reagents and disposables should be covered by the user side.

The selection criteria of the equipment for the maintenance service contract are as follows; 1) equipment whose failure would have a significant impact on medical services, and 2) equipment that can only be repaired by the local agents' engineers.

Table 2-8 Target Equipment for Maintenance Service Contract (NCCIM)

| Equipment No. | Equipment Name | Regular Service Times/Year | On-call Times | Repair and replacement parts |
|---------------|--|----------------------------|---------------|--|
| C-1 | Angiography | 4 | 4 | Included, but not more than one X-ray tube |
| C-2 | Radiofrequency ablation machine with 3D navigation | 4 | 4 | Including |
| C-4 | Intra-Aortic Balloon Pump (IABP) | 4 | 4 | Including |
| C-7 | Ventilator | 4 | 2 | Including |
| C-20 | Ventilator | 4 | 2 | Including |
| C-22 | Extracorporeal Membrane Oxygenation (ECMO) | 4 | 4 | Including |
| C-30 | Immuno-enzyme analyzer (ELISA) | 4 | 4 | Including |

Table 2-9 Target Equipment for Maintenance Service Contract (SRIHSOT)

| Equipment No. | Equipment Name | Regular Service Times/Year | On-call Times | Repair and replacement parts |
|---------------|--|----------------------------|---------------|--|
| T-1 | CT scan | 4 | 4 | Included, but not more than one X-ray tube |
| T-2 | Angiography | 4 | 4 | Included, but not more than one X-ray tube |
| T-6 | Heart lung machine | 4 | 4 | Including |
| T-7 | Ventilator for adult | 4 | 2 | Including |
| T-8 | Anesthesia machine | 4 | 2 | Including |
| T-9 | Extracorporeal Membrane Oxygenation (ECMO) | 4 | 4 | Including |
| T-10 | Hemodialysis machine | 4 | 4 | Including |
| T-22 | Ventilator for infant | 4 | 2 | Including |

2-2-3 Outline Design Drawing

(1) Site Plan

Layout plan of the main equipment for installation is as follows.

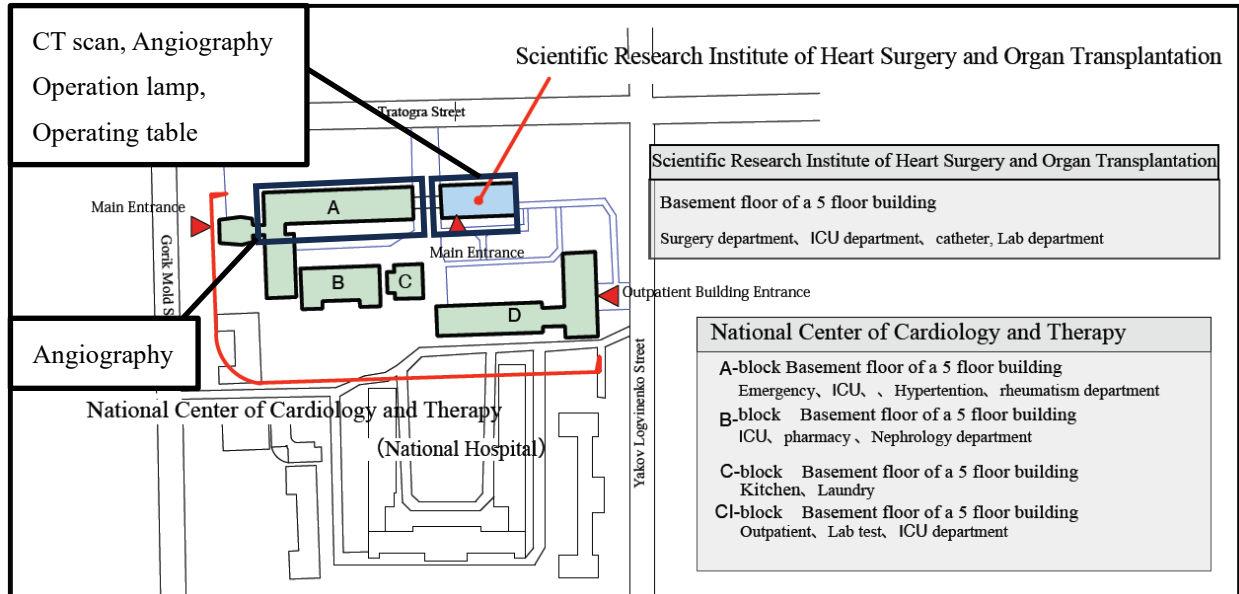


Figure 2-1 Site Plan (NCCIM and SRIHSOT)

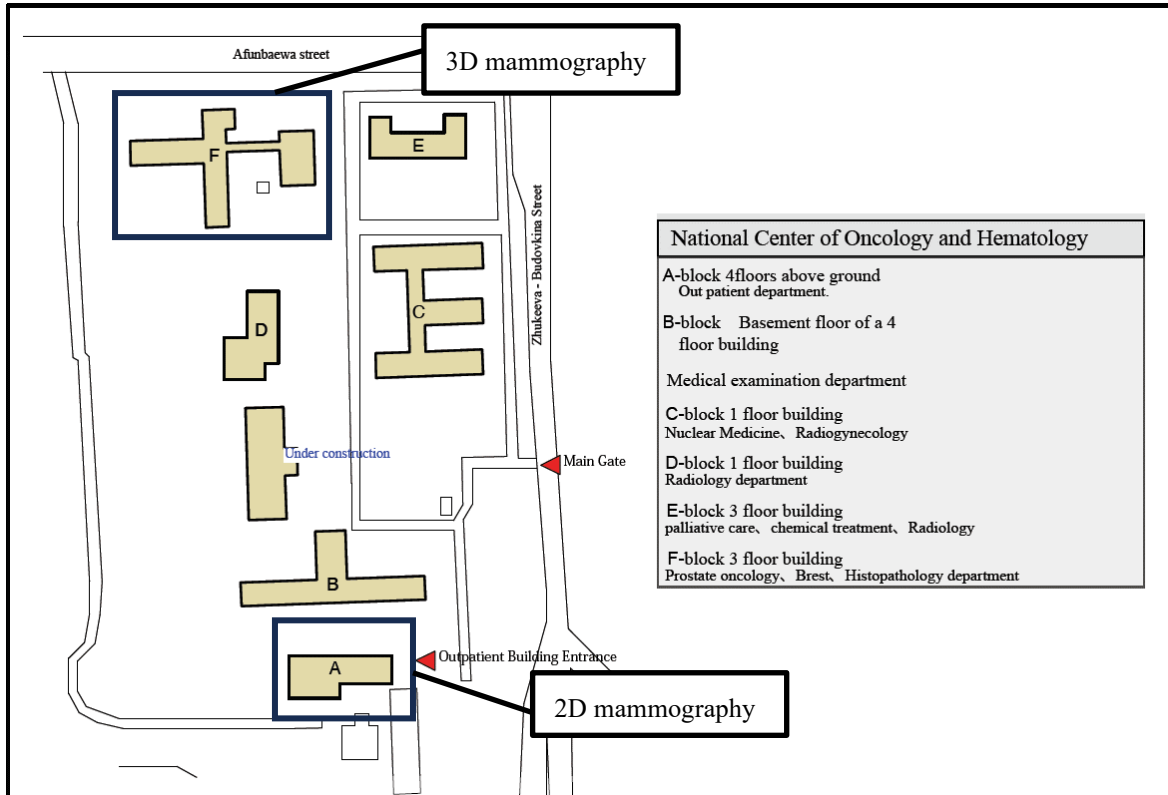


Figure 2-2 Site Plan (NCOH)

(2) Outline Design Drawing

The equipment layout of the subject hospital is shown below, along with a plan view.

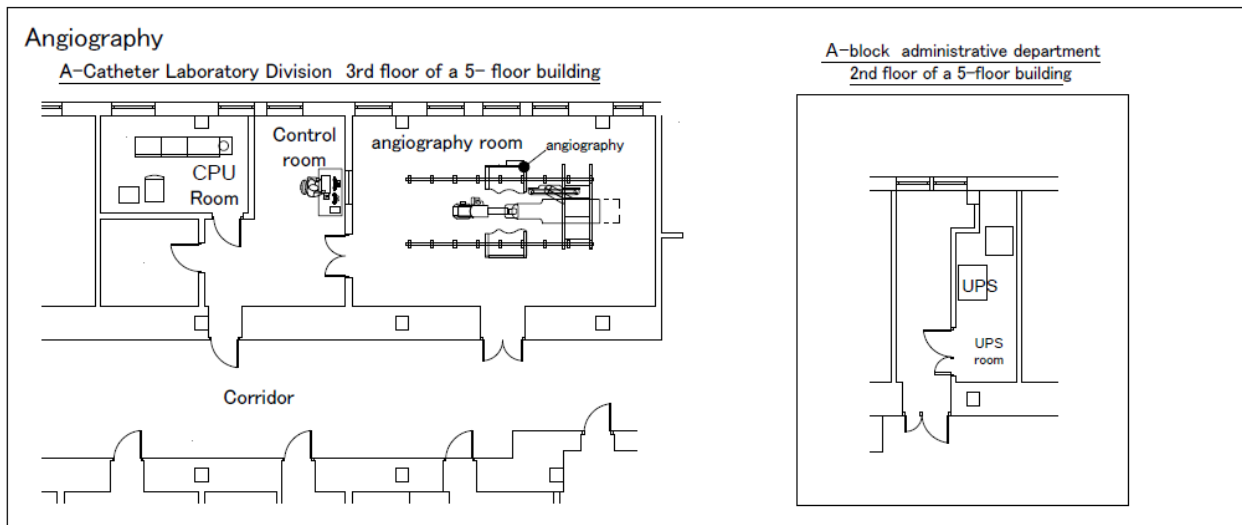


Figure 2-3 Floor Plan and Equipment Layout (NCCIM)

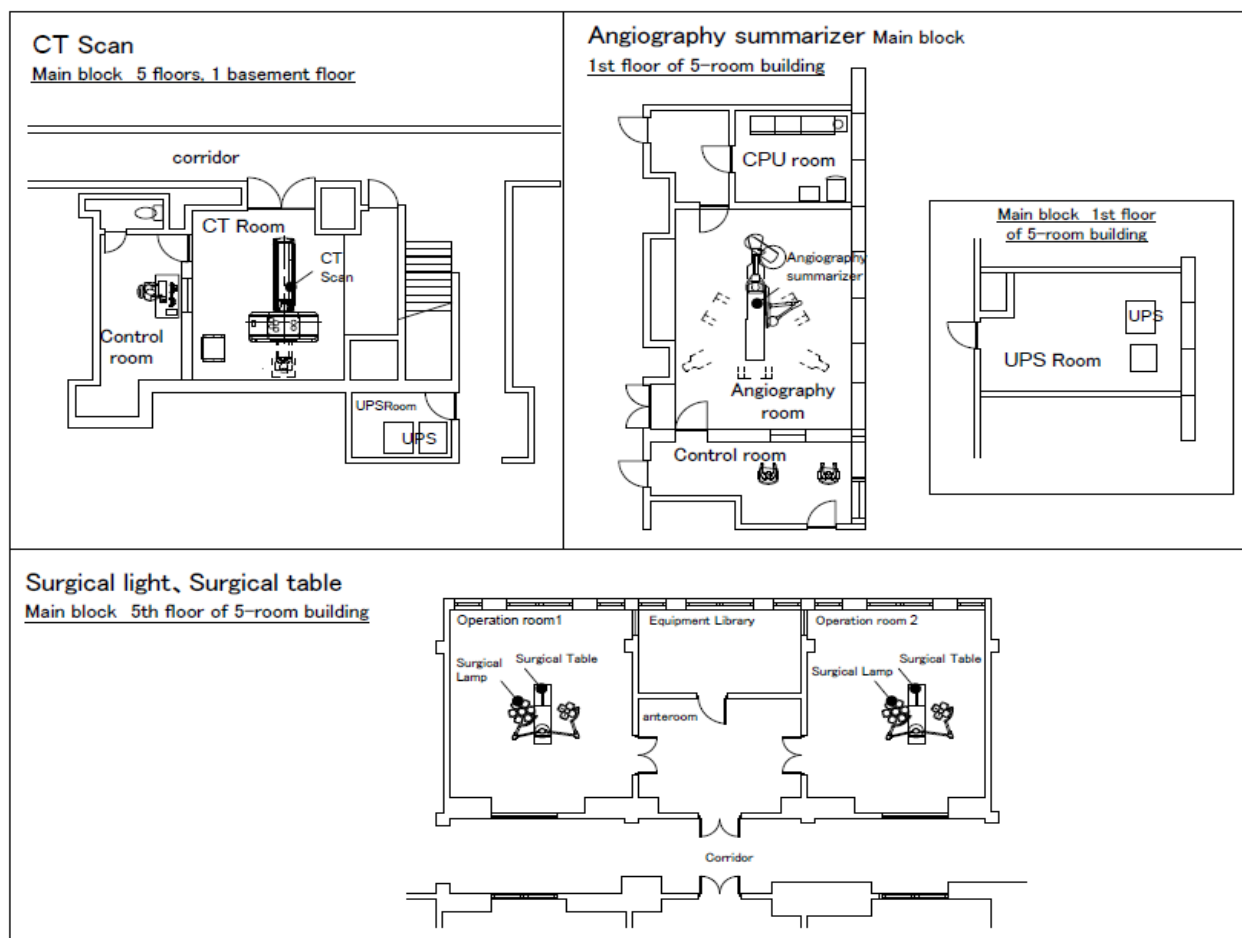


Figure 2-4 Floor Plan and Equipment Layout (SRIHSOT)

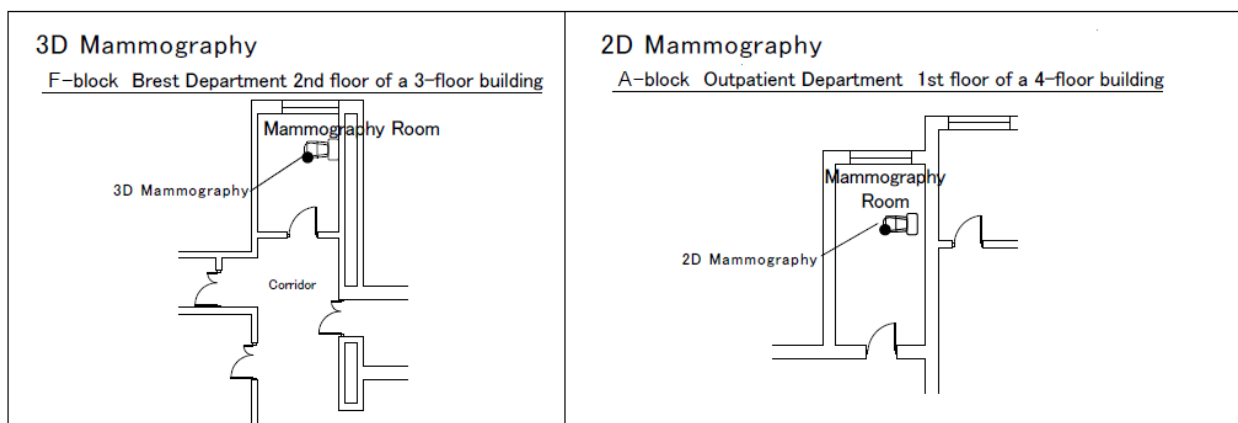


Figure 2-5 Floor Plan and Equipment Layout (NCOH)

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

Implementation of the Project will be initiated officially only after approval at the cabinet by the Government of the Kyrgyz Republic, and after the Exchange of Notes (hereinafter referred to as “E/N”) and the Grant Agreement (hereinafter referred to as “G/A”) are signed. Immediately after signing of the E/N and the G/A, the Kyrgyz Republic organization that is responsible for implementation of the Project and the Japanese consulting firms will enter into an agreement and initiate the detailed design work of the Project. When the detailed design is completed, the Japanese companies for equipment procurement participate in the tender for their works. The successful tenderer and the Kyrgyz Republic organization will enter a contract and proceed for supply and installation of the medical equipment.

(1) Implementing Organizations

1) Executing Agency

The executing agency for the Project is the MOH of the Kyrgyz Republic and a contracting party. Under the supervision by the MOH, the targeted hospitals will conduct the works borne by the Kyrgyz Republic side.

2) Japan International Cooperation Agency (JICA)

JICA will sign G/A with the Cabinet of Ministers of the Kyrgyz Republic and will review and monitor the Project for proper implementation in accordance with the Japanese Grant schemes.

3) Consultant

After signing of E/N and G/A for the Project, the executing agency of the Project and a consultant in Japan will sign an agreement for the consulting services with the MOH of the Kyrgyz Republic according to the processes of the Japanese Grant schemes. The Consultant will carry out the following works.

I. Detailed Design Stage

Final confirmation of the Project, preparation of design documents (specifications and technical reference materials on the medical equipment included in the Project)

II. Bidding Stage

Assistance to the executing agency in the bidding and contractual procedures (including preparation of bidding documents, bid openings, bid evaluation, contracts with contractor and the supplier)

III Procurement Supervision

Supervisory works for equipment procurement, delivery, installation, operational guidance and maintenance guidance of equipment

IV. Inspection before expiration of manufacturer's warranty

Inspection before expiration of 1-year manufacturer's warranty for supplied equipment

V. Inspection of maintenance services contract

Inspection of implementation status of maintenance service contract and equipment conditions

The detailed design involves determining the details of the equipment plans according to the Preparatory Survey Report, compiling the tender documents that will include the specifications, tender conditions, draft conditions of contracts for supply and installation of equipment, and estimating equipment costs. The tender and contract assistance includes attendance at the tendering for the selection of the equipment supplier, assistance in the procedures for concluding a contract and reporting to JICA, etc.

The supervision of the equipment procurement works involves ensuring that the supplier has effectively carried out the equipment procurement and installation works in accordance with the contractual terms and confirming that they have properly met their contractual obligations. For the successful completion of the Project, the consultant will from a true and fair perspective, extend advice and instructions and coordinate the persons concerned. Specifically, the supervisory services of the consultant include the following:

- I. Review and approval of the work program, equipment specifications and other documents prepared and submitted by the medical equipment supplier.
- II. Inspection and approval of the pre-shipment inspection and approval of the quality, quantity and performance of medical equipment.
- III. Confirmation of the delivery and installation of equipment for the medical equipment, and their operation manuals.
- IV. Supervision of the work progress and reporting.
- V. Final inspections of the medical equipment, and attendance during the handing-over.

In addition to the above works, the consultant will report to the Japanese authorities regarding the progress of the Project, payment procedures, completion of the Project and handover, etc.

4) Equipment Supplier

The works order pertaining to the Japanese assistance will be limited to Japanese companies satisfying the eligibility requirements. Supplier will be selected by public tender with restricted eligibility. Based on the contract, the selected equipment supplier will procure, supply and install medical equipment. The supplier will also give technical instructions to the Kyrgyz Republic side concerning the operation and maintenance of the supplied equipment. Once the equipment is handed over, in cooperation with the local agents of the equipment manufacturers, the equipment supplier will support the continuous supply of spare parts and consumables for the equipment during the maintenance service contract period as well as after the maintenance service contract has expired, either free of charge or on a chargeable basis.

5) Project Implementation Diagram

The Project implementation structure of the project is shown below.

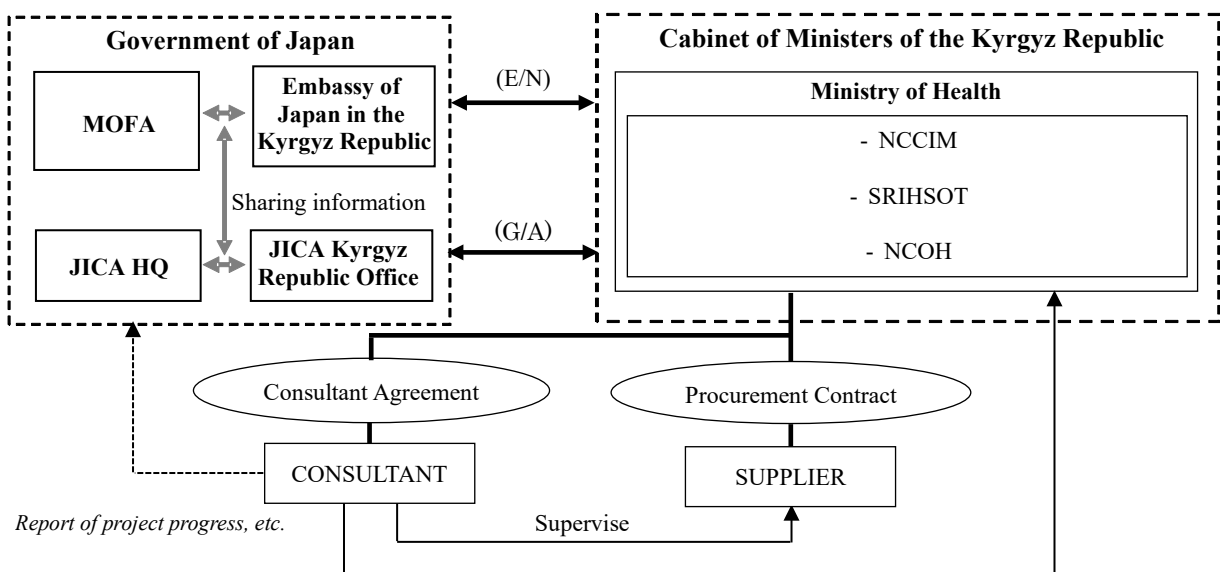


Figure 2-6 Project Implementation

(2) Monitoring on Implementation of Maintenance Service Contract by the Supplier After Handover of the Equipment.

The consultant will visit the targeted hospitals and the local agents of equipment once a year for 3 years after the handover and confirm the execution of maintenance services (periodical and daily maintenance, checklist for maintenance, etc.) that are included in the procurement contract. It will be reported to the MOH, each hospital and JICA as well.

2-2-4-2 Implementation Conditions

(1) Schedule Management

All medical equipment and peripheral equipment used in the Kyrgyz Republic must be registered. The new registration rule was scheduled to be started after January 2022 under the common rules of the EAEU, of which the Kyrgyz Republic, Russia, Kazakhstan, Belarus, and Armenia are members, but due to the conflict in Russia and Ukraine, registration was postponed until December 2025. On the other hand, it was agreed between MOH and survey team that the MOH would facilitate the necessary measures (simplification, etc.) for the registration of equipment if the medical equipment to be procured under the Project is not registered in the Kyrgyz Republic by January 2026. In addition, the ministry resolution was passed to exempt equipment that meets certain conditions from medical device registration, and the use of this resolution will be considered as well.

Because of the limited number of local agents and engineers in the Kyrgyz Republic, the importation, transportation, installation and initial operational guidance of equipment will be largely relied on the agents and personnel of neighboring countries, which requires careful schedule management for smooth implementation of the Project.

(2) Dispatch of Technicians for equipment Installation

It is extremely important to transfer the knowledge and skills regarding appropriate operation and maintenance of the equipment to contribute to medical service quality through continuous and proper operation of the procured equipment after implementation of the Project. Therefore, the technicians who are thoroughly familiar with the operation of each type of equipment will be selected. Sufficient time for explanation of equipment handling (operation techniques, simple repair techniques, inspection methods, etc.) will be taken, and the level of comprehension of the participants will be confirmed carefully during training.

(3) Tax Exemption

1) Import duty.

Custom clearance will be possible by presenting the following documents to the customs authority.

I. International commitments (E/N, G/A)

Translation into Russian and Kyrgyz is required.

*Must be approved by the Foreign Service Bureau of the Ministry of Foreign Affairs.

*Send the above documents to the Ministry of Economy, Ministry of Finance, and Customs, and obtain approval letters from the Ministry of Economy and Ministry of Finance.

II. Tax exemption letter issued by the Ministry of Economy and Finance

III. Agreement

IV. Contract with the executing agency (contract between the supplier and MOH)

*Translation into Russian and Kyrgyz is required (permission from the Ministry of Foreign Affairs is not required).

V. Shipping documents such as invoices (packing lists)

*Need a list for each shipment.

VI. Power of Attorney from the MOH

VII. Medical device registration certificate and quality control certificate

If the equipment is ISO certified, a certificate will be issued in about one week. For equipment that does not require a quality control certificate, a letter of authorization for customs clearance will be issued upon application through the website.

2) VAT

The Kyrgyz Republic imposes a 12% VAT. According to the result of the survey, because of the complicated refund procedure for VAT, it is not practical to provide tax exemption for VAT on the purchase of products that have already been imported into the Kyrgyz Republic. Therefore, if the equipment supplier procures equipment from the local agent in the Kyrgyz Republic, the local agent can receive tax exemption by importing new equipment for the Project and following the same procedures as for import tax exemption. Most of the local agents do not have medical equipment in stock and currently import it from the manufacturer's headquarters based on the orders, and it was confirmed with the local agents that there is no problem with importing and selling new equipment for the Project.

(4) Application for Import License

1) Registration of Medical Equipment

Registration of medical equipment is required for each model of a product, even if it is produced by the same manufacturer, thus registration is required each time there is a model change. Registered medical equipment can be viewed by anyone on the website of the Drugs and Medical Devices Division (<http://www.pharm.kg/en/>), an organization under the MOH. However, since some information is not the latest version, it is necessary for the supplier to directly confirm to the organization whether the equipment has been registered or not. The fees and necessary documents required for registration vary depending on the equipment, and a letter of attorney from the manufacturer, registration information of the manufacturer's headquarters, equipment manuals and technical specifications, etc. are required. This new registration rule was scheduled to be started after January 2022 under the common rules of the EAEU, of which the Kyrgyz Republic, Russia, Kazakhstan, Belarus, and Armenia are members, but due to the conflict in Russia and Ukraine, registration was postponed until December 2025.

Currently, medical equipment is registered under the Kyrgyz Republic national regulation, and the actual devices are verified during registration. After May 2019, the registrations are issued as permanent licenses for the equipment. The registration procedure of a new medical equipment takes about three months. It was confirmed that the understanding of this procedure was also same as the understanding of the MOH and the local agents during the survey.

In view of the current complex medical equipment registration procedures, a new decree was signed and passed by the President on 29 January 2024 (Presidential Decree No. 216). This decree stated that the MOH can issue special exceptions on a case-by-case basis, exempting certain medical equipment which

meet specific conditions. This decree will also apply after the application of the EAEU's terms of reference, which will start in January 2026. This special exception does not allow the sale of the targeted medical equipment outside of the decided project. In addition, the equipment must undergo a quality assessment by the Quality Assessment Department of the MOH in order to issue a special exception. To issue a special exception, the following documents must be submitted, 1) contract between the MOH and the equipment supplier, 2) quality assurance certificate from the manufacturer, 3) invoice, 4) certificate of test results by the manufacturer and 5) ISO. These documents are submitted after the equipment has been delivered to the project site, and after the document review, the quantity of the equipment is verified by on-site inspection. These series of examination will take approximately 10 days.

When issuing a special exception, it is important to note that a comprehensive list of consumables must be also submitted. The timing for issuing a special exception is after the bidding process, but it will be issued after submitting the list of equipment for which the special exception is requested to the Quality Assessment Department of the MOH and confirming that the consumables can be procured in the Kyrgyz Republic and that the equipment has not already been registered as a medical equipment in the Kyrgyz Republic.

If this exception is not applied, it will be necessary to comply with EAEU regulations after January 2026. According to current information, after applying for the documents, the products will need to be sent to an inspection center in a member country of EAEU for product inspection. There are inspection centers in the Kyrgyz Republic, but they can only perform very simple inspections. Therefore, in most cases, equipment must be sent to inspection centers in other EAEU countries other than the Kyrgyz Republic. It means that it is impossible to complete the procedures only in the Kyrgyz Republic, and additional costs must be paid by the manufacture or local agents to the EAEU country where the inspection center is located. If the medical equipment to be procured under this Project is not registered in the Kyrgyz Republic by January 2026 and the target model meets the specific conditions for the special exceptions, the MOH will facilitate the necessary measures for equipment registration in accordance with the decree passed on January 29, 2024.

(5) Points for Equipment Installation

For major large equipment that needs to be installed, it is necessary to check the specifications of the procured equipment regarding the equipment delivery route, floor load capacity of the installation room, required power supply, air conditioning and ventilation. The installation and use environment for X-ray equipment must be prepared by checking whether the targeted room has radiation protection which meet the Kyrgyz radiological regulation.

1) Floor Load Capacity

Since the weight of the gantry of CT scan is around 2 tons, it is necessary to check the floor load capacity of the installation room. The size of the installation room, the type of floor structure, and the allowable loading capacity should be confirmed before installation.

2) Delivery Route

For CT scan and angiography, the size of the equipment is large, and it is necessary to check the doors, aisle widths, and heights of the delivery routes. In particular, CT scan requires careful consideration and conditions for the delivery route.

3) Radiation Protection

X-ray apparatus must be protected in accordance with the required lead equivalent of radiation protection of the installation room based on the dose emitted from the X-ray tube of each piece of equipment. The installation room must be equipped with protection performance in accordance with the Kyrgyz X-ray protection standards.

4) CT scan Room

The CT scan room at the SRIHSOT will be renovated from the existing room for the deputy director into a CT scan room, which will require modifications to meet the installation and utility conditions including securing a power supply, securing the required space, and controlling temperature and humidity. In addition, it will be necessary to renovate the walls, doors, ceiling and operation window to meet X-ray protection standards.

5) Angiography Room

The angiography equipment for the NCCIM is planned as ceiling type, so it is necessary to confirm the strength of the structure of ceiling. The condition of ceiling after the removal of the existing ceiling rails and support will be checked, and an installation plan for the new rails will be formulated and installed.

2-2-4-3 Scope of Works

Implementation of the Project is conducted under mutual cooperations between Japan and the Kyrgyz Republic sides. As the Project is implemented under Japanese grant aid, the scope of works undertaken by both governments will be as described as follows.

Table 2-10 Scope of Works

| Items | Japan side | The Kyrgyz Republic side |
|--|------------|--------------------------|
| Equipment work | | |
| - Procurement | ✓ | |
| - Installation work | ✓ | |
| - Trial run and adjustment | ✓ | |
| - Operation guidance | ✓ | |
| - Legal procedures and inspections concerning installation | | ✓ |
| Utility work | | |
| - Utility systems work in the building | | ✓ |
| - Connection of power, etc. to the procured equipment | ✓ | |
| Securing space for equipment storage | | ✓ |
| Transportation and customs clearance | | |
| - Transportation of equipment to the site | ✓ | |
| - Customs clearance | ✓ | ✓ |
| - Tax exemption | | ✓ |
| Procedures for B/A and payment of commission fees | | ✓ |
| Provision of convenience to Japanese and/or physical persons of third countries concerned with the Project necessary for their embarkation, disembarkation and stay in the Kyrgyz Republic | | ✓ |
| Provide clinical training, staffing, and operational systems to utilize equipment that hospital has never owned before (e.g., ECMO at the SRIHSOT and the NCCIM and CT scan at the NCCIM). | | ✓ |
| The costs (travel, daily allowance and accommodation) of training for ECMO in a third country conducted by the manufacturer or the manufacturer's agent. | | ✓ |
| Effective use and management of the procured equipment | | ✓ |
| Application for and acquisition of permits necessary for the Project implementation | | ✓ |
| Payment of all the costs of related tasks that are not covered by the Japanese Grant Aid | | ✓ |

2-2-4-4 Consultant Supervision

(1) Procurement Supervision Policy

Under the grant aid policy of the government of Japan, based on the concept of the outline design, the consultant forms a team that has a continuous responsibility to execute the Project, including preparation of the detail design to achieve smooth and successful implementation. The procurement supervision policy for the Project is outlined below.

- I. To keep close contact with the persons in charge of the Project and represent related organizations of both countries so that installation of equipment will be completed without delay.
- II. To provide quick and appropriate advice and suggestions from a neutral standpoint to the

supplier(s) and others concerned.

- III. To provide appropriate guidance and suggestions regarding operation and management after the handover.
- IV. To confirm that procurement work has been completed and the terms of contract are fulfilled and to observe handing over the equipment and obtain approval of receipt from the Kyrgyz Republic side.

(2) Procurement Supervision Plan

The countries of procurement of the Project are Japan, the Kyrgyz Republic and third countries. When the equipment is shipped from Japan or third countries, the pre-shipment inspection(s) will be conducted by the third-party inspection agent at the port of embarkation. The consultant will confirm the contents of the inspection certificate submitted by the inspection agent in writing. The consultant will issue the inspection report and report to the MOH right after the completion of pre-shipment inspection(s). The person in charge of the MOH, each hospital, supplier and consultant will conduct the acceptance inspection for all procured equipment after installation and initial operational guidance and hand them over. Model name, country of origin, manufacturer name, ODA sticker, and appearance of the equipment, etc. will be checked during the acceptance inspection(s).

2-2-4-5 Quality Control Plan

Under the Project, in addition to Japanese manufacturers, the scope of procurement will be expanded to third countries. However, because it is necessary to avoid having the equipment selected only because of its price; the quality of equipment will be ensured by putting in place certain restrictions, such as limiting products to only those from DAC or OECD member countries and/or designated countries, and requiring equipment to comply with JIS, CE, IEC, and other international standards.

As ready-made equipment will be procured for the Project, the quality control of procured equipment will be also secured through factory acceptance inspections and pre-shipment inspections. The factory acceptance inspections will be carried out on the equipment that requires specific packaging, precision machines and large/heavy machines that cannot be checked for quality only at the pre-shipment inspections. The pre-shipment inspection will be conducted at designated warehouses at the seaport (or airport) for equipment procured in Japan and the third countries.

2-2-4-6 Procurement Plan

Medical equipment that is made in the Kyrgyz Republic is limited, and Japanese products and third countries products will be procured. Reflecting this situation, procurement conditions will require local agents that are located in the Kyrgyz Republic and its surrounding countries and who can provide after-sales services. If the scope of procurement is expanded to include third countries, the emphasis will be placed on factors such as availability, repair and after-sales service systems and penetration in the Kyrgyz market.

Based on the result of the distributor survey in Bishkek city, the local agents have procurement experience and after-sales service capabilities for the planned equipment in the Project. Regarding spare parts, some local agents have stocks of parts that are frequently replaced, but generally they procured parts from the manufacturer each time they get an order.

In addition, each local agent has a system to receive training from the manufacturer and obtain new certifications when necessary. Regarding large equipment such as a CT scan, some local agents in the Kyrgyz Republic provide after-sales service in cooperation with agencies in neighboring countries such as Kazakhstan and Uzbekistan. However, from the viewpoint of efficiency and promptness of local agents who provide after-sales service, the distributors in neighboring countries must be able to be contacted within the Kyrgyz Republic.

(1) Transportation Plan

Although transportation from Japan to the Kyrgyz Republic had been mainly via Russian or Chinese routes, the route via Russia is no longer available due to the Russia-Ukraine conflict. Therefore, at present, two routes are often used: via China and via Georgia. In the case of the route via China, the cargo is transported by sea from the ports of Tokyo or Yokohama to China by container ship, then transferred to rail or truck at Lianyungang in China and transported through Kazakhstan to Bishkek city. After customs clearance in Bishkek, the cargo is transported by truck to each site. The transportation time is approximately 60 days, but in the case of 20 FT containers, it is necessary to wait for pairing with other 20 FT containers at Chinese ports, which in some cases can take more than one month. In the case of containers via Georgia, containers are transported by sea from the ports of Tokyo or Yokohama to the port of Poti, Georgia, and from Poti to the site by rail and truck. The transportation time will take approximately 135 days.

1) Transportation Plan in Case of Japanese or Third Countries' Procurement

In order to obtain tax exemption, shipping documents including E/N, G/A, and invoice of the project, contract, power of attorney from the MOH, medical device registration certificate and quality control certificate, etc. are required.

2) Transportation Plan for Local Procurement

In the case of local procurement, the local agent will handle the import procedures. As mentioned above, the local agent may receive tax exemption by importing new equipment for the Project. To prove that the equipment is imported for the Project, the same documents as those required for Japanese or third country procurement (E/N for the project, G/A, shipping documents including invoice, contract, letter of attorney from the MOH, medical equipment registration certificate and quality control certificate, etc.) must be prepared. Local agents are responsible for arranging their own carriers and customs brokers to transport the goods to their respective sites, so it is necessary to have a letter of attorney from the MOH issued to each agent.

2-2-4-7 Operational Guidance Plan

Under the Project, planned equipment is medical equipment, and care concerning operation and maintenance of the equipment should be taken as much as possible for safe and continuous use of the equipment. Therefore, it is essential to provide adequate instruction and training of operation and maintenance regarding the equipment by dispatching skillful engineers from the equipment manufacturers or their local agents at the time of delivery. The consultant will check if the guidance is properly performed and confirm if the persons in charge at the hospitals understand the guidance sufficiently.

2-2-4-8 Soft Component (Short-term Technical Assistance)

The equipment planned for the Project is mainly for renewal of existing equipment due to deterioration, which means the doctors, nurses and/or technicians in the hospitals already have maintenance experience for the medical equipment. These maintenance experiences are, however, only for the daily maintenance. According to the recommendation from the manufacturer of the advanced medical equipment, the maintenance activities of such equipment is generally done by the local distributors of manufactures rather than the end-users. Thus, the maintenance service contract for the advanced equipment will be planned in the Project, and maintenance for advanced equipment will be performed by the local agents of the manufacturers under the maintenance service contract.

Regarding other equipment not covered with maintenance service contract, although the necessity for a short-term technical training so-called “Soft Component”, was acknowledged in discussions with the hospitals, it was considered that the hospital staff will be able to maintain the equipment at a certain level by alternative methods such as the confirmation of daily inspection items and practical trainings during initial operational guidance and operation training at installation by manufacture or local agent’s engineers. Hence, it was concluded that Soft Component is not planned in the Project.

For equipment which have maintenance service contracts, follow-up and feedback will be conducted during the periodic inspection visits in order to ensure that daily maintenance is properly implemented in addition to the above initial trainings at installation.

2-2-4-9 Implementation Schedule

It is assumed that it will take about 3 months from the conclusion of the E/N and G/A to ratify them in the Kyrgyz Republic. The implementation schedule of the Project will be about 4 months for detailed design after the Consultant Contract is made, about 2 months for the bid and supplier contract, and about 15months for the procurement and installation of the equipment. The implementation schedule of the Project is as follows.

addition, during installation supervision (management) work where a long stay is expected, safety measures should be taken using the Safety Measures Guidance prepared by JICA, and every possible precaution should be taken for safety during travel, and close cooperation and information exchange with the Overseas Diplomatic Establishment should be carried out.

2-4 Obligations of Recipient Country

Specific obligations of the Kyrgyz Republic side which are confirmed during the site survey are described below.

Table 2-11 Work Borne by the Kyrgyz Republic Side

| | |
|--|---|
| Before Bidding | <ul style="list-style-type: none"> ▪ To open bank account (B/A) ▪ To issue A/P to a bank in Japan (the Agent Bank) for the payment to the Consultant and bear the advising commission of A/P and payment commission for A/P. |
| During the Project Implementation until Handing-over | <ul style="list-style-type: none"> ▪ To issue A/P to a bank in Japan (the Agent Bank) for the payment to the Supplier(s) and bear the advising commission of A/P and payment commission for A/P. ▪ To ensure prompt unloading and customs clearance at ports of disembarkation and to assist the Supplier(s) with internal transportation therein (including proof documents and procedures if medical equipment registration if it is exempted for the Project). ▪ To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work. ▪ To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted. ▪ To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project, such as tables and chairs for general use, etc. ▪ To remove existing equipment and to rehabilitate facilities and utilities (electricity, water supply and drainage system and LAN system in hospitals). ▪ To prepare and submit the Project Monitoring Report (PMR). ▪ To prepare and submit the final PMR at the completion of the works. ▪ To allocate necessary medical staffs. ▪ To provide clinical training, staffing, and operational systems to utilize equipment the hospital has never owned before (e.g., ECMO at the SRIHSOT and the NCCIM and CT scan at the SRIHSOT). ▪ To bear the costs (travel, daily allowance and accommodation) of training for ECMO in a third country conducted by the supplying manufacturer or the manufacturer's agent. |
| After the Project | <ul style="list-style-type: none"> ▪ To secure maintenance cost for proper use and management of procured equipment. ▪ To organize the operation and maintenance structure. ▪ To implement daily check and regular inspection of procured equipment. |

In addition to the above, the following table shows the burden classification of the Japanese and the Kyrgyz Republic sides for the construction of facilities to prepare for the installation of the equipment.

Table 2-12 Scope of Works for Major Equipment Installation

| No. | Preparation and Installation Work | Japanese side works | Kyrgyz Republic side works |
|---|--|---------------------|----------------------------|
| CT scan, Angiography, 3D/2D mammography | | | |
| 1 | Securing space and routes for carrying the equipment to the installation room | | ✓ |
| 2 | Ensure that the switchboard, electrical capacity, and grounding are appropriate for the power consumption of the equipment | | ✓ |
| 3 | Installation of switchboards and power outlets in the installation rooms | | ✓ |
| 4 | Wiring and connections from electrical outlets to the equipment | ✓ | |
| 5 | Maintenance of appropriate temperature and humidity environment, including installation of air conditioning | | ✓ |
| 6 | Maintenance of walls, ceilings, doors, and operating windows in compliance with following the Kyrgyz Republic's X-ray protection regulation | | ✓ |
| 7 | Preparation and connection of emergency power supply in case of power failure | | ✓ |
| 8 | Removal and discharge of existing equipment | | ✓ |
| CT scan room for the SRIHSOT | | | |
| 1 | Installation of floor pit and wiring cover | | ✓ |
| 2 | Finishing work for CT scan room, control room, and machine room | | ✓ |
| 3 | Floor leveling work for CT scan installation | | ✓ |
| 4 | Air conditioning for CT scan room, control room and machine room (including UPS room) | | ✓ |
| 5 | Procurement and installation work for "In-Use" indicator lights | | ✓ |
| 6 | Procurement of microphone speaker for patient instructions | ✓ | |
| 7 | Wiring work of microphone speaker | ✓ | |
| 8 | Wiring and connection work between switchboards for CT scan, CT scan, and control panels | ✓ | |
| 9 | Procurement, installation, and connection work for emergency power supply (generator) and automatic switching panel in case of power failure | | ✓ |
| 10 | UPS Procurement | ✓ | |
| 11 | Installation and connection work from UPS to distribution panel for CT scan | ✓ | |
| 12 | Procurement of tables and chairs for control room | | ✓ |

2-5 Project Operation Plan

(1) Operation Structure and Organization

The executing agency for the Project is the MOH of the Kyrgyz Republic, but each hospital which is a target medical institution will be responsible for its operation and maintenance after the handover. The Project aims to strengthen the diagnostic and treatment systems at the tertiary hospitals in Bishkek city, the top referral hospitals for public health and medical service, by procuring medical equipment for the diagnosis and treatment of cardiovascular diseases and breast cancer, thereby contributing to the improvement of the quality of medical services. Each hospital should continue to make efforts to assign the

necessary medical staffs for the goal of assigning one maintenance technician per 100 beds, as stipulated by the Government of the Kyrgyz Republic. In addition, the Project plans to provide initial operational guidance and operation training toward equipment engineers/technicians, doctors, nurses and laboratory technicians when the equipment installation is conducted, to ensure smooth operation and maintenance of the equipment after the handover.

(2) Personnel Plan

There is no department that can service medical equipment maintenance under the MOH, so maintenance of medical equipment should be conducted by each hospital. Although each hospital is supposed to have at least 1 medical engineer per 100 beds, most of hospitals unable to secure the enough numbers of engineers. As the hospitals receive a lot of equipment after the Project, the hospitals will need more maintenance activities more than ever before. Thus, it was confirmed that the MOH would take necessary measures to secure necessary personnel in each hospital for equipment maintenance with the support from the local agents.

(3) Maintenance Management Plan

For the equipment planned in the Project, daily maintenance, before-and-after use, must be properly conducted by the end-users such as doctors, nurses and technicians.

The end-users will be instructed on the operation and daily maintenance during the initial operational guidance and operation training at the time of installation. Furthermore, in order to ensure proper operation and maintenance of the equipment procured in the Project, a maintenance service contract is planned to be covered by the expense of the Japanese grant aid for two years after the expiration of the 1-year manufacturer’s warranty. The maintenance service contract will include periodic maintenance by the local agent’s engineers (e.g., visits every three months), on-call service, replacement of periodic replacement parts, and re-confirmation of daily maintenance items and skills (includes training, if necessary).

2-6 Project Cost Estimation

2-6-1 Initial Cost Estimation

According to the initial cost estimation, the burden on the Kyrgyz Republic side was estimated as follows.

(1) Costs to be borne by the Kyrgyz Republic Side

Table 2-13 Costs to be Borne by the Kyrgyz Republic Side

| Cost | Estimated Cost | |
|---|----------------|--------------------|
| | (USD) | (Thousands of yen) |
| [1] Removal of large existing equipment (total of 3 target hospitals) | 39,647 | 5,951 |
| NCCIM | 16,995 | 2,551 |
| SRIHSOT | 17,322 | 2,600 |
| NCOH | 5,330 | 800 |

| | | |
|--|---------|--------|
| [2] Renovation for CT scan room (Scientific Research Institute of Heart Surgery and Organ Transplantation) | 49,687 | 7,458 |
| [3] Training expenses for equipment that the hospital never owned before (ECMO to be installed at the NCCIM and SRIHSOT) | 22,125 | 3,321 |
| [4] Banking Commissions, etc. | 9,993 | 1,500 |
| Total ([1] + [2] + [3] + [4]) | 121,452 | 18,230 |

(2) Calculation Conditions

Time of Estimation : As of December, 2023

Conversion Rate : 1 USD = JPY150.10, 1EUR=JPY160.78

Procurement Period : As shown in the Project Implementation Schedule

Others : Project implementation intended to follow the Grant Aid scheme of the GOJ.

2-6-2 Operation and Maintenance Costs

(1) Annual operation and maintenance costs

The maintenance cost consists of the cost of repair, consumables, and replacement parts. Consumables are required from the first year after the handover, but any malfunctions excepting malfunctions caused by user defects, are covered by the manufacturer's warranty. Until the third-year ends, the repairment works and costs of the selected equipment will be covered with the maintenance service contract, but others will not be covered after 1-year manufacturer's warranty. From the fourth-year, hospitals will need to renew these contracts or call the manufacturer's agent when necessary at hospital's own expenses.

The table below shows the maintenance costs for the equipment planned for the Project. It is estimated that the increase in the medical service fee (Special account) for the three target hospitals resulting from the operation of the Angiography, Radiofrequency ablation machine, CT scan, and 2D/3D mammography will be approximately USD400,000 per year. The other equipment is also expected to generate additional income, all of which will be used to cover hospital operation and maintenance cost. In addition, both the MOH and each hospital have agreed to confirm the necessary amount of expenses for the maintenance of planned equipment, consumables, and replacement parts to be installed under the Project, and to secure the budget with the support of the MOH.

Table 2-14 Maintenance Cost for Equipment (USD)

| Item | Initial fiscal year | 2 nd year | 3 rd year | 4 th year and after |
|---|---------------------|----------------------|----------------------|--------------------------------|
| [1] Maintenance and management costs (total of the three subject hospitals) | 0 | 30,403 | 30,403 | 321,353 |
| NCCIM | 0 | 15,206 | 15,206 | 142,706 |
| SRIHSOT | 0 | 10,607 | 10,607 | 174,057 |
| NCOH | 0 | 4,590 | 4,590 | 4,590 |

| | | | | |
|---|---------|---------|---------|---------|
| [2] Expenses for consumables and replacement parts (total of the three eligible hospitals)] | 363,302 | 363,302 | 363,302 | 363,302 |
| NCCIM | 177,396 | 177,396 | 177,396 | 177,396 |
| SRIHSOT | 140,936 | 140,936 | 140,936 | 140,936 |
| NCOH | 44,970 | 44,970 | 44,970 | 44,970 |
| Total ([1] + [2]) | 363,302 | 393,705 | 393,705 | 684,655 |

(2) Annual consumable expenses for equipment

The details of consumable expenses are as follows.

Table 2-15 Annual Cost for Consumable (NCCIM)

| Name of Equipment | | Q'ty | Consumables and Replacements | Annual Requirement | Unit price (USD) | Subtotal (USD) |
|-------------------|--|------|------------------------------|--------------------|------------------|----------------|
| NCCIM | | | | | | 177,396 |
| C-2 | Radiofrequency ablation machine with 3D navigation | 1 | Cables | 1 | 2,000 | 2,000 |
| C-3 | External pacemaker dual channel | 2 | Battery | 2 | 2 | 8 |
| C-4 | Intra-aortic balloon counter pulse | 1 | Balloon Kit | 80 | 300 | 24,000 |
| C-5 | Ultrasound machine with TEE probe | 2 | Gel | 5 | 12 | 120 |
| | | | Printing paper | 20 | 8 | 320 |
| C-6 | Defibrillator | 2 | Adult Pads | 1 | 165 | 330 |
| | | | Pediatric Pads | 1 | 165 | 330 |
| C-7 | Ventilator | 1 | Respiratory Circuit Filter | 2 | 412 | 824 |
| | | | Bacteria Filter | 2 | 11 | 22 |
| C-15 | Central monitor for 18 beds | 2 | Probe | 7 | 214 | 2,996 |
| | | | Electrode | 350 | 1 | 700 |
| | | | Printing paper | 70 | 2 | 280 |
| | | | Battery | 0.5 | 100 | 100 |
| C-16 | Patient monitor with Invasive BP | 3 | Adult Probes | 7 | 214 | 4,494 |
| | | | Electrode | 350 | 1 | 1,050 |
| | | | Printing paper | 70 | 7 | 1,470 |
| | | | Battery | 0.5 | 100 | 150 |
| C-17 | Patient monitor with non-invasive BP | 42 | Adult Probes | 7 | 214 | 62,916 |
| | | | Electrode | 350 | 1 | 14,700 |
| | | | Printing paper | 70 | 7 | 20,580 |
| | | | Battery | 0.5 | 100 | 2,100 |
| C-18 | External pacemaker single channel | 6 | Battery | 2 | 2 | 24 |

| Name of Equipment | | Q'ty | Consumables and Replacements | Annual Requirement | Unit price (USD) | Subtotal (USD) |
|-------------------|---|------|-------------------------------|--------------------|------------------|----------------|
| C-19 | External pacemaker, dual channel | 6 | Battery | 2 | 2 | 24 |
| C-20 | Ventilator | 6 | Adult Respiratory Circuit Set | 2 | 412 | 4,944 |
| | | | Bacteria Filter | 2 | 11 | 132 |
| C-21 | Defibrillator with external pacing function | 4 | Adult Pads | 1 | 165 | 660 |
| | | | Pediatric Pads | 1 | 165 | 660 |
| C-24 | High-flow oxygen therapy machine | 4 | Adult Respiratory Circuit Set | 2 | 421 | 3,296 |
| | | | Bacteria Filter | 2 | 11 | 88 |
| C-25 | Electrocardiograph | 10 | Gel | 2 | 2 | 40 |
| | | | Printing paper | 10 | 10 | 1,000 |
| C-26 | Syringe pump | 52 | Infusion set 20 drops/ml | 2 | 44 | 4,576 |
| | | | Infusion set 60 drops/ml | 4 | 53 | 11,024 |
| C-27 | Suction machine | 6 | Suction Tube | 1 | 11 | 66 |
| | | | Filter | 1 | 106 | 636 |
| | | | Hose | 1 | 53 | 318 |
| C-30 | Immuno-enzyme analyzer (ELISA) | 1 | Maintenance Kit | 1 | 1,450 | 1,450 |
| C-31 | Microplate ELISA washer | 1 | Maintenance Kit | 1 | 1,450 | 1,450 |
| C-32 | Semi-automatic biochemistry analyzer | 1 | Maintenance Kit | 1 | 1,450 | 1,450 |
| C-33 | Blood gas analyzer | 2 | Maintenance Kit | 1 | 1,450 | 2,900 |
| C-34 | Semi-automatic coagulator | 1 | Maintenance Kit | 1 | 1,450 | 1,450 |
| C-35 | Automatic urinary station | 1 | Maintenance Kit | 1 | 1,450 | 1,450 |
| C-36 | Binocular microscope | 4 | Oil | 1 | 27 | 108 |
| | | | Preparation | 5 | 7 | 140 |
| C-38 | Holter Electrocardiograph | 10 | Battery | 1 | 2 | 20 |

Table 2-16 Annual Cost for Consumable (SRIHSOT)

| Name of Equipment | | Q'ty | Consumables and Replacements | Annual Requirement | Unit price (USD) | Subtotal (USD) |
|-------------------|--------------------|------|------------------------------|--------------------|------------------|----------------|
| SRIHSOT | | | | | | 140,936 |
| T-1 | CT scan | 1 | X-ray film | 84 | 374 | 31,416 |
| T-3 | Ultrasound machine | 1 | Gel | 5 | 12 | 60 |

| Name of Equipment | | Q'ty | Consumables and Replacements | Annual Requirement | Unit price (USD) | Subtotal (USD) |
|-------------------|--|------|---------------------------------------|--------------------|------------------|----------------|
| | for echocardiograph | | Printing paper | 20 | 8 | 160 |
| T-4 | Ultrasound machine with TEE Probe | 2 | Gel | 5 | 12 | 120 |
| | | | Printing paper | 20 | 8 | 320 |
| T-5 | Patient monitor for adult | 8 | Probes for adult | 1 | 214 | 1,712 |
| | | | Electrode | 100 | 1 | 800 |
| | | | Printing paper | 15 | 7 | 840 |
| | | | Battery | 0.5 | 100 | 400 |
| T-6 | Heart lung machine | 2 | Tube Set | 500 | 2 | 2,000 |
| T-7 | Ventilator for adult | 5 | Adult Respiratory Circuit Set | 2 | 412 | 4,120 |
| | | | Bacteria Filter | 2 | 11 | 110 |
| T-8 | Anesthesia machine | 3 | Anesthetic gas | 1 | 16 | 48 |
| | | | Soda-lime | 1 | 19 | 57 |
| T-10 | Hemodialysis machine | 1 | Dialyzer | 36 | 16 | 576 |
| | | | Blood circuit | 36 | 6 | 216 |
| | | | Needle (of catheter) | 36 | 2 | 72 |
| T-12 | Cerebral oximetry | 2 | Soma sensor | 1 | 1,039 | 2,078 |
| T-13 | Anesthesia depth measuring device | 2 | Probe | 1 | 633 | 1,266 |
| | | | Electrode | 100 | 1 | 200 |
| | | | Printing paper | 15 | 7 | 210 |
| | | | Battery | 0.5 | 100 | 100 |
| T-14 | Electrosurgical unit | 1 | Hand Piece | 1 | 421 | 421 |
| | | | Blade | 5 | 84 | 420 |
| T-18 | Operating lamp | 2 | Handle | 0.1 | 14 | 3 |
| T-19 | ACT analyzer | 2 | Maintenance Kit | 1 | 1,450 | 2,900 |
| T-20 | Blood gas analyzer | 1 | Maintenance Kit | 1 | 1,450 | 1,450 |
| T-21 | Syringe pump | 9 | Infusion set 20 drops/ml | 2 | 44 | 792 |
| | | | Infusion set 60 drops/ml | 4 | 53 | 1,908 |
| T-22 | Ventilator for infant | 5 | Pediatric Respiratory Circuit Filters | 2 | 412 | 4,120 |
| | | | Bacteria Filter | 2 | 11 | 110 |
| T-23 | Patient monitor for pediatric and infant | 7 | Probe for Infant | 1 | 214 | 1,498 |
| | | | Probe for Pediatric | 1 | 214 | 1,498 |
| | | | Electrode | 100 | 1 | 700 |
| | | | Printing paper | 15 | 7 | 735 |
| | | | Battery | 0.5 | 100 | 350 |

| Name of Equipment | | Q'ty | Consumables and Replacements | Annual Requirement | Unit price (USD) | Subtotal (USD) |
|-------------------|---|------|------------------------------|--------------------|------------------|----------------|
| T-24 | External pacemaker, dual channel | 10 | Battery | 2 | 2 | 40 |
| T-25 | Defibrillator for operation theatre | 2 | Pads for Adult | 1 | 165 | 330 |
| | | | Pads for Pediatric | 1 | 165 | 330 |
| T-26 | Defibrillator for ICU | 1 | Pads for Adult | 1 | 165 | 165 |
| | | | Pads for Pediatric | 1 | 165 | 165 |
| T-27 | Electrocardiograph 12 channel | 4 | Gel | 2 | 7 | 56 |
| | | | Printing paper | 10 | 7 | 280 |
| T-28 | Electrocardiograph 12 channel for pediatric | 1 | Gel | 2 | 7 | 14 |
| | | | Printing paper | 10 | 7 | 70 |
| T-32 | Nitric oxide inhalation device | 1 | Monitoring Kit | 36 | 33 | 1,188 |
| | | | Gas | 36 | 1,999 | 71,964 |
| | | | Tubes | 36 | 33 | 1,188 |
| T-35 | Portable suction pump | 4 | Tube | 1 | 11 | 44 |
| | | | Filter | 1 | 106 | 424 |
| | | | Hose | 1 | 53 | 212 |
| T-43 | Suction machine | 4 | Tube | 1 | 11 | 44 |
| | | | Filter | 1 | 106 | 424 |
| | | | Hose | 1 | 53 | 212 |

Table 2-17 Annual Cost for Consumable (NCOH)

| Name of Equipment | | Q'ty | Consumables and Replacements | Annual Requirement | Unit price (USD) | Subtotal (USD) |
|-------------------|----------------|------|------------------------------|--------------------|------------------|----------------|
| NCOH | | | | | | 44,970 |
| O-1 | 3D mammography | 1 | X-ray film | 40 | 374 | 14,960 |
| | | | Needle guide for biopsy | 500 | 30.1 | 15,050 |
| O-2 | 2D mammography | 1 | X-ray film | 40 | 374 | 14,960 |

CHAPTER 3 PROJECT EVALUATION

Chapter 3. Project Evaluation

3-1 Preconditions

For the appropriate implementation of the Project, the Kyrgyz Republic side needs to conduct management of tax exemptions, facilitation for imported materials and equipment, process of Banking Arrangement (B/A) and Authorization to Pay (A/P) and removal of existing equipment, etc. as stated in “2-4 Obligations of the Recipient Country”. It is assumed that the necessary procedures and works by the Kyrgyz Republic side will be carried out without delay. In addition, securing necessary budget and human resources for the maintenance of hospitals and their equipment is also highlighted as the preconditions.

3-2 Necessary Inputs by the Recipient Country

The points, the Kyrgyz Republic side should tackle for the realization and continuation of effects of the Project, are described below.

(1) Recruitment and allocation of appropriate human resources

Allocation of new staff and increase in the number of staff will be necessary to operate and maintain the equipment procured under the Project, especially for new equipment that hospitals have no experience in using, such as ECMO and CT scan for the SRIHSOT and ECMO for the NCCIM. Therefore, the Kyrgyz Republic side needs to provide training on clinical techniques and allocate an appropriate number of medical staff to ensure the proper use of the equipment to be installed under the Project. These staffs should be allocated prior to the equipment installation and participate in the initial operational training. For this purpose, it is necessary for the Kyrgyz Republic to formulate a staffing and training plan including budgetary measures in advance and present it to the Japanese side. In the current situation, despite the requirement that 1 engineer in charge of medical equipment is supposed to be assigned per 100 beds, the SRIHSOT and the NCOH are both currently short 1 engineer against the requirement. After the equipment procurement under the Project, the equipment which requires maintenance will increase more than ever. Therefore, it was agreed with the Kyrgyz Republic side that the MOH will take necessary measures in cooperation with each hospital to ensure that each hospital secures the personnel who can perform the necessary maintenance of the equipment with the support from the maintenance agencies and local distributors.

(2) Securing a budget for facility operation and equipment maintenance

In order to achieve the effects of the Project, the MoH and each target hospital need to secure the increased amount of budget, as described in “2-6-2 Operation and Maintenance Cost,” and to operate and maintain the procured equipment appropriately.

(3) Capacity building of human resources

Soft Component, short-term technical assistance, is not planned under this Project, but it is necessary to improve the maintenance skills of the equipment maintenance engineers and the medical staffs for continuous implementation of appropriate maintenance. With the aim of improving the maintenance capability of the hospitals, initial operational trainings will be provided at the equipment installation, and

instructions and feedback by local distributors will be re-given at the time of periodic maintenance covered by the maintenance service contact of the Project. It is important for each hospital to utilize the skills learned through these opportunities to conduct daily and periodic inspections for proper implementation of maintenance. Moreover, the engineers and end-users of the hospitals who received direct instructions from local agent engineers should share their knowledge and skills through conducting in-hospital and regional training programs to sustain the effectiveness of the maintenance.

3-3 Important Assumptions

External conditions for the smooth implementation of the Project include no significant changes of the policies related to medical equipment of the Kyrgyz Republic and of the global economic situation. Following matters will be crucial points for smooth implementation of the Project, such as;

- I. No obstacles in procurement and transportation of equipment related to duty exemption and/or registration of medical equipment and devices caused by the political decisions of the Government of the Kyrgyz Republic.
- II. No lengthy delays of procurement and transportation of equipment caused by the cancellation and/or invalidation of the registration of medical equipment and devices, because of legal changes on the Kyrgyz Republic side.
- III. No unexpected price increase and/or exchange rate fluctuations due to economic conditions for the smooth procurement of all planned equipment.
- IV. No changes of bilateral friendship relations between Japan and the Kyrgyz Republic.
- V. No serious spread of COVID-19, new outbreaks of infectious diseases, deterioration of the political situation and/or regional security and/or outbreaks of war before/during the equipment procurement and/or staying at the Kyrgyz Republic.
- VI. Securing safe stays of the Project personnels in the Kyrgyz Republic.

3-4 Project Evaluations

3-4-1 Relevance

(1) Consideration of the Project relevance

1) Beneficiaries of the Project

The direct beneficiaries of the Project will be the users of the equipment, in other words, the patients who receive outpatient care, inpatient care, examinations and surgeries at the NCCIM and the SRIHSOT, and the patients who receive mammography examination at the NCOH. The total number of patients is calculated to be approximately 90,000. In addition to the patients explained above, these hospitals are the top referral hospitals in the fields of cardiology and oncology and accept patients from all over the Kyrgyz Republic, which will indirectly benefit about 300,000 patients with cardiovascular diseases¹⁵ and 700 patients with breast cancer¹⁶ currently registered in the national patient database. Furthermore, the NCCIM

¹⁵ Population Health and Activities of Health Care Organizations of the Kyrgyz Republic 2022 (e-Health Center)

¹⁶ National Oncology and Hematology Center Malignant Neoplasms Epidemiology and Prevention Report 2022

mainly examines adult patients from its catchment areas of the northern regions (Bishkek, Chui, Talas, Naryn, and Issyk-Kul), and it is calculated that approximately 2.02 million people (about 30% of the total population of the Kyrgyz Republic) will be covered after the equipment procurement for the treatment of cardiovascular diseases.

On the other hand, the SRIHSOT accepts mainly pediatric patients from all over the Kyrgyz Republic, and it is expected that approximately 1.5 million children (about 36% of the population) will receive appropriate pediatric care after the procurement of equipment for cardiovascular diseases. The catchment area of the NCOH is the northern regions. The procurement of mammography in the Project is expected to increase breast cancer screening opportunities for the 1.71 million women in the northern region (about 25% of the total population). Hence, the contribution of the Project through strengthening the NCDs measures in the Kyrgyz Republic to the reduction in the mortality and burden on the medical finance due to NCDs is significant.

2) Consistency with the Kyrgyz Republic's development plans

The Government of the Kyrgyz Republic has set a goal of reducing the mortality rate related to NCDs among the young generation to one-third as a health sector priority in the national long-term strategy, the “National Strategy of Development of the Kyrgyz Republic for 2018-2040”, as well as in the “Program of the Kyrgyz Republic Government on Public Health Protection and Health Care System Development for 2019-2030” established under the national development strategy. However, many public hospitals in the Kyrgyz Republic are inadequate in providing timely and appropriate medical services due to a lack of equipment, aging equipment and malfunction equipment even though NCDs are diseases for which early detection and treatment can directly lead to a reduction in mortality. Considering these situations, through medical equipment procurement for the diagnosis and treatment of cardiovascular diseases and breast cancer, this Project will strengthen the diagnosis and treatment systems of the NCCIM, the SRIHSOT, and the NCOH, which are the top referral hospitals in the Kyrgyz Republic for the examination and treatment of NCDs. Therefore, this Project is consistent with the strategies of the Kyrgyz Republic health sector, and the priority of the Project is considered high.

3) Consistency with Japan's Aid policy

According to the “Country Development Cooperation Policy (April 2022) for the Kyrgyz Republic”, it was stated in the priority area of “Improvement of Administrative and Social Services” that Japan will promote cooperation based on the needs of the Kyrgyz side to strengthen social services, by putting the healthcare system center, as the healthcare system with limited capacity of the country was exposed by the spread of the new coronavirus infection. In addition, the JICA Country Analysis Paper for the Kyrgyz Republic (March 2020) analyzes the importance of improving health and medical services including updating aging healthcare infrastructure (facilities and equipment) and strengthening maintenance capability in the development issues “Improvement of Social Services”. In addition, JICA's Global Agenda for Health addresses strengthening of diagnosis and treatment at core hospitals of the area as one of the cooperation policies to the Kyrgyz Republic. This Project matches these policies, and it is therefore appropriate to implement the cooperative project by Japan's Grand Aid.

4) Consideration of the relevance of the target area (site)

The target hospitals, top referral hospitals in the fields of cardiology and oncology, have been receiving patients with serious conditions who need advanced medical care from all over the Kyrgyz Republic. However, the hospitals have not been functioning adequately as top referral hospitals due to various combinations of deterioration and inadequate insufficient equipment. In response to this situation, this Project will enable the provision of high-quality medical services to the Kyrgyz people through providing and upgrading the medical equipment for diagnosis and treatment of cardiovascular diseases and cancers to enhance the medical treatment functions. The relevance of each hospital as a target of the Project is discussed as follows.

A. NCCIM

This hospital is a tertiary hospital specializing in cardiovascular diseases. The NCCIM treats adult patients while the adjacent the SRIHSOT treats mainly pediatric patients. The hospital plans to consolidate data on heart disease patients nationwide and to read, feedback and archive CT scan images taken at regional hospitals. The hospital plays a central role in assisting the diagnostic and treatment functions of regional hospitals and in epidemiological studies. However, most of the medical equipment has become obsolete, and the hospital is not fully capable of fulfilling its function as a top referral center. For example, the hospital does not own equipment for high-frequency ablation and acute blood purification, it had rented the equipment from private companies, but the Government of the Kyrgyz Republic has banned the rental of all medical equipment from 2024. This changed the situation, so the hospital is currently unable to perform high-frequency ablation procedures and acute blood purification.

Under these difficult situations, the hospital has made the plan titled the “Project program emergency cardiology 2023-2027” as part of the “Program of the Kyrgyz Republic Government on Public Health Protection and Health Care System Development for 2019-2030” with the aim to reduce death and disability caused by the cardiovascular diseases. Moreover, for achieving the goal of “Reducing early deaths from NCDs by one-third” stated in the “National Development Strategy of the Kyrgyz Republic for 2018-2040,” it is essential to strengthen the capacity of the NCCIM to deal with cardiovascular diseases as the center of NCDs control through procuring the medical equipment under this Project.

B. SRIHSOT

This hospital mainly treats neonates and child patients with cardiovascular diseases. The physiological functions of neonates and children are immature and their vital signs fluctuate easily. Additionally, the cardiac surgery itself is complex. These factors make the surgery and perioperative management extremely difficult. Therefore, the medical equipment specialized for neonates and children use is necessary. But most of the medical equipment the hospital owns is obsolete, and there has been no donor support in the last 10 years. For these reasons, this hospital is not able to provide sufficient medical services currently.

According to the statistics of Financial Year 2022, 3,686 people who are 14 years-old or younger have been registered as patients with congenital anomalies of the heart or circulatory organs in the national

patient database. Doctors say that even more potential patients exist, and the number of children who receive specialized consultations at the SRIHSOT has been increasing each year because of on-site examination in rural areas and other various activities to make the health and medical service access easy. In the case of children, there are cases where they require multiple surgeries as they grow, and as the number of children receiving specialized consultations increases, the number of surgeries is expected to increase as well.

Since it is the only hospital in the Kyrgyz Republic capable of performing surgical procedures for complex and challenging cardiovascular diseases of neonates and children, the procurement of medical equipment in the Project is essential.

C. NCOH

The most common cancer in the Kyrgyz Republic per unit of population is breast cancer (20.5 cases/100,000 people), especially in Bishkek and Chui Oblast (29.8 and 31.7 cases/100,000 people, respectively). The NCOH is a tertiary hospital that serves as a center for cancer care in the Kyrgyz Republic, but it has only one mammography device in operation, and it is an old model manufactured in 2012 with a low image resolution. In addition, the mammography device is not located in the outpatient area, and the image is not digitalized, so the physician of out-patient department must leave the room to check the results, which makes diagnosis time-consuming. The limitation of working hours for radiology personnel due to the radiation amount received also limits the number of patients that can be treated each day. For those reasons, the patients often select private hospitals, even the physicians at private hospitals are not sufficiently experienced and their findings do not match those of the physicians at the NCOH.

In the Kyrgyz Republic, the statistics show that the 5-year survival rate of the breast cancer patients is 45% (about half that of Japan)^{17,18}, and more than 40% of the breast cancer patients are at the cancer stage of III or higher cancer (15% in Japan)¹⁹. This suggests that delays in diagnosis and treatment have been affecting the patients prognosis. Considering all these reasons, it is appropriate to procure a high-performance mammography device at the NCOH where there are highly specialized physicians.

3-4-2 Effectiveness

The target values expected from the implementation of the Project are as follows.

(1) Quantitative Effects

The quantitative outputs expected from the implementation of the Project are summarized below. The year 2022 is set as the base year and the year 2029, three years after the completion of the Project (2026), is set as the target year.

¹⁷ National Oncology and Hematology Center Malignant Neoplasms Epidemiology and Prevention Report 2022 (National Oncology and Hematology Hospital (Cancer Center))

¹⁸ Cancer Statistics in Japan 2023 (Foundation for Promotion of Cancer Research)

¹⁹ In-hospital cancer registry 2021 national total (National Cancer Center, National Cancer Center, Cancer Control Institute)

Table 3-1 Output Indicators of the Project (NCCIM)

| Indicator | Base value [Actual value in 2022] | Target value (2029) [3 years after Project completion] |
|--|--------------------------------------|---|
| Number of angiography examination and treatment (cases/year) | 1,789 | 2,200 |
| Number of radiofrequency ablation treatment (cases/year) | 216 | 400 |

Table 3-2 Output Indicators of the Project (SRIHSOT)

| Indicator | Base value [Actual value in 2022] | Target value (2029) [3 years after the Project completion] |
|--|--------------------------------------|---|
| Number of CT examination (cases/year) | 0 | 500 |
| Number of angiography examination and treatment (cases/year) | 581 | 1,500 |

Table 3-3 Output Indicator of the Project (NCOH)

| Indicator | Base value [Actual value in 2022] | Target value (2029) [3 years after Project completion] |
|---|--------------------------------------|---|
| Number of mammography examinations (cases/year) | 1,507 | 3,000 |

1) Number of angiography examination and treatment

A. NCCIM

Currently, the NCCIM has 1 angiography device that was manufactured in 2013, but its deterioration has made it difficult to operate for long usage and limits the number of cases per day. The time occupied in the angiography room varies depending on the procedure. When the length of time required for each procedure (including preparation and cleanup) is multiplied by the number of cases performed, it is estimated that the angiography room will be in operation for approximately 2,400 hours in 2022. If it is considered that the hospitals operate 300 days per year, this would mean about 8 hours of operation per day. Since it is estimated that the new angiography device will operate for 10 hours per day (3,000 hours per year), which means approximately 1.25 times more patients will be treated than in the base year, and thus, the target value is set at 2,200 cases. The angiography device to be procured through the Project is a replacement of the current device, so the number of angiography devices owned by the hospital will remain unchanged.

B. SRIHSOT

Although the SRIHSOT currently owns 1 angiography device, it was manufactured in 2014; the angiography device is sometimes not able to operate because of malfunction due to its aging. When the time required for each procedure (including preparation and cleanup) is multiplied by the number of cases

performed in the NCCIM, it is estimated that the angiography room will be in operation for approximately 1,150 hours in 2022, which is about 3.8 hours per day, if the hospital is considered to operate 300 days per year. If a new angiography device is procured through the Project, it is estimated that the angiography room will operate for 10 hours per day (3,000 hours per year), which means about 2.6 times more patients will be treated, and thus, the target value was set at 1,500 cases. The angiography device to be procured through the Project is a replacement of the current device, so the number of angiography devices owned by the hospital will remain unchanged.

2) Number of radiofrequency ablation treatment machines

As the NCCIM had been using a rented radiofrequency ablation machine from a private company to perform the procedure, it is not able to perform the procedure in a timely manner in the base year. In addition, the rented radiofrequency ablation machine is not fully functioned and the number of patients who could get treated by the equipment is limited. In addition, the high cost of consumables was borne by the patients until 2023, so the number of patients who could undergo the procedure was limited as well.

The NCCIM has informed that the number of patients who are eligible for radiofrequency ablation machine is approximately 400 per year. If the radiofrequency ablation machine with necessary functions is procured through this Project, and if the plan to cover the cost of consumables for expensive equipment by the MOH budget is implemented without fail, all those applicable patients (400 people) will be able to undergo radiofrequency ablation machine surgeries.

3) Number of CT examination

The SRIHSOT does not currently own a CT scan and all patients who need a CT scan are transferred to the NCCIM. If a CT scan is installed in the SRIHSOT through this Project, the access for CT examinations will be easier than now. Then, approximately 500 pediatric patients a year will undergo CT examinations according to the hearing from the doctor.

4) Number of mammography examinations

The NCOH has one mammography device that was manufactured in 2012 and approximately 1,500 examinations are performed annually. However, due to the deterioration of the device, it is difficult to operate for a long time and its image resolution is low. For these reasons, many patients visit private hospitals for examinations and more precise results. The Project is planning to install 2 mammography devices with higher image quality and the existing device is scheduled to be removed. Once 2 mammography devices will be operated, each mammography device is expected to perform 1,500 examinations per year, which is resulting in 3,000 examinations in total. This number of examinations is calculated under consideration of the number of hours that radiology personnel can work (6 hours per day), the number of examinations that specialists can read, the time required to explain results and treatment plans to patients and the number of patients who can visit the hospital, etc.

(2) Qualitative effects

The output expected by the implementation of the Project is as follows.

1) The quality of medical services at the target hospital is improved

The procurement and replacement to the advanced medical diagnostic and treatment equipment will enable the provision of more accurate and efficient diagnosis and treatment. It is expected to improve the early detection and treatment of NCDs and the associated treatment outcomes. In addition, this improvement in the quality of health and medical services is expected for shorter waiting times and increase in the number of patients visiting the target hospitals.

The improvement in the quality of health and medical service such as the examinations and treatments the hospital can provide, reduction in waiting time, and increase in the number of patients will be researched through interviews and questionnaires to the hospital staffs and patients. This will be examined with questions to compare scores before and after the equipment is installed whereas the factors that led to this evaluation, the detailed contribution, and impacts of the Project on the quality of health and medical services will be researched through free descriptions and interviews.

2) Patient and healthcare professional satisfaction at the target hospitals is improved

Through the procurement of medical equipment under this Project, patients who currently choose private hospitals with sufficient medical equipment or patients who could not go to the private hospitals will be able to receive timely and appropriate health and medical services at the target hospitals. In addition, the efficiency of examinations and treatment will reduce the physical burden on patients, the workload on medical personnel and the mental stress of medical personnel due to their inability of best treatment to patients.

Those changes in satisfactions such as patients' financial and physical burdens, workload reduction, and trust in the target hospitals will be researched by questions to compare scores before and after the equipment is procured, and the factors that led to these evaluations will also be examined through free descriptions and interviews to verify the effectiveness of the Project.

APPENDICES

1. Member List of Survey Team
2. Survey Schedule
3. List of Parties Concerned in the Recipient Country
4. Minutes of Discussions
5. Evaluation Chart of Requested Equipment

Appendix1 List of Survey Team

The First Survey (11th of November to 8th of December ,2023)

| Name | Position | Organization |
|-------------------------|---|--|
| Mr. Tomoya YOSHIDA | Team Leader | Senior Deputy Director General, and Group Director for Health Group 2 Human Development Department, JICA |
| Ms. AKLELEKOVA Svetlana | Program Coordinator | Health Team 4, Health Group 2, Human Development Department, JICA |
| Mr. Takashi MORITA | Project Manager/Equipment Plan 1 | INTEM Consulting, Inc. |
| Ms. Misato OHARA | Equipment Plan 2/Maintenance Management Plan/DX 2 | INTEM Consulting, Inc. |
| Mr. Mitsuru KUDO | Procurement/Cost Estimation | INTEM Consulting, Inc. |
| Mr. Mitsuhiro NASU | Facility/Architectural Planning | INTEM Consulting, Inc. |
| Ms. Naoko SHIBAYAMA | Health and Medical Care Plan/ DX 1/Gender Consideration | INTEM Consulting, Inc. |

The Second Survey (25th of February to 9th of March,2024)

| Name | Position | Organization |
|--------------------|---|--|
| Mr. Tomoya YOSHIDA | Team Leader | Senior Deputy Director General, and Group Director for Health Group 2 Human Development Department, JICA |
| Ms. Risa HANATO | Program Coordinator | Health Team 4, Health Group 2, Human Development Department, JICA |
| Mr. Takashi MORITA | Project Manager/Equipment Plan1 | INTEM Consulting, Inc. |
| Ms. Misato OHARA | Equipment Plan2/Maintenance Management Plan/DX2 | INTEM Consulting, Inc. |

Appendix2 Survey Schedule

2-1. 1st Field Survey (11th of November to 8th of December ,2023)

| Date | | | JICA member | Chief Consultant/ Equipment Planning 1 | Equipment Planning 2 /Maintenance Planning/DX 2 | Procurement/ Cost estimation | Facility/Architectural planning | Health and medical care Plan /DX / Gender Survey |
|-----------|-----|----|--|---|---|---|---|--|
| | | | Stay 9 | Stay 28 | Stay 28 | Stay 14 | Stay 19 | Stay 23 |
| 11-Nov-23 | Sat | 1 | | Japan→Istanbul | Japan→Istanbul | | | Japan→Istanbul |
| 12-Nov-23 | Sun | 2 | | Istanbul→Bishkek | Istanbul→Bishkek | | | Istanbul→Bishkek |
| 13-Nov-23 | Mon | 3 | | JICA | JICA | | | JICA |
| 14-Nov-23 | Tue | 4 | | SRIHSOT | SRIHSOT | | | SRIHSOT |
| 15-Nov-23 | Wed | 5 | | SRIHSOT | SRIHSOT | | | NCCIM |
| 16-Nov-23 | Thu | 6 | | SRIHSOT | SRIHSOT | | | MOH e-health center. |
| 17-Nov-23 | Fri | 7 | | SRIHSOT | SRIHSOT | | | MOH e-health center. |
| 18-Nov-23 | Sat | 8 | | Team meeting | Team meeting | | | Team meeting |
| 19-Nov-23 | Sun | 9 | | Team meeting | Team meeting | | | Team meeting |
| 20-Nov-23 | Mon | 10 | | NCCIM | NCCIM | | Japan→Istanbul | MOH FOMS |
| 21-Nov-23 | Tue | 11 | | NCCIM | NCCIM | | Istanbul→Bishkek | MOH FOMS |
| 22-Nov-23 | Wed | 12 | | NCCIM | NCCIM | | SRIHSOT | SRIHSOT |
| 23-Nov-23 | Thu | 13 | | NCCIM | NCCIM | | NCCIM | NCCIM |
| 24-Nov-23 | Fri | 14 | | NCOH | NCOH | | NCCIM | MOH e-health center. |
| 25-Nov-23 | Sat | 15 | Japan→Istanbul | Team meeting | Team meeting | Japan→Istanbul | Team meeting | Team meeting |
| 26-Nov-23 | Sun | 16 | Istanbul→Bishkek | Team meeting | Team meeting | Istanbul→Bishkek | Team meeting | Team meeting |
| 27-Nov-23 | Mon | 17 | JICA,MOH | JICA,MOH | SRIHSOT | JICA,MOH | SRIHSOT | SRIHSOT |
| 28-Nov-23 | Tue | 18 | Discussion of M/D | Discussion of M/D | NCCIM Discussion of M/D | NCCIM Discussion of M/D | NCCIM Procurement Survey | NCCIM FOMS |
| 29-Nov-23 | Wed | 19 | Discussion of M/D | NCCIM Survey of MOH on Tax Exemption | NCCIM Survey of MOH on Tax Exemption | NCCIM Survey of MOH on Tax Exemption | NCCIM Procurement Survey | Procurement Survey |
| 30-Nov-23 | Thu | 20 | Discussion of M/D | SRIHSOT | SRIHSOT | SRIHSOT | SRIHSOT | Team meeting |
| 1-Dec-23 | Fri | 21 | Signing M/D with MOH Report to JICA/Embassy | Signing M/D with MOH Report to JICA/Embassy | NCCIM Report to JICA/Embassy | Signing M/D with MOH Report to Embassy | Signing M/D with MOH Report to Embassy | MOH |
| 2-Dec-23 | Sat | 22 | Bishkek→Istanbul | Team meeting | Team meeting | Team meeting | Team meeting | Bishkek→Istanbul |
| 3-Dec-23 | Sun | 23 | Istanbul→Tokyo | Team meeting | Team meeting | Team meeting | Team meeting | Istanbul→Tokyo |
| 4-Dec-23 | Mon | 24 | | Procurement survey | Procurement survey | Procurement survey | Procurement survey | |
| 5-Dec-23 | Tue | 25 | | Debriefing Meeting | NCCIM Debriefing Session | NCCIM Debriefing Session | NCCIM Debriefing Session | |
| 6-Dec-23 | Wed | 26 | | Procurement survey Design and Estimate Policy Meeting | Procurement survey Design and Estimate Policy Meeting | Procurement survey Design and Estimate Policy Meeting | Procurement survey Design and Estimate Policy Meeting | |
| 7-Dec-23 | Thu | 27 | | Additional Survey | Bishkek→Istanbul | Bishkek→Istanbul | Bishkek→Istanbul | |
| 8-Dec-23 | Fri | 28 | | Additional Survey | Istanbul→Tokyo | Istanbul→Tokyo | Istanbul→Tokyo | |

2-2. Draft Outline Design Explanatory Mission (25th of February to 9th of March, 2024)

| Date | | | Project Manager/ Equipment Plan 1 | Equipment Plan 2 /Maintenance Management Plan/DX 2 |
|-----------|-----|----|--|--|
| | | | Takashi MORITA 14 days | Misato OHARA 14 days |
| 25-Feb-24 | Sun | 1 | Japan | Japan |
| 26-Feb-24 | Mon | 2 | Istanbul→ | Istanbul→ |
| 27-Feb-24 | Tue | 3 | →Bishkek NCOH Survey of the MOH Tax Exemption | →Bishkek NCOH Survey of the MOH Tax Exemption |
| 28-Feb-24 | Wed | 4 | SRIHSOT | SRIHSOT |
| 29-Feb-24 | Thu | 5 | MOH | MOH |
| 1-Mar-24 | Fri | 6 | NCCIM | NCCIM |
| 2-Mar-24 | Sat | 7 | Team meeting | Team meeting |
| 3-Mar-24 | Sun | 8 | Bishkek→Osh | Bishkek→Osh |
| 4-Mar-24 | Mon | 9 | Osh State Integrated Hospital, Osh Oncology center Osh state → Bishkek | Osh State Integrated Hospital, Osh Oncology center Osh state → Bishkek |
| 5-Mar-24 | Tue | 10 | NCCIM | NCCIM |
| 6-Mar-24 | Wed | 11 | Procurement survey/Discussion/Signing of M/D | Procurement survey/Discussion/Signing of M/D |
| 7-Mar-24 | Thu | 12 | JICA/Embassy | JICA/Embassy |
| 8-Mar-24 | Fri | 13 | Bishkek →Istanbul | Bishkek →Istanbul |
| 9-Mar-24 | Sat | 14 | Japan | Japan |

Appendix 3 List of Parties Concerned in the Recipient Country

| Organization name | Name | Department, Position |
|-------------------|--|--|
| MOH | Shambetova Aizhamal | Deputy minister |
| | Ibraeva Nurgul Saparkulovna | Director of Medical Organization and Drug Policy, Ministry of Health |
| | Sutueva Gulasyil Burkanovna | Head of Primary Health Care Unit, Department of Medical Organization and Drug Policy, Ministry of Health |
| | Boobekova Aigul Abdrakhmanovna | Deputy Director, Department of Health Organization and Drug Policy, Ministry of Health |
| | Dzhankorozova Mariyam | Director, Drugs and Medical Devices Division, Ministry of Health |
| | Kanat Bekboev | Deputy Director of Drugs and Medical Devices, Ministry of Health |
| | Ibraimova Aida Nasypbekovna | Department of Health, Division of Drugs and Medical Devices |
| e-Health Center | Chumachuk Vitalyi | Ministry of Health e-Health Center |
| | Torobekova Elvira | Ministry of Health e-Health Center |
| | Kokulova Gulunara | Ministry of Health e-Health Center |
| | Chinguz Beksyktanov | Ministry of Health e-Health Center |
| NCCIM | Sooronbaev Talant | Director |
| | Dzhumabaev Mamraim | Deputy Director |
| | Tabyshova Aizhamal | Research Department Secretary |
| | Kubotov Dastan | Specialist, Division of Infectious Disease Control |
| | Suerkulova Nazgul | Acting Chief Nursing Officer |
| | Chukubaev Marat | Head of Diagnostic Radiology Division |
| | Semenov A. | IT specialist |
| | Saenko Galina | Facilities Management Department, Building Supervisor |
| | Golovnik Vladimir | Medical Equipment Engineer |
| | Tynchtykbek Uulu Nursultan | electrical specialist |
| | Omuralieva Adilet | Graduate student, endoscopist |
| | Monoldorova Gulnara | Financial and Economic Sector, Economic Expert |
| | Shakmankulova Elnura | Financial and Economic Sector, Material Accountant |
| | Toichubekova Fatima | Financial and Economic Sector, Material Accountant |
| | Rybin Yuri | Medical Equipment Engineer |
| | Kolbay Amantur | ICU1 Physician, Junior Research Fellow |
| | Dadabaev Murat | Head of Cardiac and Vascular X-Ray Surgery and Division |
| | Erkebulanova Baktygul | Director and Deputy Director of Health Services Quality Management |
| Kalysov Kurbanbek | Cardiac and Vascular X-Ray Surgeon and Arrhythmologist | |

| Organization name | Name | Department, Position |
|--|----------------------------|--|
| | Uchkemirova Begayim | Functional Diagnostics Department, Physician |
| | Usupbaeva D. | Head of Ultrasound Diagnostics Division |
| | Satieva Nurgul | Head of Clinical Laboratory |
| | Dzhorupbekova Khanzaada | Head of Clinical Laboratory |
| | Kalbekova Cholpon | Head of ICU2 Department |
| SRIHSOT | Shabiraliyev Samidin | Dean |
| | Bekbolot Uulu Nurbolot | Deputy Director |
| | Akimaly Uulu Arslanbek | Director, Division of Neonatal Anesthesia and Intensive Care |
| | Cholponbaev Daniyar | Interventional Cardiology and Diagnostic Radiology Department and Specialist |
| | Zhumabaev Sultanmurat | Cardiac surgeon and statistician |
| | Kabyzbekova Nazira | Accounting departments and economic specialists |
| | Ukuev Emil | radiologist |
| | Muraliev Emil | Congenital Heart Disease Surgeon |
| | Turusbekov Ulan | heart surgeon |
| | Toktosunova Dinara | Surgeon for Acquired Cardiac and Coronary Diseases |
| | Begalieva Altynai | Accounting Department, Chief Accountant |
| Maltsev Pavel | Medical Equipment Engineer | |
| NCOH | Baktygul Sultangazieva | Dean |
| | Kulikova Anna | Head of Radiation Division |
| Osh State Integrated Hospital | Jumaliyev Atabek | Dean |
| | Orozov Aliskender | Deputy Director |
| Osh Oncology center | Paizova Zaripahan | Dean |
| Ministry of Transport and Communications | Bekmambetov Talant | Consultant for JICA projects |
| Embassy of Japan in the Kyrgyz Republic | Hideki Goda | ambassador extraordinary and plenipotentiary |
| | Soichiro Okawa | Counselor/Assistant Director |
| JICA the Kyrgyz Republic Office | Hiroyuki Kawamoto | Chief Representative, JICA Kyrgyz Republic Office |
| | Hiroyuki Ikeda | Representative, JICA Kyrgyz Republic Office |
| | Ritsuko Arisawa | Project Formulation Advisor |
| | Naoko Yoshinari | Project Formulation Advisor |
| | Zhyldyz Nurlanbek kyzy | program officer |

Minutes of Discussions
on the Preparatory Survey for the Project for
the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City

Based on the several preliminary discussions between the Cabinet of Ministers of the Kyrgyz Republic (hereinafter referred to as "the Kyrgyz Republic") and Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") of the Project for the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City (hereinafter referred to as "the Project") to the Kyrgyz Republic. The Team held a series of discussions with the officials of the Cabinet of Ministers of the Kyrgyz Republic and conducted a field survey. In the course of the discussions, both sides have confirmed the main items described in the attached sheets.

Bishkek, December 1, 2023



Mr Yoshida Tomoya
Team Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan



Ms Shambetova Aizhamal
Deputy Minister
Ministry of Health of the Kyrgyz Republic
The Kyrgyz Republic

ATTACHMENT

1. Objective of the Project

The objective of the Project is to strengthen diagnosis and treatment capacities by providing medical equipment for diagnosis and treatment to tertiary hospitals in Bishkek city, thereby contributing to enhancing the quality of health care services in the top referral hospitals.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as “the Preparatory Survey for the Project for the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City”.

3. Project site

Both sides confirmed that the sites of the Project are in Bishkek city, the capital of the Kyrgyz Republic, which is shown in Annex 1.

4. Responsible authority for the Project

Both sides confirmed the authorities responsible for the Project are as follows:

- 4-1. The Ministry of Health will be the executing agency for the Project (hereinafter referred to as “the Executing Agency”). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be managed by relevant authorities properly and on time. The organization charts are shown in Annex 2.

5. Items requested by the Cabinet of Ministers of the Kyrgyz Republic

- 5-1. As a result of discussions, both sides confirmed that the items in order of priority requested and agreed by the Cabinet of Ministers of the Kyrgyz Republic are shown in Annex 3.
- 5-2. JICA will assess the feasibility of the above requested items through the survey and will report the findings to the Government of Japan. The final scope of the Project will be decided by the Government of Japan.
- 5-3. The Cabinet of Ministers of the Kyrgyz Republic shall submit an official request to the Government of Japan through a diplomatic channel before the appraisal of the Project, which in its soonest schedule will be in January, 2024.

6. Procedures and Basic Principles of Japanese Grant

6-1. The Kyrgyz Republic side agreed that the procedures and basic principles and basic principles of Japanese Grant (hereinafter referred to as "the Grant") as described in Annex4 shall be applied to the Project.

As for the monitoring of the implementation of the Project, JICA requires the Kyrgyz Republic side to submit the Project Monitoring Report, the form of which is attached as Annex 5.

6-2. The Kyrgyz Republic side agreed to take the necessary measures, as described in Annex 6, for smooth implementation of the Project. The contents of the Annex 6 will be elaborated and refined during the Preparatory Survey and be agreed in the mission dispatched for explanation of the Draft Preparatory Survey Report.

The contents of Annex 6 will be updated as the Preparatory Survey progresses, and eventually, will be used as an attachment to the Grant Agreement.

7. Schedule of the Survey

7-1. The Team will proceed with further survey in the Kyrgyz Republic until December 8, 2023.

7-2. An official request to the Government of Japan will be submitted by the end of December, 2023.

7-3. JICA will prepare a draft Preparatory Survey Report in Russian language and dispatch a mission to the Kyrgyz Republic in order to explain its contents, which in its soonest schedule will be in January, 2024.

7-4. If the contents of the draft Preparatory Survey Report is accepted and the undertakings for the Project are fully agreed by the Kyrgyz Republic side, JICA will finalize the Preparatory Survey Report and send it to the Kyrgyz Republic at earliest in July, 2024.

7-5. The above schedule is tentative and subject to change.

8. Environmental and Social Considerations

8-1. The Kyrgyz Republic side confirmed to give due environmental and social considerations during implementation, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (January, 2022).

8-2. The Project is categorized as “C” from the following considerations:

The project is likely to have minimal adverse impact on the environment under the JICA guidelines for environmental and social considerations (January, 2022).

9. Other Relevant Issues

9-1 Gender Mainstreaming

Both sides confirmed that following gender elements shall be duly reflected in the scope of Preparatory Survey.

- (a) Collection of information and gender disaggregated data for assessment of gender needs.
- (b) Examination of gender-responsive measures based on the assessment, such as:
 - ✓ Selection of equipment that reflects gender-specific needs and ensure usability by women.
 - ✓ Implementation of soft-component activities that promote women's empowerment.

9-2 Allocation of necessary staff

When the equipment, which were not in operation in the hospitals before, such as ECMO, CT, etc. will be covered by the Project, the Kyrgyz side agreed to assign the necessary certified/trained staff for operation of the said equipment.

9-3 Maintenance of Equipment to be procured

(1) Allocation of Budget and Human Resources

The Kyrgyz Republic side agreed to secure and allocate the necessary staff and budget to operate and maintain the medical equipment procured under the Project properly and effectively. The Kyrgyz Republic side will coordinate possibilities of ensuring necessary budget from income created by using provided equipment by the Grant. Besides, the Kyrgyz Republic side will definitely allocate an engineer per 100 beds in each target hospital, as prescribed by the national legislation.

(2) Maintenance Services

The team explained about importance of the routine maintenance and periodical maintenance service of some major equipment. Keeping this in view, both sides agreed to consider inclusion of maintenance service contract to the major medical equipment that need frequent maintenance, into the project, appropriate contract years of which will be investigated during the Preparatory Survey.

The Kyrgyz Republic side also agreed to secure maintenance cost after expiring

maintenance contract and/or manufacture guarantee depending on the equipment, therefore, JICA will inform the results of the maintenance service of each equipment to be covered by the Grant at the mission, dispatched for explanation of the Draft Preparatory Survey Report.

9-4 Precondition of Installment of Equipment

The Kyrgyz side agreed to take necessary measures of removal of the existing equipment for securing the space before the installment when the equipment procured by the Grant.

9-5 Soft Components

The Kyrgyz Republic side took a note of the importance of the operational training for equipment and requested to consider incorporating soft components into the Project. The team agreed to plan to include operational trainings as soft components. The concrete content will be considered further on.

9-6 Registration of medical equipment in accordance with legislation of the Eurasian Economic Union

The Kyrgyz Republic explained about rules and regulations of the EAEU in regards with medical equipment, which will enter into forth in January, 2026. The Kyrgyz side agreed to undertake all necessary procedures upon registration of the Equipment provided under the Grant, in case the actual provision of the Equipment will fall after the said period.

Annex 1 Project Site

Annex 2 Organization Chart

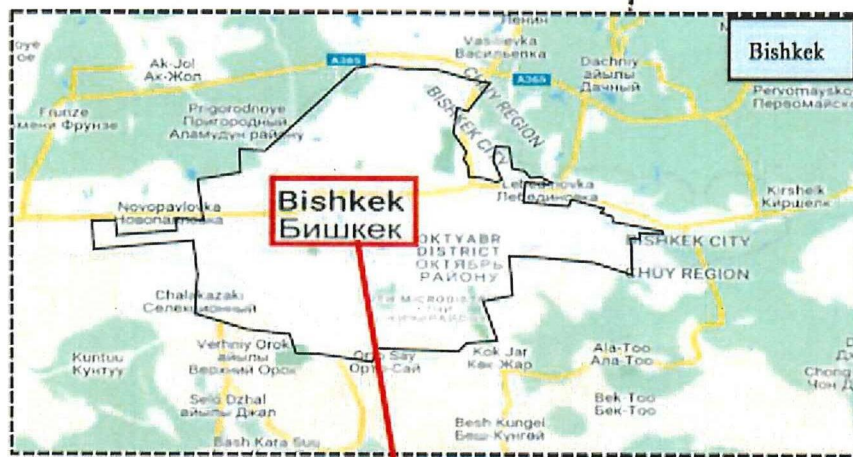
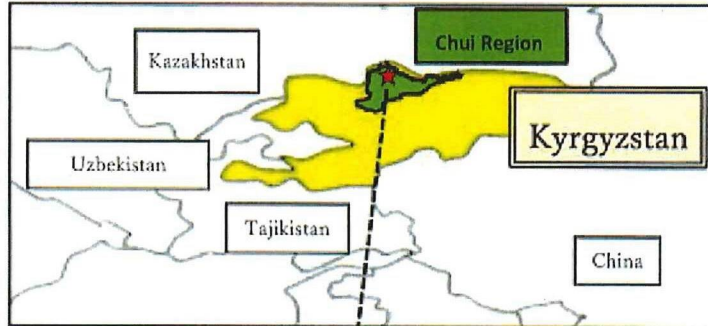
Annex 3 Equipment list

Annex 4 Japanese Grant

Annex 5 Project Monitoring Report (template)

Annex 6 Major Undertakings to be taken by the Cabinet of Ministers of the Kyrgyz Republic

Annex1. Project Site



Location of Bishkek city site

1. National Center of Cardiology and Therapy

2. Scientific Research Institute of Heart Surgery and Organ Transplantation

3. National Center of Oncology and Hematology

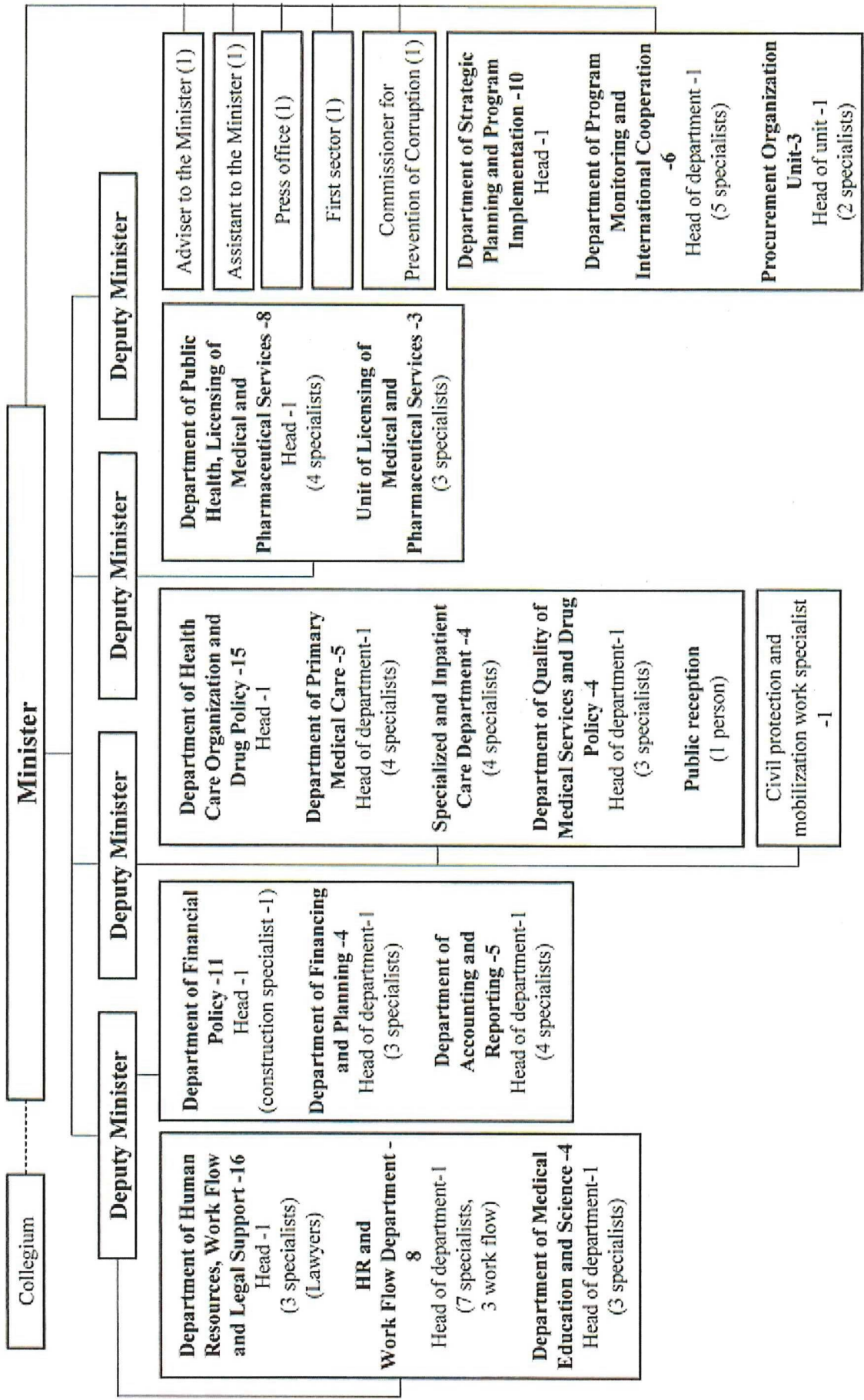
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Annex 2. Organization Chart

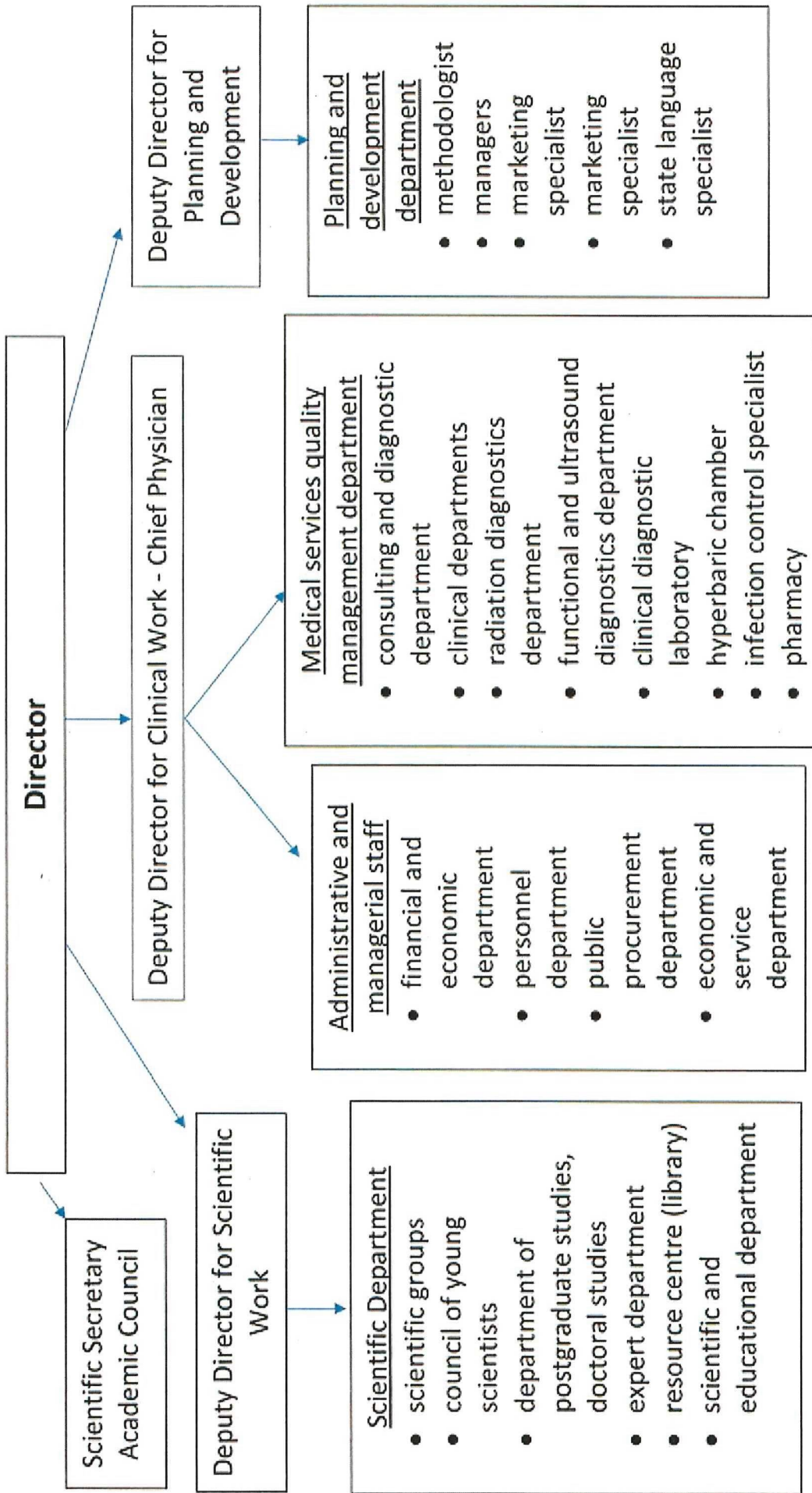
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Structure of Central Office of the Ministry of Health of the Kyrgyz Republic (71 persons)



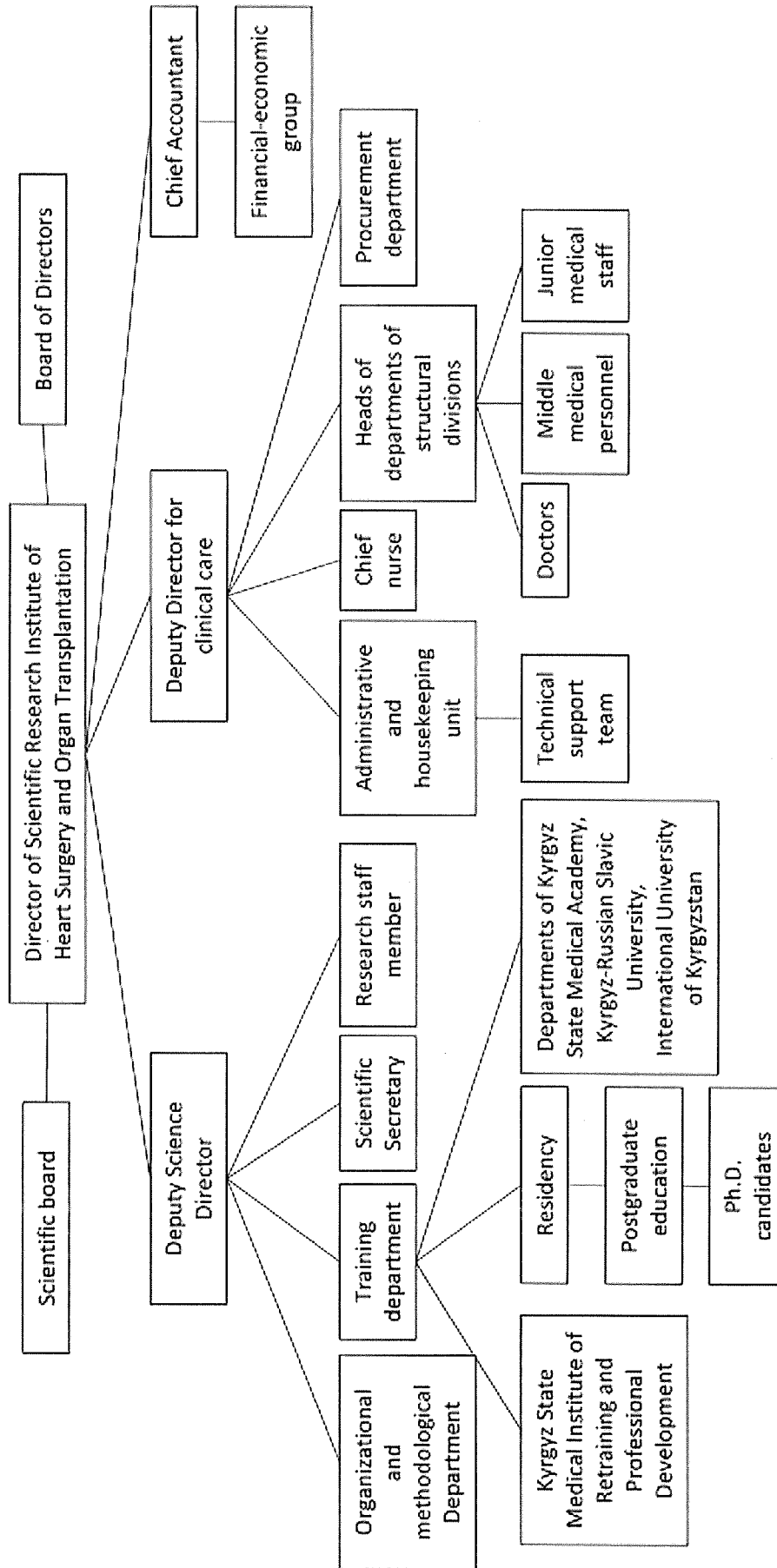
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Structure of the National Centre of Cardiology and Internal Medicine
 named after Academician M. Mirrakhimov
 under the Ministry of Health of the Kyrgyz Republic



MB TY

Organizational Chart of Scientific Research Institute of Heart Surgery and Organ Transplantation

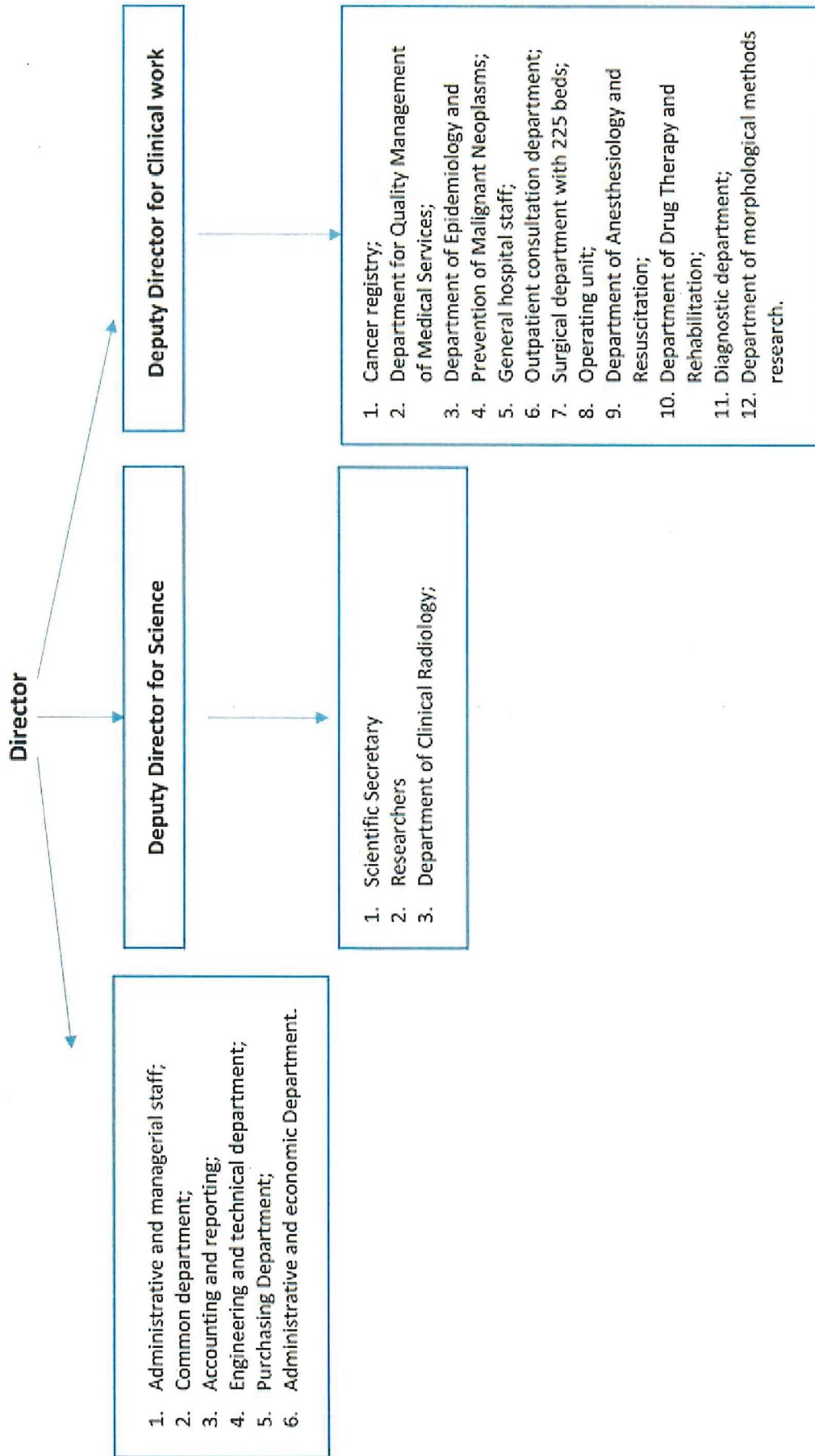


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ORGANIZATIONAL STRUCTURE

Distribution of spheres of control

National Center for Oncology and Hematology under the Ministry of Health of the Kyrgyz Republic



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Annex 3

Requested Equipment List

National Center of Cardiology and Therapy

| No. | Requested Equipment | Наименование оборудования | Q'ty | Priority |
|-----------------------|---|---|------|----------|
| For Imagery | | Рентген и УЗИ | | |
| 1 | Angiographic unit | Ангиографическая установка | 1 | A |
| 2 | System for electrophysiological examination of the heart and radiofrequency ablation with 3-dimensional navigation | Система для электрофизиологического исследования сердца и радиочастотной абляции с 3-х мерной навигацией | 1 | A |
| 3 | Pacemaker external 2-chamber | Кардиостимулятор наружный 2-х камерный | 2 | A |
| 4 | Intra-aortic balloon counterpulse | Интрааортальный баллонный контрпульс | 1 | A |
| 5 | Ultrasound machine with TEE probe | Ультразвуковая система с датчиком чреспищеводной эхокардиографии | 2 | A |
| 6 | Defibrillator | Дефибриллятор | 2 | A |
| 7 | Ventilator | Аппарат ИВЛ | 1 | B |
| 8 | Electrosurgical unit | Электрохирургическая установка | 1 | B |
| 9 | Oxygen concentrator | Концентратор кислорода | 2 | B |
| 10 | Portable electrocardiograph | Переносной электрокардиограф | 1 | B |
| 11 | Intravascular Ultrasound Imaging (IVUS) and Fractional Flow Reserve (FFR) System | Система для внутрисосудистой ультразвуковой визуализации (ВСУЗИ) и фракционного резерва кровотока (ФРК) | 1 | B |
| 12 | Digital mobile x-ray machine | Цифровой мобильный рентген аппарат | 2 | B |
| 13 | General X-ray machine | Стационарный рентген аппарат | 1 | B |
| 14 | CT scan | Компьютерный томограф | 1 | B |
| For ICU | | Реанимация | | |
| 1 | Central stations for 18 beds | Центральные станции на 18 коек | 2 | A |
| 2 | Patient monitor with Invasive BP | Кардиомонитор пациента с инвазивным АД | 3 | A |
| 3 | Patient monitor with non-invasive BP | Монитор пациента с неинвазивным АД | 45 | A |
| 4 | Temporary pacemaker 1 ch | Аппарат временной электрокардиостимуляции 1-камерн. | 6 | A |
| 5 | Temporary pacemaker 2 ch | Аппарат временной электрокардиостимуляции 2-х камерн. | 6 | A |
| 6 | Ventilator | Аппарат ИВЛ | 6 | A |
| 7 | Defibrillator with external pacing function | Дефибриллятор с функцией наружной электрокардиостимуляции | 4 | A |
| 8 | Extracorporeal membrane oxygenation (ECMO) | Устройство для экстракорпоральной мембранной оксигенации (ЭКМО) | 1 | A |
| 9 | Manual ICU bed | Кровати механические для реанимации | 48 | A |
| 10 | Equipment for high-flow oxygen therapy | Аппарат для проведения высокопоточной кислородотерапии | 4 | A |
| 11 | Electrocardiograph | Электрокардиограф | 10 | A |
| 12 | Syringe pump | Инфузоматы (шприцевые) | 52 | A |
| 13 | Portable suction machine | Переносной хирургический аспиратор | 6 | A |
| 14 | Patient trolley | Каталка больничная | 6 | B |
| 15 | Wheel chair | Инвалидная коляска | 11 | B |
| For Laboratory | | Лаборатория | | |
| 1 | microplate ELISA washer | Микроплашкетный промыватель для ИФА | 1 | A |
| 2 | Immuno - enzyme analyzer (ELISA) | Иммуно - ферментный анализатор (ИФА) | 1 | A |
| 3 | Semi-automatic biochemistry analyzer | Полуавтоматический биохимический анализатор | 1 | A |
| 4 | Blood gas analyzer for ICU | Анализатор газов крови для реанимации | 2 | A |
| 5 | Semi-automatic coagulator | Полуавтоматический коагулятор | 1 | A |
| 6 | Automatic urinary analyzer | Автоматическая мочевая станция | 1 | A |
| 7 | Microscope binocular medical. laboratory | Микроскоп бинокулярный медицинский. лабораторный | 4 | A |
| 8 | Semi-automatic hematology analyzer | Полуавтоматический гематологический анализатор | 1 | B |
| For Outpatient | | Поликлиника | | |
| 1 | Daily ECG monitoring | Суточное ЭКГ-мониторирование | 40 | A |
| 2 | APBM machine | А/Д - мониторинг | 12 | B |
| 3 | Treadmill test | Тредмил тест | 2 | B |
| 4 | bicycle ergometer | Велозргометр | 2 | B |
| 5 | Cardiopulmonary ergospirometer | Сердечно-легочной эргоспирометр | 1 | B |
| For Endoscopy | | Эндоскопия | | |
| 1 | Videogastroscope | Видеогастроскоп | 1 | C |
| 2 | video bronchoscope | Видеобронхоскоп | 1 | C |
| 3 | Set for tracheal intubation, including a laryngoscope with 3 blades, a set of necessary endotracheal tubes, including double-lumen tubes, an airway, a gastric tube | Набор для интубации трахеи, включающий ларингоскоп с 3 клинками, комплект необходимых интубационных трубок, в том числе двухпросветные, воздуховод, желудочный зонд | 7 | C |
| For Others | | Другие | | |
| 1 | PACs -system | РАСs-система | 1 | B |
| 2 | Stationary Air Purifier | Стационарный очиститель воздуха | 1 | C |
| 3 | Central oxygen station for 3000 kg of liquid oxygen (compressor included) | Центральная кислородная станция на 3000 кг жидкого кислорода (компрессор в комплекте) | 1 | C |
| 4 | Station setup | Установка станции | 1 | C |
| 5 | Generator 320 kW | Генератор 320 Квт | 1 | C |
| 6 | Generator installation | Установка генератора | 1 | C |
| 7 | Uninterruptible power supply unit (for operating unit) | Блок бесперебойного питания (для операционного блока) | 1 | C |
| 8 | Sleep laboratory - polysomnograph | Лаборатория сна - полисомнограф | 1 | C |
| 9 | Ethylene Oxide Plasma Sterilizer with Consumables | Плазменный стерилизатор окиси этилена с расходными материалами | 1 | C |
| Ambulance | | Машина скорой помощи | | |
| 1 | Portable breathing apparatus for transportation | Портативный дыхательный аппарат для транспортировки | 2 | B |
| 2 | Ambulance | Машина скорой помощи | 2 | B |

Requested Equipment List

Scientific Research Institute of Heart Surgery and Organ Transplantation

| No. | Requested Equipment | Наименование оборудования | Q'ty | Priority |
|-----|--|--|------|----------|
| 1 | CT scan | Компьютерная томография | 1 | A |
| 2 | Angiograph | Ангиограф | 1 | A |
| 3 | Ultrasound machine for eocardiograph | Ультразвуковой аппарат для эхокардиографии | 1 | A |
| 4 | Ultrasound machine with TEE Probe | Ультразвуковой аппарат с датчиком TEE | 2 | A |
| 5 | Patient monitor for adult | Монитор для взрослого пациента | 8 | A |
| 6 | Heart lung machine | Сердечно-легочный аппарат | 2 | A |
| 7 | Ventilator for adult | Аппарат для искусственной вентиляции легких для взрослых | 5 | A |
| 8 | Anesthesia machine | Аппарат для анестезии | 3 | A |
| 9 | ECMO (Extracorporeal Membrane Oxygenation) | ЭКМО (экстракорпоральная мембранная оксигенация) | 1 | A |
| 10 | Hemodialysis stationary | Стационарный аппарат для гемодиализа | 1 | A |
| 11 | Operating table | Операционный стол | 2 | A |
| 12 | Device for cerebral oximetry during CPB | Устройство для церебральной оксиметрии во время ИК | 2 | A |
| 13 | Anesthesia depth measuring device | Прибор для измерения глубины анестезии | 3 | A |
| 14 | Electrosurgical unit | Электрохирургический блок | 1 | A |
| 15 | Pediatric Cardiovascular Surgery Tool set | Набор инструментов для детской сердечно-сосудистой хирургии | 2 | A |
| 16 | Cardiovascular surgery tool set for adult | Набор инструментов для сердечно-сосудистой хирургии для взрослых | 1 | A |
| 17 | Open heart surgery tool set for adult | Набор инструментов для операций на открытом сердце для взрослых | 1 | A |
| 18 | Shadowless lamp (at least 2 satellites) | Бестеневая лампа (минимум 2 спутника) | 2 | A |
| 19 | ACT analyzer | Анализатор АСТ | 2 | A |
| 20 | Blood gas analyzer | Анализатор газов крови | 2 | A |
| 21 | Syringe pump | Шприцевой насос | 9set | A |
| 22 | Ventilator for infant | Аппарат для искусственной вентиляции легких для взрослых | 5 | A |
| 23 | Patient monitor for pediatric and infant | Монитор для детей и младенцев | 7 | A |
| 24 | External pacemaker dual channel | Внешний двухканальный кардиостимулятор | 10 | A |
| 25 | Defibrillator for operation theatre | Дефибриллятор для операционного зала | 2 | A |
| 26 | Defibrillatr for ICU | 12-канальный электрокардиограф | 4 | A |
| 27 | Electrocardiograph 12 channel | 12-канальный педиатрический электрокардиограф | 1 | A |
| 28 | Electrocardiograph 12 channel for pediatric | Налобный осветитель | 1 | A |
| 29 | ICU bed for adult | Кровать для взрослого в ОИТ | 6 | A |
| 30 | ICU bed for pediatric | Кровать для детей в ОИТ | 7 | A |
| 31 | Anesthesia cart | Тележка анестезиологическая | 2 | B |
| 32 | Nitric oxide inhalation device | Устройство для ингаляции оксида азота | 3 | B |
| 33 | Automatic injector | Автоматический инъектор | 1 | B |
| 34 | Infant warmer | Стол реанимационный для новорожденных | 6 | B |
| 35 | Small suction pump for infant warmer | Небольшой хирургический отсос для новорожденных | 6 | B |
| 36 | Bed side cabinet | Тумба прикроватная | 13 | B |
| 37 | Laryngoscope set | Комплект ларингоскопа | 3 | B |
| 38 | Instrument table | Стол для инструментов | 4 | B |
| 39 | Mayo table | Стол Майо | 6 | B |
| 40 | Tool cabinet | Шкаф для инструментов | 2 | B |
| 41 | Cabinet for medicines | Шкаф для лекарственных средств | 2 | B |
| 42 | Stainless cabinet for preparation room | Нержавеющий шкаф для подготовительного отделения | 2 | B |
| 43 | Suction machine for operation theatre | Отсасывающий аппарат для операционной | 4 | B |
| 44 | Apparatus for autohemotransfusion (blood separator) | Аппарат для аутогемотранфузии (сепаратор крови) | 1 | B |
| 45 | Portable ultraviolet lamp | Портативная ультрафиолетовая лампа | 4 | C |
| 46 | Baby scale | Весы для новорожденных | 2 | C |
| 47 | Nebulizer | Небулайзер | 6 | C |
| 48 | Mobile portable resuscitation kit | Мобильный портативный реанимационный комплект | 1set | C |
| 49 | Headlamp | Налобный осветитель | 2 | C |
| 50 | Container for pre-sterilization cleaning | Контейнер для предстерилизационной очистки | 4 | C |
| 51 | Warmer for ICU | Термоматрас для согрева пациента для ОИТ | 2 | C |
| 52 | Split air conditioning system in each operating room | Сплит-система кондиционирования воздуха в каждой операционной | 2 | C |

Annex 3

Requested equipment list

National Center of Oncology and Hematology

| No. | Requested Equipment | Наименование оборудования | Q'ty | Priority |
|-----|---------------------|---------------------------|------|----------|
| 1 | 3D Mammography | 3D-маммография | 2 | A |

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JAPANESE GRANT

The Japanese Grant is non-reimbursable fund provided to a recipient country (hereinafter referred to as "the Recipient") to purchase the products and/or services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. Followings are the basic features of the project grants operated by JICA (hereinafter referred to as "Project Grants").

1. Procedures of Project Grants

Project Grants are conducted through following procedures (See "PROCEDURES OF JAPANESE GRANT" for details):

(1) Preparation

- The Preparatory Survey (hereinafter referred to as "the Survey") conducted by JICA

(2) Appraisal

- Appraisal by the government of Japan (hereinafter referred to as "GOJ") and JICA, and Approval by the Japanese Cabinet

(3) Implementation

Exchange of Notes

- The Notes exchanged between the GOJ and the government of the Recipient

Grant Agreement (hereinafter referred to as "the G/A")

- Agreement concluded between JICA and the Recipient

Banking Arrangement (hereinafter referred to as "the B/A")

- Opening of bank account by the Recipient in a bank in Japan (hereinafter referred to as "the Bank") to receive the grant

Construction works/procurement

- Implementation of the project (hereinafter referred to as "the Project") on the basis of the G/A

(4) Ex-post Monitoring and Evaluation

- Monitoring and evaluation at post-implementation stage

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide basic documents necessary for the appraisal of the the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of

- relevant agencies of the Recipient necessary for the implementation of the Project.
- Evaluation of the feasibility of the Project to be implemented under the Japanese Grant from a technical, financial, social and economic point of view.
 - Confirmation of items agreed between both parties concerning the basic concept of the Project.
 - Preparation of an outline design of the Project.
 - Estimation of costs of the Project.
 - Confirmation of Environmental and Social Considerations

The contents of the original request by the Recipient are not necessarily approved in their initial form. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant.

JICA requests the Recipient to take measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the executing agency of the Project. Therefore, the contents of the Project are confirmed by all relevant organizations of the Recipient based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA contracts with (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the feasibility of the Project.

3. Basic Principles of Project Grants

(1) Implementation Stage

1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Recipient to define the necessary articles, in accordance with the E/N, to implement the Project, such as conditions of disbursement, responsibilities of the Recipient, and procurement conditions. The terms and conditions generally applicable to the Japanese Grant are stipulated in the "General Terms and Conditions for Japanese Grant (January 2016)."

2) Banking Arrangements (B/A) (See "Financial Flow of Japanese Grant (A/P Type)" for details)

- a) The Recipient shall open an account or shall cause its designated authority to open an account under the name of the Recipient in the Bank, in principle. JICA will disburse the Japanese Grant in Japanese yen for the Recipient to cover the obligations incurred by the Recipient under the verified contracts.
- b) The Japanese Grant will be disbursed when payment requests are submitted by the Bank to JICA under an Authorization to Pay (A/P) issued by the Recipient.

3) Procurement Procedure

The products and/or services necessary for the implementation of the Project shall be procured in accordance with JICA's procurement guidelines as stipulated in the G/A.

4) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the Recipient to continue to work on the Project's implementation after the E/N and G/A.

5) Eligible source country

In using the Japanese Grant disbursed by JICA for the purchase of products and/or services, the eligible source countries of such products and/or services shall be Japan and/or the Recipient. The Japanese Grant may be used for the purchase of the products and/or services of a third country as eligible, if necessary, taking into account the quality, competitiveness and economic rationality of products and/or services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm, which enter into contracts with the Recipient, are limited to "Japanese nationals", in principle.

6) Contracts and Concurrence by JICA

The Recipient will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be concurred by JICA in order to be verified as eligible for using the Japanese Grant.

7) Monitoring

The Recipient is required to take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and to regularly report to JICA about its status by using the Project Monitoring Report (PMR).

8) Safety Measures

The Recipient must ensure that the safety is highly observed during the implementation of the Project.

9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the

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Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

- a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.
- b) Discussing the issues affecting the Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

(2) Ex-post Monitoring and Evaluation Stage

- 1) After the project completion, JICA will continue to keep in close contact with the Recipient in order to monitor that the outputs of the Project is used and maintained properly to attain its expected outcomes.
- 2) In principle, JICA will conduct ex-post evaluation of the Project after three years from the completion. It is required for the Recipient to furnish any necessary information as JICA may reasonably request.

(3) Others

1) Environmental and Social Considerations

The Recipient shall carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the Recipient and JICA Guidelines for Environmental and Social Considerations (April, 2010).

2) Major undertakings to be taken by the Government of the Recipient

For the smooth and proper implementation of the Project, the Recipient is required to undertake necessary measures including land acquisition, and bear an advising commission of the A/P and payment commissions paid to the Bank as agreed with the GOJ and/or JICA. The Government of the Recipient shall ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Recipient with respect to the purchase of the Products and/or the Services be exempted or be borne by its designated authority without using the Grant and its accrued interest, since the grant fund comes from the Japanese taxpayers.

3) Measures to ensure more efficient implementation of the Grant

- i) In the event that the E/N and the G/A concerning a project cannot be signed by the end of the following Japanese fiscal year of the cabinet decision concerned by the GOJ, the authorities concerned of the two Governments will discuss the cancellation of the project.

ii) In the event that the period, specified in the G/A, during which the grant is available expires before the completion of the disbursement, the authorities concerned of the GOJ will thoroughly review the status, situation and perspective of the implementation of the project concerned before extending the said period. The authorities concerned of the two Governments will discuss the termination of the project including a refund, unless there are concrete prospects for its completion.

iii) Regardless of the period mentioned in ii) above, the authorities concerned of the two Governments will, in the event that five years have passed since the cabinet decision concerned by the GOJ before the completion of the disbursement, except as otherwise confirmed between them, discuss the termination of a project including a refund, unless there are concrete prospects for its completion.

4) Proper Use

The Recipient is required to maintain and use properly and effectively the products and/or services under the Project (including the facilities constructed and the equipment purchased), to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Japanese Grant.

5) Export and Re-export

The products purchased under the Japanese Grant should not be exported or re-exported from the Recipient.

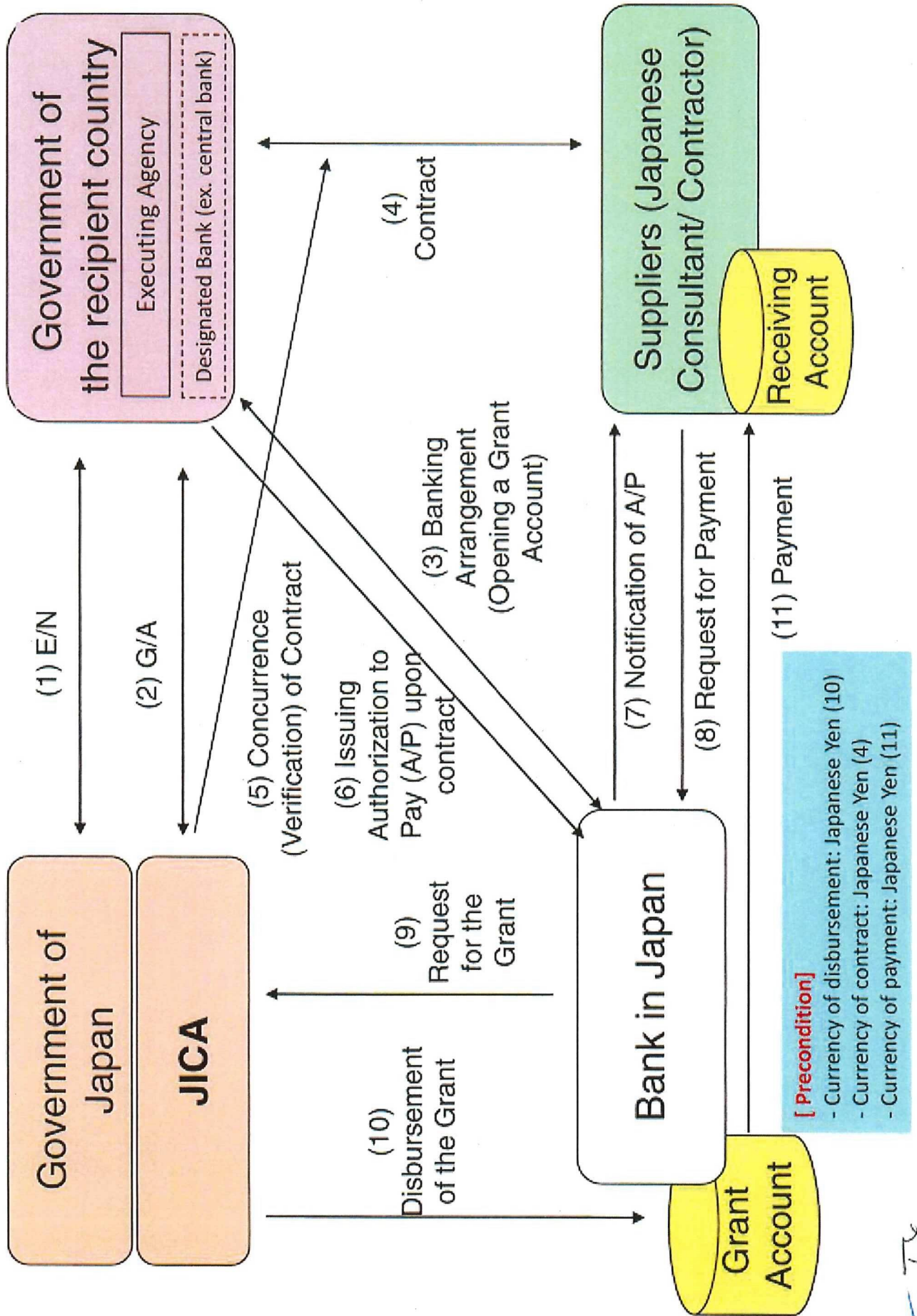
PROCEDURES OF JAPANESE GRANT

| Stage | Procedures | Remarks | Recipient Government | Japanese Government | JICA | Consultants | Contractors | Agent Bank |
|-------------------------|--|--|---|---------------------|---------|-------------|-------------|------------|
| Official Request | Request for grants through diplomatic channel | Request shall be submitted before appraisal stage. | x | x | | | | |
| 1. Preparation | (1) Preparatory Survey Preparation of outline design and cost estimate | | x | | x | x | | |
| | (2) Preparatory Survey Explanation of draft outline design, including cost estimate, undertakings, etc. | | x | | x | x | | |
| 2. Appraisal | (3) Agreement on conditions for implementation | Conditions will be explained with the draft notes (E/N) and Grant Agreement (G/A) which will be signed before approval by Japanese government. | x | x (E/N) | x (G/A) | | | |
| | (4) Approval by the Japanese cabinet | | | x | | | | |
| | (5) Exchange of Notes (E/N) | | x | x | | | | |
| 3. Implementation | (6) Signing of Grant Agreement (G/A) | | x | | x | | | |
| | (7) Banking Arrangement (B/A) | Need to be informed to JICA | x | | | | | x |
| | (8) Contracting with consultant and issuance of Authorization to Pay (A/P) | Concurrence by JICA is required | x | | | x | | x |
| | (9) Detail design (D/D) | | x | | | x | | |
| | (10) Preparation of bidding documents | Concurrence by JICA is required | x | | | x | | |
| | (11) Bidding | Concurrence by JICA is required | x | | | x | x | |
| | (12) Contracting with contractor/supplier and issuance of A/P | Concurrence by JICA is required | x | | | | x | x |
| | (13) Construction works/procurement | Concurrence by JICA is required for major modification of design and amendment of contracts. | x | | | x | x | |
| | (14) Completion certificate | | x | | | x | x | |
| | 4. Ex-post monitoring & evaluation | (15) Ex-post monitoring | To be implemented generally after 1, 3, 10 years of completion, subject to change | x | | x | | |
| (16) Ex-post evaluation | | To be implemented basically after 3 years of completion | x | | x | | | |

notes:

1. Project Monitoring Report and Report for Project Completion shall be submitted to JICA as agreed in the G/A.
2. Concurrence by JICA is required for allocation of grant for remaining amount and/or contingencies as agreed in the G/A.

Financial Flow of Japanese Grant (A/P Type)



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Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXX
20XX, Month

Organizational Information

| | |
|--|---|
| Signer of the G/A (Recipient) | <p>_____ Person in Charge (Designation)</p> <p>Contacts _____ Address: Phone/FAX: Email:</p> |
| Executing Agency | <p>_____ Person in Charge (Designation)</p> <p>Contacts _____ Address: Phone/FAX: Email:</p> |
| Line Ministry | <p>_____ Person in Charge (Designation)</p> <p>Contacts _____ Address: Phone/FAX: Email:</p> |

General Information:

| | |
|--------------------------|---|
| Project Title | |
| E/N | Signed date: Duration: |
| G/A | Signed date: Duration: |
| Source of Finance | Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____ |

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| | |
|-------------------------------|--|
| 1: Project Description | |
|-------------------------------|--|

1-1 Project Objective

| |
|--|
| |
|--|

1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

| |
|--|
| |
|--|

1-3 Indicators for measurement of "Effectiveness"

| Quantitative indicators to measure the attainment of project objectives | | |
|---|----------------|--------------|
| Indicators | Original (Yr) | Target (Yr) |
| | | |
| | | |
| Qualitative indicators to measure the attainment of project objectives | | |
| | | |

| |
|----------------------------------|
| 2: Details of the Project |
|----------------------------------|

2-1 Location

| Components | Original <i>(proposed in the outline design)</i> | Actual |
|------------|---|--------|
| 1. | | |

2-2 Scope of the work

| Components | Original* <i>(proposed in the outline design)</i> | Actual* |
|------------|--|---------|
| 1. | | |
| | | |
| | | |

Reasons for modification of scope (if any).

| |
|-------|
| (PMR) |
|-------|

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2-3 Implementation Schedule

| Items | Original | | Actual |
|-------|----------------------------------|--|--------|
| | (proposed in the outline design) | (at the time of signing the Grant Agreement) | |
| | | | |

Reasons for any changes of the schedule, and their effects on the project (if any)

| |
|--|
| |
|--|

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations
 See Attachment 2.

2-4-2 Activities
 See Attachment 3.

2-4-3 Report on RD
 See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant(Confidential until the Bidding)

| Components | | | Cost (Million Yen) | |
|------------|--|---|---|--------|
| | Original (proposed in the outline design) | Actual (in case of any modification) | Original ^{1),2)} (proposed in the outline design) | Actual |
| | 1. | | | |
| | | | | |
| | | | | |
| | Total | | | |

Note: 1) Date of estimation:
 2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

| Components | | | Cost (1,000 Taka) | |
|------------|--|---|---|--------|
| | Original (proposed in the outline design) | Actual (in case of any modification) | Original ^{1),2)} (proposed in the outline design) | Actual |
| | 1. | | | |
| | | | | |
| | | | | |
| | | | | |

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- Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

| |
|-------|
| (PMR) |
|-------|

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

| |
|---|
| Original (at the time of outline design) name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff): |
| Actual (PMR) |

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

| |
|---|
| Original (at the time of outline design) |
| Actual (PMR) |

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

| |
|---|
| Original (at the time of outline design) |
|---|

Actual (PMR)

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks (at the time of outline design)

| Potential Risks | Assessment |
|--------------------------|--|
| 1. (Description of Risk) | Probability: High/Moderate/Low |
| | Impact: High/Moderate/Low |
| | Analysis of Probability and Impact: |
| | |
| | Mitigation Measures: |
| | |
| | Action required during the implementation stage: |
| 2. (Description of Risk) | Probability: High/Moderate/Low |
| | Impact: High/Moderate/Low |
| | Analysis of Probability and Impact: |
| | |
| | Mitigation Measures: |
| | |
| | Action required during the implementation stage: |
| 3. (Description of Risk) | Probability: High/Moderate/Low |
| | Impact: High/Moderate/Low |
| | Analysis of Probability and Impact: |
| | |
| | Mitigation Measures: |
| | |
| | Action required during the implementation stage: |

| | |
|---|-----------------------------------|
| | Contingency Plan (if applicable): |
| | |
| Actual Situation and Countermeasures | |
| (PMR) | |

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

Attachment

1. Project Location Map
 2. Specific obligations of the Recipient which will not be funded with the Grant
 3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
 - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
 5. Environmental Monitoring Form / Social Monitoring Form
 6. Monitoring sheet on price of specified materials (Quarterly)
 7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
 8. Pictures (by JPEG style by CD-R) (PMR (final) only)
 9. Equipment List (PMR (final) only)
 10. Drawing (PMR (final) only)
 11. Report on RD (After project)
 12. Report on the Management of Safety for Construction Works

Monitoring sheet on price of specified materials

| 1. Initial Conditions (Confirmed) | | Initial Volume A | Initial Unit Price (¥) B | Initial total Price C=A×B | 1% of Contract Price D | Condition of payment | |
|-----------------------------------|--------|---------------------|--------------------------------|---------------------------------|------------------------------|-------------------------------|-------------------------------|
| Items of Specified Materials | | | | | | Price (Decreased) E=C-D | Price (Increased) F=C+D |
| 1 | Item 1 | ●●t | ● | ● | ● | ● | ● |
| 2 | Item 2 | ●●t | ● | ● | ● | | |
| 3 | Item 3 | | | | | | |
| 4 | Item 4 | | | | | | |
| 5 | Item 5 | | | | | | |

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

| Items of Specified Materials | 1st month, 2015 | 2nd month, 2015 | 3rd month, 2015 | 4th | 5th | 6th |
|------------------------------|--------------------|--------------------|--------------------|-----|-----|-----|
| 1 | ● | ● | ● | | | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |

(3) Summary of Discussion with Contractor (if necessary)

..

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
 (Actual Expenditure by Construction and Equipment each)

| | Domestic Procurement (Recipient Country) A | Foreign Procurement (Japan) B | Foreign Procurement (Third Countries) C | Total D |
|-----------------------------|--|-------------------------------------|---|------------|
| Construction Cost | (A/D%) | (B/D%) | (C/D%) | |
| Direct Construction Cost | (A/D%) | (B/D%) | (C/D%) | |
| others | (A/D%) | (B/D%) | (C/D%) | |
| Equipment Cost | (A/D%) | (B/D%) | (C/D%) | |
| Design and Supervision Cost | (A/D%) | (B/D%) | (C/D%) | |
| Total | (A/D%) | (B/D%) | (C/D%) | |

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Report on the Management of Safety for Construction Works

| Month/Year 2022年×月 | Cumulative number of labor 労働延人数 | Cumulative number of public accident 公衆災害件数 | Cumulative hours worked 延べ実労働時間数 | Number of deaths and injuries due to industrial accidents 労働災害による死傷者 | | | | Frequency rate 度数率 | Severity rate 強度率 |
|-------------------------------------|-------------------------------------|--|-------------------------------------|---|---|---|--|-----------------------|----------------------|
| | | | | Death and injuries 死傷者数 | Aggregated number of calendar days absent 延べ休業日数 | Aggregated number of work-days lost 延べ労働損失日数 | | | |
| This Month 当月 | | | | Death 死者 | | | | | |
| | | | | More than 4 calendar days absent 休業4日以上 | | | | | |
| | | | | 1 to 3 calendar days absent 休業1~3日 | | | | | |
| | | | | Total 計 | | | | | |
| Total including this month 当月迄累計 | | | | Death 死者 | | | | | |
| | | | | More than 4 calendar days absent 休業4日以上 | | | | | |
| | | | | 1 to 3 calendar days absent 休業1~3日 | | | | | |
| | | | | Total 計 | | | | | |

Note (注)

- Frequency rate is the frequency of occurrence of industrial accidents.
度数率 = (労働災害による死傷者数 ÷ 延べ実労働時間数) × 100 万時間
Frequency rate = (Number of deaths and injuries due to industrial accidents ÷ Cumulative hours worked) × 1,000,000
- Severity rate is degree of seriousness of the industrial accident.
強度率 = (延べ労働損失日数 ÷ 延べ実労働時間数) 1000 時間
Severity rate = (Aggregated number of work-days lost ÷ Cumulative hours worked) × 1,000
- Aggregated number of work-days lost = Aggregated number of calendar days absent × (300 ÷ 365)
Death (7,500 days) : death as a result of an industrial accident includes not only instantaneous death but also death as a result of occupational injury or disease.
延べ労働損失日数 = 延べ休業日数 × (300 ÷ 365) ・ ・ ・ 死亡 7500 日 (即死のほか負傷が原因で死亡したものを含む)
- Frequency rate and severity rate are rounding off the third decimal place.
度数率・強度率は小数点第3位以下四捨五入

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Major Undertakings to be taken by the Government of the Kyrgyz Republic

1. Specific obligations of the Government of the Kyrgyz Republic which will not be funded with the Grant**(1) Before the Bidding**

| NO | Items | Deadline | In charge | Estimated Cost | Ref. |
|----|--|---|-----------|-------------------------|------|
| 1 | To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant 6 | within 1 month after the signing of the G/A | MOF | | |
| 2 | To issue A/P to the Agent Bank for the payment to the consultant | within 1 month after the signing of the contract(s) | MoH/MOF | | |
| 3 | To bear the following commissions to the Agent Bank for the banking services based upon B/A | | | | |
| | 1) Advising commission of A/P | within 1 month after the signing of the contract(s) | MOH/MOF | JPY10,000 | |
| | 2) Payment commission for A/P | every payment | MOH/MOF | 0.1% of Agreement price | |
| 13 | To submit Project Monitoring Report (with the result of Detailed Design) | before preparation of the bidding documents | MOH | | |

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

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(2) During the Project Implementation

| NO | Items | Deadline | In charge | Estimated Cost | Ref. |
|----|---|--|----------------------|-------------------------|------|
| 1 | To issue A/P to the Agent Bank for the payment to the supplier and the contractor | within 1 month after the signing of the contract(s) | MOH/MOF | | |
| 2 | To bear the following commissions to the Agent Bank for the banking services based upon the B/A | | | | |
| | 1) Advising commission of A/P | within 1 month after the signing of the contract(s) | MOH/MOF | JPY 10,000 | |
| | 2) Payment commission for A/P | every payment | MOH/MOF | 0.1% of Agreement price | |
| 3 | to ensure prompt customs clearance and to assist the Supplier(s) with internal transportation in the country of the Recipient | during the Project | MOH | | |
| 4 | To accord Japanese physical persons and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work | during the Project | MoH | | |
| 5 | To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted/ be borne by its designated authority without using the Grant; | during the Project | MoH | | |
| 6 | To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project | during the Project | MoH | | |
| 7 | To notify JICA promptly of any incident or accident, which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers. | during the construction | MoH | | |
| 8 | To submit Project Monitoring Report after each work under the contract(s) such as shipping, hand over, installation and operational training | within 1 month after completion of each work | MoH | | |
| | To submit Project Monitoring Report (final) (including as-built drawings, equipment list, photographs, etc.) | within 1 month after issuance of Certificate of Completion for the works under the contract(s) | MoH | | |
| 9 | To submit a notice concerning completion of the Project | within 6 months after completion of the Project | MoH | | |
| 10 | To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the site(s) | | | | |
| | 1) Room preparation Remove existing equipment, if necessary. Prepare all necessary renovation works, including radiation protection works, before installing equipment. | Before the shipment of equipment | | | |
| | 2) Electricity The distributing line to the site Increase the capacity of power distribution cabinet of each equipment, if necessary, to satisfy the requirement of the equipment power consumption | Before the shipment of equipment | MoH/Target hospitals | | |
| | 3) Water Supply The city water distribution main to the site | Before the shipment of equipment | MoH/Target hospitals | | |

| | | | | | |
|----|--|----------------------------------|----------------------|--|--|
| | 4) Drainage The city drainage main (for storm, sewer and others) to the site | Before the shipment of equipment | MoH/Target hospitals | | |
| | 5) Transport of equipment for installation Secure enough opening space to transport the equipment to the room | Before the shipment of equipment | | | |
| 12 | To provide equipment, furniture, facilities necessary for the implementation of the Project in the site(s) | before start of the construction | MoH/Target hospitals | | |
| 13 | To ensure the safety of persons engaged in the implementation of the Project | during the Project | MoH | | |

(3) After the Project

| NO | Items | Deadline | In charge | Estimated Cost | Ref. |
|----|---|--------------------------------------|----------------------|----------------|------|
| 3 | To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection | After completion of the construction | MoH/Target hospitals | | |

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2. Other obligations of the Government of the Kyrgyz Republic funded with the Grant

| NO | Items | Deadline | Amount (Million Japanese Yen)* |
|-------|---|----------|--------------------------------------|
| 1 | To provide equipment 1) To conduct the following transportation a) Marin (Air) transportation of the products from Japan to the country of the Recipient b) Internal transportation from the port of disembarkation to the project site 2) To provide equipment with installation and commissioning | | / |
| 2 | To implement detailed design, bidding support and procurement supervision (Consulting Service) | | |
| Total | | | |

*The Amount is provisional. This is subject to the approval of the Government of Japan.

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Appendix 4-2 Minutes of Discussions

Minutes of Discussions
on the Preparatory Survey for the Project for
the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City
(Explanation on Draft Preparatory Survey Report)

With reference to the minutes of discussions signed between Ministry of Health of the Kyrgyz Republic and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on 1st December 2023 and in response to the request from the Cabinet of Ministers of the Kyrgyz Republic dated 28th December 2023, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") for the explanation of Draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") for the Project for the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City (hereinafter referred to as "the Project").

As a result of the discussions, both sides agreed on the main items described in the attached sheets.

Bishkek, March 7, 2024



Mr Yoshida Tomoya
Team Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan



Ms Shambetova Aizhamal
Deputy Minister
Ministry of Health of the Kyrgyz Republic
The Kyrgyz Republic

ATTACHMENT

1. Objective of the Project

The objective of the Project is to strengthen diagnosis and treatment capacities by providing medical equipment for diagnosis and treatment of cardiovascular disease and breast cancer to tertiary hospitals in Bishkek city, thereby contributing to enhancing the quality of health care services in the top referral hospitals.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as “the Preparatory Survey for the Project for the Improvement of Medical Equipment in Tertiary Hospitals of Bishkek City”.

3. Project site

Both sides confirmed that the sites of the Project are in Bishkek city, the capital of the Kyrgyz Republic, which is shown in Annex 1.

4. Responsible authority for the Project

Both sides confirmed the authorities responsible for the Project are as follows:
The Ministry of Health will be the executing agency for the Project (hereinafter referred to as “the Executing Agency”). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be managed by relevant authorities properly and on time. The organization charts are shown in Annex 2.

5. Contents of the Draft Report

After the explanation of the contents of the Draft Report by the Team, the Kyrgyz Republic side agreed to its contents. JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the Kyrgyz Republic side around July 2024.

6. Cost estimate

Both sides confirmed that the cost estimate explained by the Team is provisional and will be examined further by the Government of Japan for its approval.

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7. Confidentiality of the cost estimate and technical specifications

Both sides confirmed that the cost estimate and technical specifications of the Project should never be disclosed to any third parties until all the contracts under the Project are concluded.

8. Timeline for the project implementation

The Team explained to the Kyrgyz Republic side that the expected timeline for the project implementation is as attached in Annex 4.

9. Expected outcomes and indicators

Both sides agreed that key indicators for expected outcomes are as follows. The Kyrgyz side will be responsible for the achievement of agreed key indicators targeted in year 2029 and shall monitor the progress for Ex-Post Evaluation based on those indicators.

[Quantitative indicators]

① National Center of Cardiology and Internal Medicine

| Index(per year) | Baseline (2022) | Target (2029) |
|---|--------------------|------------------|
| Number of angiography examination and treatment | 1,789 | 2,200 |
| Number of radiofrequency ablation treatment | 216 | 400 |

② Scientific Research Institute of Heart Surgery and Organ Transplantation

| Index(per year) | Baseline (2022) | Target (2029) |
|---|--------------------|------------------|
| Number of computed tomography examination | 0 | 500 |
| Number of angiography examination and treatment | 581 | 1,500 |

③ National Center of Oncology and Hematology

| Index(per year) | Baseline (2022) | Target (2029) |
|-----------------------------------|--------------------|------------------|
| Number of mammography examination | 1,507 | 3,000 |

[Qualitative indicators]

- ① Patient satisfaction at the target hospitals is improved.

- ② The quality of medical services at the target hospitals is improved

10. Ex-Post Evaluation

JICA will conduct ex-post evaluation after three (3) years from the project completion, in principle, with respect to six evaluation criteria (Relevance, Coherence, Effectiveness, Efficiency, Impact, Sustainability). The result of the evaluation will be publicized. The Kyrgyz Republic side is required to provide necessary support for the data collection.

11. Undertakings of the Project

Both sides confirmed the undertakings of the Project as described in Annex 5. With regard to exemption of customs duties, internal taxes and other fiscal levies as stipulated in 1. (2) No.5 of Annex 5, both sides confirmed that such customs duties, internal taxes and other fiscal levies, which shall be clarified in the bid documents by the Executing Agency during the implementation stage of the Project.

The Kyrgyzstan Republic side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage. Both sides also confirmed that the Annex 5 will be used as an attachment of G/A.

12. Monitoring during the implementation

The Project will be monitored by the Executing Agency and reported to JICA by using the form of Project Monitoring Report (PMR) attached as Annex 6. The timing of submission of the PMR is described in Annex 6.

13. Project completion

Both sides confirmed that the project completes when all equipment procured by the Grant are in operation. The completion of the Project will be reported to JICA promptly by the Executing Agency, but in any event not later than six months after completion of the Project.

14. Environmental and Social Considerations

The Team explained that 'JICA Guidelines for Environmental and Social

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Considerations (January 2022)' (hereinafter referred to as "the Guidelines") is applicable for the Project. The Project is categorized as C because the Project is likely to have minimal adverse impact on the environment under the Guidelines.

15. Other Relevant Issues

15-1. Disclosure of Information

Both sides confirmed that the Preparatory Survey Report from which project cost is excluded will be disclosed to the public after completion of the Preparatory Survey. The comprehensive report including the project cost will be disclosed to the public after all the contracts under the Project are concluded.

15-2 Allocation of necessary staff and training for operation of ECMO and CT

Since ECMO and CT, which were not in operation in the target hospitals before, will be procured by the Project, the Kyrgyz Republic side agreed to assign the necessary staff and provide adequate training for them to operate the said equipment appropriately. Especially, ECMO will be installed in Kyrgyz Republic for the first time, so Kyrgyz Republic side should consider dispatching trainees to overseas hospital which has enough clinical cases of ECMO for clinical training. The Kyrgyz Republic side will submit a training plan to JICA at the Detailed Design stage, and secure necessary cost for the training described in Annex5.

15-3 Operation and Maintenance of Equipment to be procured

(1) Allocation of Budget and Human Resources

The Kyrgyz Republic side agreed to secure and allocate the necessary staff and budget to operate and maintain the medical equipment procured under the Project properly and effectively. The Kyrgyz Republic side will secure necessary budget from income of the target hospitals and the fund from Executing Agency. Besides, the Kyrgyz Republic side will definitely allocate an engineer per 100 beds in each target hospital, as prescribed by the national legislation.

(2) Maintenance Services

The team explained about importance of the routine maintenance and periodical maintenance service of some major equipment. Keeping this in view, both sides agreed to consider inclusion of two years maintenance service contract to the major medical equipment that need frequent maintenance into the Project.

Both side confirmed that a two-year on-call service and regular maintenance service

from the expiration of the one-year manufacturer's guarantee period will be secured by the Grant. The team explained that at the time of delivery, the manufacturer's agency technician will provide guidance of initial operation and daily maintenance to engineers and end users such as doctors, nurses, and laboratory technicians. Additionally, under the two-year maintenance service contract, regular inspections will be carried out every three months, and practical guidance will be provided to improve the target hospitals' maintenance and management capacity of the equipment. The Kyrgyz Republic side also agreed to secure maintenance cost described in Annex 5 after expiring maintenance contract and/or manufacture guarantee to be covered by the Grant.

15-4 Precondition of Installment of Equipment

The Kyrgyz Republic side agreed to take necessary measures of removal of the existing equipment for securing the space before the installment when the equipment procured by the Grant. In addition, both side confirmed that assuming that PACS (Picture Archiving and Communication Systems) will be introduced by the E-health center, the specification of diagnostic imaging apparatus to be procured should be compatible with the PACS for the sake of sharing and managing the diagnostic images as an electronic data.

15-5 Registration of medical equipment in accordance with legislation of the Eurasian Economic Union and The Kyrgyz Republic

The Kyrgyz Republic side explained about rules and regulations of the EAEU in regards to medical equipment, which will enter into force in January, 2026. The Kyrgyz Republic side agreed to undertake all necessary procedures such as exempting or simplifying procedures upon registration of the Equipment provided under the Grant in accordance with the national legislation which was enacted on January 29th 2024, in case the actual provision of the Equipment will fall after the said period and the expected model of the Equipment has not been registered based on the common rule of the EAEU.

15-6 Ratification

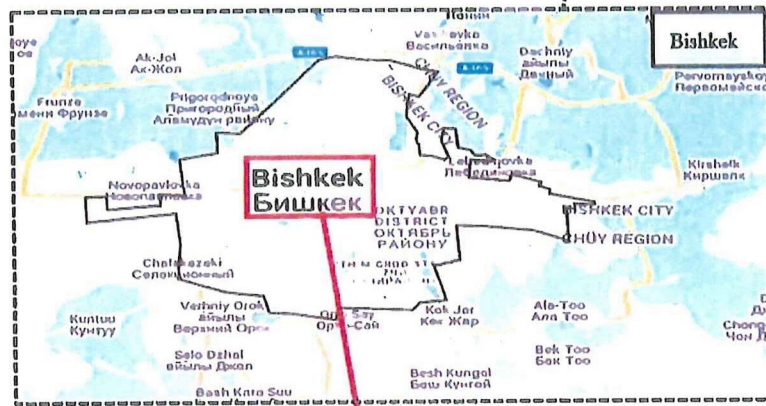
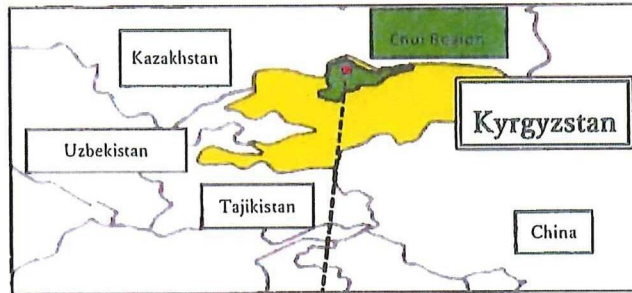
The Kyrgyz Republic side explained that the Project should be approved by the Cabinet of Ministers of the Kyrgyz Republic before the signing of EN and GA, and the project should be officially ratified before the contract of consultant. The Kyrgyz Republic side agreed to take necessary measures to proceed the process smoothly.

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- Annex 1 Project Site
- Annex 2 Organization Chart
- Annex 3 Equipment list
- Annex 4 Project Implementation Schedule (Tentative)
- Annex 5 Major Undertakings to be taken by the Cabinet of Ministers of the Kyrgyz Republic
- Annex 6 Project Monitoring Report (template)



Annex1. Project Site



Location of Bishkek city site

1. National Center of Cardiology and Therapy

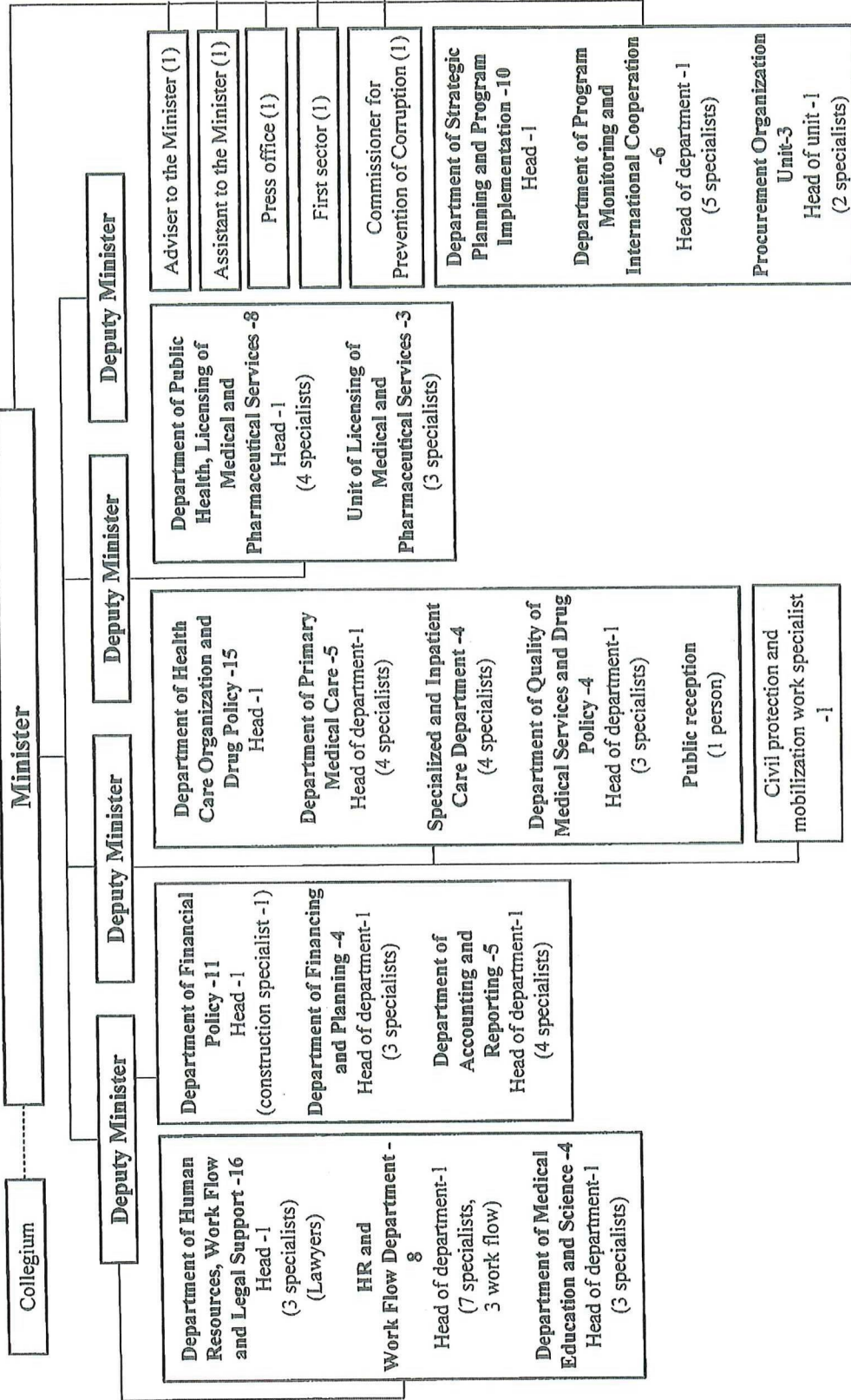
2. Scientific Research Institute of Heart Surgery and Organ Transplantation

3. National Center of Oncology and Hematology

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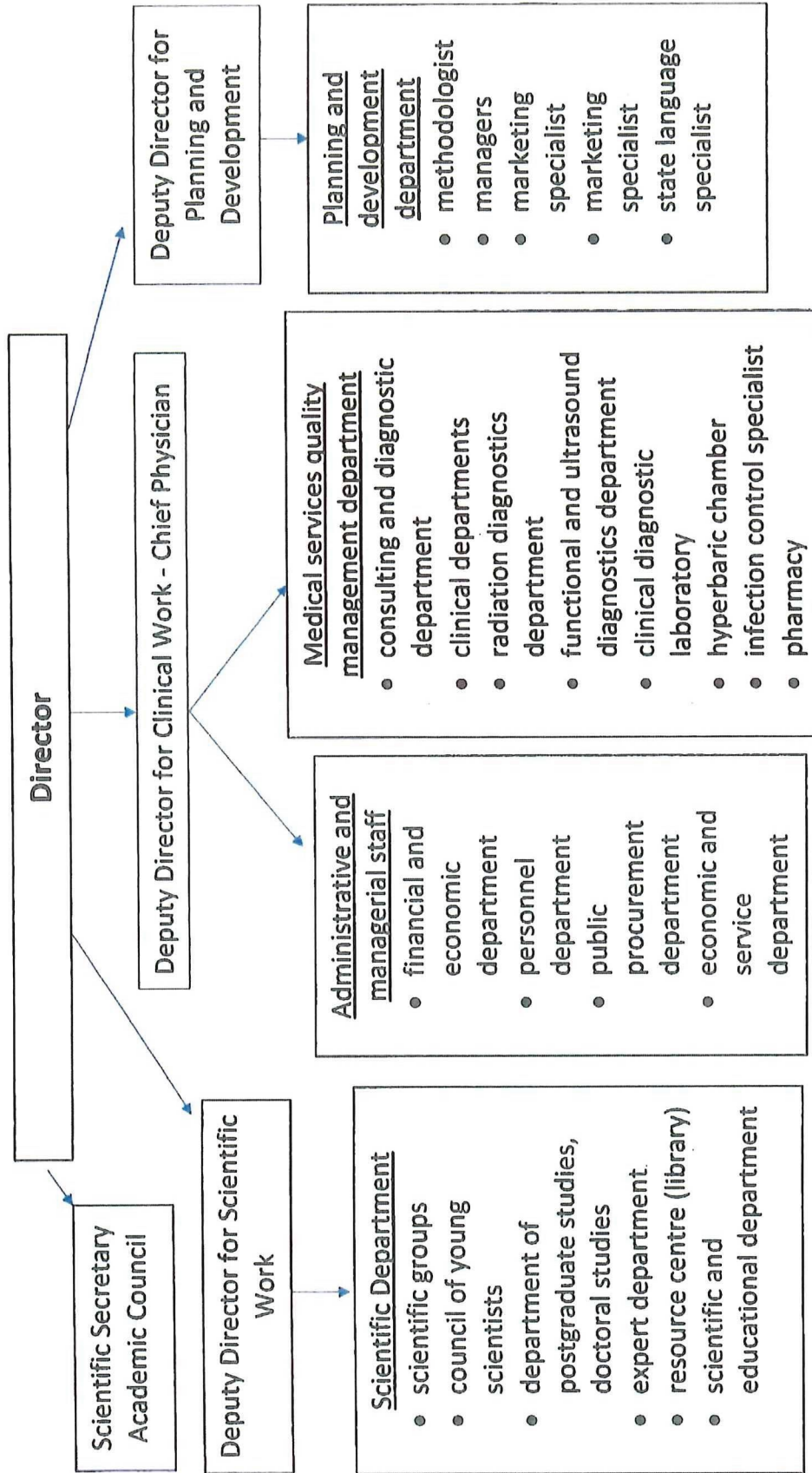
Annex 2. Organization Chart

Structure of Central Office of the Ministry of Health of the Kyrgyz Republic (71 persons)

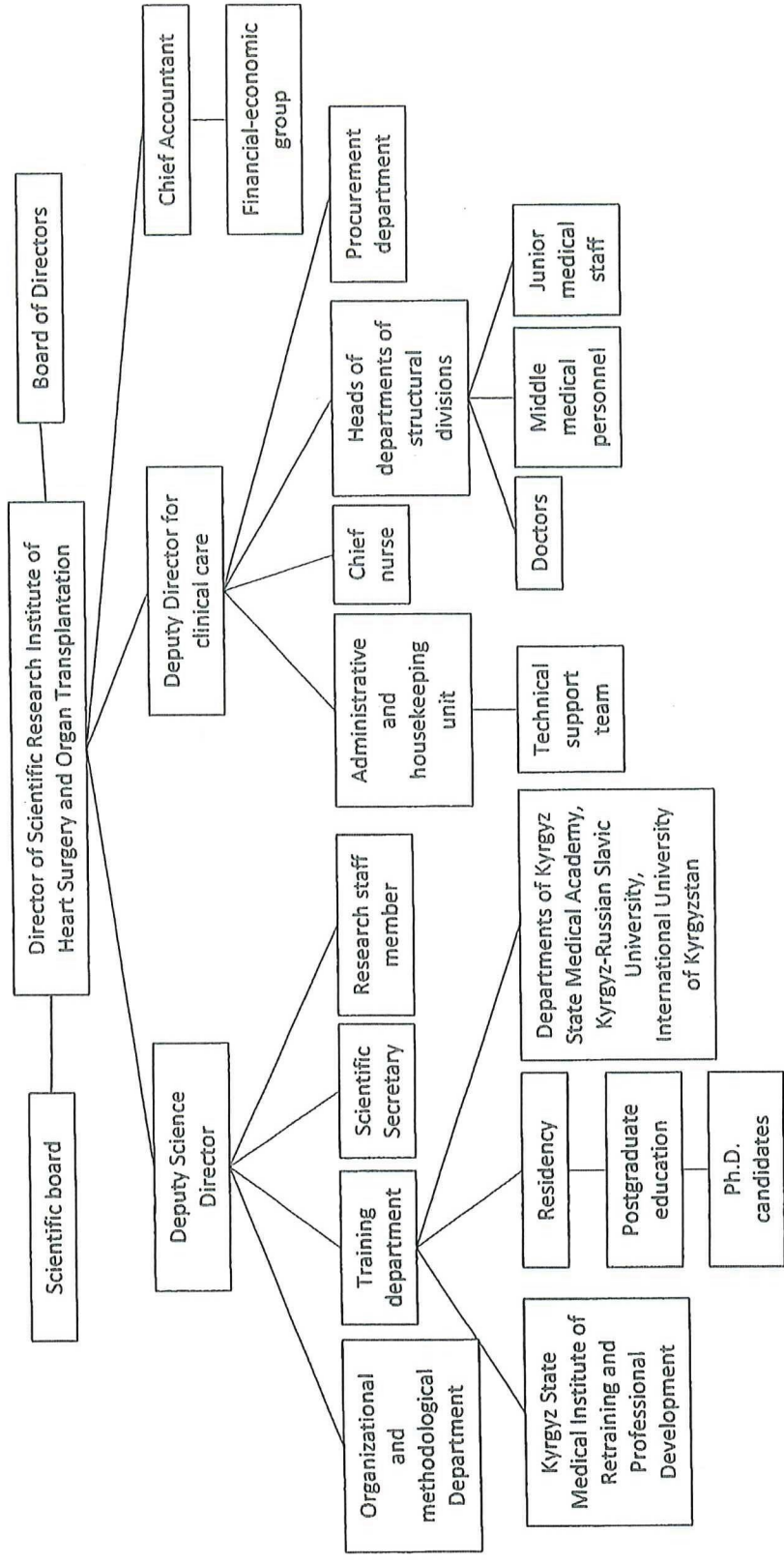


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Structure of the National Centre of Cardiology and Internal Medicine
 named after Academician M. Mirrakhimov
 under the Ministry of Health of the Kyrgyz Republic



Organizational Chart of Scientific Research Institute of Heart Surgery and Organ Transplantation

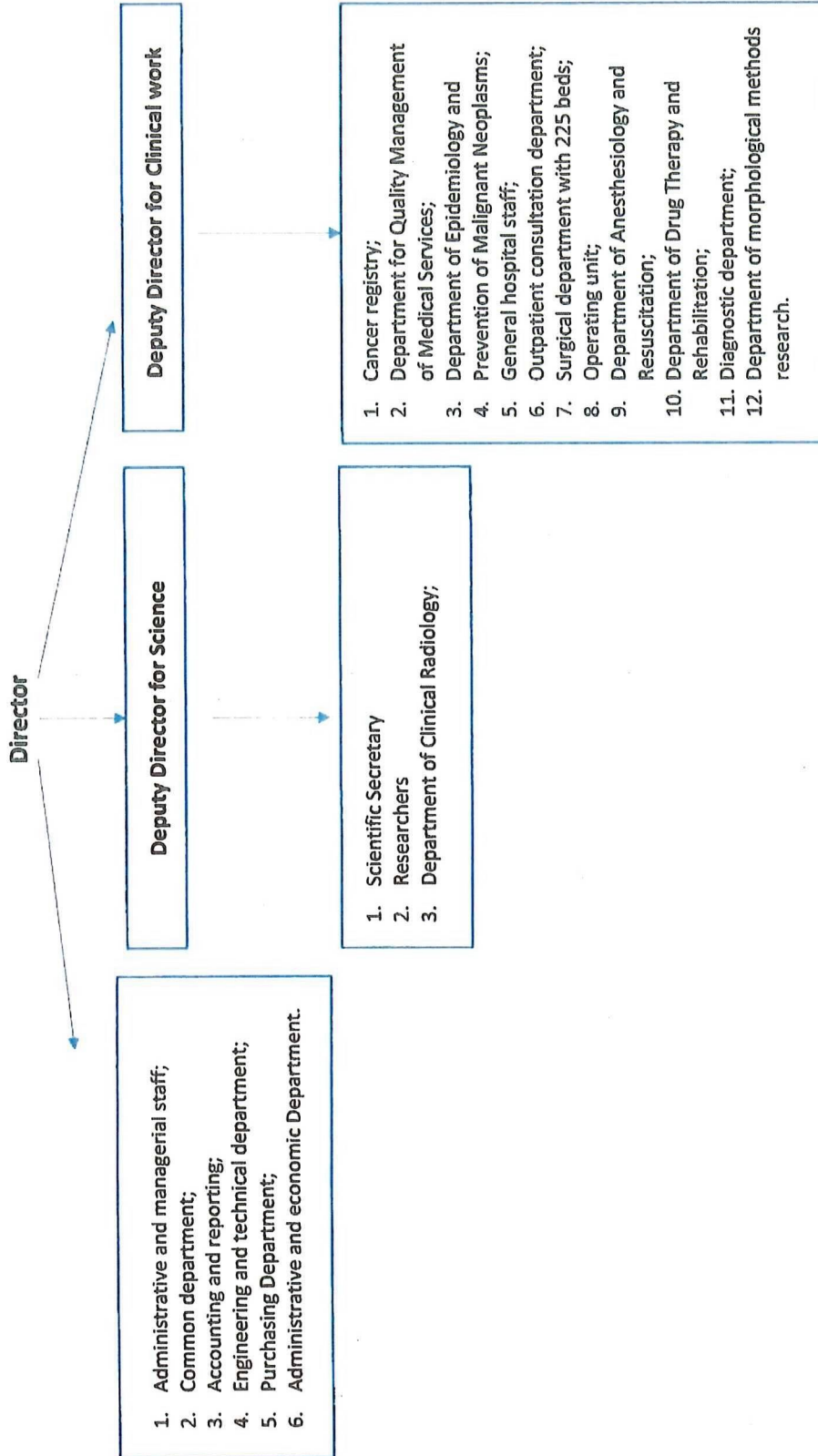


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ORGANIZATIONAL STRUCTURE

Distribution of spheres of control

National Center for Oncology and Hematology under the Ministry of Health of the Kyrgyz Republic



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Planned equipment list

National Center of Cardiology and Therapy

| No. | Requested Equipment | Наименование оборудования | Q'ty | Priority |
|-----------------------|--|--|------|----------|
| For Imaging | | | | |
| 1 | Angiographic unit | Рентген и УЗИ Ангиографическая установка | 1 | A |
| 2 | System for electrophysiological examination of the heart and radiofrequency ablation with 3-dimensional navigation | Система для электрофизиологического исследования сердца и радиочастотной абляции с 3-х мерной навигацией | 1 | A |
| 3 | Pacemaker external 2-chamber | Кардиостимулятор наружный 2-х камерный | 2 | A |
| 4 | Intra-aortic balloon counterpulse | Интрааортальный баллонный контрпульс | 1 | A |
| 5 | Ultrasound machine with TEE probe | Ультразвуковая система с датчиком чреспищеводной эхокардиографии | 2 | A |
| 6 | Defibrillator | Дефибриллятор | 2 | A |
| 7 | Ventilator | Аппарат ИВЛ | 1 | B |
| 8 | Electrosurgical unit | Электрохирургическая установка | 1 | B |
| For ICU | | | | |
| 1 | Central stations for 18 beds | Центральные станции на 18 коек | 2 | A |
| 2 | Patient monitor with Invasive BP | Кардиомонитор пациента с инвазивным АД | 3 | A |
| 3 | Patient monitor with non-invasive BP | Монитор пациента с неинвазивным АД | 42 | A |
| 4 | Temporary pacemaker 1 ch | Аппарат временной электрокардиостимуляции 1-камерн. | 6 | A |
| 5 | Temporary pacemaker 2 ch | Аппарат временной электрокардиостимуляции 2-х камерн. | 6 | A |
| 6 | Ventilator | Аппарат ИВЛ | 6 | A |
| 7 | Defibrillator with external pacing function | Дефибриллятор с функцией наружной электрокардиостимуляции | 4 | A |
| 8 | Extracorporeal membrane oxygenation (ECMO) | Устройство для экстракорпоральной мембранной оксигенации (ЭКМО) | 1 | A |
| 9 | Manual ICU bed | Кровати механические для реанимации | 45 | A |
| 10 | Equipment for high-flow oxygen therapy | Аппарат для проведения высокотоковой кислородотерапии | 4 | A |
| 11 | Electrocardiograph | Электрокардиограф | 10 | A |
| 12 | Syringe pump | Инфузоматы (шприцевые) | 52 | A |
| 13 | Portable suction machine | Переносной хирургический аспиратор | 6 | A |
| 14 | Patient trolley | Каталка больничная | 6 | B |
| 15 | Wheel chair | Инвалидная коляска | 11 | B |
| For Laboratory | | | | |
| 1 | microplate ELISA washer | Микропланшетный промыватель для ИФА | 1 | A |
| 2 | Immuno - enzyme analyzer (ELISA) | Иммуно - ферментный анализатор (ИФА) | 1 | A |
| 3 | Semi-automatic biochemistry analyzer | Полуавтоматический биохимический анализатор | 1 | A |
| 4 | Blood gas analyzer for ICU | Анализатор газов крови для реанимации | 2 | A |
| 5 | Semi-automatic coagulator | Полуавтоматический коагулятор | 1 | A |
| 6 | Automatic urinary analyzer | Автоматическая мочевая станция | 1 | A |
| 7 | Microscope binocular medical, laboratory | Микроскоп бинокулярный медицинский, лабораторный | 4 | A |
| For Outpatient | | | | |
| 1 | Daily ECG monitoring | Суточное ЭКГ-мониторирование | 10 | A |

Planned Equipment List

Scientific Research Institute of Heart Surgery and Organ Transplantation

| No. | Requested Equipment | Наименование оборудования | Q'ty | Priority |
|-----|--|--|--------|----------|
| 1 | CT scan | Компьютерная томография | 1 | A |
| 2 | Angiograph | Ангиограф | 1 | A |
| 3 | Ultrasound machine for ecocardiograph | Ультразвуковой аппарат для эхокардиографии | 1 | A |
| 4 | Ultrasound machine with TEE Probe | Ультразвуковой аппарат с датчиком TEE | 2 | A |
| 5 | Patient monitor for adult | Монитор для взрослого пациента | 8 | A |
| 6 | Heart lung machine | Сердечно-легочный аппарат | 2 | A |
| 7 | Ventilator for adult | Аппарат для искусственной вентиляции легких для взрослых | 5 | A |
| 8 | Anesthesia machine | Аппарат для анестезии | 3 | A |
| 9 | ECMO (Extracorporeal Membrane Oxygenation) | ЭКМО (экстракорпоральная мембранная оксигенация) | 1 | A |
| 10 | Hemodialysis stationary | Стационарный аппарат для гемодиализа | 1 | A |
| 11 | Operating table | Операционный стол | 2 | A |
| 12 | Device for cerebral oximetry during CPB | Устройство для церебральной оксиметрии во время ИК | 2 | A |
| 13 | Anesthesia depth measuring device | Прибор для измерения глубины анестезии | 2 | A |
| 14 | Electrosurgical unit | Электрохирургический блок | 1 | A |
| 15 | Infant Cardiovascular Surgery Tool set | Набор инструментов для сердечно-сосудистой хирургии новорожденных | 2 | A |
| 16 | Cardiovascular surgery tool set for adult | Набор инструментов для сердечно-сосудистой хирургии для взрослых | 1 | A |
| 17 | Open heart surgery tool set for adult | Набор инструментов для операций на открытом сердце для взрослых | 1 | A |
| 18 | Shadowless lamp | Светильник без тени | 2 | A |
| 19 | ACT analyzer | Анализатор АСТ | 2 | A |
| 20 | Blood gas analyzer | Анализатор газов крови | 1 | A |
| 21 | Syringe pump | Шприцевой насос | 9 sets | A |
| 22 | Ventilator for infant | Аппарат для искусственной вентиляции легких для взрослых новорожденных | 5 | A |
| 23 | Patient monitor for pediatric and infant | Монитор для детей и младенцев | 7 | A |
| 24 | External pacemaker dual channel | Внешний двухканальный кардиостимулятор | 10 | A |
| 25 | Defibrillator for operation theatre | Дефибриллятор для операционного зала | 2 | A |
| 26 | Defibrillator for ICU | Дефибриллятор для ОИТ | 1 | A |
| 27 | Electrocardiograph 12 channel | 12-канальный электрокардиограф | 4 | A |
| 28 | Electrocardiograph 12 channel for Infant | 12-канальный педиатрический электрокардиограф | 1 | A |
| 29 | ICU bed for adult | Кровать для взрослого в ОИТ | 6 | A |
| 30 | ICU bed for pediatric | Кровать для детей в ОИТ | 7 | A |
| 31 | Anesthesia cart | Тележка анестезиологическая | 2 | B |
| 32 | Nitric oxide inhalation device | Устройство для ингаляции оксида азота | 1 | B |
| 34 | Infant warmer | Стол реанимационный для новорожденных | 4 | B |
| 35 | Small suction pump for infant warmer | Небольшой хирургический отсос для новорожденных | 4 | B |
| 36 | Bed side cabinet | Тумба прикроватная | 10 | B |
| 37 | Laryngoscope set | Комплект ларингоскопа | 3 | B |
| 38 | Instrument table | Стол для инструментов | 2 | B |
| 39 | Mayo table | Стол Майо | 4 | B |
| 40 | Tool cabinet | Шкаф для инструментов | 2 | B |
| 41 | Cabinet for medicines | Шкаф для лекарственных средств | 2 | B |
| 42 | Stainless cabinet for preparation room | Нержавеющий шкаф для подготовительного отделения | 2 | B |
| 43 | Suction machine for operation theatre | Отсасывающий аппарат для операционной | 4 | B |

Annex 3

Planned equipment list

National Center of Oncology and Hematology

| No. | Requested Equipment | Наименование оборудования | Q'ty | Priority |
|-----|---------------------|---------------------------|------|----------|
| 1 | 3D Mammography | 3D-маммография | 1 | A |
| 2 | 2D Mammography | 2D-маммография | 1 | A |

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Project Implementation Schedule (Tentative)

| Year | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
|---------------------------|-----------|------|--------|--------|--------|--------|
| ① International Agreement | September | | | | | |
| ② Detailed Design | December | June | | | | |
| ③ Procurement | | June | August | | | |
| ④ Defect Inspection | | | | August | | |
| ⑤ Maintenance Contract | | | | August | August | August |

▲ ... Inspection and hand over

Major Undertakings to be taken by the Government of the Kyrgyz Republic

1. Specific obligations of the Government of the Kyrgyz Republic which will not be funded with the Grant

(1) Before the Bidding

| NO | Items | Deadline | In charge | Estimated Cost | Ref. |
|----|--|---|-----------|-------------------------|------|
| 1 | To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant 6 | within 1 month after the signing of the G/A | MoF | | |
| 2 | To issue A/P to the Agent Bank for the payment to the consultant | within 1 month after the signing of the contract(s) | MoH/MoF | | |
| 3 | To bear the following commissions to the Agent Bank for the banking services based upon B/A | | | | |
| | 1) Advising commission of A/P | within 1 month after the signing of the contract(s) | MoH/MoF | Approx. 66 USD | |
| | 2) Payment commission for A/P | every payment | MoH/MoF | 0.1% of Agreement price | |
| 4 | To submit Project Monitoring Report (with the result of Detailed Design) | before preparation of the bidding documents | MoH | | |

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)




(2) During the Project Implementation

| NO | Items | Deadline | In charge | Estimated Cost | Ref. |
|--|---|--|----------------------|-------------------------|------|
| 1 | To issue A/P to the Agent Bank for the payment to the supplier | within 1 month after the signing of the contract(s) | MoH/MoF | | |
| 2 | To bear the following commissions to the Agent Bank for the banking services based upon the B/A | | | | |
| | 1) Advising commission of A/P | within 1 month after the signing of the contract(s) | MoH/MoF | Approx.66 USD | |
| | 2) Payment commission for A/P | every payment | MoH/MoF | 0.1% of Agreement price | |
| 3 | To ensure prompt customs clearance and to assist the Supplier(s) with internal transportation in the country of the Recipient | during the Project | MoH | | |
| 4 | To accord Japanese physical persons and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work | during the Project | MoH/MoF | | |
| 5 | To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted/ be borne by its designated authority without using the Grant; | during the Project | MoH/MoF/ MoEC | | |
| 6 | To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project | during the Project | MoH | | |
| 7 | To ensure that medical device registration which is imposed in the country of the Recipient with respect to their entry into the country be exempted or simplified. | during the Project | MoH | | |
| 8 | To notify JICA promptly of any incident or accident, which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers. | during the construction | MoH | | |
| 9 | To submit Project Monitoring Report after each work under the contract(s) such as shipping, hand over, installation and operational training | within 1 month after completion of each work | MoH | | |
| 10 | To submit Project Monitoring Report (final) (including as-built drawings, equipment list, photographs, etc.) | within 1 month after issuance of Certificate of Completion for the works under the contract(s) | MoH | | |
| 11 | To submit a notice concerning completion of the Project | within 6 months after completion of the Project | MoH | | |
| 12 | To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the site(s) | | | | |
| For all equipment for all hospitals other than those listed below | | | | | |
| | 1) Room preparation Remove existing equipment, if necessary. Prepare all necessary renovation works, including radiation protection works, before installing equipment. | Before the shipment of equipment | MoH/Target hospitals | | |
| | 2) Electricity The distributing line to the site Increase the capacity of power distribution cabinet of each | Before the shipment of equipment | MoH/Target hospitals | | |

| | | | | | |
|---|---|----------------------------------|--|--------------------------|--|
| | equipment, if necessary, to satisfy the requirement of the equipment power consumption | | | | |
| | 3) Water Supply The city water distribution main to the site | Before the shipment of equipment | MoH/Target hospitals | | |
| | 4) Drainage The city drainage main (for storm, sewer and others) to the site | Before the shipment of equipment | MoH/Target hospitals | | |
| | 5) Transport of equipment for installation Secure enough opening space to transport the equipment to the room | Before the shipment of equipment | MoH/Target hospitals | | |
| National Center of Cardiology and Therapy 心臓病センター | | | | | |
| | 1) Angiography - Remove existing angiography including ceiling rail and UPS. - Secure space and routes for carrying in equipment to the room - Secure a switchboard, electrical capacity, and grounding according to the power consumption of the equipment. - Establish a temperature and humidity environment, including air conditioning, for the use of the equipment. - X-ray protection for wall, ceiling, door, and operating window - Preparation and connection of emergency power supply in case of power failure | Before the shipment of equipment | MoH/ National Center of Cardiology and Therapy | Approx. 17,000US D | |
| | 2) ECMO - Participation of at least two perfusionists and one anesthetist in an overseas training program in the hospital which has enough clinical cases of ECMO for clinical training, supported by the procuring manufacturer for a minimum of one week - To bear the travel expenses, daily allowance and accommodation expenses for participants - Establish a team with the clinical skills to use ECMO by the time the equipment is installed. | Before the shipment of equipment | MoH/ National Center of Cardiology and Therapy | Approx. 11,000US D | |
| Scientific Research Institute of Heart Surgery and Organ Transplantation 移植センター | | | | | |
| | 1) Angiography - Remove existing angiography including UPS. - Securing space and routes for carrying in equipment to the room - Secure a switchboard, electrical capacity, and grounding according to the power consumption of the equipment. - Establish a temperature and humidity environment, including air conditioning, for the use of the equipment. - X-ray protection for wall, ceiling, door, and operating window - Preparation and connection of emergency power supply in case of power failure | Before the shipment of equipment | MoH/ Scientific Research Institute of Heart Surgery and Organ Transplantation | Approx. 13,000US D | |
| | 2) Operation light and operation table - Remove existing equipment. | Before the shipment of equipment | MoH/ Scientific Research Institute of Heart Surgery and Organ Transplantation | Approx. 4,000USD | |
| | 3) CT scan - Renovation works for CT scan room - Securing space and routes for carrying in equipment to the room | Before the shipment of equipment | MoH/ Scientific Research | Approx. 50,000US D | |

| | | | | | |
|---|--|----------------------------------|---|-------------------|--|
| | <ul style="list-style-type: none"> - Secure a switchboard, electrical capacity, and grounding according to the power consumption of the equipment. - Establish a temperature and humidity environment, including air conditioning, for the use of the equipment. - X-ray protection for wall, ceiling, door, and operating window - Preparation and connection of emergency power supply in case of power failure - Installation of floor pit and wiring cover for CT wiring - Finishing work for CT room, control room and machine room - Floor leveling work in CT room - Installation of air conditioner for CT room, control room and machine room - Procurement and wiring work for CT in-use indicator lights - Procurement, wiring, and connection work for emergency power supply (generator) and automatic switching board in case of power failure - Procurement of tables and chairs for operation panel - Procurement and installation of generator for enough capacity for provided equipment | | Institute of Heart Surgery and Organ Transplantation | | |
| | <p>4) ECMO</p> <ul style="list-style-type: none"> - Participation of at least two perfusionists and one anesthetist in an overseas training program conducted by the procuring manufacturer for a minimum of one week - To bear the travel expenses, daily allowance and accommodation expenses for participants - Establish a team with the clinical skills to use ECMO by the time the equipment is installed. | Before the shipment of equipment | MoH/ Scientific Research Institute of Heart Surgery and Organ Transplantation | Approx. 11,000USD | |
| National Center of Oncology and Hematology がんセンター | | | | | |
| | <p>1) Mammography</p> <ul style="list-style-type: none"> - Remove existing mammography. - Securing space and routes for carrying in equipment to the room - Secure a switchboard, electrical capacity, and grounding according to the power consumption of the equipment. - Establish a temperature and humidity environment, including air conditioning, for the use of the equipment. - X-ray protection for wall, ceiling, door, and operating window - Preparation and connection of emergency power supply in case of power failure | Before the shipment of equipment | MoH/ National Center of Oncology and Hematology | | |
| 12 | To provide equipment, furniture, facilities necessary for the implementation of the Project in the site(s) | before start of the construction | MoH/Target hospitals | | |
| 13 | To ensure the safety of persons engaged in the implementation of the Project | during the Project | MoH | | |

(3) After the Project

| NO | Items | Deadline | In charge | Estimated Cost | Ref. |
|----|-------|----------|-----------|----------------|------|
|----|-------|----------|-----------|----------------|------|

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| | | | | |
|---|---|--------------------------------------|----------------------|---|
| 3 | <p>To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid, and are not used for military purposes.</p> <p>1) Allocation of maintenance cost including procurement spare parts and consumables 2) Operation and maintenance structure 3) Routine check/Periodic inspection</p> | After completion of the construction | MoH/Target hospitals | Approx. 370,000 for 1 st year, approx. 400,000USD for 2 nd and 3 rd year and approx. 690,000USD from 4 th year from the handover of equipment |
|---|---|--------------------------------------|----------------------|---|



2. Other obligations of the Government of the Kyrgyz Republic funded with the Grant

| NO | Items | Deadline | Amount (Million Japanese Yen)* |
|-------|---|----------|--------------------------------------|
| 1 | To provide equipment 1) To conduct the following transportation a) Marin (Air) transportation of the products from Japan to the country of the Recipient b) Internal transportation from the port of disembarkation to the project site 2) To provide equipment with installation and commissioning | | / |
| 2 | To implement detailed design, bidding support and procurement supervision (Consulting Service) | | |
| Total | | | |

*The Amount is provisional. This is subject to the approval of the Government of Japan.

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Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXXX
 20XX, Month

Organizational Information

| | |
|--|---|
| Signer of the G/A (Recipient) | _____ Person in Charge (Designation) <hr/> Contacts Address: _____ Phone/FAX: _____ Email: _____ |
| Executing Agency | _____ Person in Charge (Designation) <hr/> Contacts Address: _____ Phone/FAX: _____ Email: _____ |
| Line Ministry | _____ Person in Charge (Designation) <hr/> Contacts Address: _____ Phone/FAX: _____ Email: _____ |

General Information:

| | |
|--------------------------|---|
| Project Title | |
| E/N | Signed date: Duration: |
| G/A | Signed date: Duration: |
| Source of Finance | Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____ |

TP



| | |
|-------------------------------|--|
| 1: Project Description | |
|-------------------------------|--|

1-1 Project Objective

| |
|--|
| |
|--|

1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

| |
|--|
| |
|--|

1-3 Indicators for measurement of "Effectiveness"

| Quantitative indicators to measure the attainment of project objectives | | |
|---|----------------|--------------|
| Indicators | Original (Yr) | Target (Yr) |
| | | |
| | | |
| Qualitative indicators to measure the attainment of project objectives | | |
| | | |

| |
|----------------------------------|
| 2: Details of the Project |
|----------------------------------|

2-1 Location

| Components | Original <i>(proposed in the outline design)</i> | Actual |
|------------|---|--------|
| 1. | | |

2-2 Scope of the work

| Components | Original* <i>(proposed in the outline design)</i> | Actual* |
|------------|--|---------|
| 1. | | |
| | | |
| | | |

Reasons for modification of scope (if any).

| |
|-------|
| (PMR) |
|-------|

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2-3 Implementation Schedule

| Items | Original | | Actual |
|-------|---|---|--------|
| | <i>(proposed in the outline design)</i> | <i>(at the time of signing the Grant Agreement)</i> | |
| | | | |

Reasons for any changes of the schedule, and their effects on the project (if any)

| |
|--|
| |
|--|

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations
 See Attachment 2.

2-4-2 Activities
 See Attachment 3.

2-4-3 Report on RD
 See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant (Confidential until the Bidding)

| Components | | | Cost (Million Yen) | |
|------------|---|--|--|--------|
| | Original <i>(proposed in the outline design)</i> | Actual <i>(in case of any modification)</i> | Original ^{1),2)} <i>(proposed in the outline design)</i> | Actual |
| 1. | | | | |
| | | | | |
| | | | | |
| Total | | | | |

Note: 1) Date of estimation:
 2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

| Components | | | Cost (1,000 Taka) | |
|------------|---|--|--|--------|
| | Original <i>(proposed in the outline design)</i> | Actual <i>(in case of any modification)</i> | Original ^{1),2)} <i>(proposed in the outline design)</i> | Actual |
| 1. | | | | |
| | | | | |
| | | | | |
| | | | | |

TY

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

| |
|-------|
| (PMR) |
|-------|

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

| |
|---|
| Original (at the time of outline design) name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff): |
| Actual (PMR) |

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

| |
|---|
| Original (at the time of outline design) |
| Actual (PMR) |

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

| |
|---|
| Original (at the time of outline design) |
|---|

TY

Actual (PMR)

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks (at the time of outline design)

| Potential Risks | Assessment |
|--------------------------|--|
| 1. (Description of Risk) | Probability: High/Moderate/Low |
| | Impact: High/Moderate/Low |
| | Analysis of Probability and Impact: |
| | |
| | Mitigation Measures: |
| | |
| | Action required during the implementation stage: |
| 2. (Description of Risk) | Probability: High/Moderate/Low |
| | Impact: High/Moderate/Low |
| | Analysis of Probability and Impact: |
| | |
| | Mitigation Measures: |
| | |
| | Action required during the implementation stage: |
| 3. (Description of Risk) | Probability: High/Moderate/Low |
| | Impact: High/Moderate/Low |
| | Analysis of Probability and Impact: |
| | |
| | Mitigation Measures: |
| | |
| | Action required during the implementation stage: |

TY

| | |
|---|-----------------------------------|
| | Contingency Plan (if applicable): |
| Actual Situation and Countermeasures (PMR) | |

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

| |
|--|
| |
|--|

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

| |
|--|
| |
|--|

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

| |
|--|
| |
|--|

TP

Attachment

1. Project Location Map
2. Specific obligations of the Recipient which will not be funded with the Grant
3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
 - Consultant Member List
 - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
8. Pictures (by JPEG style by CD-R) (PMR (final) only)
9. Equipment List (PMR (final) only)
10. Drawing (PMR (final) only)
11. Report on RD (After project)
12. Report on the Management of Safety for Construction Works



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Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

| Items of Specified Materials | Initial Volume A | Initial Unit Price (¥) B | Initial total Price C=A×B | 1% of Contract Price D | Condition of payment | |
|------------------------------|---------------------|-----------------------------|------------------------------|---------------------------|----------------------------|----------------------------|
| | | | | | Price (Decreased) E=C-D | Price (Increased) F=C+D |
| 1 Item 1 | ●●t | ● | ● | ● | ● | ● |
| 2 Item 2 | ●●t | ● | ● | ● | | |
| 3 Item 3 | | | | | | |
| 4 Item 4 | | | | | | |
| 5 Item 5 | | | | | | |

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

| Items of Specified Materials | 1st month, 2015 | 2nd month, 2015 | 3rd month, 2015 | 4th | 5th | 6th |
|------------------------------|-----------------|-----------------|-----------------|-----|-----|-----|
| 1 Item 1 | ● | ● | ● | | | |
| 2 Item 2 | | | | | | |
| 3 Item 3 | | | | | | |
| 4 Item 4 | | | | | | |
| 5 Item 5 | | | | | | |

(3) Summary of Discussion with Contractor (if necessary)

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7

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
 (Actual Expenditure by Construction and Equipment each)

| | Domestic Procurement (Recipient Country) A | Foreign Procurement (Japan) B | Foreign Procurement (Third Countries) C | Total D |
|-----------------------------|--|-------------------------------------|---|------------|
| Construction Cost | (A/D%) | (B/D%) | (C/D%) | |
| Direct Construction | (A/D%) | (B/D%) | (C/D%) | |
| Cost | | | | |
| others | (A/D%) | (B/D%) | (C/D%) | |
| Equipment Cost | (A/D%) | (B/D%) | (C/D%) | |
| Design and Supervision Cost | (A/D%) | (B/D%) | (C/D%) | |
| Total | (A/D%) | (B/D%) | (C/D%) | |

Report on the Management of Safety for Construction Works

| Month/Year 2022 年 × 月 | Cumulative number of labor 労働延人数 | Cumulative number of public accident 公衆災害件数 | Cumulative hours worked 延べ労働時間 間数 | Number of deaths and injuries due to industrial accidents 労働災害による死傷者 | | | | Frequency rate 頻度率 | Severity rate 強度率 |
|--|---|---|--|---|--|--|--|-----------------------|----------------------|
| | | | | Death and injuries 死傷者数 | Aggregated number of calendar days absent 延べ休業日数 | Aggregated number of work- days lost 延べ労働損失日数 | | | |
| This Month 当月 | | | | Death 死者 | | | | | |
| | | | | More than 4 calendar days absent 休業 4 日以上 | | | | | |
| | | | | 1 to 3 calendar days absent 休業 1~3 日 | | | | | |
| | | | | Total 計 | | | | | |
| Total including this month 当月迄累計 | | | | Death 死者 | | | | | |
| | | | | More than 4 calendar days absent 休業 4 日以上 | | | | | |
| | | | | 1 to 3 calendar days absent 休業 1~3 日 | | | | | |
| | | | | Total 計 | | | | | |
| <p>Note 注)</p> <p>1. Frequency rate is the frequency of occurrence of industrial accidents. Frequency rate = (Number of deaths and injuries due to industrial accidents ÷ Cumulative hours worked) × 1,000,000 頻度率 = (労働災害による死傷者数 ÷ 延べ労働時間数) × 100 万時間</p> <p>2. Severity rate is degree of seriousness of the industrial accident. Severity rate = (Aggregated number of work-days lost ÷ Cumulative hours worked) × 1,000 強度率 = (延べ労働損失日数 ÷ 延べ労働時間数) 1000 時間</p> <p>3. Aggregated number of work-days lost = Aggregated number of calendar days absent × (300 ÷ 365) Death (7,500 days) : death as a result of an industrial accident includes not only instantaneous death but also death as a result of occupational injury or disease. 延べ労働損失日数 = 延べ休業日数 × (300 ÷ 365) . . . 死亡 7500 日 (即死のほか、負傷が原因で死亡したものを含む)</p> <p>4. Frequency rate and severity rate are rounding off the third decimal place. 頻度率・強度率は小数点第 3 位以下四捨五入</p> | | | | | | | | | |

Appendix5 Evaluation Chart of Requested Equipment

【1. National Center of Cardiology and Therapy】

| Equipment No. | Name of Equipment | Quantity | Priority | Evaluation Criteria | | | | | | | | Comprehensive | Special note | Planned quantity |
|----------------------|--|----------|----------|---------------------|---|---|---|---|---|---|---|---------------|---|------------------|
| | | | | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | | | |
| Diagnostic Imaging | | | | | | | | | | | | | | |
| 1 | Angiograph | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 2 | System for electrophysiological examination of the heart and radiofrequency ablation with 3-dimensional navigation | 1 | A | ○ | △ | ○ | △ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 3 | External pacemaker dual channel | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 4 | Intra-aortic balloon counterpuls | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 5 | Ultrasound machine with TEE probe | 2 | A | ○ | ○ | ○ | △ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 6 | Defibrillator | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 7 | Ventilator | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 8 | Electrosurgical unit | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 9 | Oxygen concentrator | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | × | Deleted for budgetary reasons | 0 |
| 10 | Mobile ECG | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 11 | IVUS and FFR | 1 | B | ○ | △ | △ | △ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 12 | Digital mobile X-ray system | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 13 | General x-ray equipment | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 14 | CT scan | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| ICU | | | | | | | | | | | | | | |
| 1 | Bedside monitors for 18 beds | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 2 | Patient monitor with invasive BP | 3 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 3 |
| 3 | Patient monitor with non-invasive BP) | 45 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 42 |
| 4 | Temporary pacemaker 1 ch | 6 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 6 |
| 5 | Temporary pacemaker 2 ch | 6 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 6 |
| 6 | Ventilator | 6 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 6 |
| 7 | Defibrillator | 4 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 4 |
| 8 | ECMO | 1 | A | △ | △ | △ | △ | △ | ○ | ○ | ○ | ○ | Subject to training and staffing of medical personnel at the recipient's expense. | 1 |
| 9 | ICU Bed | 48 | A | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | | 45 |
| 10 | Equipment for high-flow oxygen therapy | 4 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | | 4 |
| 11 | Electrocardiograph | 10 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 10 |
| 12 | Syringe pump | 52 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 52 |
| 13 | Portable suction machine | 6 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | | 6 |
| 14 | Stretcher | 6 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | | 6 |
| 15 | Wheel chair | 11 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | | 11 |
| Laboratory | | | | | | | | | | | | | | |
| 1 | Microplate ELISA washer | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 2 | Immuno - enzyme analyzer (ELISA) | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 3 | Semi-automatic biochemistry analyzer | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 4 | Blood gas analyzer | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 5 | Semi-automatic coagulator | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 6 | Automatic urinary station | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 7 | Microscope binocular medical, laboratory | 4 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | | 4 |
| 8 | Blood cell analyzer | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| Outpatient | | | | | | | | | | | | | | |
| 1 | Daily ECG monitoring | 40 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 10 |
| 2 | APBM measurement device | 12 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 3 | Treadmill | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| 4 | Ergometer | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| 5 | Ergospirometer | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| Endoscopy Department | | | | | | | | | | | | | | |
| 1 | video gastroscopy | 1 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 2 | video bronchoscopy | 1 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 3 | laryngoscope | 7 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| Hospital wide | | | | | | | | | | | | | | |
| 1 | PACS | 1 | B | ○ | ○ | △ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 2 | Stationary air purifier | 1 | C | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| 3 | Central Oxygen Station | 1 | C | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| 4 | Set up for station | 1 | C | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| 5 | Power generator | 1 | C | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| 6 | Generator installation | 1 | C | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| 7 | Uninterruptible Power Supply | 1 | C | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |
| 8 | Sleep Testing - Polysomnograph | 1 | C | ○ | △ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 9 | Ethylene oxide plasma sterilizer | 1 | C | △ | △ | ○ | × | △ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| Emergency Transport | | | | | | | | | | | | | | |
| 1 | Respirator for transport (in-hospital) | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Deleted for budgetary reasons | 0 |
| 2 | Ambulance | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | Deleted for budgetary reasons | 0 |

【2. Scientific Research Institute of Heart Surgery and Organ Transplantation】

| Equipment No. | Name of Equipment | Quantity | Priority | Evaluation Criteria | | | | | | | | | Comprehensive | Special note | Planned quantity |
|---------------|---|----------|----------|---------------------|---|---|---|---|---|---|---|---|---------------|---|------------------|
| | | | | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | | | | |
| 1 | CT Scan | 1 | A | ○ | ○ | △ | △ | ○ | ○ | ○ | ○ | ○ | ○ | Subject to training and staffing of medical personnel at the recipient's expense. | 1 |
| 2 | Angiograph | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 3 | Ultrasound machine for ecocardiograph | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 4 | Ultrasound machine with TEE Probe | 2 | A | ○ | ○ | ○ | △ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 5 | Patient monitor for adult | 8 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 8 |
| 6 | Heart lung machine | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 7 | Ventilator for adult | 5 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 5 |
| 8 | Anesthesia machine | 3 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 3 |
| 9 | ECMO | 1 | A | ○ | ○ | △ | △ | △ | ○ | ○ | ○ | ○ | ○ | Subject to training and staffing of medical personnel at the recipient's expense. | 1 |
| 10 | Hemodialysis machine | 1 | A | ○ | ○ | △ | ○ | △ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 11 | Operating table | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 12 | Device for cerebral oximetry during CPB | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 13 | Anesthesia depth measuring device | 3 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 14 | Electrosurgical unit | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 15 | Pediatric Cardiovascular Surgery Tooset | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 16 | Cardiovascular surgery toolset for adult | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 17 | Open heart surgery tool set for adult | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 18 | Shadowless lamp | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 19 | ACT analyzer | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 20 | Blood gas analyzer | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 21 | Syringe pump | 9sets | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 9 |
| 22 | Ventilator for infant | 5 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 5 |
| 23 | Patient monitor for pediatric and infant | 7 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 7 |
| 24 | External pacemaker dual channel | 10 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 10 |
| 25 | Defibrillator for operation theatre | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 2 |
| 26 | Defibrillator for ICU | 4 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 27 | ECG (12ch) | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 4 |
| 28 | ECG (12ch for Pediatric) | 1 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 29 | ICU bed (for adult) | 6 | A | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 6 |
| 30 | ICU bed (for Pediatric) | 7 | A | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 7 |
| 31 | Anesthesia machine | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 2 |
| 32 | Nitric oxide inhalation device | 3 | B | △ | △ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 33 | Injector for Angiograph | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | Included as a component of angiography equipment | 0 |
| 34 | Infant warmer | 6 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 4 |
| 35 | Small suction machine for infant warmer | 6 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 4 |
| 36 | Bed side cabinet | 13 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 10 |
| 37 | laryngoscope | 3 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | ○ | | 3 |
| 38 | Utensil table | 4 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 2 |
| 39 | Ma-yo table | 6 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 4 |
| 40 | Utensil Cabinet | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 2 |
| 41 | Medicine Cabinet | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 2 |
| 42 | Stainless steel shelf for preparation room | 2 | B | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | | 2 |
| 43 | Operating room suction machine | 4 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | ○ | | 4 |
| 44 | Automated blood separator | 1 | B | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | Deleted for budgetary reasons | 0 |
| 45 | UV sterilization lamp | 4 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | × | Deleted for budgetary reasons | 0 |
| 46 | baby scale | 2 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | × | Deleted for budgetary reasons | 0 |
| 47 | nebulizer | 6 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | × | Deleted for budgetary reasons | 0 |
| 48 | Mobile resuscitation equipment set | 1set | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | × | Deleted for budgetary reasons | 0 |
| 49 | headlamp | 2 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | × | Deleted for budgetary reasons | 0 |
| 50 | Sterilization containers | 4 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | × | × | Deleted for budgetary reasons | 0 |
| 51 | ICU Warmer | 2 | C | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | × | Deleted for budgetary reasons | 0 |
| 52 | Air conditioning system for operating rooms | 2 | C | ○ | ○ | ○ | ○ | ○ | ○ | △ | × | × | × | Deleted for budgetary reasons | 0 |

【3. National Center of Oncology and Hematology】

| Equipment No. | Name of Equipment | Quantity | Priority | Evaluation Criteria | | | | | | | | | | Comprehensive | Special note | Planned quantity |
|---------------|-------------------|----------|----------|---------------------|---|---|---|---|---|---|---|---|---|---------------|--|------------------|
| | | | | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | | | | | |
| 1 | 3D Mammography | 2 | A | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | 1 |
| 2 | 2D Mammography | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | For budgetary reasons, 2D mammography is changed for outpatient use. | 1 |

