

DATA COLLECTION SURVEY
ON HEALTH SECTOR
IN DEMOCRATIC SOCIALIST REPUBLIC
OF SRI LANKA

FINAL REPORT

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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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Abbreviations

Abbreviation	Complete Name
BES	Biomedical Engineering Service
BH	Base Hospital
BNCT	Boron Neutron Capture Therapy
BSL	Biosafety level
CKDu	Chronic Kidney Disease unknown aetiology
CP	Counterpart
CR	Computed Radiography
CT	Computed Tomography
DDG	Deputy Director-General
DFR	Draft Final Report
DG	Director-General
DGH	District General Hospital
DH	Divisional Hospital
ECG	Electrocardiogram
ETU	Emergency Treatment Unit
FR	Final Report
GC/MS	Gas Chromatography-Mass Spectrometry
HLC	Healthy Life-Style Center
HNDT	High National Diploma in Technology
ICU	Intensive Care Unit
JETRO	Japan External Trade Organization
JICA	Japan International Cooperation Agency
JICS	Japan International Cooperation System
LC/MS	Liquid Chromatography-Mass Spectrometry
LRH	Lady Ridgeway Hospital for Children
MEJ	Medical Excellence JAPAN
MOH	Ministry of Health in Sri Lanka
MP	Master Plan
MLT	Medical Laboratory Technologist
MRI	Magnetic Resonance Imaging System
MRI	Medical Research Institute
MSD	The Medical Supplies Division

Abbreviation	Complete Name
NCDs	Non-Communicable Diseases
NHSL	National Hospital of Sri Lanka
NIHS	National Institute of Health Science
OBGYN	Obstetrics and Gynecology
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
PACS	Picture Archiving and Communication System
PCI	Percutaneous Coronary Intervention
PET	Positron Emission Tomography
PGH	Provincial General Hospital
PHI	Public Health Inspectors
PHMW	Public Health Midwife
PMCU	Primary Medical Care Unit
Rs.	Sri Lanka Rupee
SPECT	Single Photo Emission Computed Tomography
Sri Lanka	Democratic Socialist Republic of Sri Lanka
TH	Teaching Hospital
The Survey	The Data Collection Survey
TQM	Total Quality Management
TRI	Trans-Radial Intervention
UHC	Universal Health Coverage
WB	The World Bank
WHO	World Health Organization

I. Summary

1. Outline of the survey

The main purpose of the Data Collection Survey is to develop the framework for future Japanese cooperation along with health policy in Sri Lanka. The survey team assessed the current situation and challenges of health sector in Sri Lanka. Then, the team proposed ideas of cooperation projects using Japanese medical technology and experiences based upon achievements in health sector in Sri Lanka and past Japanese cooperation. The targeted area is the whole area of the health sector in Sri Lanka. The overall output of the survey is formulation of preliminary drafts of the future Japanese assistance.

Results of the survey are summarized in accordance with the survey process shown below;

- 1) Identification of the current issues in health sector
- 2) Consideration of the feasibility and possibility of Japanese assistances
- 3) Listing up proposed cooperation projects
- 4) Further investigation to select the future cooperation projects
- 5) Formulation of the detailed plans of the cooperation projects (Final output)

2. Current situation of health sector and identification of the issues in Sri Lanka

(1) The National Policy in health sector

The new president announced new manifest after the presidential election in January, 2015. It includes preparedness for disease prevention program, technology development of Medical Research Institute (MRI) by installing advanced medical equipment for investigation, training of human resources, improvement of cardiac surgery, kidney transplant and prompt diagnosis and treatment for cancer. Most of them are continued from the previous policy.

(2) Current situation of health sector

1) Distribution of diseases

It is stated in the Annual Health Bulletin (2012) that 5 leading causes of death in hospitals are ischemic heart disease, neoplasm, pulmonary heart disease and disease of the pulmonary circulation, cerebrovascular disease and diseases of the respiratory system, excluding diseases of the upper respiratory tract. Non-Communicable Diseases (NCDs) have become the leading causes of death among male working-age population. Therefore management of NCDs is crucial for the nation's economic development.

2) Mechanism of health service delivery

i) Health system management

Health sector is divided into preventive and curative functions in Sri Lanka. In the curative part, Ministry of Health (MOH) mainly manages higher-level hospitals such as teaching hospitals (THs), provincial and district general hospitals (PGHs and DGHs) and specialized hospitals where high-tech diagnoses and treatments are available. These hospitals are called line ministry hospitals (tertiary). Provincial Department of health services manages Base Hospitals (BHs) (secondary), Divisional Hospitals (DHs) and Primary Medical Care Units (PMcus) (primary). It is assumed that the tertiary hospitals provide health services for all kinds of specialties. BHs are assumed to provide 4 main department services (Internal Medicine, Surgery, Gynecology and Obstetrics and Pediatrics), and DHs provide outpatient and simple in-ward services. PMcus provide outpatient service. Public Health Department of MOH supervises Provincial Department of Health Services for preventive activities. Preventive activities are mainly conducted in communities by Medical Officers, Public Health Inspectors (PHIs) and Public Health Midwives (PHMWs).

ii) Distribution system of drugs and medical equipment

The Medical Supplies Division (MSD) is the central organization mainly responsible for distribution of drugs to all the public health institutions and medical equipment to all the hospitals under the MOH.

iii) Maintenance mechanism of medical equipment

Biomedical Engineering (BES) technologists are allocated from the MOH to line ministry hospitals to work for maintenance of medical equipment. However, only 23 facilities among all 46 facilities have BES technologists. Local private agencies provide maintenance services for advanced high-tech medical equipment such as respirators and ultrasound diagnostic machines under contractual arrangements.

iv) Human resources for health (doctors and nurses)

The numbers of doctors and nurses per population are relatively smaller than the numbers in other Asian countries.

(3) Outline of the survey results

1) Health services

The greatest challenge in health service is the overcrowding situation of patients in the secondary and tertiary hospitals. One of the reasons is the limited availability of diagnoses and treatments for cardiac diseases and neurological diseases: they are only available in limited areas such as Colombo and Kandy. In Sri Lanka where cardiac diseases are the leading causes of death, catheter technology is necessary for treating these patients with low invasive diagnoses and treatment. However, only 5 provinces out of 9

provinces have catheter laboratories. Followings are the hospitals with cardiologists but without catheter laboratories; Anuradhapura TH (North Central), Polonnaruwa DGH (North Central), Badulla PGH (Uva), Batticaloa TH (Eastern) and Trincomalee DGH (Eastern). They end up sending severe cardiac patients to Kandy TH, Kurunegala PGH or National Hospital of Sri Lanka (NHSL). Due to overcrowding, some patients have to wait to receive catheter diagnoses and treatments for 2 years in NHSL, for example.

2) Maintenance service of medical equipment

The Deputy Director-General (DDG) of BES makes annual procurement plan. The DDG Procurement purchases medical equipment based on the plan, and the MSD distributes them. In each hospital, pharmacy store is the section to receive medical equipment, but it does not have system to report to the BES unit within the hospital. Although there is a record book and receipts of the medical equipment in the hospital, inventory records of the medical equipment are not maintained. The nursing sisters and doctors whom we met through series of interview also reported that misuses of equipment are often seen due to lack of training opportunity given to nurses and Medical Laboratory Technologists (MLTs).

3) MLT training

There is a rapid progress of technological innovation in the field of medical technologies. Following these technological innovations, it is crucial for medical personnel to receive in-service (after-graduation) training continuously for handling advanced medical technologies. Otherwise, MLTs often break medical equipment due to mishandling. It is reported that prompt examination is not available at MRI and Kandy TH, and they are requesting for expansion of the laboratories and as well as replacement of old equipment to improve efficiency of researches. Especially, environmental safety is not secured in the laboratories in Kandy TH due to lack of use of clean benches, which are indispensable for laboratory procedures to avoid the spread of viruses and bacteria.

(4) Current and future cooperation by other cooperation agencies

1) The World Bank

The World Bank (WB) supports the main 20 research projects with 200 million USD under the Health Sector Development Plan Phase 2. The cooperation mainly focuses on specific thematic areas such as i) Addressing nutrition; ii) improving prevention and control of non-communicable diseases; iii) addressing maternal and child health and communicable diseases; iv) health system improvement measures. WB is currently under

the discussion concerning the direction for future assistance since the cooperation will be terminated in 2017. The cooperation covers most of the target populations under the basic health services for maternal and child health and infectious diseases.

2) World Health Organization (WHO)

WHO has been providing support on the prevention of NCDs since 2008 and shared the information on NCDs in Sri Lanka with JICA. WHO also supports training sessions for medical officers working at Healthy Lifestyle Center (HLC) and provides essential medicines and simple diagnostic instruments. Furthermore, WHO supports surveillance at sentinel sites and develops plans and estimates costs of NCDs for health service activities.

3. Feasible contribution utilizing Japanese medical technologies

The survey team examined the comparative advantages of the Japanese medical equipment and technologies with other developed countries such as the USA and European countries. As a result, it was found that the Japanese medical products have strong comparative advantages in the following critical fields in terms of technical performances as well as safety for the users and patients.

- In the field of imaging diagnostics with advanced and sophisticated technologies such as ultrasound imaging, Computed Tomography (CT) scanners and Magnetic Resonance Imaging System (MRI), which are common for diagnoses of cardiovascular diseases and various types of cancers, the Japanese technologies have remarkable edges over the other brands regarding capacity of storage of imaging, resolution, retrieval function of the image operation and management of machines and information. Followings are the specific comparative advantages of medical imaging equipment made by Japanese companies;
 - Japanese MRIs are more patient-friendly than the ones made by other companies. With the improved table design, the MRIs can be used for all patients from children to adults without any pains regardless of their body sizes.
 - Japanese CT scanners need less time for examination than the ones made by other countries. This feature contributes to reducing time of radiation exposure even at the roentgenographic measurement of heart, which is the automatically moving.
 - Japanese ultrasound machines have higher spec, introducing 4D systems with smaller sizes and cheaper prices. Thus, they can be installed in smaller spaces than the ones made by other countries.
- Catheters and stents, which are the consumables used for examinations and treatments of

cardiovascular diseases, are produced with outstanding quality as well as ability and adaptability to satisfy strict user's technical requirements across the world.

- Japanese hemodialysis machines as well as water treatment units are ranked respectably high in the world, providing the various types of values such as technologies of shunt formation and management, patient's follow-up mechanism and management capacities.
- Gastrointestinal endoscopes, combining high-optics technologies and high-quality fibers, are arguably the leading technologies in the world with top market share.
- Histopathological tissue testing systems, which are used for laboratories, can reduce time to measure samples by introducing automated systems. They contribute to measuring more samples than the other systems in a shorter period of time.

Series of interview with local medical equipment agencies were conducted in the 2nd and 3rd surveys. It turns out that many local agencies provide Japanese products with maintenance services after the sales.

Table 1-1 Predominated Japanese medical equipment and medical technologies

Field of medical service	Necessary medical equipment	Related medical equipment
Fiberscope treatment (minimal invasion)of ulcer, inflammation, polyp and tumor	upper/lower gastroenterological endoscope, equipment for biopsy, culturing and pathological examination	1) Endoscope: Upper/ Lower gastroenterological endoscope 2) Equipment for biopsy, culturing and pathological examination
Diagnoses on diabetes, hyperlipidemia, liver disease, renal failure	blood test equipment, measurement of blood glucose level, ultra sound detector refractometer	1) Blood test equipment 2) Blood glucose level meter 3) Ultra sound detector 4) Refractometer
Substitution of renal function (renal failure patients)	Dialysis, body composition monitor, sphygmomanometer	1) Dialysis 2) Body composition monitor, Sphygmomanometer
Diagnosis on tumor	CT, MRI, PET ¹ , SPECT ² , γ camera, Mammography	1) X-ray, CT, MRI 2) PET, SPECT, γ camera
Treatment of tumor	Lineac, BNCT ³	1) Lineac 2) Proton Beam Therapy System and Particle Beam Therapy System, Accelerator for BNCT
Examination and treatment of circulatory organ (minimal invasion) (PC ⁴ , TRI ⁵ : treatment by vascular catheter)	angiography, catheter, laparoscope, γ knife	1) Angiography 2) Catheter and guidewires 3) Surgical instrument (for Laparoscope, etc.)

*¹PET: Positron Emission Tomography , ²SPECT: Single Photo Emission Computed Tomography (SPECT)

³BNCT: Boron Neutron Capture Therapy , ⁴PCI: Percutaneous Coronary Intervention , ⁵TRI: Trans-Radial Intervention

4. List of the proposed project plan (Long List) for health sector in Sri Lanka

(1) Identification of challenges based on the results of the field survey

Considerable project plans are listed as below based on the current situation and issues identified through the survey. The components with underline are included in the proposed plan.

- 1) Evaluation of the current Master Plan (MP) and planning of the next MP
- 2) Development of long-term policy for projection of health finance in order to respond to NCD endemics
- 3) Solving stockout of drugs and consumables and reducing financial burden for patients
- 4) Development of human resource management system to address issues of human resource shortages and to appropriately allocate limited human resources
- 5) Improvement of poor hospital function due to deterioration of facilities, lack of equipment and human resource shortages (doctors and nurses)
- 6) Addressing issues of lack of resources for special services such as consultants and equipment for diagnoses and treatments (cardiology and other specialties)
- 7) Strengthening functions of the secondary level hospitals (BHs) to install surgery functions
- 8) Installation of equipment for delivery rooms and new-born ICUs
- 9) Strengthening capacities for medical equipment maintenance
- 10) Improvement of utilization rate of health services among male adults
- 11) Rehabilitation of facilities and equipment of the hospitals in estate (plantation) area
- 12) Improvement of medical waste disposal practices through rehabilitation or installation of incinerators
- 13) Improvement of environmental situation of deteriorated buildings and overcrowding conditions in NHSL

(2) The matters that were taken into consideration to decide the direction for future cooperation

Matters that were taken into consideration for discussing future cooperation are as follows;

- 1) Clear-cut National Health Policy and Plan of the recipient country
- 2) Utilization of Japan's experience and technology
- 3) Securing resource allocation by the recipient country
- 4) Considering a comprehensive cooperation plan to develop management capacity of MOH
- 5) Considering benefits for vulnerable people in Sri Lanka
- 6) Avoiding redundancy with other donors

7) Considering minimization of environmental and social impacts

(3) Selecting the proposed project plans

The project plans are narrowed down by identifying and analyzing further challenges through the survey. Feasibility of the cooperation is discussed along with the considerations above mentioned. As a result of the survey, the most suitable projects are identified to strengthen health services through introducing new technologies for both preventive and curative aspects.

5. Detailed plan of the future cooperation projects

The following two projects are recommended for future projects based on the analysis on the survey results.

- Project for evaluation of the current MP and development of new MP (health policy)
- Project for improving health services (strengthen preventive, curative and managerial area)

Below shows the details of the “Project for improving health services (strengthen preventive, curative and managerial area)” identified through the survey results and discussion with stakeholders in the MOH.

(1) Implementing organization:

Overall	Ministry of Health
Preventive	MOH DDG Public Health DDG Education, Training and Research (ET-R)
Curative	MOH DDG Medical Service 1 DDG Laboratory Services
Management and maintenance	MOH Biomedical Engineering Services DDG ET-R

(2) Context of project plan:

1) Preventive area

- Strengthening schools for medical laboratory technicians (MLTs)
Strengthening skills and techniques of MLTs through;
 - Procurement of laboratory equipment for MLT Schools in MRI and Peradeniya TH, which are the institutions for theoretical training sessions
 - Construction of facilities and procurement of laboratory equipment for MRI and Kandy TH, which are the institutions for practical training sessions

- Establishment and rehabilitation of provincial training centers

It is aimed to strengthen the capacities of health professionals in each province through establishing or strengthening provincial training centers.

Target provinces: Uva, North Western, North Central, Eastern, Central, Southern

The context:

- Procurement of medical equipment (for all the provinces above)
- Building training center (for Uva, North Western, North Central, Eastern)

2) Curative area

- Strengthening diagnosis and treatment functions for cardiac diseases

The project aims to strengthen diagnoses and treatments for cardiac disease, improve catheter laboratories in the tertiary hospitals where cardiac consultants are available, and enhance diagnosis and treatment functions such as diagnostic imaging, surgery, ICU and wards. It makes sure that the consultants already providing diagnoses and treatments by catheter should transfer knowledge and skills to other cardiac consultants.

These are the main activities of the project. Further investigation is needed to identify the items that are actually needed in each target hospital.

- Construction of catheter laboratory
- Providing catheter equipment
- Providing equipment of diagnostic imaging systems
- Building ICU and providing equipment
- Building operation room and providing equipment

The target hospitals are selected among the tertiary level hospitals and should have cardiac consultants. The selection criteria are; i) catheter treatment is already provided, or ii) nearby facilities have a catheter laboratory (technology transfer is feasible), and MOH or the authority of the cardiac consultants approve the hospitals as appropriate facilities.

Candidate facilities:

Central Region	Kandy TH (Central), Kurunegela PGH (North Western), Anuradhapura TH (North Central), Polonnaruwa DGH (North Central), Badulla PGH (Uva), Trincomalee DGH (Eastern), Peradeniya Pediatric Hospital (Central), Batticaloa TH (Eastern)
Western and Southern Region	NHSL, Sri Jayawardanapura GH, Lady Ridgeway Hospital for Children (LRH) (Western), Karapitiya TH (Southern)

3) Management area

- Strengthening function of the BES units

It aims to strengthen the MOH BES unit and the BES unit of the target hospitals by enhancing their capacities to maintain and manage the highly advanced medical equipment to be provided through the project.

- Strengthening capacity of nurses for maintenance of medical equipment

The project includes strengthening capacities of nurses working for the target hospitals for maintenance of advanced medical equipment.

- Strengthening hospital management

Many health facilities do not collect adequate statistical data and utilize them for hospital management. Thus, the project plans to strengthen the capacity of the hospital management to utilize statistical information in the target facilities.

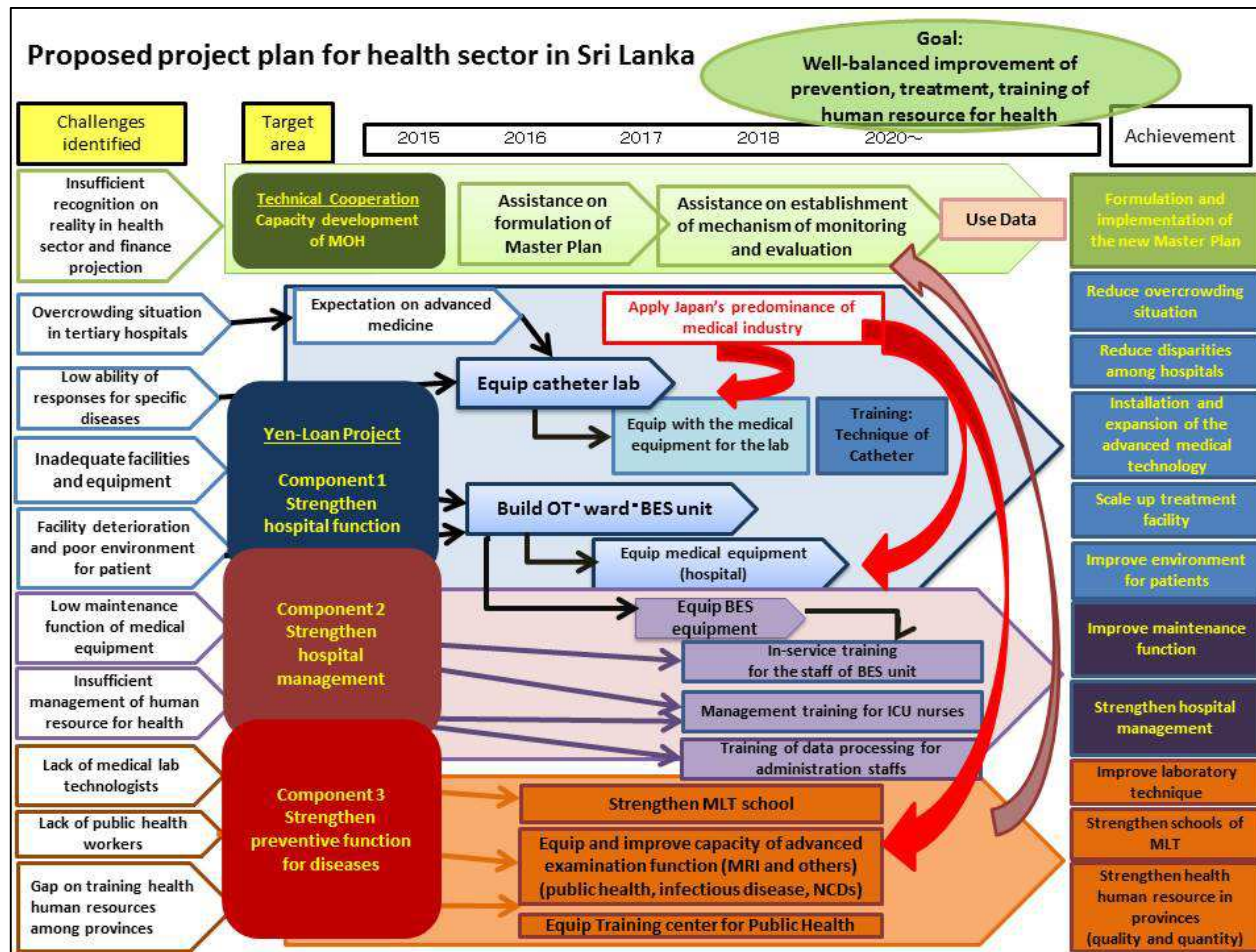


Figure 1 Overall idea of the proposed future assistance plan

Two projects are proposed in this report; (1) Strengthening Ministry of Health through support evaluation of the current MP and formulation of new MP by the Technical Cooperation and (2) Strengthening both preventive and curative health services by the Yen-loan project with the technical cooperation.

II Results of the Survey

1. Identification of challenges based on the results of the field survey and analysis

Information concerning situation and challenges in the health sector of Sri Lanka was collected from the interviews in the field survey 1 and 2. Based on the collected information, gaps and potential plans to overcome the gaps are discussed and identified as follows.

(1) Needs to strengthen planning and implementation activities in MOH

1) Identified challenges

There are no mechanisms established for planning, implementation and monitoring of the MP (National Health Policy).

2) Evidences that were found through the survey

- Some differences were identified between the needs raised by MOH and actual situation in health facilities.
- Achievements of the current MP are not evaluated.
- Evaluation report of the achievements of the MP 2007-2016 is not submitted to the team.

(2) Insufficient planning on health finance

1) Identified challenges

The Sri Lankan government has a plan to increase health budget to 3% of the annual national budget. However there is no financial estimation based on practical projection for providing health services using statistical information.

The patients who are diagnosed with NCDs often need life-long medication and/or expensive surgical treatment. Also, patients tend to live longer once they receive medication or treatment. This means that budget estimation based on the current statistic information and costs for diagnosis and treatment is crucial for ensuring the proper allocation of budget and resources for future health services.

2) Evidences observed at the survey

- MOH accumulates budget requests from each health facility and coordinates with them to come up with the total amount of health budget.
- As the national policy, public hospitals provide health services free of charge. However, there are no mechanisms to secure budget to accommodate increasing health expenditure.
- Most health expenditure is spent for drugs and consumables for free health services. Rehabilitation of infrastructure and purchasing medical equipment are considered as

relatively low priority.

(3) Burdens to patients due to shortage of drugs and consumables

1) Identified challenges

Patients are responsible for finding and purchasing drugs and consumables at their own costs if they are out of stock in the public health facilities. In such case, patients cannot receive treatments if they can not afford to purchase them.

2) Evidences observed at the survey

- Health services are provided free of charge in public health facility in Sri Lanka.
- However, out-of-pocket expenditure occurs unexpectedly to the patients when drugs or consumables are out of stock.
- Once the stockout occurs, patients have to find and purchase drugs and consumables by themselves for diagnoses and treatments. Drugs are relatively accessible for patients to purchase at private pharmacies, but it is very difficult for them to purchase expensive medical consumables such as catheter and wires for cardiology examination that are specific to the machines equipped in the hospitals. Besides, drugs such as carcinostatic agents are not affordable for most of the patients.
- There are no fee exemption measures for health services for the people who can not afford to pay out of pocket expenses, so the patients with limited financial resources can not receive treatments in stockout cases.

(4) Need to strengthen human resource management

1) Identified challenges

Human resource management issue is pointed out everywhere in the interviews at both the MOH and the field levels.

2) Evidences observed at the survey

- Insufficient number of consultants in tertiary health facilities
It is desirable that all departments at the tertiary hospitals are functioning to provide health services. However, it is confirmed that some departments are not functioning due to absence of consultants. Therefore, in some cases, even the tertiary hospitals end up transferring patients to Colombo or Kandy.

Table 2-1 Number of medical facility and consultant

Department	Consultant	Number of facilities									
		Country	Northern	North-central	North-west	Central	East	West	South	Sabaragamuwa	Uva
Neurology	About 10	5	1*		1*	1	1*	1			
Cardio	About 44	17	1(1) * ²	1	1	1(1)	3(1)	5(2)	3(2)	1	1
Kidney	About 20	13	1	1	1	1(1)* ³	1	5(4)	1	*	1
Gastro	12	12									

*Neuro department does not function well, *²catheter lab available. *³consultants for kidney transplant is available

Source: Interview results

Table 2-2 Specialist and General Practitioner (compare to other country)

Country	Population* ¹ (per 1,000)	The numbers of doctors			% of Specialist	The numbers of health facility (per 10,000)
		GP	Specialist	Total		
Sri Lanka	21,098	5,755* ² (0.27)	978* ² (0.046)	6,733 (0.32)	14%*	0.51
Mongolia	2,796	1,741* ³ (0.62)	4,908* ³ (1.76)	6,649 (2.38)	73%	2.5
Malaysia	29,240	7,605* ⁴ (0.26)	6,674* ⁴ (0.23)	14,279 (0.49)	47%	0.5
OECD	-	-	-		61.6%* ⁵	

Source:

*¹: World Health Statistics 2014 (WHO)

*²: Collected from Performance and progress report 2013-2014 (Ministry of Health, Sri Lanka)

*³: Human resources for health, Country profile Mongolia (WHO-WPRO)

*⁴: Human resources for health, Country profile Malaysia (WHO-WPRO)

*⁵: Health at a Glance 2013 (OECD)

- Lack of consultants in secondary health facilities
At least 5 consultants (i.e. physician, surgeon, obstetrician/gynecologist (OBGYN), pediatrician and anesthetist) are necessary in a BH. When consultant is not available, only limited services can be provided. For example, even if a surgeon is available, operation cannot be conducted due to absence of anesthetist.
- Appointment of consultants to hospitals without sufficient equipment for their specialties
Several cases were identified where specialists are assigned to the hospitals that are not equipped with facilities and equipment of their specialties. For example, a surgeon is assigned to a hospital where there is no operation room, or several surgeons are assigned to a hospital where only one operation room is available.

- Lack of nurses

Shortage of nurses is a common challenge in secondary and tertiary hospitals. In Sri Lanka, the government approves numbers of necessary human resources by cadres for each hospital. However, actually allocated numbers are significantly lower than the numbers of approved in many hospitals. Especially the number of nurses is significantly lower than the approved number. There is a severe shortage of nurses in the BHs compared to line ministry hospitals.

Table 2-3 Example of human resource allocation

Cadre	Doctor (Consultant, Medical Doctor)			Doctor (Medical Officer)			Nurse			Midwife			Pharmacist			Paramedical		
	expected	Fact	Insufficiency	expected	Fact	Insufficiency	expected	Fact	Insufficiency	expected	Fact	Insufficiency	expected	Fact	Insufficiency	expected	Fact	Insufficiency
Diyathalawa BH	17	9	8	80	59	21	227	157	70	30	13	17	13	7	6	16	9	7
Welimada BH	7	4	3	20	18	2	89	60	29	15	12	3	5	3	2	12	8	4
Watawala BH	6	2	4	23	9	14	43	44	-1	10	5	5	3	2	1	6	4	2
Badulla PGH	33	3	-2	7.	15	2	565	583	-20	40	33	7	29	32	-3	61	56	5

Resource: collected documents in the field survey

(5) Insufficient functions of the secondary and the tertiary hospitals

1) Identified challenges

Overcrowded condition is a serious challenge in secondary and tertiary hospitals. According to the government, this is because the patients, who have the right to choose public health facilities, directly go to a secondary or tertiary hospital, instead of using a primary health facility. However, the survey team found that the challenge is not due to low utilization of primary health facilities, but it is actually caused by the fact that the secondary and tertiary hospitals cannot respond to ever increasing number of patients who need to receive advanced treatments at higher-level health facilities.

2) Evidences observed at the survey

- Low efficiency due to absence of consideration for the flow of patients and health workers

Many health facilities expand the buildings as makeshift countermeasures without considering the overall hospital functions and patient flow.

- Patient transportation to other hospitals due to lack of equipment

Functions of hospitals are designated by MOH according to their levels, but due to lack of the expected functions, patients transfer has to be made.

- Long waiting time for diagnosis and treatment

The number of patients who visit hospitals exceeds capacity of the hospital functions. Patients with less serious symptom have to wait for treatment by registering on the waiting lists. The waiting time in many tertiary hospitals is about a half year to more than 1 year. Patients face delays of diagnoses and treatments, and thus, they may be missing opportunities for early stage detection and treatments.

- Insufficient number of beds

Many hospitals have to admit patients more than availability of beds. Some patients end up with sleeping on the floor or waiting chairs. The survey team observed that, in some cases, two patients were sharing one bed.

(6) Insufficient function of specialized treatment in tertiary hospitals

1) Identified challenges

Although it is expected that at least one tertiary hospital provides health services for all specialized diagnoses and treatments, many tertiary hospitals cannot provide specialized services that require advanced technologies and specialized physicians, especially to diagnose and treat cardiac diseases and neuro trauma diseases.

2) Evidences observed at the survey

- Many tertiary hospitals cannot provide specialized services to the patients with cardiac diseases and neuro-trauma diseases because they do not have specialized departments, specialists and technologies for diagnosis and treatment.
- In such cases, they have to transfer the patients with severe symptoms to NHSL or Kandy TH.
- Cardiac disease is the number one leading cause of death in Sri Lanka; however, only approximately 40 specialists are available in the public sector. Only NHSL and Kandy TH have capability to perform the cardiac surgeries, and the patients have to wait for more than a year before they can receive the surgeries. (Detail explanation is also written in page 27)
- Many diseases such as digestive hemorrhage, liver cancer and inflammatory bowel disease are observed, but the priority on gastrointestinal disease is low in national

disease control. There is no digestive organ specialized center, or NHSL does not even have the specialized department of gastrointestinal diseases.

- Chronic kidney diseases including unknown chronic kidney diseases (CKDs) are newly identified challenges in Sri Lanka. Kidney transplant and hemodialysis treatments are provided to these patients. Number of consultants and facilities with adequate equipment for diagnosis and treatment are limited, and thus, not all the patients who need services can receive appropriate treatments in the current situation.

(7) Insufficient surgical functions and diagnosis in the secondary hospitals

1) Identified challenges

Although BHs are expected to provide the core four functions (internal, surgical, pediatrics, OBGYN), many of them are unable to provide surgical and diagnostic functions due to lack of specialists, equipment or infrastructure (Table 2-4).

Table 2-4 Situation on provided service in Base Hospital (BH)

		Internal Medicine	Surgical Dept	OBGYN	Pediatrics	Note
Uva						
Diyathalawa	Type A	△	△	△	△	Facility space is small. Only 1 of 2 units is functioning
Welimada	Type B	○	×	△	△	Ward for surgical patient and operation theater are not available, no such service provided
Wellawaya	Type B	○	×	△	△	
Eastern						
Pulmodai	Type B	○	×	×	×	Only internal ward available. Upgraded from DH in 2012.
Muthur	Type B	○	○	○	○	Equipments installed relatively new.
Karowanchikudy	Type A	○	○	○	○	The facility is under rehabilitation utilizing Yen-loan scheme No specialist available for surgery.
Erubur	Type B	○	×	△	○	Upgraded from DH in 2013. No surgical department available. Only normal delivery provided.
Valanchenai	Type B	○	×	×	×	Upgraded from DH in 2011
Samanthurai	Type B	○	△	△	○	Operation theater available. No equipment available
Pottuvil BH	Type B	○	×	×	×	Internal ward available. Upgraded from DH in 2012

○:Expected Service provided △:Lack of partial function ×:No function

2) Evidences observed at the survey

- Many secondary hospitals (mainly BHs) have been upgraded from lower level health facilities such as DHs.
- In recent years, emergency injury and/or trauma patients have been increasing significantly because of expanding transportation networks and increasing plants and factories. Considering the situation, it is crucial for BHs to be equipped with necessary functions to provide expected services.
- Some secondary and tertiary hospitals mentioned that they have to transfer patients to the upper level hospitals due to lack of equipment for imaging diagnosis such as CT scanners and clinical examinations (Table 2-5).

Table 2-5 Reasons for transfer from BHs

	Transfer	To	Reason
Uva			
Bandarawela DH	1217	PGH Diyathalawa BH	Diagnosis/treatment is not available
Diyathalawa BH	1989 (Emergency:144)	PGH (95%)	Diagnosis/treatment is not available No vacant beds in ICU
Welimada BH	1963	PGH	Surgery not available
Wellawaya BH	—	PGH, DGH, Kandy	Surgery not available No vacant beds in ICU
Monaragala DGH	1784	PGH, Colombo, Kandy	Examination function (CT) is not available No department No vacant beds in ICU
Badulla PGH	584	Colombo, Kandy	No special department (Neurotrauma, catheter labo)
Eastern			
Pulmodai BH	1000	Trincomalee GH	Surgery not available
Muthur BH	1440-1800	Batticaloa TH	Transfer to higher level hospital except simple surgery
Kaluwanchikudy BH	2000	Batticaloa TH	No specialist No surgery→transfer to other hospitals
Eravur BH	2400	Batticaloa TH	Surgery is not available
Valanchenai BH	1200	Batticaloa TH	Surgery is not available
Samanthurai BH	1750	Batticaloa TH, Ampara DGH	Transfer to higher level hospital except simple surgery
Pottuvil BH	2000	Batticaloa TH, Ampara DGH	Surgery is not available

Resource: collected documents and the interview results in the field survey

(8) Insufficient equipment in delivery room and for new-born babies

1) Identified challenges

The equipment and facilities for maternal and neonatal care in BHs and DHs are insufficient.

2) Evidences observed at the survey

- There are no neo-natal ICU functions in all provincially-managed health facilities visited for the survey.
- Some BHs use normal beds instead of delivery tables for delivery.
- New-born babies are laid with their mothers on the mothers' beds.
- There is a case observed that new-born babies are warmed up with room lamp due to lack of infant warmers.
- Although DHs provide delivery services, patients tend to select higher level hospitals with obstetricians for their deliveries.

(9) Need to strengthen operation and maintenance system for medical equipment

1) Identified challenges

No adequate maintenance systems for medical equipment are in place. BES technicians should be allocated in all the tertiary hospitals and network systems are not established in both national and provincial levels for both preventive and collective maintenance.

2) Evidences observed at the survey

- Although BES technicians are supposed to be placed in all the line ministry hospitals for medical equipment maintenance, in reality, only half of the hospitals have the technicians. To those hospitals without a technician, the technicians have to travel from Colombo, if equipment is broken.
- Even in the hospitals where the technicians are placed, adequate space is not provided for their workplace.
- At the provincial hospital level, one BME technician who is placed at Provincial department of health services provides maintenance services to all the hospitals within the province. However, there are no collaboration between the technicians in line ministry hospitals and the BES technician in Provincial department of health services.

(10) Low accessibility to health service among adult males

1) Identified challenges

Utilization rate of medical services among adult males is low. This is due to the fact that they tend to prioritize income generation than taking care of their own health.

2) Evidences observed at the survey

- Women and children tend to use health facilities since they have more time than men. Women also have more opportunities to learn about the importance of utilizing health services through health education conducted by PHMW, On the other hand, in general, many men work during the day and have fewer opportunities to be exposed to health information.
- Men tend to prioritize work than their own health. Some of them also misunderstand that drinking alcohol and smoking would ease symptom. Especially in estate areas, where men tend to earn wages on a daily basis, they tend to avoid taking time off from work to receive health services.

(11) Insufficient facilities and equipment in estate (plantation) area

1) Identified challenges

The hospitals in estate area tend to have insufficient and old infrastructure, and often they do not have adequate equipment.

2) Evidences observed at the survey

- The authorities of the health facilities in estate area are transferred from estate companies to MOH. The hospitals in estate area tend to have insufficient and old infrastructure, and often they do not have adequate equipment. It is also difficult to retain human resources in these facilities.

(12) Lack of waste management system for medical wastes (malfunction, broken or not installed)

1) Identified challenges

There is no appropriate medical waste management systems operated in all the provinces except for Southern Province.

2) Evidences observed at the survey

- Most hospitals where the survey team visited have issues with incinerators such as malfunction, broken or not installed. Therefore, it is difficult to dispose medical wastes appropriately at these facilities.

- Smoke also causes trouble to the residents near the hospital.
- (13) Deterioration and overcrowding of NHSL
- 1) Identified challenges

NHSL, the top referral hospital, has problems such as overcrowded condition and deterioration of the facility and equipment.
 - 2) Evidences observed at the survey
 - It is observed that a large amount of fungi are growing in the ICU ward of the neurosurgery department. This is not safe environment for both patients and staff in terms of infection.
 - There is no sign board and hospital guide in the hospital. This makes it difficult for the patients to find a department.
 - Challenges on human resource training in the fields of trauma, neuro surgery, and endoscope inspection and treatment were pointed out.
 - Overcrowded situation is caused by insufficient allocation of specialists, deterioration of facility and equipment and limited coordination among the departments under top-level hospital management.
 - Environment of the waiting rooms for patient are also not well organized (e.g. no control on room temperature, insufficient number of seats). Some patients were kept on stretchers for long time in the corridor.
 - There is a long waiting list for cardiac surgery. Some patients have to wait for more than one year.

2. Criteria considered deciding the direction for future cooperation

Based on the challenges listed on “1. Identification of challenges based on the results of the field survey and analysis”, the matters to consider for future possible direction of Japanese assistance are listed as follows.

(1) Clear cut policy and plan of recipient country

Areas of the assistance should be clearly included in the National Policy or Strategies in Sri Lanka. If the areas are not included in the National Policy, it might be difficult to obtain strong commitment and ownership of the recipient country. Once the government is changed, the policy or the plan might be changed as well. When discussing direction of the cooperation, strong commitment of the government should be confirmed along with official documents.

(2) Utilization of Japan’s experience and technology

Possibility of utilizing Japan's experience and technology on prevention, diagnosis and treatment should be taken into consideration. Since the health indicators in Sri Lanka show transition from infectious diseases to NCDs, many Japanese technologies can be transferred to improve the Sri Lankan health sector. Also, management capacity on planning, policy making, implementation and monitoring can also be considered along with transferring Japanese technology.

(3) Securing resource and technology for cooperation

Allocation of adequate number and quality of human resources should be secured in the areas of the assistance. Or human resource development using the existing resources and framework is needed in the areas of the assistance. It is also necessary to secure financial resources for medical consumables and other costs for sustainability.

(4) Consideration for capacity development of stakeholders in the health sector

It is important to consider developing systems for planning, implementation and monitoring both within the MOH and at the entire health sector. Once the systems are in place, the actions will be continuously taken within the systems by the Sri Lankan government even after the Project. For instance, if the project to evaluate and formulate MP is supported, the process should be mainly facilitated by Sri Lankan government in collaboration with the Japanese side. This will also contribute to strengthening capacities of MOH. Thus, it is needed to consider not only strengthening specific areas but also capacity development of the organizations that are responsible for management of the health sector.

(5) Consideration for all residents in Sri Lanka by Japan's cooperation

When discussing Japan's cooperation, the proposed project should be conducive to all vulnerable residents in Sri Lanka. Thus, the proposed project may focus on vulnerable people, or the areas all people can access.

(6) Avoidance of redundancy with other donors

It is necessary to ensure that the proposed projects would not be duplicated with other donors' activities. If other donors already have similar cooperation activities, they should be avoided and consider different approaches to create synergy effect.

(7) Securing adequate countermeasures taking social environment into consideration

When examining future direction of the Japan's cooperation, the impact onto nearby environment and the residents should be taken into consideration. In other words, negative

impact on environment should be minimized within the acceptable level.

3. Further selection of the proposed project plans

Further analysis was conducted to select the proposed project plans based on the evaluation using the criteria mentioned above “2. Criteria considered to decide the direction for future cooperation” (Table 2-6). The results of the analysis are shown on the Table 2-7.

Table 2-6 Considering points of proposed project plans

Item	Context
Feasibility	If assistance using Japanese experience and technology is feasible or not If the recipient country has strong understanding and agreement on the plan Resources and technologies are secured by the recipient country Countermeasures are ensured for protection of social environment
Priority	Timing of providing health service, security of patients who are at risk
Benefits/Fairness	Whether conceiving to all people or reducing internal gaps
Other donor	Whether other donors’ supports are in progress or planned

Table 2-7 Analyzed results for selection of proposed project

Context	Feasibility	Priority	Benefits/ Fairness	donor	Reason	candidacy
1. Capacity development of MOH						
Planning and monitoring of the MP	Middle	High	High	None	Previous experience can be used Selection of experts might take long	◎
Management of health finance	Low	—	—	—	Japan has few experience to support this area	
Strengthening health information system	Low	—	—	—		
2. Management of health human resource						
Strengthen management of human resource	Low-Middle	High	High	WHO	Developing mechanisms might be possible to support	△
3. Malfunction of health facility						

Context	Feasibility	Priority	Benefits/ Fairness	donor	Reason	candidacy
Strengthen specific disease - Cardiac disease - Neurosurgery (CKD, cancer)	High (partially low: CKD cancer)	Very High	High	Depends on facility	<ul style="list-style-type: none"> • Japan has experiences to provide medical devices and technologies in some areas. • Need to ensure human resources and spaces if construction is included. • Response for cancer and CKD is difficult; • Cancer: difficult to deal with waste management of radioactive substances. • CKD: difficult to ensure hemodialysis techniques 	◎ (partially low)
Malfunction of secondary hospital (BH) -surgery and diagnosis	Middle	Very High	Middle	Depends on facility	<ul style="list-style-type: none"> • Need to identify criteria for selection of the target hospitals • The situations differ from provinces 	○
Malfunction of primary hospital -diagnosis and treatment	Middle	Low	Middle	WHO	Primary hospital works sufficiently, and the priority to cooperate is less than others	
NCD screening(Healthy Lifestyle Center: HLC)utilization is low	Middle	Low	Middle	Previous JICA projects	Screening is conducted to patients at high risk. *Limited access to health services for male	
Guidelines for diagnosis and treatment for each disease	Low	—	—	WHO	It needs specialist's knowledge to develop guideline for diagnosis and treatment	
Deterioration of infrastructure of hospital and bad line of flow	Low-Middle	High	Low-Middle	Depends on facility	It is difficult to select target hospitals since most public hospitals have deteriorated infrastructure	△
Insufficient maintenance system for equipment	High	High	High	—		◎
CKDu →Considered as diagnosis · treatment of CKD	Low	—	—	Only for finding causality (WHO, Kyoto Univ.)	Difficult to ensure human resources, budget, ethical issues, technical level, and safety	

4. Access to health service and improve quality for vulnerable people

Context	Feasibility	Priority	Benefits/ Fairness	donor	Reason	candidacy
5. Increase accessibility to health service among immigrants and labor in plantation	Low	—	—	—	Needs to involve companies and plantation owners into the project for obligation of medical check-up among their employees.	
Improve quality of health service in the provinces having estate area	Middle	Middle-High	Middle-High	—	Further analysis is needed to identify specific areas or population groups to be supported.	○
4. Others						
Strengthen MRI and laboratory function	High	High	High	—	Urgent response is needed since National laboratory has limited functions	
Malnutrition	Middle	Low	—	WHO	MOH area and PHMW work on malnutrition	
Strengthen training of Dentists	Middle	Low	—	—	Dentists are allocated in primary to tertiary hospitals. Thus the priority is low.	
Traditional Medicine	Low	—	—	—	Japan has limited experience.	
Countermeasure for elderly and handicapped people	Low	—	—	WHO/ JICA	Policy and implementation mechanism are not established yet.	

4. List of the proposed cooperating projects¹

The proposed cooperating projects are selected based on the analysis results shown in “3 Further selection of the proposed project plans”. Considering current challenges identified “1. Identification of challenges” and feasibility of the Japanese assistance mentioned in “2.Criteria considered deciding the direction for future cooperation”, the proposed cooperation projects are selected through the analysis shown in “3 Further selection of the proposed project plans”. Candidates of the cooperation projects are listed on the table 2-8. The key areas of assistances are; (1) Strengthening capacity of MOH for planning, implementation and evaluation, (2) Management of human resources for health, and (3) Insufficient function of medical facilities.

Table 2-8 List of proposed project (idea)

Plan	Outline of project	Main target	Scheme
1	Evaluation, development and management of the MP	MOH	<u>Technical Cooperation</u>

¹ These are just the proposed ideas and not ensured to implement them.

Plan	Outline of project	Main target	Scheme
Project for strengthening hospital management			
2	Capacity development on responses for cardiac diseases in tertiary hospitals	Tertiary hospital	<u>Yen-Loan Project</u>
3	Reinforcement of trauma and neurosurgery departments in tertiary hospitals	Tertiary hospital	<u>Including Plan 1</u>
4	Strengthening function of BH	Secondary hospital	<u>Including Plan 1</u>
5	Strengthening management of human resources for health	MOH	<u>Including Plan 1</u>

Plan 1: Evaluation, development and management of the MP

In Sri Lanka, the current MP 2007-2016 will come to an end in 2016, and it is necessary to develop a new MP for the coming decades. Confirming and evaluating the progress of the MP 2007-2016 is the highest priority before beginning the process of developing the next MP. All the activities throughout the processes of developing the next MP will be discussed and conducted together with the MOH related personnel. Capacity development is also considered to enable MOH to develop the new MP after 10 years from now.

Plan 2: Capacity development on responses for cardiac diseases in tertiary hospitals

It aims at treating cardiac diseases appropriately since it is the top leading cause of deaths in the country. It will strengthen capacity for diagnosis and treatment through strengthening medical equipment and facility functions in NHSL, Kandy TH and the other tertiary hospitals.

Plan 3: Reinforcement of trauma and neurosurgery departments in tertiary hospitals

Although tertiary hospitals are supposed to have all departments in Sri Lanka, in fact, only three tertiary hospitals (i.e. NHSL, Kandy TH and Karapitiya TH) have functioning neurosurgery department. These three hospitals receive patients from other hospitals in the entire country. For example, 90% of the patients who require neurosurgery and severe trauma patients at NHSL are transferred from other hospitals, and it accepts 30% of the entire patients in the country. 3,000 cases of surgery are practiced per year by limited number of medical personnel including only 2 consultants and 38 medical doctors. Among them, approximately 2,000 cases die due to septicemia. To address this issue, this plan is proposed to strengthen neurosurgery functions in tertiary hospitals through procurement of equipment and construction of a facility.

Plan 4: Strengthening functions of BHs

BHs are supposed to have at least 4 departments; internal medicine, surgery, OBGYN and pediatrics. However, it was identified that many BHs in Uva Province and Eastern Province, where the team visited for the survey, can not provide adequate services due to lack of resources for expanding hospital functions.

Thus, after confirming functional conditions (i.e. facility, equipment and human resources), the proposed plan aims to strengthen functions of the secondary hospitals to provide 4 major health services mentioned above. This will lead to decreasing number of the cases transferred to other hospitals, solving overcrowded situation in tertiary hospitals and reducing patients' burdens for receiving health services.

Plan 5: Strengthening management of human resources for health

Human resources for health is one of the challenges identified in Sri Lanka. According to the information obtained from the MOH to establish health human resource unit is under discussion. Below are necessary actions to be taken for improving the situation of human resources for health.

- Organizing information of existing health human resources (number, cadre and allocation)
- Review of the current situation of training schools for medical workers
- Review of training curriculums for medical workers and the progress of the standardization
- Projection of required human resources for health by category and formulation of the training plan
- Cooperation to establish training schools for medical workers, if necessary
- Capacity development of trainers in training schools for health professionals

5. Detailed Analysis on the proposed projects

Further analysis is conducted for each of the candidate plans shown in “4 List of the proposed cooperating projects” to identify possibilities of the assistance.

Plan 1: Evaluation, development and management of the MP

Conclusion: Quick response is required.

The MP is the policy document for 10 years from 2007 to 2016. MOH is aware of the importance of monitoring, evaluation and analysis of the MP, and requests Japan to support the formulation of the next MP.

Analysis on the current status and projection of future situation will be necessary. The

results of the analysis and projection will be the cornerstone of the next MP. Establishing monitoring and evaluation mechanism and strengthening capacity of MOH for evidence-based planning through the project is the highest priority.

Plan 2: Capacity development on responses for cardiac diseases in tertiary hospitals

Conclusion: Yen-Loan Project

The 2nd and 3rd survey results confirmed that supporting cardiology area is crucial and feasible. Table 2-9 shows the conditions of cardiac services in the tertiary hospitals investigated by the survey. These results indicate the followings; 1) among 6 provinces, only 3 provinces can provide catheter services, 2) duration of the waiting for diagnosis and treatment is from 3 months to 2 years and 3) half of the catheters laboratories (Total 12) are not functioning. Once a catheter laboratory is established at least at one hospital per province, the patients’ waiting hours must be reduced.

Table 2-9 Conditions of Cardiac Services in the Tertiary hospitals

Province	Name of hospital	Consultant of cardiac dept.	Catheter Lab	# of Catheter		Waiting hours
				Working	Out of order/Old	
Western	NHSL	○	○	1	2	2 years
	Sri Jayewardanepura GH	○	○	1	1	A half year
	Lady Ridgeway Children Hospital	○	○	1	1	A half year
Central	Kandy TH	○	○	2	0	2 year and a half (*including surgery)
North-west	Kurunegala PGH	○	○	0	1	A half year
Southern	Karapitiya TH	○	○	1	1	3~5 months
Eastern	Batticaloa TH	○	none	—	—	—
Uva	Badulla PGH	○	none	—	—	—

Resource: interview results in the field survey

Cardiology consultants in Kandy TH mentioned that it would be very effective in cardiac field to receive support for strengthening cardiology departments in the tertiary hospitals. Kandy TH accepts many cardiac transfer cases from other hospitals across the country. The interview found that Anuradapura TH (North Central), Poronnaruwa DGH (North Central), Badulla PGH (Uva), Batticaloa TH (Eastern) and Trincomalee DGH (Eastern) have cardiac

consultants, but they do not have catheter laboratories. Establishing catheter laboratories in these GHs would contribute to improvement of overcrowded situation of cardiac patients at Kandy TH, Kurunegala PGH and NHSL. Since Kandy TH and Kurunegala PGH have adequate experiences and knowledge on catheter treatment, it is possible for them to provide technical training and assistance for consultants in other hospitals.

In Western and Southern Provinces, catheter laboratories are already in place in all the visited facilities, and the consultants have catheter technique. It is also confirmed from the survey that NHSL and Karapitiya TH have intervention radiologists. Intervention radiologists are for intervention of blood vessel diseases (including brain vessel). There are currently only 3 intervention radiologists in Sri Lanka and thus strengthening their capacity of diagnosis and treatment is also desirable.

Plan 3: Reinforcement of trauma and neurosurgery departments in tertiary hospitals

Proposed conclusion: Consider developing long-term plan under the new MP

There are only 10 consultants for trauma and neurosurgery in public hospitals. Thus, the team concludes that the priority should be given to the training of consultants of neurosurgery to secure human resources, and then strengthening facility and equipment. Jaffna TH, Kurunegala GH, Kandy TH, NHSL and Batticaloa TH have the neurosurgery department. Among them, Kandy TH and NHSL accept patients for neurosurgery from all over the country. NHSL plans to receive support from China, and the facility of Kandy TH has been rehabilitated with donation by patients. Kurunegala GH has a rehabilitation plan for the entire hospital, but there is a setback of the plan due to termination of the budget allocation for construction. Given this situation, it would not be feasible to install equipment, unless the construction plan moves forward. Batticaloa TH also has a rehabilitation plan for all the buildings. Therefore, strengthening function of trauma and neurosurgery departments in tertiary hospitals should be considered and planned with a long-term vision and along with the MP development.

Plan 4: Strengthening function of BHs

Conclusion: Consider developing long-term plan under the new MP

It was observed in the 2nd field survey that many BHs in Uva and Eastern Provinces do not have surgical function and can not provide the health services of main 4 departments. Thus, it is necessary to strengthen surgical and diagnoses functions in BHs to enhance capacities of the secondary health facilities, leading to reduction in burden on the tertiary health facilities.

At the 3rd survey, it is confirmed that improving functions of BHs in all provinces are

crucial. However, it turned out that BHs in each province are faced with different types of challenges (Table 2-10 and 2-11). For example, health services of all 4 main departments are not provided in BHs in the provinces with relatively high poverty level. Meanwhile, the hospitals in industrial or over-populated area are faced with difficulties in responding to the increasing number of population and patients. Lack of health workers is a significant challenge in these areas since health worker retention rate is lower in Northern Province and Plantation regions. Each province has different characteristics and social background, and each facility has different issues. Thus, it is better to identify current challenges for each province and re-examine the ways to strengthen BHs at the evaluation of the MP and development of new policy.

Table 2-10 Challenges of BH by province

Province	Challenges
Western	Negombo DGH (Type A hospital) was built by South Korea 11 years ago near the international airport. It has severe issues on water leaking from the pipes and cracks on the walls, resulting in spread of mildew and calcium crystals on the surface of the walls. Thus, hygiene of the facility is poor, and the building even faces a risk of collapse.
Uva	Many BHs were upgraded from DHs. They have to develop surgical department, but it takes several years for them to install surgical functions due to lack of resources (i.e. budget, human resources and equipment).
Eastern	Many BHs were upgraded from DHs. They have to develop surgical department, but it takes several years for them to install surgical functions due to lack of resources (i.e. budget, human resources and equipment).
Central	Economic disparities among the districts are high within the province. There are also differences of health indicators by district. Dambulla BH, located on the main road between Kandy and Kurunegala, receive huge number of trauma patients due to industrial development and car accident and need to increase capacity of the hospital. They developed the comprehensive rehabilitation plan 10 years ago, but the rehabilitation stopped in the middle due to lack of budget.
North-west	Many BHs cannot fully respond to increasing number of patients unless they undertake expansion and rehabilitation of the facilities. Puttalam BH (Puttalam District) needs urgent actions to improve the facility since they receive rapidly increasing number of trauma patients due to traffic accidents associated with the development of new roads and population growth. Especially, their surgical function is limited compared to allocated number of surgeons.
Southern	Three facilities which need urgent responses are as follows. 1)Tangalle BH(Hambantota District): Although human resources are sufficient and the latest equipment is installed, it has limited number of health facilities to accommodate the patients and accepts patients more than the capability. Only the support for expanding the facilities is necessary. 2)Elpitiya BH(Galle District) : Number of patients is rapidly increasing due to high-way construction 2 years ago. But the rehabilitation of facility is not catching up with current

Province	Challenges
	situation. The hospital has to transfer emergency patients to other hospitals because they cannot adequately provide ICU services. 3)Deniyaya BH (Matara): There is no operation room. There is no well-functioned ETU.
Northern	Even through there are 6 BHs, none of them has functioning main 4 departments. Only 3 surgical consultants, 3 internal consultants and 1 OBGYN consultant are available in the province. Gaps of the health services are significant compared to other provinces.

Resource: the interview results in the field survey

Table 2-11 List of challenges in BHs

Challenges	Western	Uva	Eastern	Central	North Central	Southern	Northern
Insufficiency of facility, equipment and human resource along with expansion of hospital function		<input type="radio"/>	<input type="radio"/>				<input type="radio"/>
Insufficient numbers of human resources (doctors and nurses)		<input type="radio"/>	<input type="radio"/>				<input type="radio"/>
Insufficiency of management capacity due to increasing number of patients				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Mismatch between facility function and staff allocation		<input type="radio"/>			<input type="radio"/>	<input type="radio"/>	
Patient transfer due to lack of diagnostic functions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		
Remote transfer of patient due to malfunction of nearby tertiary hospitals		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		
Regional gaps on staff allocation and facility function				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Old equipment and patched buildings		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>		

Resource: the interview results in the field survey

※The survey wasn't conducted in North-Central, Northern and Sabaragamuwa Provinces. The collected data from these provinces is based from questionnaire. Northern Province responded with the answers.

Plan 5: Strengthening management of human resources for health

Conclusion: Consider developing long-term plan under the new MP

Followings are several challenges in human resources identified from the survey results;

- 1) Insufficient information management system of health human resource
- 2) Lack of projection on and demand for health services in the future
- 3) Needs of training plan for health human resources and allocation plans
- 4) Many years to become a consultant and limited number of consultants newly assigned per

year

5) Allocation of human resources without taking into consideration their specialties and actual hospital functions

Considering the increasing demands for consultants, it is better to review training mechanisms of consultants and other medical professionals for specialized services of NCDs diagnoses and treatments. Current training for consultants is also time consuming. Therefore, the long-term vision and policy for health human resource should be included in the new MP.

6. Additional Components to be included in the proposed projects

Additional components were discussed with MOH for successful implementation of the proposed projects during the 3rd survey. Management components and preventive measures are added in the proposed projects.

(1) Reinforcement of preventive measures

In the beginning of the 3rd survey, the survey team shared challenges identified by the series of surveys and possible project plans with MOH. In response to the project plans, MOH requested to include both preventive and curative components in the projects to strengthen both aspects. Based on the discussion with MOH and further investigation in the 3rd survey, these issues are identified to be candidates for the future project components.

1) Strengthening function of MLTs training facilities

MLTs training facilities are located in Peradeniya TH, MRI and NIHS in Sri Lanka. MRI still uses old equipment installed in 1990 through the Japan's grant aid. Peradeniya TH also trains MLTs using outdated laboratory equipment. Laboratory technology has progressed drastically in general since then, but the technology or equipment has not been renewed in these facilities. Given this situation, the needs to strengthen the functions of MLTs training facilities through procuring upgraded laboratory equipment for NCD examination are recognized.

MRI and Kandy TH are also assigned as training institutions of MLTs for practical parts. These two facilities also utilize outdated laboratory equipment with insufficient functions. Due to lack of spaces and adequate laboratory equipment, the laboratory technicians have to work in congested conditions that cannot ensure accuracy and prevention of biohazard infections. It is very hard for MLTs students to learn appropriate laboratory techniques under these circumstances. Therefore, it is urgent to strengthen laboratory functions and technologies in MRI and Kandy TH.

2) Strengthening function of provincial training center

MOH has a policy to establish provincial training center in each province and train PHMWs and PHIs. The provincial training center is also in charge of planning and implementing in-service training of health workers. However, establishment of the centers is dependent on the budget allocation by Provincial Health Department. Progress of establishing a training center differs among the provinces, reflecting the budget allocation.

The status of the provincial training centers where the survey team visited are as follows;

- Uva, Eastern: Provincial training centers are not established yet.
- North Western: The training centers are established without facilities. Borrowing training space in the facilities near the center for training
- Central and Southern: Facility is available but equipment is insufficient.

It is desirable to build training centers and install equipment in the provinces where no training center exists. Trainers of training can be selected from the tertiary hospitals in each province and faculties of universities or teaching hospitals. It is feasible for provinces to request lecturers since the government sets the fee of a trainer at an affordable rate of about 1,000 rupees per 1 lecture. Quality of the training for PHIs and PHMWs is ensured since the curriculum and the training materials are standardized by NIHS.

(2) Management capacity related in implementation Yen-loan scheme project

1) Strengthening management capacity of equipment maintenance

It is necessary to explore possibilities of strengthening maintenance capacity of medical equipment once advanced medical equipment is installed. Currently, pharmacists have responsibility to keep records of medical equipment, but they are not managed as inventory information. It is expected to allocate at least 1 BES technician in tertiary hospitals, but, in reality, half of them do not have technicians. The hospitals without technicians have to request MOH to send BES technicians. Therefore, strengthening functions of BES in MOH and tertiary hospitals should be discussed.

2) Strengthen maintenance capacity of nurses on medical equipment

The main health cadres that utilize the advanced medical equipment are doctors, nurses, MLTs and radiologists. In those cadres, doctors have the opportunity to learn the advanced medical equipment when receiving specialized training, and MLTs and radiologist have the opportunity when receiving on-the-job training. However, nurses have very limited opportunities to obtain such knowledge, resulting in inappropriate use of medical equipment or equipment trouble.

3) Strengthen facility management based on statistical information

Each health facility collects and reports statistical data as regulated by MOH. However, the facilities have not utilized the data for management purposes. To address this issue, this component of the proposed project aims at strengthening management capacity of health facilities to collect necessary data for improving their health services, and utilize the data to come up with the best allocation of financial resources. When necessary, the concept of 5S-KAIZEN-TQM can be applied.

7. Detailed plans of the future cooperation projects

The following two projects are recommended for future projects based on the results of analysis of the information obtained through the survey.

- (1) Project for evaluation of the current MP and development of new MP
- (2) Project for improving health services (strengthen preventive, curative and managerial area)

It is considered that supporting evaluation of the current MP and formulation of new MP are the highest priorities in Sri Lanka. Through the project, MOH is expected to grasp overall situation of the health sector, identify challenges, examine countermeasures and allocate resources adequately based on the data and information. The project will also aim at strengthening MOH's capacity for planning and implementation.

In parallel with the project above, it is effective to conduct a yen-loan project called "Health Sector Improvement Project" to improve health services of both preventive and curative aspects. The purposes of the project are to improve the followings; 1) quality and quantity of health personnel, 2) treatment of cardiovascular diseases, and 3) management in tertiary hospitals (i.e. establishment of maintenance system for medical equipment and hospital management). Detailed outlines of the projects are shown below.

(1) Outline of the Project 1: Project for evaluation of the current MP and development of new MP

1) Objective

MOH clarifies current situation and challenges related to the health sector in Sri Lanka, grasps the situation of own resources (human, physical and financial), allocates resources adequately based on the current situation and future prediction. Financial projection also should be done based on considering increase of costs for NCD diagnoses and treatments

with estimation of number of patients. The Project also aims to strengthen capacity of MOH for monitoring and policy planning.

2) Implementing Organization:

MOH: Planning Department of MOH and related departments

3) Implementation Methods:

- i) Establish an implementing mechanism under the authorization of top management level in MOH, for planning, implementation and monitoring progress and achievement of the current MP (The current framework such as working groups will be applied if they are already in place.). In case of applying the current working groups, a core working group will be formulated with principle members.
- ii) Establish sub-working groups consisted of members of responsible DDGs and develop evaluation schedule.
- iii) Share the plans developed by sub-working groups with related parties, and acquire consensus on the contents. Then each group in charge collects necessary information.
- iv) Share progress of the activities with other sub-working groups at periodical meetings. If there are sub-working groups with delay in progress, the core working group will help them to identify problems and brainstorm solutions.
- v) Compile results of the evaluation from each sub-working group within the designated period, examine progress and challenges, clarify their causes and share the results with concerned parties.
- vi) Develop the next MP in accordance with the ongoing health policies and including unsolved issues and issues that are newly identified. For each issue, responsible DDG will draft plans and share them with concerned parties. If more information is needed in order to analyze principal causes of the issues, conduct a more detailed survey simultaneously.
- vii) Share draft plans developed by each DDG, compile and finalize them as a consolidated long-term plan. At the same time, clarify division of roles and responsibilities in implementation, monitoring and evaluation of the new MP, and discuss framework and schedule for monitoring as well as methods to collect information for monitoring and publication.

4) Points to be considered for implementation of the project:

It is surmised that the current MP was formulated by MOH based on the results of the survey conducted by the Japanese side. This indicates a possibility that the survey

methods were not transferred to MOH. Besides, it is necessary for personnel of Sri Lanka to join the processes in order to accurately understand their own issues and challenges and examine possible solutions. This will enhance the ownership of the countermeasures to address the issues and challenges. Thus, MOH should take initiatives throughout the process of developing the next MP.

5) Ripple effects on the entire country:

It is expected to improve quality and quantity of medical services in the entire country through the project. The project will contribute to increasing MOH's recognition on the current situation and challenges in health sector and allocating resources adequately by developing a long term plan.

(2) Outline of the Project 2: Health Sector Improvement Project

(Strengthen preventive, curative and managerial area)

1) Outline of the Project

Objective: Strengthen health sector activities in Sri Lanka by providing advanced technologies in the preventive and curative areas and through training in management area.

2) Implementing organization

Overall	MOH
Preventive area	MOH-DDG Public Health I, DDG ET and R
Curative area	DDG Medical Service I, DDG Laboratory Service
Management area	DDG Biomedical Engineering., DDG ET and R

3) Contents of the project

A. Preventive area

The project aims to improve quality and quantity of health personnel by strengthening training institutions for medical personnel. Provincial Training Centers are responsible for training medical personnel such as PHI, PHMW and hospital workers under the supervision of NIHS (National Institute of Health Science).

A-(1) Strengthening capacity of training for MLTs

i) Strengthening of MLT training institutes

In Sri Lanka, there are three training institutes, MRI(Medical Research Institute), Peradeniya TH and NIHS for MLTs. Among them, MRI and Peradeniya TH were identified

to be targeted for the project. Their equipment used for the education is extremely old and does not meet the requirement of techniques actually practiced in the clinical sites.

Table 2-12 Outline of the component A-(1)-i)

Target	MLT training institutes in MRI, Perdeniya TH		
Contents of assistance	Procurement of equipment	Binocular Microscope, Osmometer, PH meter, etc.	Spectrophotometer, Refrigerator,

ii) Strengthening of clinical sites for MLT practical training

Laboratories in Kandy TH and MRI are designated for practical training institutes for MLTs. They are expected to provide practical learning experiences with current technologies. However, their equipment is outdated. For example, the MRI machine has not been replaced since it was donated by Japan in 1990. It is considered that the two training institutes need to improve examination technology for its accuracy and safety as well as appropriate practical training for the MLT students.

Table 2-13 Outline of the component A-(1)-ii)

Target		MRI	Kandy TH
Contents of assistance			
Construction	BSL-3	○	
	Examination unit of 5 stories building		○
Procurement of equipment	DNA Sequencer (1)	○	
	LC-MS/Ms (1)		
	GC/MS (1)		
	Biohazard cabinet II		
	Clean Bench		○
	Replacement of old Laboratory analyzer		

A-(2) Establishment and improvement of Provincial Training Center

The MOH has a policy to establish Provincial Training Center in each province and train medical personnel and hospital staff at provincial level. However, the actual situation differs in provinces. For instance, some provinces do not have any Provincial Training Center. Some have training function but lack a training facility, and others have a training facility but its function is insufficient. Strengthening the function of training components at provincial level will enhance quality and quantity of medical personnel such as PHMWs and PHIs as well as improve capacity of hospital staff.

Table 2-14 Outline of the component A-(2)

Target		Uva	North Western	North Central	Eastern	Central	Southern
Current Situation							
No training center		○		▲	○		
Exists training function but no facility			○				
Exists training center but equipment is insufficient						○	▲
Contents of Assistance							
Construction		○	○	○	○		
Procurement of Equipment and vehicles	Manikins for CPR for neonatal	○	○	○	○	○	○
	Immunization practice tools						
	PC for students						
	Audio education equipment						
	Furniture (tables and chairs)						

▲:Provinces for which MOH requested assistance

A-(3) Strengthening capacity of monitoring and outreach activities in the field

The request of vehicles for preventive area was submitted by MOH at the end of the 4th survey. Purposes of the purchasing vehicles are for strengthen preventive activities such as monitoring by MOH and outreach visits by Medical Officers of Health Office. Numbers of vehicles requested are shown on table 2-15. The team identified the vehicles for outreach activities in MOH office are very old, but there is no enough information to analyze priority of the vehicles. Further analysis will be needed at the detailed design study on project.

Table 2-15 Outline of the component A-(3)

Purposes	Target	Number of vehicles (Total)
Outreach activities in MOH Offices	MOH Offices in the entire country	325
Monitoring at district level	All districts	340
Monitoring at national level	MOH	30

B. Curative Area

Strengthening of diagnosis and treatment of cardio vascular disease

In Sri Lanka, cardiovascular diseases are considered as serious health problems since

they account for one quarter of the entire causes of deaths. According to the health system in Sri Lanka, each province should have at least one tertiary level hospital, and consultants for cardiovascular diseases should be placed to the hospital. However, catheter laboratory, which is a method for less-invasive diagnoses and treatments, is established in only limited tertiary level hospitals. Thus, critically ill patients have to be transferred to either Colombo or Kandy. Regarding the situation of those hospitals that have a catheter laboratory, many patients are waiting to receive diagnoses and treatments for months to years. In such circumstance, the project aims at strengthening diagnosis and treatment of cardiovascular diseases in tertiary hospitals, increasing capacity of attendance of patients, decreasing number of patients transferred to other provinces and improving curative rate.

Concerning capacity building of cardiology consultants in those hospitals which do not have a catheter laboratory, the projects include series of training for technical transfer from the consultants who have conducted catheter diagnosis and treatments. Below is the idea of grouping for the target hospitals.

Table 2-16 Idea of grouping for the component B

Region	Already implemented	Not yet implemented
Central Province	Kurunegela GH Kandy TH Peradeniya Pediatric H	Polonnaruwa GH Batticaloa TH Trincomalee GH Badulla GH Anuradhapura TH
Western and Southern Province	NHSL LRH Sri Jayawardanapura GH Karapitiya TH	

Details of implementation are as follows;

- Establishment of a catheter laboratory
- Provision of catheter equipment
- Strengthening of operation rooms as annex, Intensive Care Unit: ICU, image diagnosis, surgery ward (Cardiology)

Actual components of the supports will be identified based on the situation of each target facility after the detailed project formulation survey. Current situation and necessary components are shown on Table 2-17.

Table 2-17 Current condition of cardiology services and components B by hospital

Target	Central							Western and Southern				
	Kandy	Kurunegela	Badulla	Anuradhapura	Trincomalee	Batticaloa	Polonnaruwa	Peradeniya Pediatric	National Hospital SL	Sri Jayawardanapura	LRH	Karapitiya TH
Current situation												
Actual Situation	No catheter lab			○	○	○	○					
	Old / out of order catheter lab	○	○						○	○	○	○
	Exists catheter lab but no capacity to attend patients	○	○								○	○
	Request by MOH							▲				
	No problem in catheter lab						○					
	Insufficient function of operation room	○	○	○			○	▲		○	○	○
Components of the Project												
Construction	Catheter lab		※	○	△	△	※				○	○
	Operation room, ICU, ward		※	○	△	△	※	△		○	○	○
Procurement of Equipment	Equipment for catheter lab	○	○	○	○	○		▲	○ (2)	○	○	○
	Equipment for operation		○	○	△	△	○	△		○	○	○
	Equipment for ICU and ward		○	○	△	△	○	△		○	○	○
	Equipment for image diagnosis	○	○	○	△	△	○	△		○	○	○

*: Feasibility of implementation depends on the progress of the other construction

○: Feasible to implement

△: Explained by concerned personnel but the actual situation is not be confirmed yet

▲: Request by MOH

*2: Assist catheter laboratories of both cardiology and intervention radiology

Table 2-18 List of Equipment for Component B

Category of Equipment	Contents
Equipment for catheter lab	Cardio catheter system (Rotational angiography) Detector, IVUS, Patient's table, Recording system, Intravenous ultrasounds, Fractional flow reserve, Ventilator

Category of Equipment	Contents
	Anesthetic machine (for children) C-Arm etc.
Equipment for operation	Anesthetic machine, Suction machine Operation table, Patient monitor Defibrillator, Ventilator
ICU, Equipment for ward	Patients bed, Patient monitor, Central monitor system, Suction machine, Ventilator, Infusion pump, Syringe pump, etc.
Equipment for image diagnosis	MRI, CT, Digital X ray machine, Computed radiography (CR) System, Ultrasounds (3D, Doppler), Picture archiving and communication system (PACS)

C. Management area (Maintenance and Management)

C-(1) Strengthening of Biomedical Engineering: BES Unit

As mentioned above, along with provision of highly-advanced medical equipment, the project aims at improving the capacity of maintenance and management of medical equipment as well as strengthening BES unit of MOH and those units of target health facilities.

Table 2-19 List of Component C-(1)

Target		BES	BES unit in target institutions + MRI
Contents of Assistance			
Procurement of Equipment	Basic engineer tools	○	
	Testing equipment	○	
	PC and printer	○	○
	Vehicle (for training and monitoring)	○	
Technical Cooperation	Building networks for strengthening of maintenance and management of medical equipment by BES and capacity building	○	○

C-(2) Strengthening of capacity of nurses for maintenance and management of medical equipment

In most cases, nurses handle above mentioned highly advanced medical equipment, even though their knowledge on medical equipment is limited. The project aims to improve the capacity of nurses through technical training to enable them to deal with the equipment in ICU and operation room properly.

Table 2-20 List of Component C-(2)

Target		BES	Target health facilities (12)
Technical Cooperation	Assistance for provision of technical trainings for nurses	○	○

C-(3) Strengthening of management capacity of hospitals

In Sri Lanka, statistical information on health is supposed to be reported to MOH. However, necessary information for hospital management such as data of trends in patients and provision of services are not kept well in many health facilities. Also, usage of the statistical information to improve hospital management varies among hospitals. Therefore, the project aims to strengthen the capacity to manage and utilize statistical information for the above mentioned target hospitals.

Table 2-21 List of Component C-(3)

Target		MOH	Target health facilities(12)
Technical Cooperation	Strengthening of hospital management and statistical information management	○	○
Procurement of Equipment	PC and printer	○	○

4) Ripple effects on the entire country

- In each province, PHIs and PHMWs will be trained, which will assure medical human resource for preventive service provision in provinces.
- It is expected that accuracy and promptness of the laboratory examination will be improved.
- By means of strengthening the capacity of responding to cardiovascular diseases;
 - Congestion of patients in NHSL and Kandy TH can be reduced.
 - Waiting time of the patients can be shortened, and the patients can receive necessary diagnosis and treatment sooner.
 - The patients who are currently transferred to the hospitals in other provinces due to lack of catheter laboratory can receive diagnosis and treatment in their own province (reduction of burden on patients).
 - Tertiary health facilities which currently do not have a catheter laboratory will be able to provide services, and their burden in transferring patients will be reduced (reduction of burden on the health facilities that transfer the patients).
 - By means of establishing maintenance and management systems of medical

equipment in MOH and tertiary health facilities in provinces, proper use of medical equipment will be facilitated. Furthermore, by applying the same system to other health facilities that do not participate in the project, the capacity of maintenance and management of medical equipment will be improved in the entire country.

- By improving the management capacity of tertiary health facilities, management of departments and the entire hospital will be improved. Moreover, application of the methodology developed in the target health facilities to the remaining health facilities may lead improvement in the capacity of hospital management in the entire country.

Appendix 1: Member List of the Survey Team

Member List of the Survey Team

NAME	ASSIGNMENT TITLE	1	2	3	4
Kanako TANIGAKI Ms.	Team Leader/ Health Service 1	○	○	○	○
Tamotsu NOZAKI Mr.	Medical Equipment Plan		○	○	
Kyoko GOTO Dr.	Health Facility Plan	○	○	○	○
Aya YAGI Ms.	Health Service 2		○		

Appendix 2: The schedule of Field Survey

1st Field Survey

Day	Time	Activities	Major interviewees
1/26 (Mon.)	09:00	Courtesy call to MOH	SG DDG: Dr. Sunil De Alwis and others
	10:30	Discussion with MOH Planning Department (The plenary meeting)	DDG
	11:00	--Planning Department	DG
	12:00	Courtesy visit JICA	Mr. Amada (Chief Representative), Mr. Abe (Vice Chief Representative), Mr. Shimano
		Discussion with MOH Planning Department	
	13:30	--Policy Analysis Division	DG : Dr. D.A.B.Dangalla
	14:30	--Finance Division	DG
	15:30	--Information Division	DG: Dr. Champika
1/27 (Tue.)	10:00	Discussion with National Planning Department (NPD)	DG: Chandanie Wijayawardhana ADG: S. S. Mudalige and others
	14:00	Discussion with MOH Medical Service Department1 NCD-Unit	DDG : Dr. Sarath Amunugama Unit Chief : Mr. Ananda
	15:30	Discussion with MOH Medical Service Department2	DDG: Dr. Ananda Gunasekera
	19:00	Discussion with Local agency of medical equipment	Nihon Kohden Co., Ltd. the related personnel Wexham Medical Resources Inc. Chairman: Chrisantha Mendis
1/28 (Wed.)	9:30	MOH Adolescent/Aged person/Handicapped Person Department	DG : Dr. Luckshmi Kumartilake Consultant : Dr. Shiromi Maduwage
	11:00	World Bank	Dr. Kumari Vinodhani Navaratne
	14:00	WHO	Postponed to 1/30
	17:00	MOH Public Health Department 1	DDG: Dr. Amunugama
1/29 (Thur.)	9:30	Western Province Health Service Department	DG: Dr. Deepthi Perera
	10:30	Provincial Ministry of Health	DG: Dr. P G Mahipala
	14:00	Western Province Health Service Department	Dr. P. Samarasinghe
1/30 (Fri.)	09:00	Discussion with WHO	Dr. Lanka Jayasuriya Dissanayake
	10:00	MOH Procurement Department	Mr. Jayathilake
	11:15	Medical Research Institute	Dr. Sumith Ananda
	13:00	Reporting visit JICA	Mr. Amada (Chief Representative), Mr. Abe (Vice Chief Representative), Mr. Shimano
	14:00	Discussion with MOH Planning Department (The plenary meeting)	Wrap-up meeting (cancelled)
	15:00	MOH Organization Department	DG : Dr. Susie Perera De Silva

2nd Field Survey

	Day	Date	Team Leader/Health Service 1 (Kanao TANIGAKI Ms.)	Medical Equipment Plan (Tamotsu NOZAKI Mr.)	Health Facility Plan (Kyoko GOTO Dr.)	Health Service 2 (Aya YAGI Ms.)
1	Sun	3/8	Narita→(via Singapore)→Colombo Arrive on 3/9 (00:15 arrival: Singapore Airline)			
2	Mon	3/9	AM: Courtesy Visit JICA Sri Lanka Office/Embassy of Japan in Sri Lanka PM: Meeting/Discussion with MOH Planning Department			
3	Tue	3/10	AM: Meeting/Discussion with MOH related division/personnel PM: Meeting/Discussion with the related ministries(Ministry of Finance and Planning, Ministry of Education, Ministry of Social Service)			
4	Wed	3/11	Investigation on National Hospital of Sri Lanka			
5	Thu	3/12	Investigation on Cancer Institute(suburb of Colombo area)/Lady Ridgeway Hospital for Children			
6	Fri	3/13	Investigation on Castle Street Hospital for Women (Colombo area), Training Center for Medical Equipment			
7	Sat	3/14	Report Writing/Team Meeting			
8	Sun	3/15	On-site survey ^{*1} : Team A Move to Central State	Team B Move to North Western State	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
9	Mon	3/16	AM: Visit State Ministry of Health/Explain the purpose of investigation, and the outline PM: Investigation on Teldeniya District Base Hospital, Kandy Province	AM: Visit State Ministry of Health/Explain the purpose of investigation, and the outline PM: Investigation on Galgamuwa Base Hospital, Kurunegala Province	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
10	Tue	3/17	Investigation on University of Peradeniya, Department of Dental Service	Investigation on Provincial General Hospital/District General Hospital	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
11	Wed	3/18	Investigation on Provincial General Hospital/District General Hospital	Investigation on Base Hospital/Divisional Hospital	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
12	Thu	3/19	Investigation on Base Hospital/Divisional Hospital	AM: Investigation on Warakapola Base Hospital, Kegalle District PM: Investigation on Teaching Hospital	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
13	Fri	3/20	Investigation on Primary Medical Unit/Facility for Disabled people	AM: Investigation on Primary Medical Unit/Facility for Disabled people PM: Move to Colombo	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
14	Sat	3/21	Report Writing/Team Meeting	Report Writing/Team Meeting	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
15	Sun	3/22	Move to Eastern State from Central State	Move to Sabaragamuwa State from Colombo	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
16	Mon	3/23	AM: Visit State Ministry of Health/Explain the purpose of investigation, and the outline PM: Investigation on hospital	AM: Visit State Ministry of Health/Explain the purpose of investigation, and the outline PM: Investigation on Ratnapura General Hospital	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
17	Tue	3/24	Visit Kalavanchikudy Base Hospital, Batticaloa District	AM: Investigation on Teaching Hospital PM: Investigation on Provincial General Hospital/District General Hospital	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
18	Wed	3/25	Investigation on Provincial General Hospital/District General Hospital	Investigation on Base Hospital/Divisional Hospital	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
19	Thu	3/26	Investigation on Base Hospital/Divisional Hospital	AM: Investigation on Primary Medical Unit PM: Move to Western State	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
20	Fri	3/27	Investigation on Primary Medical Unit	AM: Investigation on Sri Jayawardanepura General Hospital PM: Move to Colombo from Western State	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
21	Sat	3/28	Move to Colombo from Eastern State	Report Writing/Team Meeting	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
22	Sun	3/29	Report Writing/Team Meeting	Report Writing/Team Meeting	Same as Team Leader/Health Service 1	Same as Medical Equipment Plan
23	Mon	3/30	AM: Investigation on Central Storage of Medicine, MOH PM: Meeting/Discussion with the personnel charged in medical equipment/medicine ^{*2}			
24	Tue	3/31	Visit local agencies for medical equipment, donor organizations ^{*2}			
25	Wed	4/1	Visit local agencies for medical equipment, donor organizations ^{*2}			
26	Thu	4/2	AM: Meeting/Discussion with the charged MOH personnel of bidding PM: Investigation on legal imperatives of Ministry of Finance and Planning regards to bidding on medical equipment ^{*2}			
27	Fri	4/3	Meeting/Discussion with MOH (Collecting filled questionnaire) ^{*2}			
28	Sat	4/4	Report Writing/Team Meeting			
29	Sun	4/5	Report Writing/Team Meeting			
30	Mon	4/6	Investigation on related division/department of MOH/project recipients of Japan's grant ^{*3}			
31	Tue	4/7	Investigation on related division/department of MOH/project recipients of Japan's grant ^{*3}			
32	Wed	4/8	Investigation on related division/department of MOH/project recipients of Japan's grant ^{*3}			
33	Thu	4/9	Report the result of the Field Survey to MOH			
34	Fri	4/10	Report the result of the Field Survey to JICA Sri Lanka Office			
35	Sat	4/11	Report Writing/Team Meeting			
36	Sun	4/12	Colombo 01:30 departure→(via Singapore)→Narita(17:05 arrival: Singapore Airline)			

*1: the designated state for the Field Survey will be arranged based on discussion with MOH and JICA Sri Lanka Office.

*2: Arranged along with the progress of the Field Survey and appointment of meeting.

*3: Conduct the investigation to any additional interviewee organizations if necessary.

3rd Field Survey

		Day	Team Leader/Health Service1 (Kanao TANIGAKI Ms.)	Health Facility Plan (Kyoko GOTO Dr.)	Medical Equipment Plan (Tamotsu NOZAKI Mr.)
1	5/6	Wed	Narita→(via Bangkok)→Colombo		/
2	5/7	Thu	07:30 Secretary and relevant DDGs 09:00 DDG ET&R 11:00 MRI Teaching school for MLT 14:00 MS1(cancelled) 17:00 Courtesy call to JICA		
3	5/8	Fri	09:00 Planning (Dr.Champika) 11:30 MS1 (cancelled) 15:30 Discussion with the DDG ET&R (cancelled)		
4	5/9	Sat	Documentation and team discussion		Narita→(via Bangkok)→Colombo
5	5/10	Sun	Move from Colombo to Central Province*1		
6	5/11	Mon	09:00 Courtesy call on Department of Health, Central Province 11:00 Kandy Teaching Hospital		
7	5/12	Tue	Investigation on Kandy Teaching Hospital		
8	5/13	Wed	Investigation on Training center, Base Hospital and		Peradenia Teaching Hospital
9	5/14	Thu	09:00 Courtesy call on Department of Health, North Western Province		
			11:30 Provincial Training Center	11:00 Investigation on Kurunegala PGH	
			PM Investigation on Kurunegala PGH		
10	5/15	Fri	Investigation on Base Hospitals in Puttlam Baes Hospital	Investigation on Kurunegala PGH	
11	5/16	Sat	Move to Colombo		
12	5/17	Sun	Documentation and team discussion		
13	5/18	Mon	Meeting with relevant DDGs in MOH		
14	5/19	Tue	09:00 JICA, 13:00 DDG Laboratory, 16:30 Meeting with Secretary		
15	5/20	Wed	09:00 Sri Jayawarudanapura Hospital 14:00 MOH BME		
16	5/21	Thu	10:00 Courtesy call on Department of Health, Southern Province 12:00 Provincial Training Center 14:00 Elpitiya BH		
17	5/22	Fri	11:00 Tangalla BH	09:00 Investigation on Kalapitiya TH	
			15:00 Kalapitiya TH		
18	5/23	Sat	Documentation/Team discussion		
19	5/24	Sun	Documentation/Team discussion		
20	5/25	Mon	10:00 National Institute of Health Sciences		
			12:30 National Hospital in Sri Lanka (Intervention Radiologist)		
			14:00 Lady Ridghway Children Hospital		
21	5/26	Tue	10:00 MRI		Market survey
			11:00 Lady Ridghway Children Hospital		
			Report to JICA		
22	5/27	Wed	Colombo 01:20 departure→(via Bangkok)→Narita		

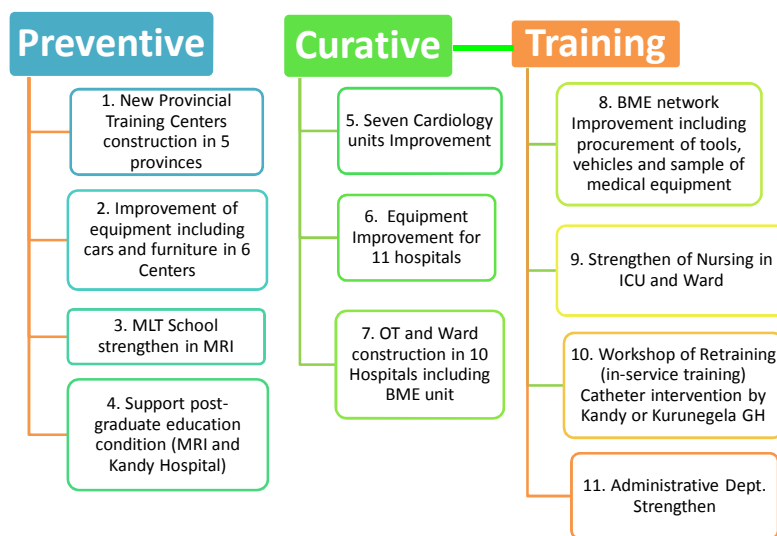
4th Field Survey

F o r t h s u r v e y		Day	Team Leader/Health Service1 (Kanakano TANIGAKI Ms.)	Health Facility Plan (Kyoko GOTO Dr.)	Medical Equipment Plan (Tamotsu NOZAKI Mr.)	Health Service 2 (Aya YAGI Ms.)
	1	Thu	Narita→(via Singapore)→Colombo Arrive on Day 2(00:15 arrival: Singapore Airline)		/	/
	2	Fri	9:00 MOH Planning 10:00 MOH BES 14:00 Medical Equipment Agent (Market Survey) 15:00 Medical Equipment Agent2 (Market Survey) Discussion the result of the Field Survey with MOH Planning			
	3	Sat	Internal Meeting and preparation on the meeting on Monday			
	4	Sun	Internal Meeting and preparation on the meeting on Monday			
	5	Mon	9:00 MOH BES 14:00 NPD 15:30 JICA 17:00 MOH Secretary			
	6	Tues	9:00 MOH Planning 10:00 MOH BES 14:00MOH PH1			
	7	Wed	Colombo 01:30 departure→(via Singapore)→Narita(17:05 arrival: Singapore Airline)			

Idea of Japanese future assistance

Health Sector Improvement Project

Image of Effect by future assistance



Outline of Project of Preventive area

New Provincial Training Center	1. 7 Construction School Buildings (Uva, Eastern, North western, North central, Southern)	2 Lecture hall 1 Auditorium 2 Tutorial Rooms 1 Kitchen and dining room	Rough Estimate by Consultant (Not decided by JICA) 1,000m ² x 7 building
	2. Procurement of Equipment and furniture for 6 schools (Uva, Eastern, Central, North western, North central, Southern)	Manikins for CPR and neo natal care, Immunization practice tools, PC for students, Audio education equipment, Furniture(Tables, Chairs) Transportation Vehicles for MOH	
Medical Laboratory School in MRI	3. Procurement Equipment	Binocular Microscope Spectrophotometer Refrigerator, Osmometer, PH meter, water bath, Urine analyzer etc.	

Outline of Project of Preventive area

4. Support post-graduate education condition	MRI	Construction BSL-3 Building	
	• Procurement Equipment	DNA Sequencer (1) LC-MS/Ms (1) GC/MS (1) Biohazard cabinet II	
	Kandy GH • Construction of Laboratory Unit	• 5 stories building for Microbiology, Biochemistry, Histopathology Hematology, Molecular biology	2,800 m ² x 5 Floors = 14,000m ²
	• Procurement of Laboratory Equipment	• Clean Bench • Replacement of old Laboratory analyzer	

Outline of Project of Curative area

Cardiology	5. Four Cardiology Intervention Units Improvement (Badulla, Trincomalee, *Batticaloa, Lady Ridgeway (LRH))	Construction of Cathe labo; 520m ^{2x} - Angio room and other related rooms, 40m ² x 2 rooms, other rooms/ 200m ² , <u>Total 280m²</u> - Ward 20 beds = <u>240m²</u>	
	6. Procurement of Equipment (9 hospitals) Kandy GH, Badulla, Anuradhapura, Trincomalee, Batticaloa, Karapitiya GH, NHSL,LRH, Sri Jayawardanapura GH	9 Cardio Catheter Systems (Rotational Angiography) Detector, IVUS, Patient's table, Recording system, Intravenous Ultrasounds, Fractional Flow reserve, Ventilator Anesthetic machine (for children) C-Arm etc.	
	10. Workshop of Retraining (in-service training) Catheter intervention for Cardiologist by Kandy or Kurunegela GH		Supplementary Technical Cooperation budget

Outline of Project of Curative area

7. OT and Ward construction in 10 Hospitals including BME unit	• OT Construction Anuradhapura, Badulla, Karapitiya, Trincomalee, RLH, NHSL, Kandy TH, Sri Jayawardanapura, Batticaloa, Polonnaruwa Kurunegala, Peradeniya children	Construction of two operating rooms by Sri Lankan construction company (Area of the building; 280m ² - Operating room and other related rooms, 40m ² x 2 rooms , other rooms/ 200m ² , <u>280m²</u>
	• Procurement of Equipment for OT (Same as above)	<ul style="list-style-type: none"> • Anesthetic Machine, Suction machine • Operation Table, Patient Monitor • Defibrillator, Ventilator
	• ICU and Ward construction(Same as above)	Construction of ICU (5 beds) and surgical company (Area of the building; <u>720m²</u> - ICU and other related rooms, 16m ² x 5 beds, other rooms/ 160m ² , <u>280m²</u> - Ward 12m ² /1 bed x 40 beds = <u>240m²</u> - <u>BME Units 200M²</u>
	• Procurement of Equipment for ICU and Ward(Same as above)	<ul style="list-style-type: none"> • Patients bed, (40) Patient monitor (25) • Central Monitor system(1), • Suction machine (10), Ventilator (10), Infusion pump, Syringe Pump
	• Diagnostic Radiography	<ul style="list-style-type: none"> • MRI and/or CT • Digital X ray machine (1/1Hp) • CR system? • Ultrasounds (3D, Doppler) • PACS (Picture Archiving and Communication System)

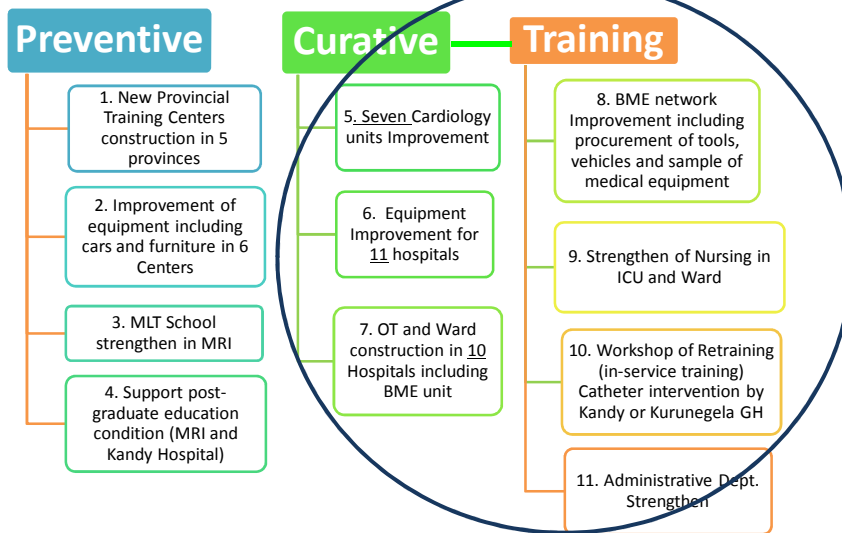
Outline of Project of Training area

(4) Negombo GH renewal	• The Plan will be submitted from the hospital	
8. BME network Improvement including procurement of tools, vehicles and sample of medical equipment	<ul style="list-style-type: none"> • Basic engineer tools • Testing Equipment which will e procured by Japanese assistance , such as ECG, Monitor, Defibrillation, Suction machine, Ventilator, Infusion pump, Syringe pump , Ultrasound phantom, KV meter etc • PC and printer for BME units • Vehicles 	Supplementary Technical Cooperation budget
9. Strengthen of Nursing in ICU and Ward	<ul style="list-style-type: none"> • 10 Hospitals 	Supplementary Technical Cooperation budget
10. Administrative Dept. Strengthen	<ul style="list-style-type: none"> • PC and printer for 10 Hospitals 	Supplementary Technical Cooperation budget

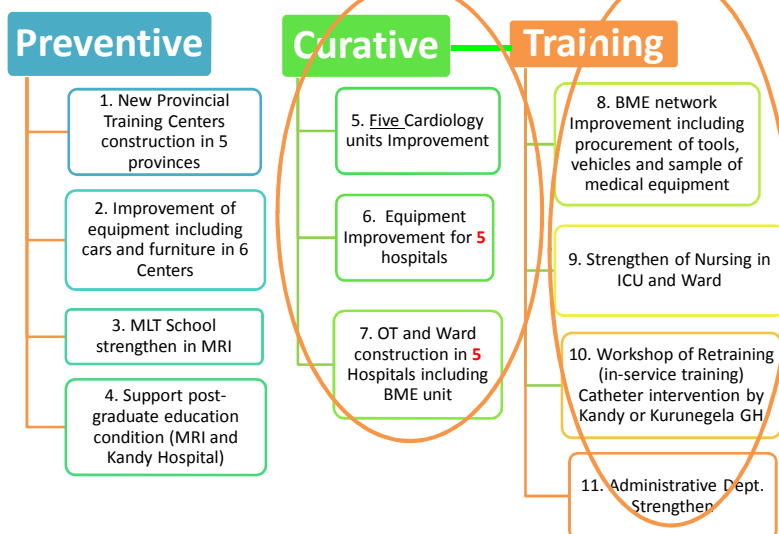
Yen Loan Project Planning

- Rough estimate Budget is a big amount
- When you will need to reduce the budget, how you make a priority of the Plan?
 - By allocation of Budget?
 - or
 - By Urgent situation?
 - or
 - By target hospital?
 - or
 - By Province ?

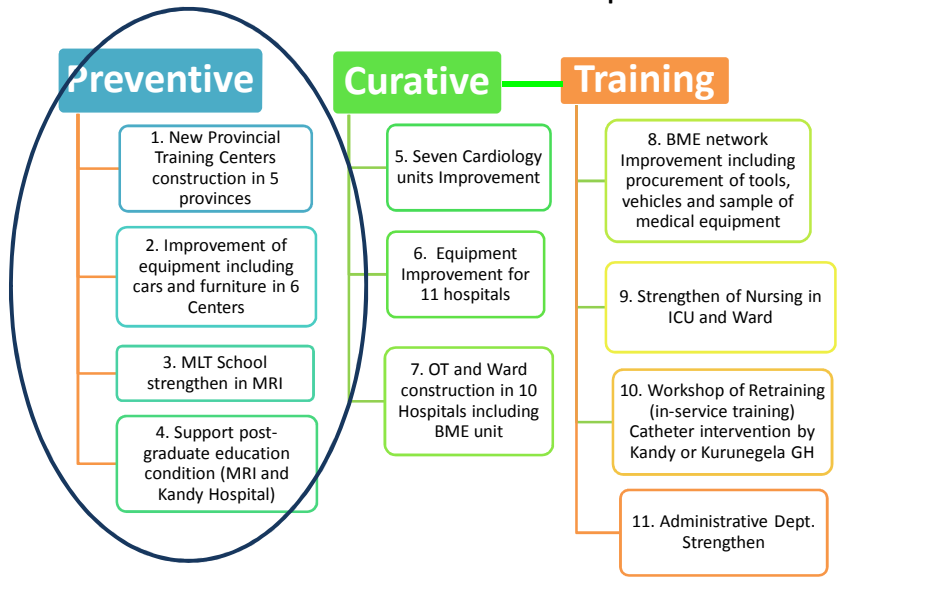
Planning based on Priority by Improvement of Medical Service and Reduce Burden of hospitals



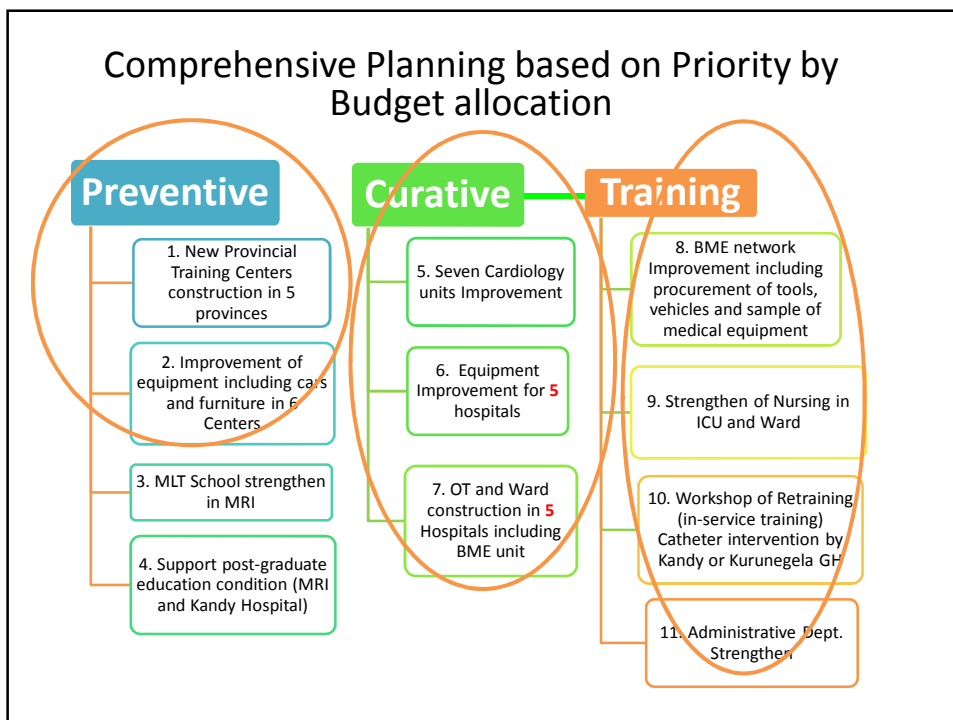
Comprehensive Planning based on Priority by Budget allocation



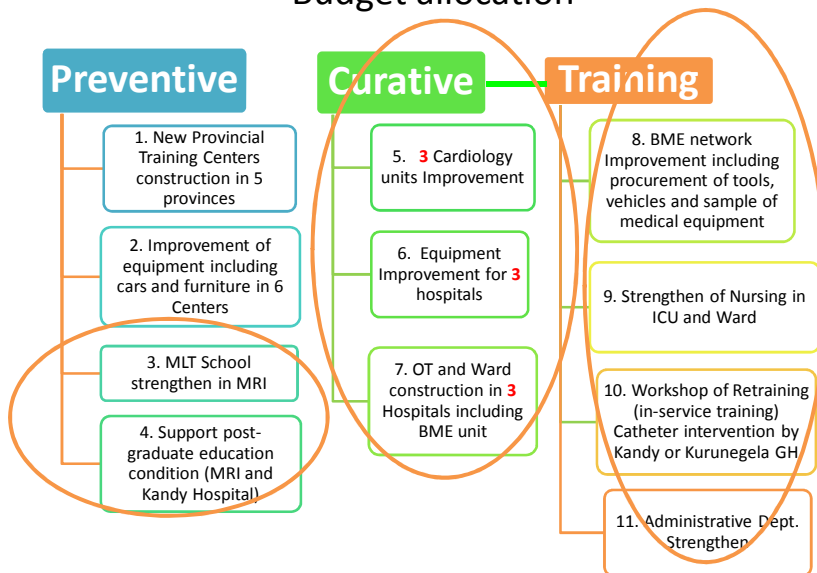
Planning based on Priority by Improvement Human resource development



Comprehensive Planning based on Priority by Budget allocation

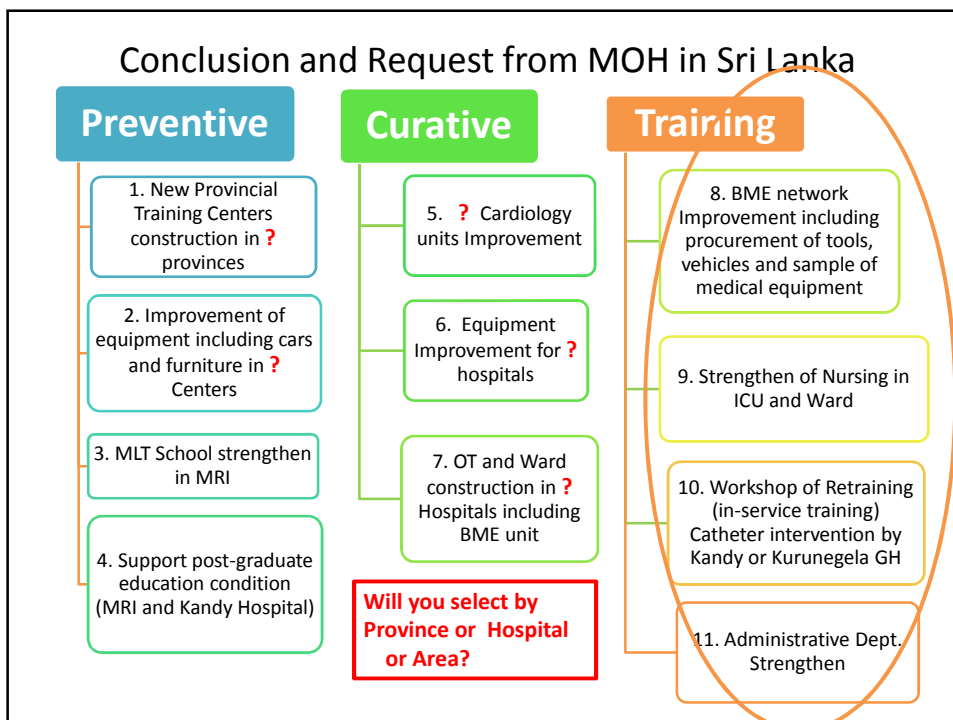
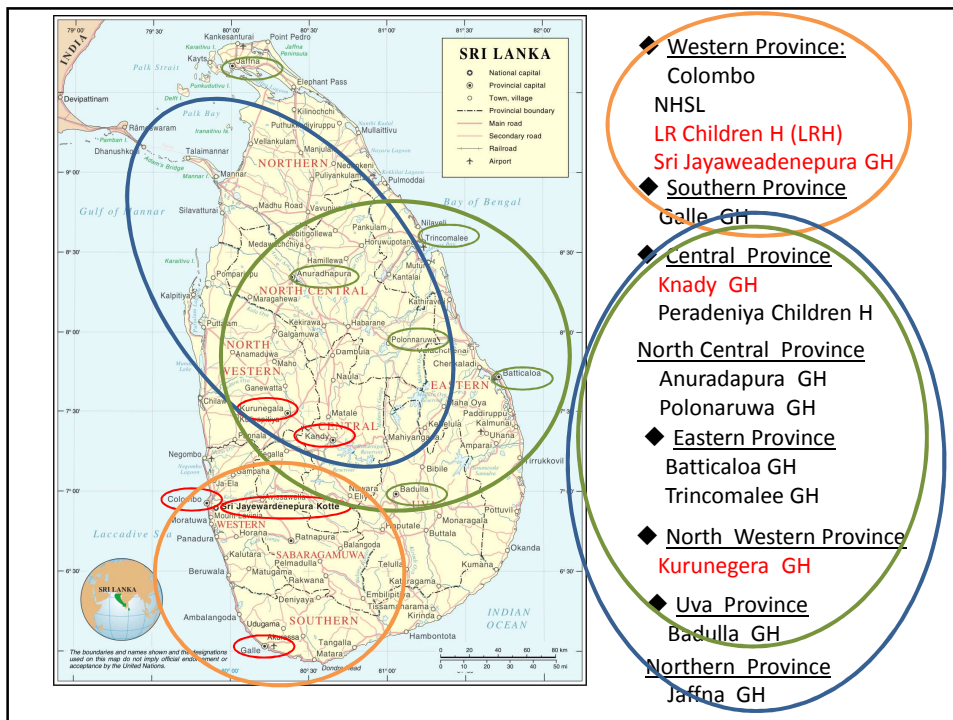


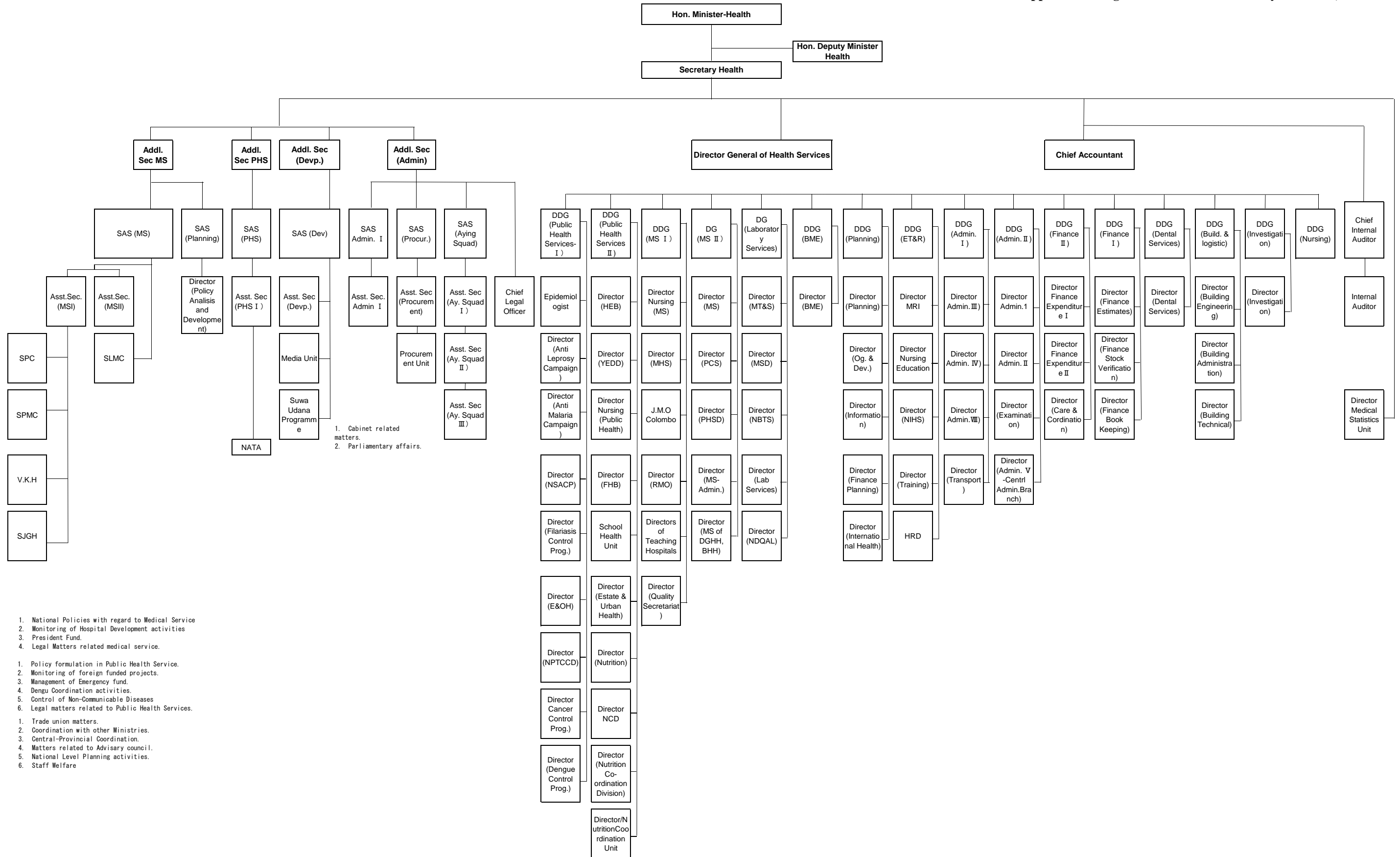
Comprehensive Planning based on Priority by Budget allocation



Reduce the target Hospitals? For example

Cardiology	5. Three Cardiology Intervention Units Improvement (Badulla, Anuradhapura , Trincomalee , * Batticaloa , Kurunegala , Karapitiya GH, Lady Ridgeway (LRH))
	6. Procurement of Equipment (5 hospitals) Kandy GH, Badulla, Anuradhapura , Trincomalee , Batticaloa , Kurunegala, Peradeniya Pediatric H , Karapitiya GH, NHSL , LRH, Sri Jayawardanapura GH
7. OT and Ward construction in 4 Hospitals including BME unit	<ul style="list-style-type: none"> • Four OTs Construction Anuradhapura, Badulla, Karapitiya, Trincomalee, Polonnaruwa, LRH, Sri Jayawardanapura, *Kurunegala, Batticaloa, (JAFFNA)





- 1. National Policies with regard to Medical Service
 - 2. Monitoring of Hospital Development activities
 - 3. President Fund.
 - 4. Legal Matters related medical service.
-
- 1. Policy formulation in Public Health Service.
 - 2. Monitoring of foreign funded projects.
 - 3. Management of Emergency fund.
 - 4. Dengu Coordination activities.
 - 5. Control of Non-Communicable Diseases
 - 6. Legal matters related to Public Health Services.
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- 1. Trade union matters.
 - 2. Coordination with other Ministries.
 - 3. Central-Provincial Coordination.
 - 4. Matters related to Advisory council.
 - 5. National Level Planning activities.
 - 6. Staff Welfare