

THE SOCIALIST REPUBLIC OF VIET NAM  
MINISTRY OF HEALTH

SPECIAL ASSISTANCE FOR PROJECT FORMATION  
FOR  
PROVINCIAL AND REGIONAL  
HOSPITAL DEVELOPMENT PROJECT  
(PHASE II)  
IN  
THE SOCIALIST REPUBLIC OF VIET NAM

FINAL REPORT

JANUARY 2011

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

SYSTEM SCIENCE CONSULTANTS INC.

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Map of Project Survey Site



**Ha Giang Provincial General Hospital**



**Son Tay Inter-district General Hospital**



**Bac Giang Provincial General Hospital**



**Nam Dinh Provincial Obstetrics Hospital**



**Ha Nam Provincial General Hospital**

**Candidate Hospitals (1)**





**Thai Binh Provincial Pediatric Hospital**



**Nghe An Provincial Pediatric Hospital**



**Thanh Hoa Provincial Pediatric Hospital**



**Lam Dong Provincial General Hospital**



**Binh Dinh Provincial General Hospital**



**Ninh Thuan Provincial General Hospital**



**Sa Dec Inter-district General Hospital**



**Tay Ninh Provincial General Hospital**



**C Da Nang Central General Hospital**



**Tien Giang Provincial Obstetric Hospital**

**Candidate Hospitals (3)**

## ABBREVIATIONS

ADB	Asian Development Bank
CBR	Crude Birth Rate
CIDA	Canadian International Development Agency
CPMU	Central Project Management Unit, Ministry of Health
DAC	Development Assistance Committee of Organization for Economic Cooperation and Development (OECD) of United Nations
DOH	Department of Health at each province
DOHA	Direction Office of Healthcare Activity
EIRR	Economic Internal Rate of Return
EU	European Union
FIRR	Financial Internal Rate of Return
GDP	Gross Domestic Product
GGE	General Government Expenditure
GNI	Gross National Income
GoV	Government of Vietnam
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH
HCFP	Healthcare Fund for the Poor
HPIU	Hospital Project Implementation Unit
ICB	International Competitive Bidding
IMF	International Monetary Fund
IMR	Infant Mortality Rate
IT	Information Technology
JAHR	Joint Annual Health Sector Review
JICA	Japan International Cooperation Agency
JPY	Japanese Yen
KfW	Kreditanstalt für Wiederaufbau
LAN	Local Area Network
LCB	Local Competitive Bidding
M & E	Monitoring and Evaluation
MMR	Maternal Mortality Rate
MOH	Ministry of Health, Vietnam
MOLISA	Ministry of Labor, Invalids and Social Affairs
NGO	Non-Governmental Organization
NPV	Net Present Value
Ob/Gyn	Obstetrics and Gynecology
ODA	Official Development Assistance
PGH	Provincial General Hospital
PPC	Provincial People's Committee
SAPROF	Special Assistance for Project Formation
SIDA	Swedish International Development Cooperation Agency
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
USD	United States Dollar
VND	Vietnamese Dong
VSS	Vietnam Social Security System
WB	World Bank
WHO	World Health Organization



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Map of project site

Photos of project site

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## **Exchange rate (As of October 2010)**

1 USD = 85.5 JPY

1 VND = 0.00461 JPY

## **Chapter 1 Introduction**

# 1. Introduction

This Final Report (hereinafter referred to as “the Report”) was prepared by consultant team of System Science Consultants Inc. for the Special Assistance for Project Formation (SAPROF) for the Regional and Provincial Hospital Development Project Phase-II (hereinafter referred to as “the Project”). The Report describes the information, findings, result of analysis and recommended implementation program of the Project. All data, information and recommendations are reported herein for the discussions among the parties concerned on the realization of the components of the Project.

## 1.1 Background of SAPROF

In Vietnam, the “Vietnam’s Strategy for Socio-Economic Development in the period 2001-2010” promulgated in March 2001 is being implemented, and the “Strategy of Protection and Care of the People’s Health for the Period of 2001-2010”, is in practice, according to the Decision of Prime Minister in March 2001. The “Strategy of Protection and Care of the People’s Health” confirms: technical decentralization and enhancement of strict regulations on reference to higher level facility; improvement of regional healthcare services for the patients with investment on equipment and human resources and the number of patient bed, where the rate of patient bed is low, in the provinces. Such strategies of MOH, the effect on economic growth, and support from international donors have contributed to constant improvement of basic healthcare indicators. As a result, Vietnam has demonstrated good performance in comparison with other countries at the same level of per capita income.

However, such improvement has been witnessed mainly in the urban area. In many provinces, medical facilities, equipment and personnel are still insufficient both quantitatively and qualitatively. Widening gap between urban and rural area is becoming as one of the major issues in health sector in Vietnam. In this regard, the Government of Vietnam (GoV) requested the Government of Japan for ODA loan assistance for further improvement of the sector in the country.

Upon request of GoV for ODA loan to improve the Regional and Provincial hospitals, JICA (formerly Japan Bank for International Cooperation) conducted a Pilot Studies for Project Formulation for Health Service Improvement, from February to June 2005, and came up with the plan of Provincial and Regional Hospitals Development Project (Phase I). The Phase I Project with an objective to improve 1 Regional General Hospital in Thai Nguyen Province and 2 Provincial General Hospitals in Lang Son Province and Ha Tinh Province started with the Yen Loan Agreement concluded in March 2006, between JICA and the GoV. With all the procured equipment delivered and the trainings done to the hospital staffs, the Phase I Project was completed by the end of November 2010.

The GoV, during implementation of the Phase I Project, requested to JICA for further support to expand assistance to provincial hospitals with ODA Loan as the Phase II Project. JICA, although understanding the needs for proposed Phase II project, found the need to review of the overall project design including the assessment of the feasibility of each candidate hospitals. Therefore, JICA and GoV agreed to conduct Special Assistance for Project Formation (SAPROF) to formulate the project in a more sustainable and effective manner in order to ensure expected benefits to be achieved satisfactory.

## 1.2 General outline of the study

### 1.2.1 Objectives of the study

This SAPROF was conducted to formulate the Phase II Project, continued from Phase I (Phase I Project), in the most suitable way to achieve such objective. The main objective of Phase II project is to consolidate regional healthcare system through reinforcing capacity of Provincial hospitals with particular focus on referral system and human resource development. It also aims to improve quality of medical service and tackle the current diseases and several non-infectious diseases which are increasing in the Provinces, and thereby contributing to enhancement of health of local people.

### 1.2.2 Study area

Following 15 study areas were decided based on mutual agreement between MOH and JICA. Ha Giang Province, Bac Giang Province, Ha Noi Capital, Ha Nam Province, Nam Dinh Province, Thai Binh Province, Thanh Hoa Province, Nghe An Province, Da Nang City, Binh Dinh Province, Lam Dong Province, Ninh Thuan Province, Tay Ninh Province, Dong Thap Province, Tien Giang Province

## 1.3 Implementation of the study

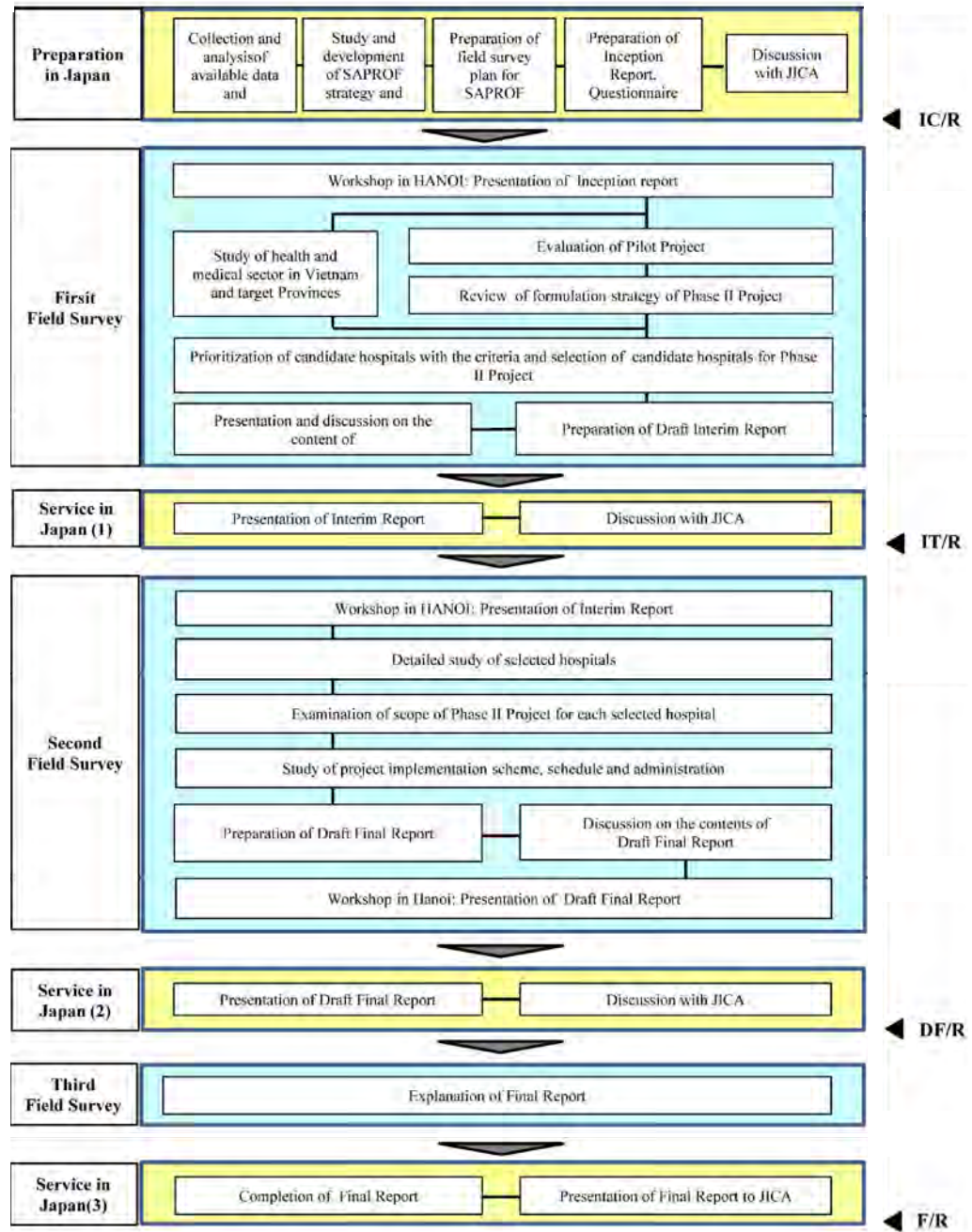
The SAPROF started in March 2010 and completed in January 2011, which comprised three parts shown below.

- (1) Evaluation and analysis of Phase I Project
- (2) Plenary study on all candidate hospitals to screen the current conditions and future hospital management plans
- (3) Detailed Study on selected hospitals to examine the project scope, components implementation plan and Monitoring and Evaluation (M&E) scheme of Phase II project

The target hospitals for Phase II Project were finalized through 2 phases of the field study. The first phase was conducted as a plenary study to screen all candidate hospitals, and the second phase for the detailed study was conducted to further examine the selected hospitals. Throughout the two phases, evaluation of Phase I Project was also conducted in order to collect



lessons learned. Detailed flow of the study is shown in the next page.



IC/R: Inception Report, IT/R: Interim Report, DF/R: Draft Final Report, F/R: Final Report

Figure 1a: Flow Chart of the SAPROF

#### 1.4 Composition and assignment of the study team

Consultants are composed of international and local consultants. Local consultants assist international consultants, under the instructions of international consultants, in documents translation and interpretation between Vietnamese and English languages, giving technical information and advice, making arrangements of appointment and meetings and others.

SAPROF team comprises of the following experts.

Position	Name
Team Leader/Medical and Healthcare Service Expert(1)	Mr. Shuji Noguchi
Health and Medical Service Specialist (2)	Dr. Toshimasa Nishiyama
Medical Equipment and Facility Specialist	Mr. Kenji Okada
Health Education/Training Specialist	Dr. Takeo Mori
Hospital Management Specialist	Dr. Maria Cristina Bautista
Environment Specialist	Mr. Hirotaka Koizumi

Figure 1b: Composition and Assignment of the Study Team

## **Chapter 2 Health and medical sector in Vietnam**

## 2. Health sector in Vietnam

### 2.1 Socio-economic conditions and health expenditure

Vietnam is one of the fastest growing economies in Asia, with annual rates of growth registered around 7.0 percent in the last decade. Affected by the global economic downturn, the Vietnamese economy showed a sharp decline in GDP growth in 2009, although still at a robust 5.2 percent annual growth. This however is a sharp drop from the figure in 2007 which was at nearly 9 percent (Table 2a). Inflation surged at the height of the global economic crises, which reached double digit at 23%. In 2009, it appeared to have been reined in prices to 6.9%, with 2010 expected to register 10% inflation. Inequality or income distribution is not well tracked, but it is expected to worsen during inflationary periods and the economy transitions from ‘low income’ to ‘lower middle income’ status. Poverty levels however have continued to decline in the past three years, which the Asian Development Report (ADB Outlook, 2010) report as “suggesting the positive impact of government support programs”.

Table 2a: Economic Indicators, Vietnam

	2007	2008	2009	Average of 2000 – 2007
Annual GDP Growth (average, %) (A)	8.5	6.23	5.2	7.2
Annual Inflation (average, %) (B)	8.3	23.0	6.9	6-8
GDP Per capita, current prices, US\$	832(C)	890(C)	1,000(D)	-
GNI Ratio (E)	N/A	58 (Atlas method)	N/A	N/A
% of Population below national poverty line (F)	21.85	13.4	12.3	15.85

Source:

(A) Asian Development Bank, Key Indicators Asia and the Pacific 2009

(B) UNESCAP, Economic and Social Survey of Asia and the Pacific 2010, Statistical Annex

(C) General statistic Office, Vietnam

(D) Estimation from IMF for GDP and exchange rate data, and UNFPA for population data

(E) Vietnam at a Glance (The World Bank Group 9/28/2007)

(F) Ministry of Labor, Invalids and Social Affairs (MOLISA), web site

The structure of the economy as shown in Table 2b shows a changing economic landscape, with industry having the biggest share of GDP, followed by services. Agriculture comprised slightly over a fifth of domestic production, but absorbing more than half of the employed in the economy. Industry is the largest source of income, but the lowest share of employment. Industry sectors include food production and beverage, metal and non-metallic products, chemical and textiles and clothing apparel. With a large proportion of the population remaining in agriculture, there is likely a high level of underemployment, as unemployment rates are registered to be low at around 2.0 percent. The service sector includes retail trade, banking and finance, education, construction, among others.



Table 2b: Structure of the Economy, as Percent of GDP, 2008

	As % of GDP	As % of Employed
Agriculture	22.1	53
Industry	39.7	14
Services	38.2	33

Source: Asian Development Bank, Key Indicators for Asia and the Pacific 2009

Table 2c shows Vietnam having a population of 86 million, and a population growth rate of 1.2 percent. The majority or 65% of the population are in the economically active age group (15-59 years), and a quarter below 15 years old. There is a relatively lower burden of ageing population at 10 percent. Vietnam remains a predominantly rural-based economy, along with the changing structure of the economy, urbanization is expected to rise rapidly as lack of jobs in the countryside push more people to the cities. There are 54 ethnic groups in the country, with the Kinh comprising the majority. Ethnic minorities are found across the country, many residing in mountainous and remote areas.

Table 2c: Population Profile

		2006	2007	2008
Population (thousand)		84,136.8	85,171.7	86,210.8
Population growth rate (%)		-	1.22	1.21
Population by age group (%)	<15 years old	26.4	25.5	25.1
	15-59 years old	64.5	65.0	65.1
	> 60 years old	9.2	9.5	9.9
Percent of Permanent Residents (A)	Urban	27%	N/A	N/A
	Rural	73%	N/A	N/A

Sources: Health Statistics Yearbook 2006-2008

(A) Vietnam at glance (The World Bank Group)

Health expenditure as a proportion of GDP in Vietnam was 7.3% in 2008; which was high in terms of a regional comparison (WHO Western Pacific Region)<sup>1</sup> where the average was 6.5%.

Besides, Health sector expenditure of the GoV was 8.7% of general government expenditures (GGE), which is low in terms of the region's average. This low share of health in the government budget is reflected in a low share of government in over-all health spending. GGE on health of total expenditure on health is around 40%, and private expenditure is around 60%. Nearly a third of government spending is through the social security system, or the Vietnam Social Security System (VSS). Private health expenditures were largely (90 percent) out of pocket and only a small proportion was through private health insurance.

## 2.2 Current situation in health sector

### 2.2.1 Major indicators of health sector

<sup>1</sup> Cambodia (6.6%), Japan (8.1%), Lao (4.0%), Malaysia (4.3%), Philippines (3.8%), Singapore (4.0%)

The country has been making steady and rapid improvements in major indicators of health, accompanied by the increased expenditures based on the rapid economic growth. Some of which are given below.

Table 2d: Major Health Indicators of Vietnam (in 2008)

Population (thousand)	86,211	No. of public beds per 10,000 inhabitants	19.3
Annual population growth rate (%)	1.19		
GDP per capita (US\$, A)	1,010	No. of doctors per 10,000 inhabitants	6.52
Poor house hold rate (%)	14.87	Life expectancy	73
Population covered by insurance (%)	43.76	IMR (per1,000 live births)	12
Health budget (Million VND)	13,727.7	MMR (per 100,000 live births)	56
Health budget in state budget expenditure (%)	8.7	Under-5 malnutrition (%)	19.9
Health budget in GDP (%)	7.3		
Major cause of morbidity	1. Pneumonia 2. Acute pharyngitis and tonsillitis 3. Acute bronchitis and bronchiolitis	Major cause of mortality	1. Intracranial injury 2. HIV/AIDS 3. Pneumonia 4. Intra-cerebral hemorrhage

Source: Health Statistics Yearbook (2008), (A) World Bank (2009)

Table 2e: Comparison between 2000 and 2008 in Vietnam

	2000	2008
Life expectancy	70	73
IMR	15	12
MMR	91	56

Source: Global Health Observatory, WHO

Table 2f: Major Health Indicators of Asian Countries, 2008

	Indonesia	Philippines	Lao PDR	Cambodia	Vietnam
Population (million)	240	90	6	15	86
GDP per capita (2007,US\$)	1,918	1,640	684	597	832
Life expectancy	67	70	62	62	73
IMR(per1,000)	31	26	48	69	12
MMR(per 100,000)	240	94	580	290	56
Health budget in state budget expenditure (%)	11.2	8.7	3.7	11.2.0	8.7

Source: WHO: Global Health Observatory

## 2.2.2 Current situation of hospitals and doctors

Health facilities in Vietnam in 2008 are shown in Table 2g. The total number of beds per 10,000 inhabitants is 25.7, but without communal station beds, the coverage of hospitals beds would be 20. This is well within government targets for 2010. However, the distribution of these facilities and beds across the country is not likely to be even. Hospitals are mostly public, with less than 1 percent private. However private sector appeared to be rising fast, as 2007 figures were reported to be around 40 plus private facilities. This would suggest a doubling of number of private facilities in 1 year; but still far short of the 2010 target of 10-15% coverage of private beds set in the Health Sector Master Plan (2010-2020) (No. 153/2006/QD-TTg). Central/

MOH-managed hospitals comprised less than 1 percent, but had more beds on average. Small communal health stations, with around 5 beds, were the most numerous of the facilities.

Table 2g: Number of Hospitals and Beds, 2008

	Number	No. of Bed	Average No. of Bed	Beds per 10,000 Inhabitants (A)
Public Medical Facilities	12,713	216,266	-	25.1
Public Hospital	1,793	162,462	-	18.9
Central Hospital (Management by MOH)	44	17,060	387.7	-
Provincial Hospital	383	85,250	222.6	-
District Hospital	1,366	60,152	44.0	-
Other Public Medical Facilities				
Commune Health Station	10,156	45,994	4.5	-
Other Branches	764	7,810	10.2	-
Private Hospital	83	5,429	65.4	-
Grand Total	12,796	221,695	-	25.7

Source: Health Statistics Yearbook 2008, (A) Population in 2008: 86,210,000

Number of beds has been increasing for around last ten years. Although the number of beds per inhabitants remained on the same level until 2005, an upward trend began recently. This is attributed to the higher growth rate of population than increase rate of the number of beds until 2002. The significant rise of rate of beds in these years contributes to this upward trend

The number of bed by level of hospital shows the reinforcement on the foothold hospitals such as central and provincial level hospitals are focused to cope up with the patient demand, and those of upper class hospitals show higher increasing rates.

Table 2h: Number of Beds by Level, 1999-2008

	1999	2002	2005	2008	Increased Ratio (2008/1999)
Central	11,140	12,180	13,170	17,060	1.53
Provincial	57,431	61,886	71,876	85,250	1.48
District	46,942	48,493	55,085	60,152	1.28
Communal Stations	42,464	46,101	45,176	45,994	1.08
Other Branches	16,100	9,725	9,406	7,810	0.49
Total, Public Managed	174,077	178,385	194,713	216,266	1.24
Population (thousand)	76,328	79,727	83,120	86,211	1.13
No. of Beds per 10,000 Inhabitants	22.8	22.4	23.4	25.1	1.10

Source: Health Statistics Year Book 1999-2008

The definite number of doctors and per 10,000 populations has been increasing for the last decade, with the stable increase by 5,000 to 6,000 in the 3 years from 2005. Being different from the expansion in the number of beds, the number of doctors particularly at the district and commune levels shows bigger increase. This trend seems to correspond to the expanded access

to the health services.

Table 2i: Number of Doctors by Level, 1999-2008

	1999	2002	2005	2008	Increased Ratio (2008/1999)
Central	6,926	7,623	8,878	10,627	1.53
Provincial	15,233	17,094	18,901	21,648	1.42
District	11,990	12,857	13,837	19,442	1.62
Communal Stations	2,955	5,447	6,335	6,957	2.35
Other Branches	1,936	1,807	1,928	2,062	1.07
Total	39,294	45,073	50,106	56,208	1.43
Population (thousand)	76,328	79,727	83,120	86,211	1.13
No. of Doctors per 10,000 Inhabitants	5.1	5.7	6.0	6.5	1.27

Source: Health Statistics Year Book 1999-2008

## 2.3 General policies, strategies and development plans in health sector

### 2.3.1 Five Year Socio-Economic Development Plan (2006-2010)

Five Year Socio-Economic Development Plan (2006-2010) was issued with the National Assembly Resolution No.56/2006/QH11, in 2006, based on the Ten Year Socio-Economic Development Strategy (2001-2010) with Prime Minister Decision No.56/2006/QH11, assessing the achievements in the period of 2001-2005. The Resolution No.25/2006/NQ-CP recognizes that there still have been limitations in health care operation, such as; sluggish renovation and poor adaptability of medical system to the variation in disease structure; unsatisfactory quality of medical services against the inhabitants and ethnic minorities in remote areas; improper policies for the encouragement and remuneration of medical officials, doctors and nurses working in remote and disadvantaged areas; various challenges in preventive medical operation and management; health indicators sharply vary among regions, especially the ratio of neonatal mortality, children nutrition and mothers' health.

The major targets and solutions specified in the Five Year Socio-Economic Development Plan are summarized as follows.

#### 1. Major targets in 2006 – 2010

- (1) Increase average life expectancy to over 72
- (2) Decrease maternal mortality to below 60/100,000 live births
- (3) Under-1 infant mortality rate to 16
- (4) Under-5 children mortality rate to below 25
- (5) Under-5 malnutrition children to 20
- (6) Reach the number of 7 doctors and 1-1.2 pharmacists with university degree per 10,000 inhabitants
- (7) Increase hospital beds to 26 per 10,000 inhabitants

#### 2. Major measures

- (1) Invest, strengthen and improve public health care at grassroots level both in terms of infrastructure, and staff. Give priorities to grassroots health care and preventive healthcare. **Build and upgrade**



***hospitals, especially General Hospitals in provinces and districts to basically meet local peoples' demands of medical check and treatment. Gradually build wards and centers network proportionate to residences rather than administrative borders, continuing investment in specialized medical centers.***

- (2) Renovate and improve medical financial policies so as to increase public financial sources. Ensure the implementation of universal medical insurance for all people in line of diversifying insurance forms.
- (3) **The government pays for medical services for the poor people, children under 6, and the subsidized, targeted people of social policies, including officials and people in the armed forces through medical insurance.** Implement the policy to partially assist near-poor people and farmers in getting medical insurance.

### 2.3.2 Health Sector Master Plan (2010-2020)

In June 2006, the Health Sector Master Plan (2010-2020) was issued by the Government Decree No. 153/2006/QD-TTg. Since the issue of Master Plan, the hospital improvements have been implemented basically in compliance with this Master Plan.

This Mater Plan is well aligned to continuously diversify the strategies to meet all indicators that have been indicated in the strategy for the period of 2001-2010 stated in the Ten Year Socio-Economic Development Strategy (2001-2010) with Prime Minister Decision No. 35/2001/QD-TTg, providing the targets of facility improvement, human resources development, financial solutions, and environment management, in each level of central, regional, province, inter-district and district and communes, as well as the road map for realization of planning.

The major objectives and road map specified in this Master Plan are summarized as follows.

#### 1. Major specific objectives

- (1) Building new hospitals in line with the general planning and local socio-economic development planning.

Ensuring adequate conditions of medical waste treatment and sterilization at hospitals so that medical examination and treatment activities shall not affect the people and their living environment.

- (2) Striving for the target by 2010, the number of hospital beds per 10,000 inhabitants (excluding commune health station beds) will reach 20.5(including 2 private hospital beds) and by 2020, 25(including 5 private hospital beds.)

#### 2. Road map for realization of planning

(2008-2010 period)

- **To complete the construction of district and regional general hospitals. To accelerate investment in the building of regional general hospitals and provincial hospitals and three specialized health centers.**

- To continue upgrading provincial preventive medicine centers.

- To continue investing in projects which are not yet completed in the 2006-2007 period and invest in other projects included in the master plan up to 2010.

- Others

(2011-2020 period)

- To invest in the development of specialized hospital in Can Tho

- **To continue investing in further improving specialized health centers, regional hi-tech health centers and central and local health establishments**

More detailed development plan for 2020 was issued, based on the above Master Plan. This was approved in February 2008 with the Prime Minister's Decision No. 30/2008/QD-TTg.

Specific objects and targets are as follows.

(Specific Objectives and Targets)	
-	By 2010, 20.5 beds/10,000 inhabitants (of which 2 beds are of private hospital) at minimum shall be reached, and by 2020 to 25.0 beds/10,000 inhabitants(of which 5 beds are of private hospital)
-	By 2010, at least 80% of healthcare facilities carry out techniques as specified in the “List of medical technologies for examination and treatment” issued with the MOH Decision 25/2005/QD-BYT in August 2005 <sup>2</sup> .
-	By 2010, more than 80% of health facilities, and by 2020, 100% of them have waste treatment system as specified by MOH.
-	By 2010, all health facilities can do quality assurance/control for healthcare services by themselves in compliance with the regulations of MOH. By 2015, quality control/assurance shall be verified periodically at all facilities. By the end of 2010, the MOH circular” Quality Management of Vietnam Hospital” will be launched.
-	The relocation of tropical disease hospital/institute and tuberculosis center to a reasonable area will be completed by 2020.

### 2.3.3 Governmental decisions and decrees for individual issues in health sector

Along with the integrated health sector development policies and plans, individual issues are addressed in the following government decisions and decrees.

Month and Year of Issue	Main Contents
(Health and medical service)	
November 2006	Decision No. 255/2006/QD-TTg, “Approving national strategy on preventive medicine to 2010 and orientation to 2020”
March 2007	Decision No. 43/2007/QD-TTg, “Approving proposal on development of pharmaceutical industry and model of drug distribution”
June 2007	Decree No. 108/2007/ND-CP, “Guidance on implementation of Law on HIV/AIDS prevention and control”
November 2007	Decision No. 170/2007/QD-TTg, “Approving national target program on population and family planning 2006-2010”
(Administration organization and decentralization)	
September 2004	Decree No. 172/2004/ND-CP, “Organization of entities belonging to District People’s Committee” by establishing District Health Bureau to take governmental management of healthcare in the District
April 2006	Government Decree No. 43/2006/ND-CP “Providing mechanism of autonomy and self-responsibility for task performance, organizational apparatus, payroll and finance applicable to public non-business units” Giving autonomy and self-responsibility rights to non-business units to organize works, and to rearrange management structure, using staff and financial resources to complete assigned tasks; effectively use unit resources to provide high quality services; increase source of revenue in order to increase labor income step by step.
December 2007	Decree No. 188/2007/ND-CP, “Function, responsibility, power and structure of MOH”
2008	Circular No. 3/2008/TTLT-BYT-BNV, “Guidelines on functions, responsibilities, power and structure of Provincial Health Bureau, Health Department belonging to Provincial and District People’s Committee”

<sup>2</sup> List of medical technologies for examination and treatment” of MOH defines the services and fees for clinical services to be provided by central, regional, provincial and district hospitals. The services defined in the List are minimal maximum limit of services to be provided at each level of hospital, and hospital needs to have MOH approval when they plan to provide service beyond the defined limitation. Most of central, regional and provincial hospitals provides services to the maximum limit, and plan to serve better with MOH approval.

(Health financing and insurance)	
October 2002	Decree No. 139/2002/QD-TTg, "Health Care fund for the Poor(HCFP)" <ul style="list-style-type: none"> <li>▪ Primary beneficiaries (poor, those living in most disadvantaged communes, ethnic minorities in Central Highlands and 6 disadvantaged provinces in Northern Uplands), secondary beneficiaries (those incurred catastrophic healthcare cost).</li> <li>▪ Establishment of provincial HCFP</li> <li>▪ Budget allocation: 70.000 VND/person/year (State budget secures 75%, 25% mobilizes from local funds, individuals and organizations' contribution).</li> <li>▪ Implementation arrangements: procure HI cards (with premium of 50,000 VND) or employ Direct Reimbursement</li> </ul>
March 2005	Decree No. 36/2005/ND-CP, "Insurance for children under6", providing policies for free health care under 6 years of age.
May 2005	Decree No. 63/2005/ND-CP, "Health Insurance" <ul style="list-style-type: none"> <li>▪ Expanded target groups of Compulsory HI Scheme and Voluntary HI Scheme</li> <li>▪ Benefit package</li> <li>▪ Contracted providers (inclusion of private providers)</li> <li>▪ Premium (50,000 VND for the poor)</li> <li>▪ Responsibilities of concerned partners (provider, purchaser, user</li> </ul>
(Human resource development and training)	
July 2007	Decision No. 121/2007/QD-TTg, "Approving Master Plan on university and college network, 2006-2020"
November 2007	Decision No. 1544/2007/QD-TTg, "Approving proposal on training health professionals for disadvantage, in the provinces of North Central, Cuulong Delta and Central Highlands, according to special quota"
May 2008	Decision No. 1816/QD-BYT "Rotation of medical staff from higher level hospital supporting lower level hospital for improvement of quality of health services" Specific objective: <ul style="list-style-type: none"> <li>▪ Improve the quality of health examination, treatment at lower level hospital, especially in the mountainous and rural areas where has a lack of health staff.</li> <li>▪ Reduce overload of upper level hospitals, particularly central hospitals</li> <li>▪ Transfer technologies and provide on-site training to the health staff in order to improve skills of health staff at lower level hospital</li> </ul>
May 2008	Decision No. 06/2008/TT-BYT, "Guidelines on upgrading training to university and college levels"
(Management information system/IT )	
July 2001	Decision No. 122/2001/QD-TTG, "Computerized state administrative management" Program period 2001-2005 <ul style="list-style-type: none"> <li>▪ Establish computerized system in state administrative management</li> <li>▪ Construct national databases (firstly at targeted Ministries i.e. MPI, DOLISA, SBV, Customs Office, MOC, MOH, MOTE etc.)</li> <li>▪ Computerizes public services to enable state agencies to provide better service</li> <li>▪ Provide informatics training for civil servants at district and higher level</li> </ul>
(Environment management)	
1997	Decision No. 18955/1997/QD-BYT, MOH, Chapter 4
April 1999	Decision No. 2575/1999/QD-BYT, MOH, "Regulation on healthcare waste management"
2001	Decision No. 62, by Ministry of Science, Technology and Environment

In summary, for the period of 10 years from 2001, MOH has been thrusting the improvement of provincial and district general hospitals, and providing the financial support to vulnerable people in the country.

In the next 10 years from 2011, the same efforts are to be continued but generally focusing more on specialized hospitals and high-technology hospitals. Under this policy, the Government

Decree No. 43/2006/ND-CP issued in April 2006 is giving strong effect to the management of hospitals all over the country. By this Decree, all the hospitals are expected to be autonomous. They are authorized to organize works, re-arrange the management structure, using the personnel and financial resources to complete the assigned tasks. They are facing new challenges to draft improvement plans, apply and secure the budget, and undertake the implementation with their own capability.

## 2.4 Policies and plans on individual issues in health sector

### 2.4.1 Regional health system

#### (1) Basic concept of regional health system

Regional health system is designed for the realization of provision of appropriate health care services to all inhabitants when needed, utilizing limited health care resources effectively. To satisfy this purpose, it is essential to clarify roles and responsibilities of hospitals at each level and then establish a functional referral system through differentiation of functions and cooperation among them.

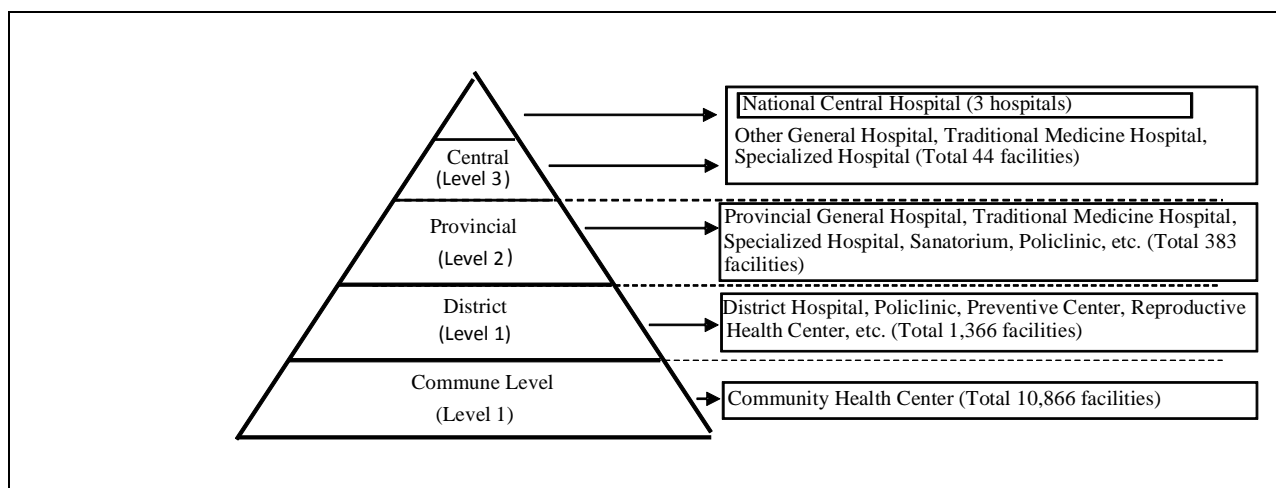
In Vietnam, a referral system is generally formulated with three-tiers, namely commune and district level, provincial level and central level. The function of the lowest tier consisting of commune and district level is near-at-hand for inhabitants with limited medical service for common disease. The function of the middle tier at provincial level is to provide specialized medical services some of which requires hospital admission. The highest tier at the central level is to provide the advanced medical services, including highly specialized treatment for particular disease.

Cooperation among hospitals at different levels is a key to enable provision of health care services effectively and to improve quality of health care service in the whole country.

#### (2) Policies for development of networks of medical examination and treatment

The commune health center as the primary medical facility and all the hospitals at District level in each District are categorized as level 1. Inter-District hospital is also included in level 1. Level 2 include all provincial level hospitals, both general hospitals and specialized hospitals, and the regional hospital. Level 3 include all the hospitals at the central level and under the management of MOH.

As for cooperation among different-level hospitals, the upper level hospitals provide supervision and trainings to the medical staffs of lower level facility staff, in line with the MOH strategy. Patients who need specialized treatment are referred from the lower level facility to upper level facility.



Source: Health Statistics Yearbook (2008)

Figure 2: Overall health system in Vietnam (as of 2008)

The Health Sector Master Plan (2010-2020) presented the development strategies of three levels of facilities in order to form medical examination and treatment networks among different technical levels, which are summarized as follows:

Level 1: consisting of Grade<sup>3</sup> III standard hospitals, such as Community Health Center, District Hospital and Inter-District General Hospital

Role	- To provide basic medical examination and treatment services and to receive patients from communities or grassroots health stations
No. of beds	- 50 to 200 beds for 1 hospital
No. of inhabitants	- 1,500 to 1,700 inhabitants for 1 bed
Development policy	- To maintain and develop regional general clinics of district hospitals in mountainous, deep-lying and remote areas

Level 2: consisting of general and specialized hospital of provinces and centrally-run cities, which meet Grade II or higher hospital standards,.

Role	- To provide medical examination and treatment services with specialized techniques and operate as practice establishments for students of medical and pharmacological schools in the provinces
No. of beds	- 300 to 800 beds for 1 hospital
No. of inhabitants	- 1,600 to 1,800 inhabitants for 1 bed
Development policy	- In provinces and centrally run cities each having a population of 1 million or more, specialized hospitals in gynecology-obstetrics, pediatrics, convalescence and functional rehabilitation hospitals may be established. - To build tuberculosis and lung diseases hospitals in provinces with the morbidity rate of 120 patients per 100,000 inhabitants or higher, with AFB-positive patients accounting for over 50%.

<sup>3</sup> Grade is rating for hospitals according to technical capacity (number of working office, number of department, etc.). On the other hand, Level is rating of hospitals according to administrative issue (number of bed, number of inhabitants for 1 bed, etc.).

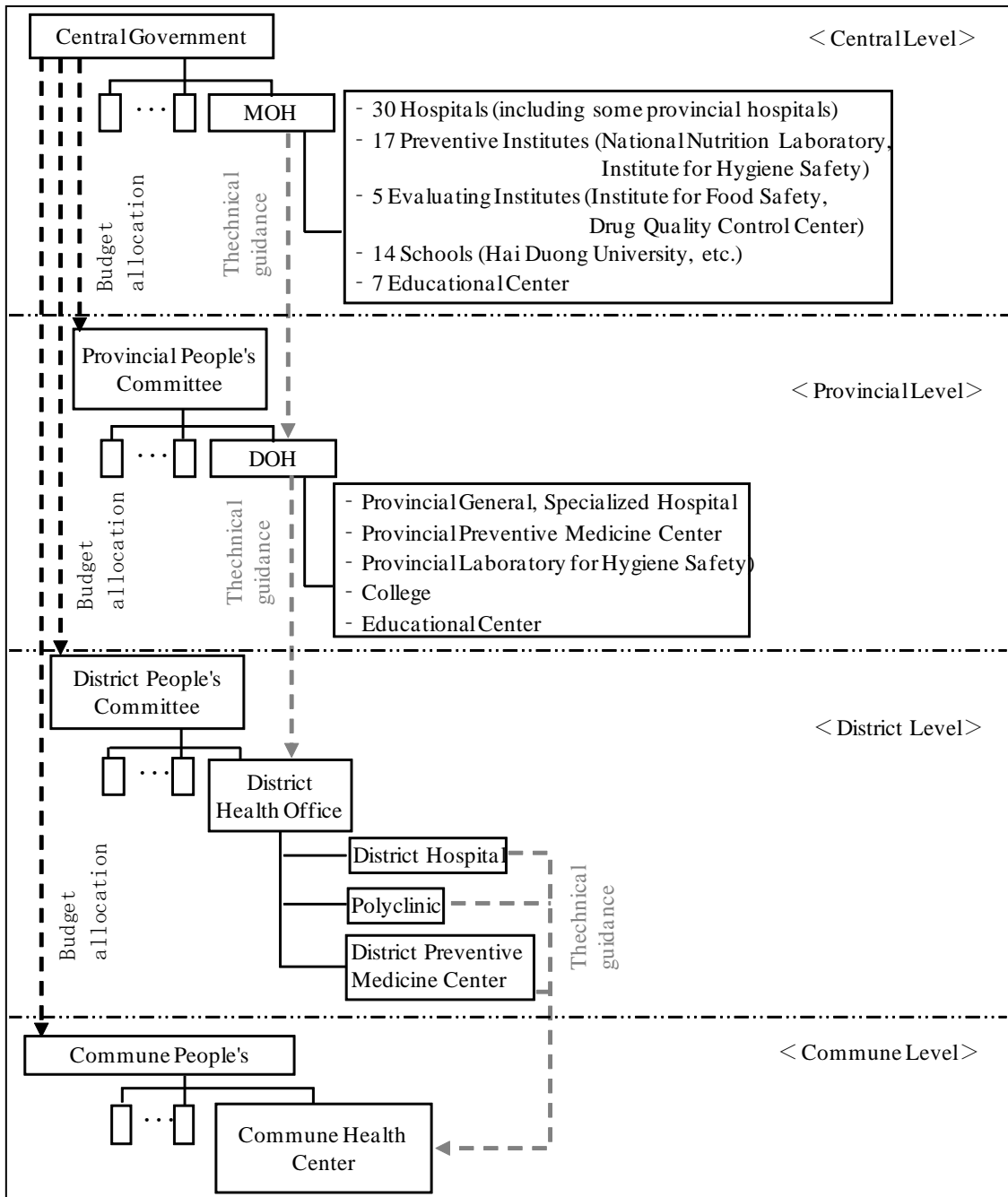
Level 3: consisting of hospitals of Grade I or special grade standard,

Role	- To provide highly specialized techniques, conduct scientific research and concurrently operate as practice establishments for students of medical and pharmaceutical universities.
No. of beds	- 500 to 1,000 beds for 1 hospital
No. of inhabitants	- 1,500 to 1,700 inhabitants for 1 bed
Development policy	<ul style="list-style-type: none"> <li>- By 2010, central general hospitals which fail to meet grade-I hospital standards shall be transferred to provincial or municipal administrations for management.</li> <li>- To continue consolidating and upgrading existing specialized hospitals and build new specialized hospitals to meet ever-increasing needs for specialized medical examination and treatment.</li> <li>- To prioritize investment in building ten regional general hospitals in Son La, Thai Nguyen, Hai Phong, Nam Dinh, Nghe An, Binh Dinh, Khanh Hoa, Dak Lak, Kien Giang and Tien Giang, capable of meeting with local demands with high professional quality and modern technology.</li> <li>- To further invest in developing and expanding patient emergency transportation networks in all residential areas.</li> </ul>

The Three-tier referral system is closely connected with health administration as shown below.

Budget for operation of health facilities at each level of the three-tiers is allocated from the central Government based on the request of local Peoples' Committee. The Department of Health (DOH) at each Province and District receives health budget allotment from the respective Peoples' Committee and allocate it for the management of the facilities in each Province and District.

For technical improvement or upgrade of health care services, the medical staff of upper level facilities will educate the ones of lower level facility with the arrangement of DOHs of each Province and District.



Source: Health Service in Vietnam Today 2006

Figure 2b: Flow Chart for Health Administration in Vietnam (as of 2006)



## 2.4.2 Facility and equipment of the medical institutions

### (1) Basic target of development

In the course of the improvement of medical facilities, the Health Sector Master Plan (2010-2020) defines the number of beds per inhabitants as the basic target of medical facilities development as shown below.

- Target in the year of 2010: 20.5 beds/10,000 inhabitants  
(of which 2 beds are of private hospital),
- Target in the year of 2020: 25.0 beds/10,000 inhabitants  
(of which 5 beds are of private hospital),

On this premise development policy and plans are formulated as shown below, so as to establish the referral system presented in the preceding section.

### (2) Development policy and plans

Basic policy on medical institutions improvement by region up to 2010 is indicated in the Five Year Socio-Economic Development Plan (2006-2010), which are presented below.

Region	Improvement policy
Northern Midland and mountainous areas	- To modernize clinical facilities for provincial and district hospitals - To establish regional hospital in Thai Nguyen for the Northeast and Son La for the Northwest
Red River Delta	- To invest in comprehensive hospital system in provinces and cities - To reduce overloads on hospitals in Ha Noi and other big cities in the region
Central Highlands	- To continue investment on new construction and improvement of clinics and hospitals, especially in remote areas and ethnic communities. - To develop medical centers in the Central Highlands by developing Dak Lak general hospital.
Southeastern region	- To improve the quality of healthcare services to meet the demands of local people, foreigners and tourists - To upgrade leading hospitals and provincial general hospitals
Mekong Delta	- To modernize existing hospitals, especially provincial level general hospitals - To accelerate the construction of such specialized facilities as those for tumors, heart disease and antenatal and obstetric clinics in Can Tho City

In 2009, general and specialized hospitals of provincial level and some central hospitals were pinpointed for improvement acceleration, with the Prime Minister Decision No. 930/2009/QD-TTg. Though this Decision does not list the Regional, Inter-District and District hospitals, it specifically addresses to provincial and some central hospitals for faster improvement. Summary of this Decision is shown in the following table.

Target	- Investment, renovation, improvement of facility, equipment procurement and improvement of capacity for medical staffs of hospitals of tuberculosis, mental diseases, oncology, pediatrics, obstetrics-pediatrics, infectious diseases at central and local level - General hospitals of mountainous, different provinces
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	<ul style="list-style-type: none"> <li>- Some regional general hospitals and Can Tho university of medicine and pharmacy to meet the demands of health care of people in the area</li> <li>- To make favorable conditions for the poor, citizens in rural, mountainous, areas to approach higher and higher quality health services</li> <li>- To help to reduce the overload situation in higher level hospitals and improve the quality of medical staffs.</li> </ul>
Investment scale	<ul style="list-style-type: none"> <li>- 78 central and provincial general hospitals</li> <li>- 55 hospitals of tuberculosis</li> <li>- 33 hospitals of pediatrics/obstetrics-pediatrics</li> <li>- 9 hospitals/centers of oncology</li> <li>- 7 departments of oncology of central general hospitals and general hospitals of big cities</li> <li>- National hospitals of tropical and infectious diseases</li> <li>- Can Tho university of medicine and pharmacy</li> </ul>
Implementation period	<ul style="list-style-type: none"> <li>- Hospitals of Tuberculosis, Mental Diseases: 2009-2011</li> <li>- Hospitals of Pediatrics, Ob/Gy, Oncology: 2009-2012</li> <li>- Provincial General Hospital: 2009-2013</li> <li>- National hospital of Tropical and Infectious Diseases: 2010-2013</li> <li>- Can Tho Medical and Pharmaceutical University: 2009-2013</li> </ul>
Investment scale	<p>Total budget for the project from 2009-2013 is around 45,280 billion VND, in which:</p> <ul style="list-style-type: none"> <li>- Government bond: 32,628 billion VND</li> <li>- Local state budget and other legal resources: 10,002 billion VND</li> <li>- ODA resource: 2,340 billion VND and others: 310 billion VND</li> </ul>

Government bond will be connected with ODA resources to invest for upgrade of provincial and regional hospitals over the country, avoiding the overlapped investment and omission of regions or medical institutions.

Regarding medical equipment, MOH issued Decision 437/QD-BYT dated 20/2/2002 which indicates the number and details of equipment for each department of medical institutions. MOH is planning to update the equipment lists to make it suitable in accordance with demands of health care and advances of medical technology.

#### 2.4.3 Human resources allocation and education

The Health Sector Master Plan (2010-2020) acknowledges the importance of development of balanced and rational human resources for the health sector and sets the policies and strategies for the human resource development to achieve the targets as follows.

- Over 7 medical doctors per 10,000 inhabitants by 2010 and over 8 medical doctors per 10,000 inhabitants by 2020;
- One university-level pharmacist per 10,000 inhabitants by 2010 and 2-2.5 university-level pharmacists per 10,000 inhabitants by 2020, with at least 01-03 university-level pharmacists at district level.
- The ratio of 3.5 convalescence workers to 1 medical doctor at medical examination and treatment establishments.

In addition, as the human resource development strategies, versatile approaches are listed up, as shown below.

- To build 2 health workers training centers in Ha Noi and Ho Chi Minh City up to the standards of those in advanced countries,
- To formulate an operation mechanism to enable these centers to pair up with foreign universities in conducting medical and administration training,
- To organize short-term training courses on managerial work for health officials, especially hospital managers,
- To formulate a scheme on training health personnel with high professional qualifications and technical skills for health service establishments at provincial and central levels,
- To develop policies on the selection, training, employment and preferential treatment of health personnel with high professional qualifications,
- To promote the overseas training of health personnel with state budget scholarships and foreign financial support,
- To encourage health personnel to attend training with their own funds to improve their professional level, among others.

In line with these strategies, Direction Office for Healthcare Activities (DOHA) was introduced and put into practice since 1998. DOHA has 3 types of activities: accepting trainees at higher level hospitals for training, organizing on-site training at lower level hospital and dispatching medical staff to lower hospitals for technical guidance. With a view to further enhancement of technical improvements at the hospitals of rural areas, MOH Decision No. 1816/QD-BYT was issued for rotation of medical staffs from higher to lower level hospitals, particularly in rural and remote areas in order to provide technical guidance for improvement of the quality of medical services.

#### 2.4.4 Hospital management

Finance is one of the most important elements of hospital management. Hospitals generally rely on 3 funding sources: government budget, health insurance and hospital fees. An examination of the over-all health budget in the public sector in terms of expenditures (Table 2j), by source showed that between 2006 and 2008, there has been an increase in health spending by 74.0%. The biggest increase was the 127.7% change in development investment expenditures comprised mainly of equipment, capital acquisitions and renovations. Expenses for training, under “Other expenditures” including staff training and management also rose by a high of 76.7%.

The same table indicates that health spending remained dependent on government budget at just slightly below 50%, followed by health insurance (33.1% share in 2008) which grew fastest

among the revenue sources. Hospital fees or user charges grew at 32.5% but was a declining share of revenue at 14.6%, down from 17.6% in 2006.

Table 2j: Health Expenditure by Public Sector (Budget), Vietnam 2006/2008

	2006 (Billion VND)	Percentage Share (%)	2008 (Billion VND)	Percentage Share (%)	Rate of Change
A. Total Health Expenditures	24,694	100.0	43,048	100	74.3
1) Treatment & Prevention of recurrent nature	19,100	77.3	30,580	71.0	60.1
2) Development Investment Expenditures	5,063	20.5	11,530	26.8	127.7
3) Other Public Expenditures incl. management	531	2.1	938	2.2	76.7
B. Expenditures Based on Source	19,100	100.0	30,580	100	60.1
1) Government Budget	9,303	48.7	15,067	49.3	62.0
2) Hospital Fees	3,370	17.6	4,464	14.6	32.5
3) Health Insurance	5,631	29.5	1,0114	33.1	79.6
4) Others	386	2.0	435	1.4	12.6
5) Aid and Loans	410	2.1	500	1.6	22.0

Source: Health Statistics Yearbook 2006 and 2008

The over-all increase in government funding for health services during the period could be attributed to the policy changes that were put in effect since 2006. The latest Joint Annual Health Sector Review 2009 (JAHR) noted several policy resolutions that underpinned health financing reforms, namely: a) Prime Minister Decision 47/2008/QD-TTG in April 2008, approving the investment project to upgrade district and inter-district hospitals using government treasury bonds and other sources of funding for period 2008-2010; b) National Assembly issued Resolution 18/2008/Q12 dated 3 June 2008 on promoting social mobilization to improve quality of care by assuring the financing and budget of health care activities and implemented with an action plan through Prime Minister Decision 402/2009/QD-TTg of March 2009; and c) Health Insurance Regulation issued with Government Decree No. 63/2005/ND-CP in May 2005, setting a road map to the achievement of universal coverage by 2014, with committed funding from the state budget.

Two other issuances affect operations and budgets of hospitals. On 30 May 2008, Decree 69/2008/ND-CP encouraged social mobilization for health and other sectors, applicable to public and non-public health facilities, in generating resources through joint-venture, cost sharing and leasing policy concessions for land, facility as well as taxes and credit. Joint-venture activities in hospitals entailed a private company providing equipment to hospitals, for a payment of a share in net income of the hospital, initially for three to five years, for a sharing of 70-30 in favor of the company, and subsequently a reversal of 30-70 sharing in favor of the hospital.

Another significant policy issuance was the Politburo's Conclusion 43-KL/TW, implementing

Resolution 46-NQ/TW for 3 years implementation, and Directive 06-CT/TW for 5 years implementation. It reaffirms the basic orientation for health financing and restructuring of health financing sources with the explicit goal of allocating more state budget to account for a bigger share (at least over 50%) of total health expenditures. This increased budget in effect would bring benefits to medical service users, as Conclusion and Directive include: acceleration of universal health insurance, compulsory health insurance, improving care quality and effectiveness for insured and reforming user fees based on full and correct calculation of costs for patients. All hospitals are aware of the imminent changes in user fees and eagerly awaiting its launch.

Current public funding for hospitals are largely supply-side subsidies, allocated on the basis of the number of beds. Therefore there is an inherent tendency for increasing number of beds in anticipation of generating additional hospital income. Over half of government central budget in 2008 went to hospital expenditures including the remuneration of hospital staff. There is a proportional relationship between local health budgets and the number of beds in the province; the higher the number of beds, the higher the budget. After Doi Moi reforms, hospitals started to charge patients user fees in 1995. User fees are however regulated by the Ministry of Health. The more patients there are the more user fees that can be collected, thus boosting hospital income. User fees for the hospital services are regulated, from per item charges for tests and procedures, to per diem rates for hospital stay. However new drugs and procedures that were put in place after the 2006 Fee Schedule (This is expected to be replaced anytime soon this 2010) are not covered by the price regulation, and the medical institutions can charge as they consider appropriate. This provides the loophole for medical institutions to provide tests, drugs and other interventions, as well as provide services and interventions using newer technologies not identified in the Fee Schedule. Once the new and proper user fee schedule is introduced, full and correct calculation of service cost including the new drugs and procedures will be the basis for the service payment. It would require the hospital management is required to be cost- effective and capable of better-quality care in pursuit of the sound financial management.

The hospital management strategy varies by the degree of autonomy. While fees remain in conformity to MOH fee schedule, Decrees 10/2002/ND-CP and 43/2006/ND-CP for autonomy allow hospitals a wide range of discretionary power in nearly all areas – financial operations, human resource management, organization of services and provision of services. For instance, hospital can earn its own income, distribute it among staff, invest such funds, and establish wards for fee-paying patients. Incentives for staff are aligned with how well the hospital earns, although there are ceilings on maximum allowances and bonuses, after deducting the recurrent cost and development plans (e.g. facility upgrade). Budget oversight and financial review are provided by the PPC and other state agencies. Decree 43/2006/ND-CP expands further powers with full control over manpower (hiring, firing, promotion, assignments). Only 5 hospitals in the

country operate under full autonomy as mandated under Decree 43. Other hospitals are also trying but failed to overcome a hurdle to complete autonomous management which hospitals consider very difficult.

While Decree 43 increases incentives for providers, with the residual income at their disposal after 25% is set aside for facility upgrading, there is also risk of increasing costs in the health system. Current reliance on out of pocket payments and the fee system prevailing, provide greater incentives for hospitals to offer of unnecessary services in order to gain additional user fee. In the pricing system which controls only a certain part of medical services, it is reported that the hospitals tend to provide more high tech services. If such costly services are not fully covered by health insurance, it may force high out-of-pocket payment on patient. (Lieberman and Wagstaff<sup>4</sup>).

Strengthening of the VSS, namely the social health insurance system, especially expansion of its coverage of the population and changing the payment system will be a key to hospital reforms. The current compulsory insurance covers the office workers or formal sector, noncontributory group like pensioners and the poor and, the voluntary scheme including private insurance covers students and commune members. Reimbursement of user fee is based on the fee schedule, which is set in 1995 and due update in 2010. VSS however covers only a small share of expenditures, accounting for only 13 per cent of national health spending in recent health accounts.

In order to deliver the best possible care, it would require consensus on the type of diagnosis, steps and procedures to be taken, the intensity of treatment and use of medications. This is a highly contentious process and may require decades to develop. Adapting good practices of other countries would be an option but not likely to fit the context of Vietnamese social and political norms. When the consensus building system is established, VSS should be adjusted to fit to the new system to control what doctors can charge for any type of services through the development of clinical pathways or some DRG (Diagnostic Related Groups)-type of payments.

#### 2.4.5 IT technology development at medical institutions

Utilization of IT technology at medical institutions is one of effective solutions for improvement of medical services for patients. Enhancement of IT technology utilization would contribute to increasing management capacity at medical institutions such as handling of medical charts, hospital fee management, and insurance management.

MOH encourages hospitals to use network software named “Medisoft” for hospital management improvement. They expect that use of computerized database will enable evidence-based medical service and hospital management.

Followings are MOH’s recommendation on IT utilization for hospital management and health

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<sup>4</sup> Lieberman and Wagstaff, Health Financing and Delivery in Vietnam (World bank, 2009)

insurance management.

(1) Applying IT in hospital management

- The Decree No. 5842/BYT-K2DT addresses enhancement of applying IT in hospital management with the aim of 100% provincial, central hospitals and 80% of district hospitals successfully applying IT in hospital management by 2015
- Information system has at least the following eight modules:
  - Department of Examination,
  - Clinical Departments/ inpatients,
  - Para-clinical Departments,
  - Pharmacy,
  - Hospital fee and Health insurance,
  - Personnel, salary,
  - Network guidance, and
  - Medical equipment

(2) Applying IT in health insurance management

MOH and a private insurance company in Vietnam are conducting a joint project of applying IT in health insurance management.

MOH does not have definite strategies and development plan for IT technology except suggestion of using “Medisoft”. However, MOH recognizes the importance of IT utilization in and among hospitals, and considers building network between upper level hospitals and lower level hospitals for training of lower level hospital staff in near future.

In case of the Phase I Project, Lang Son Provincial General Hospital and Ha Tinh Provincial General Hospital have procured 20 personal computers and 10 printers each on the Phase I Project. But despite MOH’s plan these computers are used exclusively for hospital, not for training between hospitals.

#### 2.4.6 Environment management at medical institutions

Environmental issues are one of the most important subjects in the world. Medical institute is also required to address it. However, the environmental issues have particular aspects from the viewpoint of medical institute. Especially medical wastes are considered as a possible cause of environmental pollution and outbreak of infectious disease because it may include infectious wastes, noxious chemicals, radioactive substances and so on. Moreover, medical facility is open to the public where many people can visit and enter. In order to prevent environmental burden or other negative impacts, control of medical wastes, both waste water and solid waste, is urgent and crucial concern in the environmental issues in medical institute.

The detailed development plan for 2020 approved in February 2008 with the Prime Minister's Decision No. 30 set the development target of waste treatment system as shown below.

- By 2010, more than 80% of health facilities have waste treatment system as specified by MOH.

- By 2020, 100% of them have waste treatment system

(1) Laws and regulation for waste management

There are various forms of policies and strategies at national level on medical waste management, including environmental standards and technical specification of medical waste incinerators. Since 1997, more than 40 policies were issued directly or indirectly in connection with the waste management. The valid and currently binding regulations on medical waste management are attached as Appendix 4.

Article 39 of Law No. 52/2005/QH11 dated 29/11/2005 stipulates fundamental principles of environmental protection in hospitals and other medical establishments as shown below.

- 1) Hospitals and other medical establishments must comply with the following environmental protection requirements:
  - a) Having a system or measures to collect and treat medical waste water, which operates on a routine basis and meets environmental standards;
  - b) Arranging specialized equipment to sort at source pathological materials and medical garbage;
  - c) Taking measures to treat and incinerate pathological materials, medical garbage and expired medicines, ensuring environmental sanitation and standards;
  - d) Having plans, facilities and equipment to prevent and respond to environmental incidents caused by medical wastes;
  - e) Solid wastes and waste water discharged from patients' daily life must be pre-treated to eliminate contagious germs before transfer to concentrated treatment and incineration establishments.
- 2) Hospitals and other medical institutions treating infectious diseases must be isolated from residential areas and water sources. New hospitals and other medical institutions treating infectious diseases must not be built within residential areas.
- 3) X-ray apparatus, medical instruments and equipment using radioactive substances must meet nuclear safety and radioactive safety requirements provided for in Article 89 of this Law and the law on nuclear and radioactive safety.
- 4) Staffs in hospitals and other medical institutions engaged in activities related to medical wastes must be equipped with protective clothes and equipment to protect them from contracting diseases from medical wastes.
- 5) MOH shall collaborate with concerned ministries, ministerial-level agencies, government-attached agencies and Provincial People's Committees in directing and



organizing the collection of statistics on discharging sources and assessing the pollution levels in hospitals and other medical establishments; work out measures to remedy environmental pollution and guide and inspect the observance of the environmental protection law by hospitals and other medical establishments.

## (2) Environmental management in hospitals

### 1) Build the environment inside the hospital

Hospitals and medical institutions owe responsibility to improve the environment inside the hospitals step by step, in suitable period. However, the development of environment inside the hospital depends on architecture element. In reality, the division between sterilized, semi-sterilized and normal areas is not clear. The existing facility, equipment, human resource for operating theatres, post-operative rooms, intensive care units, neonatal intensive care units are so limit and cannot meet the equipped sterilization conditions.

### 2) Plan for medical waste management

Management of medical waste, which may include hazardous one, must follow the regulation including the following processes:

Collection: separating, classifying, gathering, packing and keeping temporarily waste at the gather location of the medical institution

Transportation: transportation of waste to the treatment/incineration location

Primary treatment: process of sterilizing waste that has infection risks at the location that it is generated

Incineration (priority for burning): a process of using technology to stop the waste from causing damage to environment and people's health.

Containing and collecting medical waste in general hospitals: isolation and classification of medical clinical waste from other wastes have been primarily conducted, medical waste is contained in nylon bags and put into plastic tanks.

## 2.5 Monitoring and evaluation standards for medical institutions

In Vietnam, each hospital is annually evaluated/ audited in its resources, fulfillment of function and tasks, and compliance with the Government regulations. MOH developed the evaluation format (Appendix 5), which all the hospitals are requested to fill up with necessary data and information, and submit it to concerned administrative agency/office. The administrative office forming an evaluation team, composed of experts from different departments in the government office, conducts evaluation at the hospital. The points on each item, given in accordance with the scoring system, are discussed and agreed between hospitals and evaluation teams and then fixed with the signature of both sides. In case of Provincial

general hospital, they submit the evaluation form to DOH, who sends the evaluation team to the hospital. After evaluation at the hospital, the format is signed by both parties. In case of central and regional hospitals, MOH conducts evaluation with the team having experts from different departments concerned.

Formerly, hospital evaluation had been conducted by 2 methods. One is the evaluation by administrative office as mentioned above, and the other is called cross-checking evaluation, to be done by other hospital. However, the cross-checking evaluation is not in practice now.

Generally the evaluation standards used in the evaluation format cover all, except financial standing and level of clinical services. From the sound hospital management, the financial evaluation ought to be included. Current practice of requesting the government finance to make up the shortage of hospital budget may not urge the People's Committee to evaluate the financial standing of the hospital. However MOH will need to consider including the financial evaluation as well. Although the evaluation format check the implementation condition of the hospital's function and task, it will be difficult to evaluate the medical level of technology of clinical department, unless the team of experienced medical professional performs evaluation. More importantly, to what extent the hospital services meet the medical demand in their area is not visible in the format.

## 2.6 Activities of donors in health sector

### (1) Activities of JICA

JICA has been contributing to the development and improvement of the three core central hospitals in the country, namely Bach Mai, Hue Central and Cho Ray hospitals in the North, Central and South, in the form of grant aid and technical assistance. Technical assistance was extended for clinical service improvement, human resource development, training function reinforcement and others. The Hoa Binh Provincial General Hospital was also supported by JICA, as a model of provincial medical system, in its improvement of infrastructure, emergency services, nosocomial infection control, equipment maintenance system, DOHA<sup>5</sup> in the linkage with Bach Mai Hospital, and others. The training services by central hospitals were fully utilized in the Phase I Project.

### (2) Activities of other donors

Beside JICA, many other donors are actively supporting the health sector of Vietnam. Their assistance covers the improvement of health infrastructure, hospital management, human resource development, health finance, waste management and policy development. Major donors supporting health sector of Vietnam meet quarterly every year since 2008 for

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<sup>5</sup> DOHA: Direction Office for Healthcare Activities-Service of technical assistance by sending medical experts to lower level facilities. In broader concept, the service also includes the training at DOHA office.

information sharing with the chair of MOH Department of International Cooperation. Recently, upon request of MOH, major donors support drafting the coming 5 years development plan.

WHO: WHO, coordinating with other major donors, is supporting MOH on policy and strategy development and not active in the specific geographical areas nor infrastructures. They provide technical assistance for policy management and health systems with short and long term trainings.

World Bank: The World Bank is currently implementing the Northern Upland Health Support Project for the duration of 2008 to 2014, with the U.S. \$60Million. The project will improve district level hospitals by strengthening the health workforce capacity and developing pilot models to increase staff retention in Northern Upland provinces, by providing basic medical equipment and selective facility repair, and improving hospital management, in Bac Can, Cao Bang, Dien Bien, Ha Giang, Lai Chau, Lao Cai and Son La provinces. The World Bank will also implement the waste management project for the hospitals of provincial and district levels of around 200 to 220, in a demand-driven approach, by supporting the software system development and equipment procurement.

ADB: ADB is also active in supporting the health sector but diversifying the strategy from supporting the hospitals to primary healthcare and poverty reduction. In parallel with the policy support to MOH, such as the assistance of remodeling the nurse education system, they are focusing on the integrated system improvement on regional health service, which can produce the expected outputs more easily. The Health Care in the South Central Coast Region Project is being implemented from 2009 up to 2013, covering 8 provinces, with the budget of U.S.\$80Million. The target facilities covers district hospitals and health centers in each province. The facilities will be supported with equipment, staff trainings, hospital management, waste management and all other elements for service improvement in the target provinces.

KfW: KfW also adopts the systematic approach for healthcare improvement. The Joint German Cooperation Project TC supports provincial general hospital, selective district hospitals and health centers in 5 provinces, including Nghe An, Thai Binh and Thanh Hoa. Project inputs are equipment, trainings, waste management and IT application. The provincial and district governments are involved from planning to implementation. DOH carries the responsibility of procurements. Understanding the effect of Prime Minister's Decree No. 43 requesting government institutions to be autonomous, KfW is supporting the regional government and systems.

Most of other donors supporting the health sector recognize the importance of collaboration among the donors and of avoiding the duplication of support. With this understanding, some donors interviewed by Consultants welcome the discussion with JICA on possible collaboration

between projects. For example, World Bank welcomes the collaboration between the facilities which are supported by the World Bank on the district level and by JICA on the provincial level in the same province, in the functions of human resource development, referral system or others. The target provinces supported by ADB include Da Nang, Binh Dinh and Ninh Thuan, and ADB is also welcoming further discussions with JICA for possible collaboration between the projects. Some provinces are the same targets of KfW and JICA Phase II project, and the discussion of possible collaboration between the projects of KfW and JICA is suggested.

Table 2k: Other Donors Activities

Donor	Project (Implementation period)	Contents
ADB	Rural Health Project (2001-2007)	Improvement of facilities, procurement of medical equipment of Community Health Center and District Hospital, and capacity building of Volunteer Health Worker in Ben Tre, Binh Phuoc, Can Tho, Hoa Binh, Khanh Hoa, Long An, Ninh Binh, Phu Tho, Quang Binh, Quang Ngai, Quang Ninh, Tien Giang
	Preventive Health System Support Project (2006-2010)	Procurement of medical equipment and training for 46 Provincial Preventive Medicine Centers
	Health Care in the South Central Coast Region Project (2009-)	Improvement of health service and human resource development in Da Nang, Quang Nam, Quang Ngai, Binh Dinh, Khanh Hoa, Ninh Thuan, Binh Thuan
ADB/ SIDA	Health Care in the Central Highlands(2005-2009)	Improvement of facilities for 15 District Hospital, and procurement of medical equipment and reeducation at university for 16 District Hospitals in Dac Lak, Dac Nong, Gia Lai, Kon Tum, Lam Dong and Dac Lak Provincial Hospital
World Bank	National Health Support Project(1996-2005)	Assistance to national program such as malaria and tuberculosis. Procurement of equipment, improvement of facilities and training for District Hospital and Community Health Center in Cao Bang, Lang Son, Son La, Ha Bac, Ha Tay, Nghe An, Ha Tinh, Quang Tri, Binh Dinh, Phu Yen, Ninh Thuan, Gia Lai, Kon Tum, Tay Ninh, Soc Trang
	Mekong Regional Health Support Project (2006-2011)	Procurement of medical equipment for 13 Provincial Hospitals and Preventive Medicine Centers in Long An, Dong Thap, An Giang, Tien Giang, Ben Tre, Vinh Long, Tra Vinh, Can Tho, Hau Giang, Soc Trang, Kien Giang, Bac Lieu, Ca Mau and Can Tho Central General Hospital
	Northern Uplands Health Support Project (2009-)	Assistance for Provincial Hospitals and District Hospitals and Preventive Medicine Centers in Ha Giang, Bac Can, Cao Bang, Dien Bien
EU	Health Care support to the Poor of the Northern Uplands and Central Highlands: HEMA (2006-2010)	A fee-based contract that shall ensure the provision of high quality preventive, curative and preventive care in 5 mountainous provinces which have a high proportion of poor people (Dien Bien, Lai Chau, Son La, Gia Lai and Kon Tum).
Holland	Human Resource Development	Reproductive health, Basic education at Hai Duong University including improvement of curriculums
Germany (KfW)	Medical Equipment Improvement	Improvement of medical equipment at Viet Duc Hospital and provincial hospitals in Quang Ninh, Bac Kan, Kon Tum,

		Kien Giang, Tuyen Quang, Lao Cai, Son La, Vinh Phuc, Hai Phong, Thanh Hoa, Yen Bai
Korea (Korea Eximbank)	Medical Facility Improvement	Under construction for Quang Nam Central Hospital

## **Chapter3 Health and medical sector in candidate Provinces**

### 3. Health sector in candidate provinces

On the candidate 15 provinces which were agreed between MOH and JICA, a study was done on regional characteristics and current conditions of candidate hospitals, to confirm the eligibility for target hospitals for the Phase II Project. In line with the policies of MOH to develop the human resources and to improve the medial equipment for strengthening the medical technologies in the regions, focus in the study was placed on population characteristics, medical service needs, financial conditions and others in each province, so that the eligibility and priority are confirmed. On the candidate hospitals, the current conditions including the bottlenecks and problems were studied to see if such conditions would meet the requirements for the hospital improvement as the Phase II Project.

The data and information in candidate Provinces and hospitals are collected from the available publications and also by the Questionnaire developed by Consultants which is attached as Appendix 1.

#### 3.1 Major indicators in health sector of candidate Provinces

##### 3.1.1 Ha Giang Province

The Ha Giang Province, which is a part of North East Region of the country, lies at the top North facing the borderline with Yunnan Province of China. Being away more than 300 km from Hanoi, many minorities live there comparatively. The province has the poverty which ranks at the top among the 15 candidate provinces in terms of poor household rate. Mountainous topography of this province provides limited access to the health facilities, and the minorities are making communication difficult due to their language. Due to the smaller population size, the provincial budget is small. Economic activities are seen in the primary industry of agriculture and forestry. The disease structure shows that the most morbidity and mortality attribute to the infectious diseases, and the infant mortality rate is the highest among the 15 candidate provinces. The province may be said one of the typical poverty areas.

Table 3a: General Situation of Ha Giang Province

Population	705,100
Poor Household Rate (%)	39
GDP Per Capita (USD)	332
Total Provincial Expenditure (Million VND)	1,773,286
Health budget out of Total (%)	10
Insured Population of Poor (%)	97
No. of Hospital Beds per 10,000 Inhabitants	20
No. of Doctors per 10,000 Inhabitants	5.7
IMR	40
Major Cause of Mortality	Bronchitis, Accident, Pneumonia
Major Cause of Morbidity	Bronchitis, Pneumonia, Gastritis

Source: Provincial general statistics office, MOF, Statistics Year Book 2008 (various sources for other provinces)

### 3.1.2 Bac Giang Province

Bac Giang Province is located 65 km away from Hanoi, though it belongs to North East Region of the country. Facing to the trade triangle of Hanoi, Hai Phong and Quang Ninh, the industrialization has been in progress, although the agriculture has been a main industry till the recent years. 90% of the population is Kinh and the ethnic minorities are small. The number of the poor is thirdly large. GDP per capita as well is secondary lowest after Ha Giang Province, but the provincial budget is large enough to rank as the middle among the 15 candidate provinces. The reason behind this provincial budget which ranks as the middle among the 15 is not clear, though it is only an amount of a year. It is an advantage, however, to implement the health activities, as the bigger health expenditure can be expected when the provincial budget is big. The disease structure shows that the major disease is the infectious, and the increasing trend of injuries due to the traffics on the trunk line to China through Lang Song Province and the chronic disease such as urology disease. Among the candidate provinces, Bac Giang Province can be classified in the lower economical level and the relatively poorer health situation. However, considering the accessibility in and out of the province and the recent industrialization in progress, the development potentials is considered to be high.

Table 3b: General Situation of Bac Giang Province

Population	1,628,400
Poor Household Rate (%)	21
GDP Per Capita (USD)	432
Total Provincial Expenditure (Million VND)	2,704,674
Health budget out of Total (%)	8
Insured Population of Poor (%)	85
No. of Hospital Beds per 10,000 Inhabitants	15
No. of Doctors per 10,000 Inhabitants	5.9
IMR	18
Major Cause of Mortality	Asphyxiation during delivery, Premature, Trauma- shock
Major Cause of Morbidity	Flu, Acute bronchitis, Urinary/kidney gravel/stone

### 3.1.3 Ha Noi Capital

Ha Noi is the capital of country, located in the region of Red River Delta. Having the adjacent province merged in 2008, the area became 3.6 times bigger and population became twice, which is the secondary large after Ho Chi Minh. The disease structure can be said as the one of urban with traffic injury and chronic diseases as the main diseases. Economic size is also big as the capital of the country and the public health expenditure is the smallest among 15 candidate provinces. The ratio of number of doctors per population is not the highest, however, due to the MOH guidance. As many specialized hospital of high technology are in the city, so that the people can easily avail of the specialized quality service. The problem of this city would be the concentration of the medium level serious patients at the medical facilities in the congested city.



This problem also gives physical and financial burden to the patients and his/her families due to the transportation from the provinces far from Ha Noi. As the ratio of number of doctors per population is not big, as mentioned above, it would be necessary to start the institutional guidance for active counter-referral service and prioritization of serious patients who should have the specialized care of high technology.

Table 3c: General Situation of Ha Noi Capital

Population	6,116,200
Poor Household Rate (%)	2
GDP Per Capita (USD)	1,151
Total Provincial Expenditure (Million VND)	13,734,931
Health budget out of Total (%)	3
Insured Population of Poor (%)	100
No. of Hospital Beds per 10,000 Inhabitants	14
No. of Doctors per 10,000 Inhabitants	4.3
IMR	7
Major Cause of Mortality	Pneumonia, Cranium wounds, Brain hemorrhage
Major Cause of Morbidity	Maternal & newborn baby diseases, Back bone diseases, Pneumonia

#### 3.1.4 Ha Nam Province

Ha Nam Province, a part of Red River Delta, is located along the 1A national highway and 50 km away from Ha Noi. It enjoys the easy access by road, railway and waterways. Main industry is agriculture and industrialization is progressing recently. Area and population size are relatively small, and the poor household rate is low. The disease structure shows the pattern of transmission period with infectious disease, and chronic disease and traffic injuries. Public health expenditure is comparatively higher among the 15 candidate provinces, in spite of the small share of the poor and the medium position of GDP per capita. This may be attributable to the provincial policy.

Table 3d: General Situation of Ha Nam Province

Population	831,020
Poor Household Rate (%)	7
GDP Per Capita (USD)	720.00
Total Provincial Expenditure (Million VND)	1,727,000
Health budget out of Total (%)	12
Insured Population of Poor (%)	98
No. of Hospital Beds per 10,000 Inhabitants	18
No. of Doctors per 10,000 Inhabitants	5.4
IMR	14
Major Cause of Mortality	HIV/AIDS, Traffic accident, Cardiovascular diseases
Major Cause of Morbidity	ARI, Diarrhea, Diabetes

### 3.1.5 Nam Dinh Province

Nam Dinh Province facing the South China Sea is a part of Red River Delta. Going down from Ha Nam Province to the south, Nam Dinh Province is 90 km away from Ha Noi. The city of Nam Dinh is the third biggest city in the Red River Delta after Hanoi, Hai Phong and constructing the highways for better transportation network. Further industrialization is expected. Population size is the third biggest among 15 candidates and population density is one of the highest. The poor household rate is small and disease structure shows typical urban pattern. However, considering that the major mortality is caused by injury, cerebral vascular disease and diseases arising in the perinatal period, it would be recommendable to provide the secondary emergency service in the province, as the transportation to Ha Noi takes around 2 hours which give possible risk of death.

Table 3e: General Situation of Nam Dinh Province

Population	1,995,000
Poor Household Rate (%)	10
GDP Per Capita (USD)	500.00
Total Provincial Expenditure (Million VND)	2,674,000
Health budget out of Total (%)	8
Insured Population of Poor (%)	98
No. of Hospital Beds per 10,000 Inhabitants	13
No. of Doctors per 10,000 Inhabitants	4.3
IMR	11
Major Cause of Mortality	Injury, Poisoning, Perinatal diseases, Cerebral vascular hemorrhage
Major Cause of Morbidity	Pregnancy, Childbirth, Injury, Poisoning, Genitourinary diseases

### 3.1.6 Thai Binh Province

Thai Binh Province, a part of Red River Delta, is located at eastern-north from Nam Dinh Province. It faces the South China Sea. It has the population of the 4th biggest among 15 but is in the middle class among the 15 candidates in terms of poor household rate and GDP per capita. Both of the number of the poor, and poor household rate are ranked at 3 from the worst, and GDP per capita is top 7th among the 15 candidates. It is 125 km far from Ha Noi, which takes 2 hours by car, and the industry started to change from agriculture to manufacturing. Construction of new roads and execution of the plan of thermal power plant construction with the Japan ODA loan in the province will enhance the speed of industrialization. By this industrialization, the provincial budget is expected to increase, and the public health expenditure could also be increased steadily from 8% at present. Though the current major disease in the province is infectious diseases, the disease structure would be changed accordingly.

Table 3f: General Situation of Thai Binh Province

Population	1,934,166
Poor Household Rate (%)	10
GDP Per Capita (USD)	800
Total Provincial Expenditure (Million VND)	2,331,767
Health budget out of Total (%)	8
Insured Population of Poor (%)	100
No. of Hospital Beds per 10,000 Inhabitants	15
No. of Doctors per 10,000 Inhabitants	5.3
IMR	11
Major Cause of Mortality	Respiratory diseases, Infectious diseases, Neurology diseases
Major Cause of Morbidity	Pneumonia, Acute bronchitis, Acute sore throat

### 3.1.7 Thanh Hoa Province

Thanh Hoa Province is located in Northern Central Coastal Region and faces with Laos in the West and Bac Bo Gulf in the East. It is 160 km far from Ha Noi which has central hospital, which takes approximately 3 hours by car. Among the 15 candidate provinces, it has the largest area and the second highest poor household rate after Ha Giang Province. Having the topographic characteristics which has hills in the west facing the Laos and the sea in the east, the major industry is forestry and fishery. The disease structure shows mostly the infectious disease, and the infant mortality rate is the 4th highest among 15 candidates. Possibly because of having high poor household rate, the province allocates around 11% of their budget to the health sector, which implies the provincial policy of health sector. This province which has high poor household rate and comparatively worse health indicators is considered as the one that needs an urgent improvement of medical service. Certain assistance deemed necessary considering that the province can hardly implement the medical service improvement with their financial capability.

Table 3g: General Situation of Thanh Hoa Province

Population	3,412,043
Poor Household Rate (%)	18
GDP Per Capita (USD)	810
Total Provincial Expenditure (Million VND)	7,161,793
Health budget out of Total (%)	11
Insured Population of Poor (%)	85
No. of Hospital Beds per 10,000 Inhabitants	14
No. of Doctors per 10,000 Inhabitants	4.4
IMR	19
Major Cause of Mortality	Pneumonia, Infectious Shock, Blood Infections
Major Cause of Morbidity	Pneumonia, Acute Respiratory, Infections, Diarrhea

### 3.1.8 Nghe An Province

Nghe An Province, a part of Northern Central Coastal Region, fronts to the south side of Thanh Hoa Province, facing with Laos in the west and Bac Bo Gulf in the East, as Thanh Hoa Province. It is located almost in the mid-point between Ha Noi and Hue. The Northern Central Coastal Region is the area which has been left behind in the development of the infrastructures for agriculture and social life. Poor land, shortage of infrastructure, particularly for the agricultural production, makes the peoples income at lower level. The Region is one of the poorest in the country. The Nghe An Province has the second largest area after Thanh Hoa Province and the population is also big. The poverty rate is the second highest after Thanh Hoa Province. However, GDP per capita of this province is small at 570 USD, while the one of Thanh Hoa Province is 810 USD. This implies that this province is less developed than Thanh Hoa Province. Infant mortality rate in the province is higher than in Thanh Hoa Province, and ranking at second among 15. Though the health indicators show unfavorable condition, the public health expenditure is not big. This province has a need for improvement of access to health facilities and the living standard of the poor, and has possibility of providing the enough budgets for the health sector.

Table 3h: General Situation of Nghe An Province

Population	2,919,214
Poor Household Rate (%)	19
GDP Per Capita (USD)	570
Total Provincial Expenditure (Million VND)	7,581,000
Health budget out of Total (%)	7
Insured Population of Poor (%)	100
No. of Hospital Beds per 10,000 Inhabitants	14
No. of Doctors per 10,000 Inhabitants	4.3
IMR	26
Major Cause of Mortality	Respiratory system disorder, Trauma, HIV/AIDS
Major Cause of Morbidity	Pneumonia, Trauma, Broken limb

### 3.1.9 Binh Dinh Province

Binh Dinh Province, which is a part of Southern Central Coastal Region, has a long coastline facing the East China Sea in the east. It is located at 300 km away from Hue and 700m from Ho Chi Minh as a coastal city in the middle of Vietnam. Its main industry is tourism, agriculture and fishery. In terms of population, GDP, poor household rate and health indicators, the province is in the middle of 15 candidates. The disease structure shows many injuries and chronic diseases, which is a typical urban pattern. The public health expenditure is high, so that such major diseases would be improved if this trend of public health expenditure is continued. Though the province enjoys the economic situation as the mid ranking position, as mentioned

above, the problem in the province is far from the upper level hospitals to refer the patients when necessary. Therefore, the issue is; if the patients can be treated within the province, served with the secondary emergency service for the serious acute cases, and be referred to upper level hospital when the patient has become stable.

Table 3i: General Situation of Binh Dinh Province

Population	1,448,982
Poor Household Rate (%)	10
GDP Per Capita (USD)	937
Total Provincial Expenditure (Million VND)	4,030,800
Health budget out of Total (%)	14
Insured Population of Poor (%)	95
No. of Hospital Beds per 10,000 Inhabitants	16
No. of Doctors per 10,000 Inhabitants	4.8
IMR	17
Major Cause of Mortality	Brain injury, Cancer, Cerebral vascular accident
Major Cause of Morbidity	Back bone diseases, Digestive, Brain injury

### 3.1.10 Lam Dong Province

Lam Dong Province is located in the mountainous area of middle highland, 220 km away from Ho Chi Minh. This middle highland is also behind the development in the country and the main industry is agriculture, forestry and tourism. The province earns more than average in the middle highlands but the poverty rate ranks at 6th among the 15 candidates. The major cause of morbidity in the disease structure is infectious diseases, and that of mortality is the traffic injuries. The upper level hospital to refer the patient from the province is the ones in Ho Chi Minh, which takes 6 hours by car. Like the case of Binh Dinh Province, it is necessary to provide the high level medical service to complete the treatment for the patient, as the upper level hospital is far away from the province, and to refer the patient to the hospital in Ho Chi Minh only for the intractable cases. Da Lat, the provincial capital, is a highland city of 1,400 to 1,500 high and developed as a city of health resort by French in 19th century. It has Da Lat University and developed as a modern urban city with easy access, which could be prioritized for the Phase II Project.

Table 3j: General Situation of Lam Dong Province

Population	1,206,200
Poor Household Rate (%)	8.4
GDP Per Capita (USD)	760
Total Provincial Expenditure (Million VND)	2,792,511
Health budget out of Total (%)	3
Insured Population of Poor (%)	95
No. of Hospital Beds per 10,000 Inhabitants	17
No. of Doctors per 10,000 Inhabitants	5.3
IMR	14
Major Cause of Mortality	Brain injury, Premature, Hemorrhage of brain
Major Cause of Morbidity	Trauma, Pneumonia, Acute sore throat, Tonsillitis

### 3.1.11 Ninh Thuan Province

Ninh Thuan Province, a part of South East Region, faces the South China Sea in the east. It is located 350 km away from Ho Chi Minh, which takes approximately 6 hours by car. Among the 15 candidate provinces, Ninh Thuan Province has the least population, but the poor household rate and GDP per capita rank at 7th and 12th, respectively, which shows low level of economic situation. Infant mortality rate is the third highest and a cause of major morbidity is the infectious diseases, which implies that the province is relatively at low level of development among the 15 candidates. It is therefore obvious that it needs to improve the health and medical services, and to provide the services to compete the treatment for the patient in the province, as it is not easy to transport the patient to the upper level hospital in Ho Chi Minh.

Table 3k: General Situation of Ninh Thuan Province

Population	581,444
Poor Household Rate (%)	15
GDP Per Capita (USD)	415
Total Provincial Expenditure (Million VND)	1,244,396
Health budget out of Total (%)	6
Insured Population of Poor (%)	98
No. of Hospital Beds per 10,000 Inhabitants	18
No. of Doctors per 10,000 Inhabitants	4.9
IMR	20
Major Cause of Mortality	Blood infection, Neonatal respiratory dysfunction, Brain injury
Major Cause of Morbidity	Multi injury, Diarrhea, Viruses

### 3.1.12 Tay Ninh Province

Tay Ninh Province is a part of South East Region like Ninh Thuan Province, but it is located in the inland area facing the borderline with Cambodia. It is 100 km away from Ho Chi Minh to

north-west direction, which takes approximately 2hour by car. Being away by around 40 km from Cambodian border, the patients are coming to the province from Cambodia as well. The poor household rate of this province ranks low at 12th among the 15 candidates and GDP per capita is at the third highest, which shows the high level of development. The morbidity is seen more in the acute infectious diseases but mortality is largely attributable to injuries, cerebral hemorrhage and circulatory diseases which seem to be caused by hypertension. Medical service needs in the province is therefore in the stage to start introducing the high level technologies for the brain and heart surgeries. When the patients in the province are not referred to the upper level hospital in Ho Chi Minh, the burden at such upper level hospital would be partly alleviated.

Table 3l: General Situation of Tay Ninh Province

Population	1,058,500
Poor Household Rate (%)	9
GDP Per Capita (USD)	1,523
Total Provincial Expenditure (Million VND)	2,035,247
Health budget out of Total (%)	5
Insured Population of Poor (%)	98
No. of Hospital Beds per 10,000 Inhabitants	13
No. of Doctors per 10,000 Inhabitants	4.2
IMR	14
Major Cause of Mortality	Heart attacks, Heart failure, Hemorrhage of brain
Major Cause of Morbidity	Acute respiratory infection, Diabetes, Bronchitis

### 3.1.13 Dong Thap Province

Dong Thap Province is a part of Mekong Delta and faces the borderline with Cambodia in the west. Kaoran city, a provincial capital, is located 200 km away from Ho Chi Minh, and the old capital, Sa Dec, is 140 km away from Ho Chi Minh. The weather is tropical pattern and has canals, reed plains, and marshes which are created by the flood of Mekong River. In the rainy season, the traffic is stopped and access to the health facilities becomes difficult. Main industry is the agriculture. Commercial activities in industrial zone are also active and they have a plan to construct a highway network. GDP per capita is ranked at the 4th highest. Although the morbidity rate of infectious diseases is high, due to the tropical weather, the mortality rate is high in the case of chronic diseases, which represent the urban pattern of disease structure and the certain achievement of development. The old capita of Province, Sa Dec, has central general hospital. This hospital was constructed, not as a provincial hospital, but with the purpose of serving for the adjacent provinces in the season of difficult access to other facilities. As a matter of reality, the access to Ho Chi Minh can also be stopped, so that the medial services should be provided to complete the necessary treatment for the patient in the province. The need of

improvement of current service to this level can be therefore justified for the Phase II Project.

Table 3m: General Situation of Dong Thap Province

Population	1,628,700
Poor Household Rate (%)	9
GDP Per Capita (USD)	650
Total Provincial Expenditure (Million VND)	2,893,698
Health budget out of Total (%)	6
Insured Population of Poor (%)	98
No. of Hospital Beds per 10,000 Inhabitants	18
No. of Doctors per 10,000 Inhabitants	4.4
IMR	18
Major Cause of Mortality	Heart failure, Shock, Brain hemorrhage
Major Cause of Morbidity	Diarrhea, Viruses, Pneumonia

### 3.1.14 Tien Giang Province

Tien Giang Province is 73 km away from Ho Chi Minh, which takes 90 minutes by car. There are rivers which benefits to the farming and produces variety of tropical fruits. Fisheries of freshwater and seawater fishes are also active. This area was cleared by Chinese immigrant who started commercial business in 17th century, and became a prominent base of international trade by the construction of railways by French in late 19th century. With this background, the province has the 3rd biggest population but the poor household rate ranks at 5th from the worst. On the other hand, GDP per capita falls high as 5th thus there is a gap between wealth and poverty. The disease structure shows double burden with infectious diseases and non-infectious diseases, which is in the transmission period. Being relatively close to Ho Chi Minh, the improvement of the medical service in the province would contribute to the reduction of cases to refer the patients to Ho Chi Minh and the burden of upper level hospital.

Table 3n: General Situation of Tien Giang Province

Population	1,742,100
Poor Household Rate (%)	16
GDP Per Capita (USD)	1,011
Total Provincial Expenditure (Million VND)	2,378,914
Health budget out of Total (%)	7
Insured Population of Poor (%)	95
No. of Hospital Beds per 10,000 Inhabitants	14
No. of Doctors per 10,000 Inhabitants	4.3
IMR	13
Major Cause of Mortality	Circulatory system diseases, Infectious and parasitic diseases, Respiratory system diseases
Major Cause of Morbidity	Respiratory system disease, Infectious and parasitic diseases, Circulatory system diseases



### 3.1.15 Da Nang City

Da Nang City is 970 km away from Ho Chi Minh and 760 km away from Hanoi. It is the city having the biggest commercial port in the middle of Vietnam and the 4th biggest city in the country. The city has been playing an important role in the commercial activities, with the good harbor, thriving as the satellite base of east-west trade business for a long time. With this historical and economical background, the GDP per capita of the city is the highest after Ha Noi, and the value is equivalent to around 10 times bigger than that of Ha Giang Province. The poor household rate is at the bottom. Though the weather in city is of tropical monsoon having the rainy season, the disease structure is urban pattern with mostly non-infectious diseases. The ratio of health budget out of total is the smallest among 15 candidates. Being 100 km away from Hue, the upper level hospital to refer the patient is the ones in Hue.

Table 3o: General Situation of Da Nang City

Population	887,069
Poor Household Rate (%)	4
GDP Per Capita (USD)	1,076
Total Provincial Expenditure (Million VND)	5,498,270
Health budget out of Total (%)	2
Insured Population of Poor (%)	95
No. of Hospital Beds per 10,000 Inhabitants	30
No. of Doctors per 10,000 Inhabitants	8.4
IMR	11
Major Cause of Mortality	Hypertension, intracranial damage, pneumonia
Major Cause of Morbidity	Pneumonia, delivery obstruction, diarrhea, gastritis, intestine infection

### 3.2 Profile of each candidate hospital

15 candidate provinces have a certain number of provincial level hospitals respectively, out of which only 1 hospital in each province was selected by MOH as the candidate hospitals for the Phase II Project. The selected 15 candidate hospitals are shown below.

Table 3p: Candidate Provinces and Candidate Hospitals

Region	Candidate Province	No. of Provincial Level Hospitals	No. of Beds of Provincial Level Hospitals	Candidate Hospital
North East	Ha Giang Province	1	425	Ha Giang Provincial General Hospital
	Bac Giang Province	6	1,200	Bac Giang Provincial General Hospital
Red River Delta	Ha Noi Capital	23	5,370	Son Thai Inter-District General Hospital
	Ha Nam Province	4	700	Ha Nam Provincial General Hospital
	Nam Dinh Province	3	600	Nam Dinh Provincial Obstetric Hospital
	Thai Binh Province	7	1,165	Thai Binh Provincial Pediatric Hospital
North Central Coastal Region	Thanh Hoa Province	9	2,130	Thanh Hoa Provincial Pediatric Hospital
	Nghe An Province	6	1,500	Nghe An Provincial Pediatric Hospital
South Central Coastal	Binh Dinh Province	6	1,400	Binh Dinh Provincial General Hospital
Central Highlands	Lam Dong Province	4	1,070	Lam Dong Provincial General Hospital
South East	Ninh Thuan Province	2	600	Ninh Thuan Provincial General Hospital
	Tay Ninh Province	2	600	Tay Ninh Provincial General Hospital
Mekong Delta	Dong Thap Province	5	1,930	Sa Dec Inter-District General Hospital
	Tien Giang Province	8	1,640	Tien Giang Provincial Obstetric Hospital
South Central	Da Nang City	5	1,300	C Da Nang Central General Hospital

In the SAPROF, for these 15 candidate hospitals, the specific characteristics, facility and equipment, medical staff, hospital management and environment management were studied to evaluate if the candidate hospitals meet the conditions for Phase II Project implementation.

- (1) Hospital characteristic: to see what is the hospital organization (such as hospital's status, organization structure and medical personnel) and what are the needs for the services to be provided by the hospital
- (2) Facility and equipment: to see if the hospital has enough space and necessary infrastructures for new equipment, and the maintenance capability by checking the current use and maintenance conditions of medical equipment
- (3) Medical staff: to see if the hospital staff have enough knowledge and experience to properly use the equipment to be procured, by confirming the hospital staff allocation and training plan, and if the knowledge and experience is low but still remain at the level to be uplifted by training, this case is considered eligible for Phase II Project.

The provincial level hospitals have certain number of specialized departments, which is headed by a specialized doctor. Therefore, the specialized doctors are required in the same number as the specialized department. The specialized doctor must have qualification with continuous education after graduating from the university. They must experience the medical service at the specialized department for 2 to 3 years at least after the graduate, and will have a qualification of "Specialist I" after recognition of resident course completion. Then after another 2 years education, they can get "Specialist II" qualification. The doctors

immediately after graduating from the universities receive diploma as “General Doctor”. The one who goes to master course at the university is also qualified as Specialist I. Among other medical staff, except the pharmacist, one can obtain license as nurse or technician (x-ray, laboratory technician, etc.) in the 3 years junior college or secondary medical school (SMS). When he/she studies abroad at 4 years university and obtain a degree, he/she will be treated as master upon returning his/her country. In the introduction of high-tech medical equipment, experience of equipment use as well as the medical knowledge concerned is important. In Vietnam, there are many cases where the doctors handle the equipment for diagnosis and treatment. One of the best ways to provide the quality service to the patients is therefore to have the experienced specialized doctor and to use the medical equipment safely. To acquire the progressing medical technologies is essential for providing the clinical services at the hospitals. It is necessary for the hospital to give opportunities for education to the staff and the staff should also be eager for learning. In Vietnam, the concept of team work for the medical service is being introduced to avoid any possible mis-diagnosis casually caused by an individual. Education and training at the medical facility and academic institutions in and out of country with the government fund are also conducted. However, as the level and quality of medical technology of medical staff cannot be measured only with the number of education or trainings, the quality of medical staff was confirmed with the doctors’ qualifications and number of specialized doctors in the hospital.

- (4) Hospital management: to see the number of patients referred to and from upper and lower level facilities in the past and type of disease of such referred patients. The hospital management needs comprehensive quantitative analysis from the viewpoints of finance, medical service provided by the hospital and the human resource. .
- (5) Environment management: to see if the hospital is managing the environment in and outside the hospital, following the applicable rules and regulations, by disposing the medical wastes

To grasp the whole picture of candidate hospitals, following table shows main indicators of each hospital.



### 3.2.1 Ha Giang Provincial General Hospital

#### (1) Characteristic

As the general hospital, they have specialized departments including ophthalmology, ENT, dental surgery, dermatology, geriatrics, physiotherapy, in addition to the basic 4 departments of inter medicine, surgery, pediatrics, and obstetrics and gynecology. Besides the departments of emergency outpatient, surgery and ICU, the departments of radiology, laboratory and pathology are provided for diagnosis. According to their data, they accept 503 patients per day, based on the 260 working days a year. The number of inpatients at the basic 4 departments share 64% of the total number of inpatient.

Considering this Ha Giang Province is the mountainous poverty area, it is due to have the patients of pediatrics and the inter-medicine on the high ranks. Therefore, it is desirable that the secondary medical service should be strengthened rather than high-tech medical service.

Table 3r: General Information

Type of hospital	General
Distance to the nearest upper level hospital	320 km (Ha Noi)
No. of bed: authorized → actual	400 → 410
Bed occupancy rate	112 %
Average length of stay (days)	8.3
Annual No. of outpatients	130,821
Annual No. of inpatients	17,373
Annual No. of death at hospital	□□
No. of MD	62
No. of medical staffs except MD	□370

Table 3s: Annual No. of Inpatients in Top 10 Departments

Rank	Department	□□	□IPD/year
1	Pediatrics	4	3,102
2	Inter-medicine	6	2,795
3	Obstetrics	4	2,091
4	Surgery	6	2,044
5	Emergency outpatients	2	1,003
6	Geriatrics	2	855
7	Infectious disease	2	747
8	Laboratory diagnosis	2	656
9	Ophthalmology	3	632
10	ENT	2	523

MD: Medical doctor

IPD: Number of inpatients /Year

#### (2) Facility and equipment

##### 1) Facility

Authorized bed capacity is 400 and bed occupancy rate is 112%. In this situation, they have a plan to expand the capacity to 500 beds by 2015, which has been approved by Provincial People's Committee (PPC). The new building will include new 5 departments such as neurology and respiratory organs. This new building being constructed will be completed in 2013. The existing building is old but designed well for the line of flow for convenient use.

##### 2) Equipment

Almost all equipment at clinical departments is obsolete. Specifically in ICU, fundamental and essential equipment such as respirator and monitor are not fully provided. The emergency outpatient and surgery departments do not have defibrillator for emergency case, which would

affect the medical service or lower the quality of service. For image diagnosis, each 1 of CT scanner and X-ray machine are provided. For the equipment maintenance, they assign 2 engineers, but the equipment is not well maintained in general. It is not clear if it is attributable to a lack of fund or engineers skill.

(3) Medical staff

The educational background of major medical staff of hospital is as listed below. In case of Ha Giang Provincial General Hospital, one half of the doctors are specialized doctors. And they have no Assistant Doctor (one with 3 years education sent to a hospital at remote area for a limited service, to balance the regional gap), which is beneficial to the hospital. Namely, in case that the hospital staff lacks the basic knowledge of modern technology, it will take long time to educate them for the use of high-tech medical equipment if it is purchased. In the nurses as well, there is a range of technical level such as primary level nurse (practical nurse) with only a year’s education, middle level nurse with 2 years education which is common in the country, one who receives 3 years education at medical college, which is on increasing trend, and the one who study abroad. To use the high-tech equipment, the nurses over the medium level qualification can be considered to be capable of handling the equipment. This hospital is therefore considered to satisfy the requirement in medical staff.

Table 3t: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	5				
Specialist II	3				
Specialist I	23				
General Doctor	33	Bachelor	2	3	2
Assistant Doctor	0	Middle Level	186	15	35
		Primary Level	4	0	0
Total	64	Total	192	18	37

(4) Referral system

Although the number of out and in patients increased in 2008 by 20% from the previous year, the total number of patients referred to upper level hospitals was not increased. This means that the ratio of referral case has become less. On the other hand, the number of patients referred back to lower level hospital in 2008 was relatively small like 120. The main reason of this small number of cases is that the patients do not like to go to lower level hospital. The back-referral system is not functioning well yet. The major diseases of patients referred to upper level hospitals are; malignant tumor/disease, serious heart disease and kidney disease, which are difficult to be treated by this hospital. The hospital judgment on referral cases is considered to

be suitable.

(5) Environment control

Infection control	14 staffs allocated, and 3 washing machines and 1 drier are installed at Laundry. They have 2 autoclaves and 2 ovens for dry-heat sterilization at Central Material Room.
Waste water treatment system	Central waste water treatment facility has a capacity of 250 m3 per day. All waste water is sent to this facility. Chemical and infectious liquid waste is not separately collected and sent together to the waste water treatment facility. After the treatment, the waste water is discharged directly to Red River. Currently there is no public waste water treatment plant. The method of central waste water treatment facility is basically microbiological treatment with an addition of coagulant and disinfectant before discharging. But disinfecting process by reagent has not been functioning for 6 months. The facility is checked and maintained monthly. Waste water after treatment is sampled and tested for its quality once a year.
Solid waste treatment system	For general waste, hospital produces around 850 kg per day in average, and contracts with a private firm in Ha Giang for daily service of transporting and disposal of general waste including cinders from incinerators at town's landfill. About 53 kg of medical hazardous waste is produced every day. 2 employees operate the incinerator to dispose medical hazardous waste from the hospital. But currently, the incinerator is out of order and storage place was filled with hazardous waste of very bad smell. They don't have a testing result of the incinerator
Hospital cleaning service	Cleaning services of the hospital is contracted to a private firm that provides hygiene cleaning service. The staffs of the company are cleaning all department facilities and yards of the hospital, collecting the general waste and putting it at the storage.
Plan for environment management	The hospital also has an investment plan for wastewater treatment facility and incinerator to meet the requirements. But at this moment, this plan has not been approved by the PPC.
Points for improvement	a) Waste water treatment system <ul style="list-style-type: none"> <li>· The waste water from surgical department, hematology department, microbiology department, biochemistry department is not sterilized and discharged directly into the waste water drain pipe. Infectious and chemical waste water should be pre-treated. Central waste treatment facility for disinfecting process should be repaired immediately.</li> <li>· As testing result shows, the system should be improved to reduce TSS, BOD5, and Total coli form to a standard level.</li> </ul> b) Solid Waste Treatment <ul style="list-style-type: none"> <li>· Incinerator should be repaired and monitored immediately in accordance with the new regulation: TCVN7380, 7381:2004 and TCVN6560:2005.</li> <li>· Segregation of solid waste should be done completely</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done</li> </ul> c) Training Activity <p>Enhancement of human resource development for environment management is needed.</p>

3.2.2 Bac Giang Provincial General Hospital

(1) Characteristics

Bac Giang Provincial General Hospital has the departments of circulatory disease, tumor, ophthalmology, ENT, dermatology and physiotherapy in addition to the basic 4 departments (inter medicine, surgery, pediatrics, and obstetrics and gynecology). However, as the obstetric

hospital is in the province, the hospital does not have obstetric department. They have departments of radiology, image diagnosis, laboratory and pathology for diagnosis, as well as emergency out patient, surgery and ICU departments. Outpatients of 675 per day in average visit the hospital. Among the inpatients, the basic 4 departments and infectious disease departments share about 70% of all inpatients. As the many traffic accident happens in the province, patients for surgery, trauma and emergency outpatient shares 30% of all outpatients. Since the patients of non-infectious chronic disease are increasing, there is a need for a high level medical service such as heart surgery and radiation treatment in the circulatory and tumor departments.

Table 3u: General Information

Type of hospital	General
Distance to the nearest upper level hospital	60 km (Ha Noi)
No. of beds: authorized → actual	550 → 630
Bed occupancy rate	128 %
Average length of stay (days)	9.6
Annual No. of outpatients	175,559
Annual No. of inpatients	29,057
Annual No. of death at hospital	73
No. of MD	157
No. of medical staff except MD	333

Table 3v: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Pediatrics	12	4,567
2	Surgery	11	3,950
3	Inter-medicine	15	3,545
4	Circulatory Inter-medicine	14	3,445
5	Trauma	10	2,436
6	Infectious disease	7	2,328
7	Tumor	8	1,768
8	Emergency outpatients	12	1,766
9	Ophthalmology	6	1,306
10	Dermatology	3	1,128

## (2) Facility and equipment

### 1) Facility

The existing building is obsolete, and does not have ample space. The plan of new building construction has been approved by PPC, and the construction will start to complete in 2013. The construction was approved with the national budget of 120 Billion VND and the building will house the space for 800 patients and equipment.

### 2) Equipment

Both quantity and quality of existing equipment is not satisfactory for the needs. Particularly, in the ICU, there is almost no equipment so that ICU may not be functional. They have 3 units of x-ray for image diagnosis, and CT scanner would be needed as many patients of traffic injury visit the hospital. Although they have 8 engineers for equipment maintenance, the condition of existing equipment is not good. This situation seems to have been caused by the oldness of equipment and lack of budget. However, some equipment like x-ray is maintained with the periodical maintenance service under the contract with the private company.



### (3) Medical staff

Around half of doctors are specialist and many bachelor degree nurses are employed, which implies rather high academic level staffing. This is promising situation for the Phase II Project.

Table 3w: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	26				
Specialist II	6				
Specialist I	41				
General Doctor	66	Bachelor	21		2
Assistant Doctor	0	Middle Level	219		28
		Primary Level	0		0
Total	139	Total	240	0	30

### (4) Referral system

As the patient referral system, the cases to send the patients to upper level hospitals are increasing since 2005; from 2,800 cases in 2005 to 5,300 in 2009. From the lower level hospitals, they have received 20,000 patients referred in the 5years of 2003 to 2007 (4,000 patients a year in average). Possibly because the patients are properly treated for complete cure at the hospital to which the patients are referred, they hardly received the patients referred back from the upper level hospitals, and they also send the patients of around 20 or less in a year back to the lower level hospitals. The problem is the increasing referral service to upper level hospitals. If there is a background behind this referral service that the serious disease of patients which is hardly treated at the hospital such as a traffic injury requiring brain surgery is increasing, this hospital improvement plan should be prioritized.

### (5) Environment control

Infection control	At Infection control department, 30 staffs are at the work of washing of all used clothes and linens, sterilizing the medical instruments and maintaining the central waste water treatment facility and incinerator. In the laundry and Central Material Room area, 600kg used clothes and linens for all patients and hospital staffs are washed by 2 washing machines, packed in the plastic bags. After this process, sterilizing the metal tools and packed clothes/linens by 4 autoclaves, putting all sterilized clothes/linens and medical instruments at the store room.
Waste water treatment system	The central waste water treatment facility was completed in 2008 through the project supported by EU-ASIA Pro Eco Program. The full capacity is 350m <sup>3</sup> /day, but currently treating is about 200m <sup>3</sup> /day. The drainage system is connected with the 16 buildings of the hospital and each waste water drain pipe is led to the pre-septic tanks which are connected to the settling tank of the central waste water treatment facility.
Solid waste treatment system	In average, hospital produces about 1,590kg of solid waste every day: 1,500 kg of general waste and 90 kg of hazardous medical waste. Major part of general waste is transported and treated by a private firm in Bac Giang. The recyclable general waste of about 40kg per day are separated by 2 stuffs of

	<p>hospital, and collected by the recycling company. It makes hospital income of around 2 million VND per month.</p> <p>Hazardous medical waste is burned by the incinerator. The Incinerator was donated in 2001 from Italian NGO. The cinders after treatment are buried in the hole dug in the ground in the hospital premises of the site, then slaked lime is spread on cinders to sterilize it.</p> <p>The incinerator is monitored once per year by a testing service company in Bac Giang. But the major part of the incinerator function items which is regulated by TCVN7380:2004, and half part of the exhaust gas items from chimney which is regulated by TCVN6560:2005 are not available.</p> <p>The publicity of solid waste segregation and hospital hygiene is quite good. Staffs, patients and visitors of the hospital can easily find many placards that are placed at sorting and collecting facilities. In spite of good condition of the publicity, the solid waste segregation and hospital hygiene are not thoroughly done in the hospital, as the budget for purchasing colored plastic bags and containers for the segregation of solid waste determined is not enough, and the Decision No 43/2007/QĐ-BYT dated 30/11/2007 is causing confusion on the segregation of general waste and hazardous medical waste, especially infectious waste.</p>
Training for infection control	Training activity are planned and conducted by infection control department. But only one day is given in a year for the training to all staff of the hospital, which is not enough. The one day training focuses on current activity and techniques for clinical departments in the hospital.
Plan for environment management	No specific plan
Points for improvement	<p>a) Waste water treatment system</p> <ul style="list-style-type: none"> <li>• Pre-treatment of waste water is needed before sending to the central waste water treatment facility.</li> <li>• Currently, waste water treatment systems in hospitals are out of function because two motors of the system have been broken since 2 months ago. Waste water is discharged without the treatment. The system should be repaired immediately.</li> <li>• As testing result shows, the system should be improved to reduce H<sub>2</sub>S and Total coli form to a standard level.</li> </ul> <p>b) Solid waste treatment</p> <ul style="list-style-type: none"> <li>• The budget should be secured for purchasing enough colored plastic bags and containers for the segregation of solid waste.</li> <li>• Segregation of solid waste should be done completely.</li> <li>• All items should be tested for incinerator in accordance with the Decree TCVN7380:2004 and TCVN6560:2005</li> </ul> <p>c) Training Activity</p> <p>Enhancement of human resource development for environment management is needed.</p>

### 3.2.3 Son Tay Inter-District General Hospital

#### (1) Characteristics

The hospital has ENT, ophthalmology, circulatory disease departments, in addition to the basic 4 departments. The number of patients at basic 4 departments, infectious and trauma departments shares upper position. Particularly, the number of patients at obstetric/gynecology and pediatric departments only shares a little less than 50%. They may pay attention to the medical examination of pregnant woman and prenatal care in the obstetric/gynecology

department. As this is located at outskirts of west Ha Noi, the hospital is expected to receive the patients from the outskirts and neighboring provinces, before they come to upper level hospitals in Ha Noi.

Table 3x: General Information

Type of hospital	General
Distance to the nearest upper level hospital	320 km (Ha Noi)
No. of bed: authorized → actual	400 → 410
Bed occupancy rate	112 %
Average length of stay (days)	8.3
Annual No. of outpatients	119,858
Annual No. of inpatients	17,373
Annual No. of death at hospital	31
No. of MD	62
No. of medical staff except MD	370

Table 3y: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Obstetrics	9	8,690
2	Pediatrics	6	4,099
3	Inter-medicine	5	2,553
4	Infectious disease	4	2,092
5	Surgery	5	1,877
6	Trauma	5	1,734
7	Traditional medicine	2	1,607
8	Emergency outpatients	4	1,470
9	Ophthalmology	3	1,104
10	ENT	3	884

## (2) Facility and equipment

### 1) Facility

All the existing buildings are of one-storied and the transfer from one building to the other needs the move to outside the buildings, which is not convenient for the patients. They plan to increase the beds from 420 to 600, with the approval of PPC on the construction of new building. The new building will house the departments of NICU and dialysis and be completed in 2013. Construction work is segmented in 3 phases, and current construction of new building is in the Phase 1.

### 2) Equipment

Although most of equipment is obsolete and not enough in quantity, some equipment (second hand) is given by Viet Duc Hospital as this hospital is one of the satellite hospitals of Viet Duc Hospital. The equipment at ICU is generally short. They have 1 engineer for equipment maintenance, and the equipment condition is not good. Equipment for image diagnosis and laboratory are periodically maintained by the private company under the contract.

### (3) Medical staff

The number of specialized doctor is 30%, which is relatively small but this will not be a bottleneck at this moment as the service provided by this hospital is not of high level. When the hospital tries to purchase high-tech medical equipment in the future, many medical staff would need to be re-educated and trained.

Table 3z: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	4				
Specialist II	2				
Specialist I	16				
General Doctor	49	Bachelor	16		3
Assistant Doctor	0	Middle Level	122	19	26
		Primary Level	2	0	0
Total	71	Total	140	19	29

#### (4) Referral system

The hospital referred 7,689 patients to upper level hospitals in 2009. This number is equivalent to one third of the number of outpatients to this hospital and 7% of the patients which has received the medical service at this hospital. The reason of this comparatively big number of referred patients would be the location of this hospital which is close to Ha Noi, and this allows easy referral of patients. Or, it may come from the judgment of hospital that the treatment rooms are not well functional and it would be better for lifesaving to refer all the patients of acute cases and complications.

#### (5) Environment control

Infection control	In Infection control department, 9 staffs are at work of washing all used clothes and linens, sterilizing the medical instruments and maintaining the central waste water treatment facility and incinerator. In the laundry area, as there is no washing machine, staffs are washing by hands 300 kg used clothes and linens every day. Waste water from laundry area is discharged to the waste water drain pipe without disinfection treatment. In central material room, 4 autoclaves and 2 drying machines are used for sterilizing medical instruments of all departments. Washed clothes and linens is not sterilized and served to the stuffs and patients.
Waste water treatment system	Drainage system in the hospital is divided into two: rain water sewage system and waste water sewage system. However, each building in hospital does not have a pre-septic tank to regulate the waste water. Central waste water treatment facility was built in 2007. All waste water is sent to this facility of 350 m <sup>3</sup> per day processing capacity. Chemical and infectious liquid waste is not separately collected and sent together to the waste water system. Waste water after treatment is directly discharged into the pond next to the hospital. Central waste water treatment facility is operating for 24 hours every day and two staffs are responsible for operation. The method used in the central waste water treatment facility is basically biological treatment with an addition of coagulant and disinfectant before discharging. Discharged waste water quality is tested twice per year by Hanoi department of technology and environmental resources.
Solid waste treatment system	200 kg general solid waste and 47 kg medical hazardous waste are generated every day. General waste is gathered, transported and treated by a local private firm. Cleaning services of the hospital is also contracted to a private hygiene cleaning service company. The medical hazardous waste is gathered and kept in a closed storage room which is air-conditioned to maintain optimum temperature for storage by the hospital staff and

	<p>burned by the incinerator every 2 days. The Incinerator was donated in 2001 by Austrian NGO. The cinders after treatment are packaged and handled as general waste.</p> <p>The exhaust gas from chimney of incinerator is monitored by Hanoi department of technology and environmental resources.</p> <p>Since the incinerator has been used for 9 years, the function of the incinerator does not meet the parameter in Vietnam standard TCVN 7380:2004. At present, the hospital has to consider and give decision between two options: set-up new incinerator in the hospital or contract with private or public company for transportation and disposal.</p>
Plan for environment management	No specific plan.
Points for improvement	<p>a) Waste water treatment system</p> <ul style="list-style-type: none"> <li>· There are many insects in drain pipes and central waste water treatment facility. Pest control should be done immediately, to avoid the risk of transmission of infection not only in the hospital, but also around the hospital.</li> <li>· Pre-treatment of waste water is needed before sending to the central waste water treatment facility.</li> <li>· All items should be tested in accordance with the Decree TCVN7382-2004.</li> </ul> <p>b) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done</li> </ul> <p>c) Training Activity</p> <p>Enhancement of human resource development for environment management is needed</p>

### 3.2.4 Ha Nam Provincial General Hospital

#### (1) Characteristics

Ha Nam Provincial General Hospital has the departments of ENT, ophthalmology, dermatology, physiotherapy in addition to the basic 4 departments. Inter medicine is divided into I, II, III and A departments, which are considered for circulatory, respiratory, stomach, and intestine and others. This would be true as the major diseases are chronic bronchitis, asthma, coronary arteries disease and cerebral infarction after the infectious disease at pediatric department. As seen in the disease structure, the patients of non-infectious disease and injury are increasing, so that they are expected to serve for the patients of medium serious level chronic disease and acute heart disease.

Table 3aa: General Information

Type of hospital	General
Distance to the nearest upper level hospital	60 km (Hanoi)
No. of bed: authorized → actual	450 → 540
Bed occupancy rate	153 %
Average length of stay (day)	6.6
Annual No. of outpatients	NA
Annual No. of inpatients	38,171
Annual No. of death at hospital	82
No. of MD	134
No. of medical staff except MD	519

Table 3ab: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Pediatrics	9	6,710
2	Obstetrics	10	5,195
3	Surgery	8	2,609
4	Infectious disease	3	2,077
5	Inter-medicine (I)	6	2,026
6	Trauma	8	1,981
7	Inter-medicine(II)	4	1,535
8	Inter-medicine (III)	6	1,424
9	Emergency outpatients	8	1,312
10	ICU	7	1,082

## (2) Facility and equipment

### 1) Facility

The hospital plans to increase the beds from 330 to 600 by 2015. The plan of new building construction has been approved by PPC. The construction is being implemented with the budget authorized by PPC and a building of 4 stories will be complete in 2011. When it is completed, NICU and ICU will be moved to the new building.

### 2) Equipment

Similarly to the other hospitals, most of the equipment is obsolete, and the number is in shortage. However, the emergency room is provided with equipment in general. Similar to others are the equipment in ICU, which is in shortage and does not function as ICU. They have 7 engineers for equipment maintenance but the equipment is not well maintained. The private company provides periodical maintenance for the equipment of image diagnosis under the contract with the hospital.

### (3) Medical staff

At present, they have specialized doctors of less than 10%, and more than a half is assistant doctors. More than 90% of the nurses are of middle class, so that there is no significant gap of quality among the nurses, which is beneficial to the medical services. When the new equipment is procured, the hospital needs to re-educate and provide the basic training to the staff.

Table 3ac: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	0				
Specialist II	8				
Specialist I	2				
General Doctor	42	Bachelor	14	3	1
Assistant Doctor	65	Middle Level	241	25	15
		Primary Level	1	0	0
Total	117	Total	256	28	16

### (4) Referral system

This hospital is located at 60 km away from south Ha Noi, which is contributing to active cooperation with the facilities in Ha Noi. The number of patients referred to upper level hospital in 2009 was 1,457 and the number of patients referred from lower level hospitals was 1,343. The situation where the number of patients referred from lower level hospital is less than that of patient to upper level hospital is not seen in the other candidate hospitals. By this situation, assumption can be made that even lower level hospitals prefer to send the patients directly to the

hospitals in Ha Noi, without sending them first to secondary hospital.

(5) Environment control

Infection control	<p>In infection control department, 17 staffs is washing all used clothes and linens, sterilizing the medical instruments. In the laundry and central material room area, 300kg used clothes and linens for all patients and medical staffs are treated every day. There are 8 washing machines, 2 driers in laundry room, 8 autoclaves and 4 ovens for dry-heat sterilization in central material room. But there is no store room for sterilized clothes, linens and medical instruments.</p> <p>The central waste water treatment facility is maintained and monitored by only 1 staff.</p>
Waste water treatment system	<p>There are 2 staffs that are responsible for operation and maintenance of the facility. The facility is checked and maintained every day.</p> <p>The amount of treatment is 200m<sup>3</sup> a day, which is less than the capacity of the treatment facility; 400m<sup>3</sup> a day.</p> <p>The technology used for waste water treatment is basically biological treatment with an addition of coagulant and disinfectant before discharging.</p> <p>Sludge sediment in waste water treatment process is cleaned and vacuumed by a private company in Ha Nam every 2 years. Department of environment and natural resources takes and tests the sample in every 6 months on waste water quality after treatment.</p>
Solid waste treatment system	<p>About 500 kg per day of general solid waste is generated in the hospital and hospital contracts with a private firm in Ha Nam for the transportation and disposal at town's landfill.</p> <p>Medical hazardous waste is generated at 47 kg per day. Since the incinerator is broken, hospital contracts with local private company for transporting and burning.</p> <p>Currently, general waste and medical hazardous waste storages are not centralized and a room for central storage is being constructed. Currently, the hazardous medical waste is kept in the provisional room which is air conditioned.</p> <p>The hospital gains about 1 to 2 million VND per month as extra income by recycling some solid material for waste.</p>
Training for infection control	<p>Training activities are conducted once a year to all staffs of the hospital.</p>
Plan for environment management	<p>No specific plan</p>
Points for improvement	<p>a) Infection Control activity</p> <ul style="list-style-type: none"> <li>· Storage room for sterilized clothes, linens and medical instruments in the central material room area is needed.</li> </ul> <p>b) Waste water treatment system</p> <ul style="list-style-type: none"> <li>· Pre-treatment for waste water is needed before sending to the central waste water treatment facility.</li> <li>· Central waste treatment facility for disinfecting process should be repaired immediately.</li> <li>· As testing result shows, the system should be improved to reduce the H<sub>2</sub>S and Total coli form to a standard level.</li> <li>· All items should be tested in accordance with Decree TCVN7382-2004.</li> </ul> <p>c) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done</li> </ul> <p>d) Training Activity</p> <ul style="list-style-type: none"> <li>· Training should be done more frequently for all staff of the hospital to improve the knowledge and skill for solid waste segregation and hospital hygiene</li> </ul>

### 3.2.5 Nam Dinh Provincial Obstetric Hospital

#### (1) Characteristics

Having separated from provincial general hospital in 2009, Nam Dinh Provincial Obstetric Hospital has departments of obstetric, pediatrics and new born infant. In addition to the emergency outpatient, surgery and ICU, they have radiology, image diagnosis, laboratory and pathology departments for diagnosis service. Out of 160 beds as total, 140 is allocated for obstetric, 10 for new born infant, and 10 for NICU and emergency outpatient. Main service is for the deliveries but the number of patients for gynecology is also increasing. They do obstetric surgeries of 500 to 700 cases per month in average and gynecology surgeries of around 300 cases a month, at 3 operating rooms. Many of emergency outpatients are pregnant woman. Being a specialized hospital, this hospital receives the patients from adjacent provinces as well.

The emergency case of obstetric service always needs immediate treatment. And any complication of pregnancy should not be diagnosed only by obstetric doctor and often requires high level of treatment of different departments. For these cases, this hospital is expected to set up the systems to function in the linkage with the specialized doctors of adjoining provincial general hospital.

Table 3ad: General Information

Type of hospital	Specialized
Distance to the nearest upper level hospital	90 km (Ha Noi)
No. of bed: authorized → actual	160 → 160
Bed occupancy rate	167 %
Average length of stay (days)	6.8
Annual No. of outpatients	20,039
Annual No. of inpatients	14,007
Annual No. of death at hospital	116
No. of MD	37
No. of medical staff except MD	□157

Table 3ae: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Emergency outpatients	3	14,007
2	Obstetrics	11	
3	New-born infant	3	

#### (2) Facility and equipment

##### 1) Facility

The existing building which was lately completed is new and has ample space. Nam Dinh Province has a university of nursing, which will complete the building of lecture rooms with the approval of PPC.

##### 2) Equipment

As mentioned above, the building is new and has enough space but the equipment is not adequately provided. They are not ready yet to provide the necessary services for the patients. Particularly, the incubators are in shortage though this is obstetric hospital, and NICU is almost



non-functional. They have 2 maintenance engineers but the maintenance is not well done. When the equipment is down, they request the equipment supplier to make repairs.

### (3) Medical staff

As this hospital is specialized in obstetric service, more than 90% of the doctors are specialized in this field. Many of the nurses as well are bachelor degree. Though they are fully qualified for the service, such staffs are not considered well acquainted with the use of medical equipment as the equipment is not well managed. When the hospital becomes eligible for the Phase II Project, the training for the staff should also include the equipment management.

Table 3af: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	3				
Specialist II	25				
Specialist I	9				
General Doctor	3	Bachelor	5	19	3
Assistant Doctor	0	Middle Level	15	37	2
		Primary Level	3	0	0
Total	40	Total	23	56	5

### (4) Referral system

This pediatric hospital referred patients of 742 in 2008 and 745 in 2009 to upper level hospitals. They have received 115 patients from lower level hospital during the last 2 years. The patients referred to upper level hospitals in 2009 included 93 premature babies. The reason of such cases may be because the low level of service at NICU having no incubator. The number of patients referred from the lower level hospitals in 2009 was 5,015.

### (5) Environment control

Infection control	In infection control department, 17 staffs are washing all used clothes and linens, sterilizing the medical instruments. In the laundry and central material room area, 300kg used clothes and linens for all patients and medical staffs are treated every day. There are 8 washing machines, 2 driers in laundry room, 8 autoclaves and 4 ovens for dry-heat sterilization in central material room. But there is no store room for sterilized clothes, linens and medical instruments. The central waste water treatment facility is maintained and monitored by only 1 staff.
Waste water treatment system	There are 2 staffs that are responsible for operation and maintenance of the facility. The facility is checked and maintained every day. The amount of treatment is 200m <sup>3</sup> a day, which is less than the capacity of the treatment facility; 400m <sup>3</sup> a day. The technology used for waste water treatment is basically biological treatment with an addition of coagulant and disinfectant before discharging. Sludge sediment in waste water treatment process is cleaned and vacuumed by a private company in Ha Nam every 2 years. Department of environment and natural

	resources takes and tests the sample in every 6 months on waste water quality after treatment.
Solid waste treatment system	<p>About 500 kg per day of general solid waste is generated in the hospital and hospital contracts with a private firm in Ha Nam for the transportation and disposal at town's landfill.</p> <p>Medical hazardous waste is generated at 47 kg per day. Since the incinerator is broken, hospital contracts with local private company for transporting and burning.</p> <p>Currently, general waste and medical hazardous waste storages are not centralized and a room for central storage is being constructed. Currently, the hazardous medical waste is kept in the provisional room which is air conditioned.</p> <p>The hospital gains about 1 to 2 million VND per month as extra income by recycling some solid material for waste.</p>
Training for infection control	Training activities are conducted once a year to all staffs of the hospital.
Plan for environment management	No specific plan
Points for improvement	<p>a) Infection Control activity</p> <ul style="list-style-type: none"> <li>· Storage room for sterilized clothes, linens and medical instruments in the central material room area is needed.</li> </ul> <p>b) Waste water treatment system</p> <ul style="list-style-type: none"> <li>· Pre-treatment for waste water is needed before sending to the central waste water treatment facility.</li> <li>· Central waste treatment facility for disinfecting process should be repaired immediately.</li> <li>· As testing result shows, the system should be improved to reduce the H2S and Total coli form to a standard level.</li> <li>· All items should be tested in accordance with Decree TCVN7382-2004.</li> </ul> <p>c) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done</li> </ul> <p>d) Training Activity</p> <ul style="list-style-type: none"> <li>· Training should be done more frequently for all staff of the hospital to improve the knowledge and skill for solid waste segregation and hospital hygiene</li> </ul>

### 3.2.6. Thai Binh Provincial Pediatric Hospital

#### (1) Characteristics

Thai Binh Provincial Pediatric Hospital, a specialized pediatric hospital, has pediatric outpatient, respiratory, digestive organs, surgery and new born infant departments. In addition to emergency outpatient, surgery and ICU departments, they have radiology, image diagnosis, laboratory and pathology departments. Outpatients of 1,174 visit per day in average. Among the inpatients, the diseases of respiratory infectious disease and diarrhea are many, sharing 60% of all inpatients. The hospital is also receiving the patient of congenital diseases so that there is a need for a high level of service to a limited extent.

Table 3ag: General Information

Type of hospital	Specialized
Distance to the nearest upper level hospital	110 km (Ha Noi)
No. of bed: authorized → actual	200 → 205
Bed occupancy rate	164 %
Average length of stay (days)	7.6
Annual No. of outpatients	30,524
Annual No. of inpatients	16,098
Annual No. of death at hospital	43
No. of MD	31
No. of medical staff except MD	137

Table 3ah: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Respiratory/digestive organs	7	9,472
2	Urinary, circulatory, muscular nerve, joint diseases	4	3,906
3	New born emergency outpatients	6	2,248

## (2) Facility and equipment

## 1) Facility

This hospital was separated from the provincial general hospital in 2008, and presently using a part of provincial general hospital. An improvement plan up to 2020 was approved by provincial planning and investment office. They will increase the beds from 200 to 300 by 2013, in accordance with the improvement plan. Though the plan of new building construction has been approved by PPC, the construction work has not commenced. They are negotiating with the farmers association to acquire the land of 3 ha for construction, and expect to conclude the contract for the land after the harvest season.

## 2) Equipment

Many types of equipment, except the ones procured in 2008 and 2009, are obsolete. The number is also insufficient. They have 5 maintenance engineers but the equipment is not well maintained. They have no contract with private company for equipment maintenance.

## (3) Medical staff

In spite of specialized service hospital, their specialized doctors are 40% only. However, they do not have an ambition to become capable of doing high-level of service very soon such as heart surgery of infant, so that the equipment of specifications which they can handle would be eligible.

Table 3ai: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	2				
Specialist II	0				
Specialist I	7				
General Doctor	14	Bachelor	12		1
Assistant Doctor	0	Middle Level	40	2	4
		Primary Level	0	0	0
Total	23	Total	52	2	5

#### (4) Referral system

This hospital was separated from the provincial general hospital in 2008, but the actual activities and services are still maintained as in the past. Particularly, the vice director of this pediatric hospital was used to be a head of pediatric department of provincial general hospital, so that he still feels the pediatric hospital still belongs to the general hospital. In this situation, the hospital referred patients of around 10% (1,838 in 2008 and 2,740 in 2009) of all the patients to the upper level hospitals.

The number of patients referred from the lower level hospitals was 4,000 to 10,000, which implies that the lower level hospitals heavily rely on this pediatric hospital.

(5) Environment control

Infection control	Only few staffs are nominated for infection control activity, and there is no laundry area, nor central material room in the hospital.
Waste water treatment system	Drain piping system of the hospital is divided into two: surface water sewage system (rain water) and waste water sewage system discharged from each department. However, each building in hospital does not have pre septic tank to regulate the amount of waste water. Moreover, the hospital does not have its own central waste water treatment facility, so that the waste water of the hospital is sent to the facility of the General Hospital and to the public waste water treatment plant through the public sewage system.
Solid waste treatment system	Medical waste is gathered and taken out to the storage by local private company. The hospital produces around 400 kg of medical waste, 1% of which is medical hazardous waste. General waste is transported and disposed at the landfill by local private company every 2 days. The hospital does not have the recycling system. Medical hazardous waste is also transported and disposed by a local private company twice a week.
Training for infection control	There is no training on infection and hospital environmental management.
Future plan	Currently the hospital is implementing a plan to build a new hospital, According to the plan, and construction will be started in 2013 and completed in 2016. But the plan does not show details of central waste water treatment, solid waste treatment, nor infection control.
Points for improvement	<p>a) Infection Control Activity</p> <ul style="list-style-type: none"> <li>· More attention should be paid to infection control.</li> <li>· Clothes of the hospital staffs are washed by themselves in their home. Because there is no laundry area, nor central material room in the hospital. The hospital should be set rooms for infection control activity immediately.</li> </ul> <p>b) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done</li> </ul> <p>c) Training Activity</p> <ul style="list-style-type: none"> <li>· Enhancement of human resource development for environment management is needed</li> </ul>

3.2.7 Thanh Hoa Provincial Pediatric Hospital

(1) Characteristics

Thanh Hoa Provincial Pediatric Hospital has 11 departments including pediatric outpatient, respiratory, digestive organ, surgery, new born infant, and others, like general hospital. They have radiology, image diagnosis, laboratory and pathology departments, in addition to emergency outpatient, surgery, and ICU for diagnosis. However, the number of outpatient is 184 per day in average, which is comparatively small. Inpatients at infectious, respiratory and internal secretion/metabolism departments share less than 50%, and the major diseases are osteomyelitis, high fever, pneumonia, dyspnea. As this province is relatively poor, the hospital should provide the necessary service to save the acute serious patients and treat them to be free from aftereffect for the time being, rather than trying to treat the congenital disease with the high technology.

Table 3aj: General Information

Type of hospital	Specialized
Distance to the nearest upper level hospital	150 km (Ha Noi)
No. of bed: authorized → actual	300 → 360
Bed occupancy rate	138 %
Average length of stay (days)	7.5
Annual No. of outpatients	47,923
Annual No. of inpatients	20,888
Annual No. of death at hospital	2
No. of MD	71
No. of medical staff except MD	274

Table 3ak: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Infectious disease · dermatology	3	3,279
2	Respiratory	5	3,265
3	Renal · internal secretion · metabolism	5	3,126
4	Surgery	8	3,020
5	Digestive organs	5	2,922
□	New born infants	3	1,520
7	Trauma · ophthalmology · plastic surgery	5	1,358
8	Nerve · psychiatry	4	385

## (2) Facility and equipment

### 1) Facility

The existing buildings are new and a plan of another new building was approved by PPC. This new building is being constructed and will be completed in 2013. They have a long-term improvement plan up to 2020, and wait for the approval of provincial health office. Implementation of this long-term plan is subject to the annual budget allocation by PPC.

### 2) Equipment

Most of equipment are new and can be full operation. However, the quantity is obviously insufficient. They have 3 maintenance engineers and contracts with the private companies for maintenance. The equipment is therefore well maintained. Equipment for image diagnosis, surgery, ICU and laboratory are provided by the private companies under the contract with the hospital.

### (3) Medical staff

As the specialized pediatric hospital, the number of specialized doctors is 30% of all doctors, which is relatively small. Like Thai Binh Provincial Pediatric Hospital, the procurement of equipment of proper specifications for a limited use may still satisfy the needs. The nurses of bachelor degree and of secondary level are more than double of doctors, so that the services would not have any hindrance if those nurses are well controlled under the proper line of command, even if the number of specialized doctors is small. They have 1 technician of master degree, and if he takes initiative in the training on safe operation and maintenance of equipment, it would be highly efficient.

Table 3a1: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	5				
Specialist II	3				
Specialist I	11	Master			1
General Doctor	46	Bachelor	31		6
Assistant Doctor	0	Middle Level	111		21
		Primary Level	0	0	0
Total	65	Total	142	0	28

#### (4) Referral system

The number of patients referred to the upper level hospitals in 2009 was 2,640 and the number of patients referred back from the upper level hospitals was only 5. Major diseases of patients referred to the upper level hospitals were malignant tumor, renal failure and serious heart/respiratory diseases. The hospital is trying to reduce those patients to be referred, by opening new departments. The number of patient referred from the lower level hospitals in 2009 was 21,053. This big number of referred patients means that the lower level hospitals rely heavily on this pediatric hospital.

#### (5) Environment control

Infection control	Currently, Infection control activity of the hospital is done at provisional building, so it is not designed in accordance with the Circular No18/2009/TT-BYT which indicates the number of functional rooms and one way procedure from receiving unclean clothes/linens and medical tools, to washing, sterilizing and storing them. There are 2 washing machines, 1driers for laundry, and only 1 autoclave for sterilizing medical instruments of all departments.
Waste water treatment system	The hospital introduced a wet land system called DEWATS for waste water treatment technology in 2007 through the support of German NGO. DEWATS is located in an area of 700m2 behind the hospital. The horizontally planted gravel filter is creating good landscape behind the hospital. This central waste water treatment facility has the capacity of 500m3/day. As the amount of waste water generated in the hospital is only 300m3/day, the facility can still accommodate additional waste water, which will be produced by the hospital when it is expanded to 500 beds in 2015. Every 6 months, discharged water after treatment is tested.
Solid waste treatment system	2m3 general solid waste and 20 kg medical hazardous waste are generated every day. General waste is gathered 2 times per day, transported and treated by a local private firm. The medical hazardous waste is gathered and kept stored at the open aired storage space in front of the incinerator surrounded by wire mesh. The incinerator is operated 5 days a week. The incinerator functionality is checked once a year. The exhaust gas from chimney of the incinerator is monitored by local environment company.
Training for infection control	Training activities related to classification, management and monitoring the wastes are one of the activities of infection control team established in the hospital, and they also provide the training to the staff of other departments in the hospital. To the new staff, they provide the training on infection control and medical waste management every 3 month.
Plan for environment management	No specific plan

Points for improvement	<p>a) Infection Control Activity Infection Control Department facility should be adequate/newly constructed in accordance with the Circular No18/2009/TT-BYT.</p> <p>b) Waste water treatment system</p> <ul style="list-style-type: none"> <li>· Pre-treatment for waste water is needed before sending to the central waste water treatment facility.</li> <li>· As testing result shows, the system should be improved to reduce total coli form to a standard level.</li> <li>· All items should be tested in accordance with the Decree TCVN7382-2004</li> <li>· Manhole covers for both waste water and rain water drainage were stolen and should be fixed immediately.</li> <li>· The lack of urine drainage tube causes unsanitary conditions at some toilets. It should be restored immediately.</li> </ul> <p>c) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely.</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done.</li> <li>· General waste centralized storage should be constructed to avoid disorganized stock of wastes.</li> </ul> <p>d) Training Activity</p> <ul style="list-style-type: none"> <li>· Enhancement of human resource development for environment management is needed.</li> </ul>
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### 3.2.8 Nghe An Provincial Pediatric Hospital

#### (1) Characteristics

Nghe An Provincial Pediatric Hospital, having separating the pediatric department from the general hospital, operates 7 departments of pediatric outpatient, respiratory, digestive organs, surgery, new born infant and others. They have radiology, image diagnosis, laboratory and pathology departments for diagnosis in addition to the departments of emergency outpatient, surgery and ICU. The number of outpatients is 340 per day in average, and the inpatients of surgery, digestive organs, infectious disease and respiratory departments share more than 60%. Major diseases are meningitis, high fever, pneumonia and dyspnea. As this province is also poor, the hospital should provide the necessary service to save the acute serious patients and treat them to be free from aftereffect for the time being, rather than trying to treat the congenital disease with the high technology.

Table 3am: General Information

Type of hospital	Specialized
Distance to the nearest upper level hospital	300 km (Ha Noi)
No. of bed: authorized → actual	240 → 244
Bed occupancy rate	152 %
Average length of stay (days)	5.7
Annual No. of outpatients	88,505
Annual No. of inpatients	23,791
Annual No. of death at hospital	68
No. of MD	59
No. of medical staff except MD	208

Table 3an: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Surgery	9	4,932
2	Digestive organs	3	3,608
3	Infectious disease	4	3,519
4	Respiratory	4	3,056
5	Emergency outpatients	7	2,166
6	New born infants	6	1,933
7	Circulatory organs	3	1,609
8	Medical examination	-	1,553
9	ENT	7	1,415



## (2) Facility and equipment

### 1) Facility

The existing building is very small and old. The space is so limited for the services and the patients that it is always crowded with patients and their families. With the approval of PPC, the new building is being constructed and will be completed in 2010. When the new building is completed, they will transfer all the patients to new one and plan to expand the existing building. For the future improvement of the hospital, they are discussing with MOH on the plan to include the obstetric services.

### 2) Equipment

The existing equipment is old and fall short in quantity. They have 4 maintenance engineers, and the equipment is properly maintained in general. However, due to the lack of budget, they do not have contract with private company for maintenance. Every time when the equipment becomes out of order, they request the supplier to repair.

### (3) Medial staff

More than 60% of the doctors are specialized, and more than 90% of nurses are of graduates of more than secondary level medical school. Therefore, more than certain level of medical judgment can be expected. The subject in future is how they improve the services and what equipment they procure. There will not be any significant bottlenecks, however, in their service improvement, as they satisfy the basic conditions of technical level, although some training may be required. They have 1 technician of master degree, and he may become a core person in equipment maintenance. As hospital seems to have expectation to him, some measure for active promotion is recommendable.

Table 3ao: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	4				
Specialist II	7				
Specialist I	22	Master			1
General Doctor	22	Bachelor	5		0
Assistant Doctor	0	Middle Level	107		12
		Primary Level	2		0
Total	55	Total	114	0	13

### (4) Referral system

The referral system with the other hospital is not functioning well. The hospital should make more efforts to reduce the number of patients to be referred to the upper level hospitals. The

number of patients referred to the upper level hospitals is 2,620 in 2008 and 2,143 in 2009, which was slightly decreased. The major diseases of patients referred to the upper level hospitals were kidney disease and serious heart/respiratory disease, which should have been treated at this pediatric hospital. The number of patients referred back from the upper level hospitals was 50 in 2008 and 52 in 2009. Though the number of patients referred to the upper level hospitals was slightly decreased, there is still a room for further improvement. The number of patients referred from the lower level hospitals in 2009 was 5,060. Considering the medical services of lower level hospitals, such number of referred patients looks natural, which impresses that the linkage between this hospital and the lower level hospital is well functioning.

(5) Environment control

Infection control	<p>Laundry area and central material room currently have 18 staffs and serve for 300 kg of laundry per day for textile, and other metal instruments. Laundry area has 4 washing machines, 2 dryers which are operational. The central material room is well organized according to the standards of MOH. Central material room has 3 ovens for dry-heat sterilization. In laundry, infectious textile are soaked with water and then washed with Chloramine B.</p> <p>Waste management team of the infection control department goes to all department of the hospital to check and remind segregation and environmental sanitation hygiene every week, and the hospital hygiene inspection team under vice-director monitors all departments on this issue every month.</p>
Waste water treatment system	<p>Central waste water treatment facility has a capacity of 200 m<sup>3</sup> per day. All waste water is sent to this facility. Chemical and infectious liquid waste is not separately collected and sent together to the waste water. After the treatment, the water is discharged directly into public sewers, located right next to the hospital. Currently there is no public waste water treatment plant, so that the public sewer is directly connected to a stream.</p> <p>Method used in waste water treatment facility is basically a biological treatment with an addition of coagulant and disinfectant before discharging.</p> <p>The facility is checked and maintained every month. Waste water after treatment is sampled and tested for its quality once a year. In accordance with the current regulations, hospital reports quarterly to licensing agencies on the quality of discharged water.</p>
Solid waste treatment system	<p>The volume of hospital solid waste is nearly 454kg per day of medical hazardous wastes and 2,500 kg per day of general waste. The hospital contracts with private companies for wastes (often toxic) disposal, and the company collects medical hazardous waste with an intensity of 2 times per day. Hospital also contracts with international companies for the sanitary hygiene cleaning service for the whole hospital, as well as collection and storage of waste in hospitals. The hygiene situation at the hospital is generally well maintained.</p>
Training for infection control	<p>The infection control department is in charge of planning and implementation of infection control activity. They provided new staffs with the training on guidance of infection control and medical waste treatment 4 times per year, and the other staffs with the regulation of MOH and operating procedures of infection control 2 times per year. Moreover, staffs from international cleaning service company also have some training courses on medical waste management. These training courses are very useful for all staffs' capacity enhancement.</p>
Plan for environment management	No specific plan

Points for improvement	<p>a) Waste water treatment system</p> <ul style="list-style-type: none"> <li>· Pre-treatment of waste water is needed before sending to the central waste water treatment facility.</li> <li>· Central waste treatment facility for disinfecting process should be repaired immediately.</li> <li>· As testing result shows, the system should be improved to reduce H2S and total coli form to a standard level.</li> <li>· All items are needed to be tested in accordance with TCVN7382-2004.</li> </ul> <p>b) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely.</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done.</li> </ul>
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### 3.2.9 Binh Dinh Provincial General Hospital

#### (1) Characteristics

Binh Dinh Provincial General Hospital, having a role of regional hospital, has 17 departments of circulatory organs, urinary, geriatrics, brain surgery, tumor, trauma/burn and others, in addition to the basic departments (inter medicine, surgery, pediatrics and obstetrics). As a matter of natural, capacity of hospital is also big having more than 1,000 beds operating. In addition to emergency outpatients, surgery, ICU and dialysis rooms, they have radiology, laboratory and pathology departments for diagnosis. The number of outpatients is 1,760 per day in average, and inpatients of obstetric and brain surgery share 50%. The obstetric department serves for complicated pregnancy and the infectious department treats virus oriented bleeding fever, both of which are important for the people. The hospital clearly features their high-tech services and have an inter medicine department especially for high government officials. Serving for the local needs for the people, they also offer high technology such as brain surgery. As there is no upper level hospital within a range of 300 km, the improvement of this hospital, which is next to Cho Ray Hospital in the level of technology, has a geographical priority from the viewpoint of reducing the patient's burden to access to the hospital.

Table 3ap: General Information

Type of hospital	Central General
Distance to the nearest upper level hospital	400 km (Hue)
No. of bed: authorized → actual	900 → 1,075
Bed occupancy rate	157 %
Average length of stay (days)	9.4
Annual No. of outpatients	457,784
Annual No. of inpatients	54,404
Annual No. of death at hospital	35
No. of MD	211
No. of medical staff except MD□	1,021

Table 3aq: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Obstetrics	12	17,857
2	Nerves	18	9,410
3	Pediatrics	10	8,009
4	Surgery	15	6,642
5	Trauma · burn	14	5,127
6	Operation room · anesthesia	9	4,698
7	Infectious disease	5	4,162
8	Urology	7	3,514
9	Inter-medicine	6	3,322
10	Tumor	9	2,704

## (2) Facility and equipment

### 1) Facility

The plan of having the same function as the regional hospital was approved in 2006. Improvement plan up to 2015 was prepared and they target to increase the beds to 1,322. With the approval of PPC, the expansion of building is currently on-going. Expansion includes the surgery department as the main facility and the total number of operation room will be 16 when the expansion is completed.

### 2) Equipment

Excepting the main equipment at image diagnosis and laboratory rooms, most of equipment are old and fall short in the quantity. They have 20 maintenance engineers who maintain the equipment in a very good condition. They also have many sophisticated equipment such as MRI, which are periodically maintained by private company under the contract with the hospital.

### (3) Medical staff

This hospital is one of the hospitals which are provided with the doctors of all fields. Yet, a half of doctors are specialized, which is considered sufficient. The number of Specialist II, Specialist I and general doctors can be formed in a pyramid with each ratio, and such formation is effective for the hospital and equipment management, when it is placed in a proper line of command. Employment of technician of master degree implies that due attention is paid to the maintenance of medical equipment and the quality of service with the use of equipment.

Table 3ar: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	1				
Master	30				
Specialist II	9				
Specialist I	77	Master			1
General Doctor	96	Bachelor	20	2	15
Assistant Doctor	16	Middle Level	375	57	68
		Primary Level	13	0	4
Total	229	Total	408	59	88

### (4) Referral system

This hospital as a regional hospital is expected to provide the complete medical service, except for the special cases, serving for around 5 Million people. In 2009, however, they referred 1,656 outpatients and 409 inpatients to the upper level hospital. These figures are still decreased from the ones in 2008, which are 2,635 of outpatients and 475 of inpatients. The major diseases of referred patients were; cancer and heart diseases, and those are caused that the

hospital does not provide the services for these diseases. Their improvement plan includes the establishment of the departments of these fields. With this establishment, the number of referred cases would be decreased, while the hospital may be congested. The number of patients referred from the lower level hospitals was 14,258 in 2008 and 26,342 in 2009, which is on the increasing trend. This increase implies that the reliance on this hospital is becoming heavier, but it would be recommendable to study to refer the patients to the district hospital in the province, in case only a simple treatment is enough.

(5) Environment control

Infection control	<p>Laundry area and central material room currently have 18 staffs and serve for 300 kg of laundry per day for textile, and other metal instruments. Laundry area has 4 washing machines, 2 dryers which are operational. The central material room is well organized according to the standards of MOH. Central material room has 3 ovens for dry-heat sterilization. In laundry, infectious textile are soaked with water and then washed with Chloramine B.</p> <p>Waste management team of the infection control department goes to all department of the hospital to check and remind segregation and environmental sanitation hygiene every week, and the hospital hygiene inspection team under vice-director monitors all departments on this issue every month.</p>
Waste water treatment system	<p>Central waste water treatment facility has a capacity of 200 m3 per day. All waste water is sent to this facility. Chemical and infectious liquid waste is not separately collected and sent together to the waste water. After the treatment, the water is discharged directly into public sewers, located right next to the hospital. Currently there is no public waste water treatment plant, so that the public sewer is directly connected to a stream.</p> <p>Method used in waste water treatment facility is basically a biological treatment with an addition of coagulant and disinfectant before discharging.</p> <p>The facility is checked and maintained every month. Waste water after treatment is sampled and tested for its quality once a year. In accordance with the current regulations, hospital reports quarterly to licensing agencies on the quality of discharged water.</p>
Solid waste treatment system	<p>The volume of hospital solid waste is nearly 454kg per day of medical hazardous wastes and 2,500 kg per day of general waste. The hospital contracts with private companies for wastes (often toxic) disposal, and the company collects medical hazardous waste with an intensity of 2 times per day. Hospital also contracts with international companies for the sanitary hygiene cleaning service for the whole hospital, as well as collection and storage of waste in hospitals. The hygiene situation at the hospital is generally well maintained.</p>
Training for infection control	<p>The infection control department is in charge of planning and implementation of infection control activity. They provided new staffs with the training on guidance of infection control and medical waste treatment 4 times per year, and the other staffs with the regulation of MOH and operating procedures of infection control 2 times per year. Moreover, staffs from international cleaning service company also have some training courses on medical waste management. These training courses are very useful for all staffs' capacity enhancement.</p>
Plan for environment management	No specific plan
Points for improvement	<p>a) Waste water treatment system</p> <ul style="list-style-type: none"> <li>· Pre-treatment of waste water is needed before sending to the central waste water treatment facility.</li> </ul>

	<ul style="list-style-type: none"> <li>· Central waste treatment facility for disinfecting process should be repaired immediately.</li> <li>· As testing result shows, the system should be improved to reduce H2S and total coli form to a standard level.</li> <li>· All items are needed to be tested in accordance with TCVN7382-2004.</li> </ul> <p>b) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely.</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done.</li> </ul>
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### 3.2.10 Lam Dong Provincial General Hospital

#### (1) Characteristics

Lam Dong Provincial General Hospital has the departments of ENT, ophthalmology, infectious disease, dermatology and physiotherapy, in addition to the basic 3 departments. For the diagnosis, they have radiology, image diagnosis, laboratory and pathology department, as well as emergency outpatient, surgery and ICU departments. The number of outpatients is 1,052 per day in average, and the inpatients at the basic 4 departments' share 66% in the upper position. As Lam Dong Province located in the Central Highlands, presents cold highland weather, tuberculosis ranks at 10<sup>th</sup> among other diseases. As the inpatient at basic 4 departments ranks in an upper position, the service required for the patients are not especially of high technology. It is important therefore that the hospital transfers the patients of special case and/or receiving the patients of recovery period from the upper level hospital, at the same time to provide the secondary lifesaving service.

Table 3as: General Information

Type of hospital	General
Distance to the nearest upper level hospital	320 km (HCM)
No. of bed: authorized → actual	500 → 497
Bed occupancy rate	99 %
Average length of stay (days)	5.9
Annual No. of outpatients	273,601
Annual No. of inpatients	30,366
Annual No. of death at hospital	150
No. of MD	102
No. of medical staff except MD	441

Table 3at: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Obstetrics	9	6,152
2	Pediatrics	7	5,216
3	Trauma	7	4,686
4	Inter-medicine	10	3,948
5	Surgery	9	3,311
6	Operation room • anesthesia	2	1,427
7	Infectious disease • dermatology	3	1,338
8	ICU	6	1,280
9	ENT	5	1,058
10	Tuberculosis	2	780

#### (2) Facility and equipment

##### 1) Facility

Though the existing buildings are still new, the hospital improvement master plan targeting the year of 2020 was prepared. The plan includes the expansion of beds from 450 to 800, and reduction of patients referred to the upper level hospital by 15%, IMR per 100,000 births from 6.5 to 6.0, and MMR from 45 to 35. In accordance with this master plan, five years improvement plan to 2015 was prepared, and the expansion construction is on-going. It will be

completed in 2013.

## 2) Equipment

Many of the equipment are old and short in quantity. Specifically, the hospital is providing the radiology treatment for the cancer but the equipment currently used is insufficient. They have 5 maintenance engineers and equipment is maintained well. Equipment for image diagnosis and respirators are well maintained by the private company under the contract with the hospital.

## (3) Medical staff

Like Binh Dinh Provincial General Hospital, this hospital also employs the doctors of all fields. The difference is that they have specialized doctors of one third of all. The number of assistant doctors shares around 20%, which is still a pending problem, but improvement with medium level of technology would be possible, as the hospital is not urging for rapid improvement with high technology. This hospital also employs a technician of master degree and this will be technically advantageous for improvement.

Table 3au: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	1				
Master	6				
Specialist II	5				
Specialist I	32	Master			1
General Doctor	57	Bachelor	3	4	11
Assistant Doctor	27	Middle Level	191	35	14
		Primary Level	12	0	1
Total	128	Total	206	39	27

## (4) Referral system

The number of patients referred to the upper level hospitals in Ho Chi Minh in 2009 was 5,069 including 1,365 of inpatients. In 2007, the number of such patients was 3,929 including 1,135 inpatients. Comparing the figures in 2007 and 2009, it can be assumed that the number of referred patients increased but the cases that the hospital could treat became more, so that the referral cases became relatively small. The major diseases of referred patients were; cancer and serious injuries. They are trying to decrease the referral cases by opening new departments of these fields.

The number of patients referred from the lower level hospitals in 2009 was 4,342. The systems of back referral to the lower level hospitals and from the upper level hospital are not well functioning yet.

(5) Environment control

Infection control	Infection control department has 10 staffs for washing all used clothes and linens, sterilizing the medical instruments. At laundry and central material room, 600kg/day of used clothes and linens for all patients and medical staffs is washed with 2 washing machines, packed, and the metal tools are sterilized and packed with 4 autoclaves, and stored them at the store room. The central waste water treatment facility and incinerator are maintained and monitored by 4 staffs.
Waste water treatment system	<p>Drain piping system of the hospital is divided into two: surface water sewage system (rain water) and waste water sewage system discharged from the departments. Individual septic tanks for each building are also built in this network. Currently hospitals are in the process of constructing additional buildings, so that the waste water collection network is expanded.</p> <p>The sewage system in the hospital has been used for long time, so that damages and water leakage on the piping are observed in the laundry area, and the water flows out of examination and obstetric ward, which can give negative impact to the environment. Presently, new central waste water treatment facility is under construction, and the drain piping system is also rehabilitated. The construction is expected to complete at the end of 2010. As of now, waste water from departments and wards is discharged to septic tanks and poured into the public sewer system.</p> <p>Waste water of 30 liters per day from radiological diagnosis department is discharged to their own tanks before discharging to the hospital drainage system. In these tanks, contaminated waste water is kept for 3 to 6 months of radioactive life cycle, and the radioactivity is measured by Inspector before discharging to the hospital drainage system.</p>
Solid waste treatment system	<p>The total volume of solid waste in hospital is about 205 kg per day, of which 157 kg is general waste and 48 kg is medical hazardous waste.</p> <p>For general waste, hospitals contracts with a private company for transportation and disposal in the city landfill.</p> <p>As the hospital does not have an incinerator, they planned to transport medical hazardous waste to the city waste incinerator plant located next to Da Lat landfill. However, this incinerator plant has not been completed yet, so that they burn them in a simple primitive way in the hospital site. Cinders after treatment are buried in the hole dug in the ground of the site, and then slaked lime is spread on cinders to sterilize. With this treatment, there is a risk of ground and groundwater contamination, which may endanger the hospital and adjacent residential area.</p>
Training for infection control	The infection control department is in charge of planning and implementation of infection control activity. But they provided all staffs of the hospital with the infection control training course only 1 or 2 times per year.
Plan for environment management	Currently, central waste water treatment facility is under construction. When completed, drain piping system of the hospital, surface water sewage system (rain water) and waste water sewage system discharged from all departments will be restored.
Points for improvement	<p>a) Waste water treatment system</p> <ul style="list-style-type: none"> <li>· Pre-treatment of waste water is needed before sending to the central waste water treatment facility.</li> <li>· New drain piping system should be rechecked.</li> </ul> <p>b) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely</li> <li>· The propagation of solid waste segregation and hospital hygiene should be done</li> <li>· New incinerator should be set to be used until the completion of the city waste incinerator plant.</li> </ul> <p>c) Training Activity</p> <ul style="list-style-type: none"> <li>· Enhancement of human resource development for environment management is needed.</li> </ul>



### 3.2.11 Ninh Thuan Provincial General Hospital

#### (1) Characteristics

Ninh Thuan Provincial General Hospital has departments of ENT, ophthalmology, infectious disease, circulatory organs, and others. For diagnosis, they have radiology, image diagnosis and laboratory department as well as emergency outpatients, surgery and ICU departments. They do not have pathology department. The number of outpatients is 550 per day in average, and the inpatients of basic 4 departments' share 76% in an upper position. Next to the basic 4 departments, the patients of circulatory disease and infectious disease follow. This implies the changes of disease structure from infectious to chronic disease, and the hospital is trying to serve for this change of needs. In Ninh Thuan Province which is relatively poor area, top ranking department for the patient's need is obstetric, which implies that the deliveries in this province still involve the risk to the life. Second ranking department for the patient's need is the surgery, which clearly implies the traffic accident happening in the province. In the hospital which requires the basic medical services, procurement of medium level of equipment for diagnosis and treatment of acute patient will be useful.

Table 3av: General Information

Type of hospital	General
Distance to the nearest upper level hospital	320 km (HCM)
No. of bed: authorized → actual	500 → 527
Bed occupancy rate	116 %
Average length of stay (days)	6.2
Annual No. of outpatients	142,947
Annual No. of inpatients	34,192
Annual No. of death at hospital	156
No. of MD	57
No. of medical staff except MD	485

Table 3aw: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Obstetrics	15	8,885
2	Surgery	9	6,295
3	Pediatrics	5	5,441
4	Inter-medicine	7	5,359
5	Infectious disease	8	3,529
6	Circulatory organs	8	3,034
7	Laboratory	7	680
8	ENT	3	442
9	Dental surgery	4	362
10	Ophthalmology	1	165

#### (2) Facility and equipment

##### 1) Facility

In accordance with the hospital improvement plan up to 2015, the construction of new building was approved by PPC, and being constructed. It is scheduled to complete in March 2011, and all activities will be transferred to new building when completed. The plan includes establishment of new department such as new born infant, tumor and others, equipment and training. Current building will be used by district hospital, after the transfer.

##### 2) Equipment

There is new equipment but still short in quantity and quality. Some of the equipment will be transferred to new building for continuous use. Other equipment will be left in the old building,

and used by the district hospital. They have 7 maintenance engineers and equipment is maintained well. Some equipment for image diagnosis, surgery, obstetric and infectious departments are maintained by the private company under the contract with the hospital.

### (3) Medical staff

Specialized doctors share around 40% but they employ no assistant doctors, which is uplifting the bottom of overall capability. On the other hand, the number of primary level nurse is the biggest among 15 candidate hospitals. In this situation of medical staff composition, attention should be paid to the equipment specifications, number, and purpose of use, when the equipment is to be procured. The technicians of master and bachelor degrees are many, which will benefit to the introduction of sophisticated medical equipment.

Table 3ax: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	5				
Specialist II	3				
Specialist I	25	Master			1
General Doctor	52	Bachelor	10	2	10
Assistant Doctor	0	Middle Level	167	28	14
		Primary Level	25	2	2
Total	85	Total	202	32	27

### (4) Referral system

The patient referral system with upper level hospitals is working, but the one to lower level hospitals is not functioning as in the other candidate hospitals.

The number of outpatients referred to the upper level hospitals in 2008 was 3,675 and the one of inpatients was 1,061. In 2009, the referred outpatients were 3,281 and inpatients were 969, both of which decreased. Main reason of this decrease is considered that the brain surgery department was opened.

The number of patients referred from the lower level hospitals in 2009 was 3,930 but there was no case of back referral from the upper level hospitals, like the other candidate hospitals.

### (5) Environment control

Waste water treatment system	<p>Drain piping system of the hospital is not divided. Surface water sewage system (rain water) and waste water sewage system are mixed together and go into waste water treatment system.</p> <p>The hospital at the present location has a central waste water treatment facility using biological sediment model combined with suction volute pump. The capacity of the waste water treatment is 15 m<sup>3</sup>/ h. Central waste water treatment facility is still operating normally. However, the inspection of the Nha Trang Pasteur Institute showed that the quality of the outlet water did not meet the standard: TCVN-7382/2004 level 1.</p>
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	Currently, a new main hospital building is under construction. Construction plan includes the separate sewage system for surface water and waste water, and an adequate central facility for waste water management. The capacity of the treatment is 500m <sup>3</sup> per day. The method adopted is a biological treatment with coagulating and disinfecting before discharging the water.
Solid waste treatment system	The hospital follows the Decision 43/2007/QĐ-BYT on medical waste management for solid waste segregation and hospital hygiene, transportation, storage and waste treatment. The hospital activities produce 1,700 kg of solid waste, of which 120kg is hazardous medical waste. The solid waste treatment in the hospital is clearly separated to 2 ways for general waste and for hazardous medical waste. For general waste, hospital maintains a contract with a private company for collection and disposal at the public garbage. General wastes are collected daily. For hazardous medical waste, the current incinerator in hospital is used. Test result of the incinerator is not available.
Training for infection control	Hospital prepares the training plan in detail for each year and for coming 5 years as well. However, the training related to improve the knowledge and skill for solid waste segregation and hospital hygiene is not included in this plan. Training on infection control is conducted by infection control department once a year. There is a need to provide adequate trainings on medical waste management to the hospital staff.
Plan for environment management	The hospital prepares mid and long term improvement plan, but plan of the medical environment management and infection control is not included.
Points for improvement	a) Waste water treatment system <ul style="list-style-type: none"> <li>· Pretreatment of waste water is needed before sending to the central waste water treatment facility.</li> <li>· As testing result shows, the system should be improved to reduce PH, BOD5, H2S, Ammonium, PO4+ and total coli form to a standard level. The experience and lessons from the current facility should be reflected to the new facility of new site.</li> </ul> b) Solid Waste Treatment <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely.</li> <li>· The propagation of solid waste segregation and hospital hygiene should be done.</li> </ul> c) Training Activity <ul style="list-style-type: none"> <li>· Enhancement of human resource development for environment management is needed.</li> </ul>

### 3.2.12 Tay Ninh Provincial General Hospital

#### (1) Characteristics

Tay Ninh Provincial General Hospital has departments of ENT, ophthalmology, infectious disease, physiotherapy and others in addition to basic 4 departments. For diagnosis, they have radiology, image diagnosis, laboratory, and pathology department as well as emergency outpatients, surgery and ICU departments. The number of outpatients is 1,351 per day in average, and the inpatients of basic 4 departments plus infectious department reaches 87%. The most number of beds are allocated in the inter medicine, and the 5<sup>th</sup> ranking is given to infectious disease department, which implies the hospital service is doubled with infectious and chronic diseases. Current needs for the service are almost satisfied by the basic 4 departments and many other services will not be required for the time being. For the increasing chronic diseases, improvement of basic 4 department services to a medium or higher level technologies will be required.

Table 3ay: General Information

Type of hospital	General
Distance to the nearest upper level hospital	120 km (HCM)
No. of bed: authorized → actual	500 → 647
Bed occupancy rate	100 %
Average length of stay (days)	6.0
Annual No. of outpatients	351,413
Annual No. of inpatients	39,549
Annual No. of death at hospital	246
No. of MD	103
No. of medical staff except MD	526

Table 3az: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Inter-medicine	15	11,209
2	Obstetrics	9	9,097
3	Surgery	12	6,811
4	Infectious disease	6	3,732
5	Pediatrics	5	3,728
6	Ophthalmology	6	1,201
7	Emergency	9	983
8	ENT	5	493
9	Dental surgery	5	375

## (2) Facility and equipment

### 1) Facility

The existing buildings are obsolete and not well designed for the line of flow, which is inconvenience for use. Therefore, the mid-long term improvement plan up to 2010 was prepared with the target of increasing the beds to 1,000 at maximum. The plan to increase the bed from 500 to 700 at maximum by 2015 was approved at first by DOH. 2 building are under construction. They plan to construct other 2 buildings with 8,000 m<sup>2</sup> and 500 m<sup>2</sup> respectively to be completed by 2020. The total budget is 50 Billion VND, and they wait for the budget allocation from PPC. Targeting to improve the services, they plan to have the technical assistance from the higher level hospitals in Ho Chi Minh. The plan includes the department of tumor having 7 doctors of inter medicine and surgery and will be place in implementation with the support of PPC.

### 2) Equipment

The existing equipment is extremely old and short in quantity. They have 4 maintenance engineers but the maintenance is not well done. CT scanner is broken and they are waiting for the spare parts for repair. Medical gas supply facilities are maintained by the private company under the contract.

### (3) Medical staff

This hospital also has a specialized doctor of around a half of all, and no assistant doctor, which is uplifting the bottom of overall capability. The number of nurses is the second most, next to Binh Dinh Provincial General Hospital. Therefore, when the training includes for the nurses, training courses should be efficiently planned, to select either placing importance to the number of trainee, or period or the quality of training.

Table 3ba: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	10				
Specialist II	4				
Specialist I	44	Master			1
General Doctor	52	Bachelor	2	2	7
Assistant Doctor	0	Middle Level	273	31	18
		Primary Level	11	1	0
Total	110	Total	286	34	26

#### (4) Referral system

The referral system to the upper level hospitals is functioning. In 2008, 475 patients were referred to the upper level hospitals, and in 2009 it was 935. Number of patients back referred from the upper level hospitals was 202 in 2008 and 166 in 2009. Compared with the number of patients referred to the upper level hospitals, the number of back referral from those hospitals is small. However the number of back referral case is increasing, and the rate of back referral case from the upper level hospitals is bigger than the other candidate hospitals.

The number of patients referred from the lower level hospitals was 4,419 and only 5 patients were back referred to the lower level facilities. Due to the lower level of service at the lower level hospitals, many patients sent from the lower level hospitals were completely treated and discharged from this hospital.

#### (5) Environment control

Waste water treatment system	<p>Drain piping system of the hospital is divided into two: surface water sewage system (rain water) and waste water sewage system discharged from the hospital departments.</p> <p>The drain pipe of waste water from all departments is constructed under the ground. Infectious and chemical waste water coming from departments of infectious disease, laboratory, surgical and laundry, etc, are sterilized by chemical material such as Chloramine B before discharging. The sterilized water is sent through waste water drain pipe to the central waste water treatment facility. The facility has a treatment capacity of 300m<sup>3</sup> a day, and after treatment, the water is discharged directly to Lam Vo stream.</p> <p>Method used in the treatment facility is basically a biological treatment with an addition of coagulant and disinfectant by Chloramine B before discharging.</p>
Solid waste treatment system	<p>Hospital produced approximately 400-500 kg medical waste, including 170-200 kg/day of medical hazardous waste.</p> <p>General waste is gathered, transported and disposed by local private company every day.</p> <p>Hazardous medical waste is burned by the incinerator. The cinders after treatment are buried in the hole dug in the ground in the hospital premises of the site, then slaked lime is spread on cinders to sterilize it.</p> <p>The incinerator is not monitored. But only 2 items of the exhaust gas from chimney which is regulated by TCVN6560:2005 are available.</p> <p>There is still confusion about mixing general waste and medical hazardous waste. Because there is no instruction sheet, some colored plastic bags nor containers for</p>

	segregation, collection, storage and disposal of medical waste which is following the Decision 43/2007/ QĐ-BYT.
Training for infection control	Training activity for all staffs is in charge of infection control department. Every year, infection control department makes a plan of training and conducts training course for all staffs. However, there is only 1 or 2 course per year for them. This is not enough for them to understand all knowledge related to infection control and medical waste management.
Plan for environment management	No specific plan
Points for improvement	<ul style="list-style-type: none"> <li>a) Waste water treatment system <ul style="list-style-type: none"> <li>· Pre-treatment of waste water is needed before sending to the central waste water treatment facility.</li> <li>· As testing result shows, the system should be improved to reduce PH, NH<sub>4</sub>, PO<sub>4</sub><sup>-</sup> and total coli form to a standard level.</li> </ul> </li> <li>b) Solid Waste Treatment <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely.</li> <li>· The propagation of solid waste segregation and hospital hygiene should be done.</li> <li>· Incinerator should be monitored in accordance with the new regulation: TCVN7380, 7381:2004 and TCVN6560:2005.</li> </ul> </li> <li>c) Training Activity <ul style="list-style-type: none"> <li>· Enhancement of human resource development for environment management is needed.</li> </ul> </li> </ul>

### 3.2.13 Sa Dec Inter-District General Hospital

#### (1) Characteristics

The Sa Dec Inter-District Hospital located in the old capital, Sa Dec, of Dong Thap Province has inter medicine (ENT, ophthalmology, dentistry), tuberculosis, infectious diseases and others, in addition to the basic 3 departments. For the diagnosis, they have radiology, image diagnosis and laboratory, as well as the department of emergency outpatients, surgery and ICU. They do not have pathology department. The number of outpatients is 1,075 per day in average, and the inpatients of basic 4 departments only share 81%. Like the Tay Ninh Provincial General Hospital, the disease structure is doubled with infectious and chronic diseases, and it is on transmission period. This hospital will also need upgrading the service of basic 4 departments to medium or higher level, to cope up with the increasing chronic diseases. As the hospital aims to maintain the access for the patients in the rainy season, they will have to play a role of secondary and tertiary lifesaving for the emergency or acute cases rather than providing the services for the special cases.

Table 3bb: General Information

Type of hospital	General
Distance to the nearest upper level hospital	140 km (HCM)
No. of bed: authorized → actual	465 → 577
Bed occupancy rate	131 %
Average length of stay (d□ys)	5.3
Annual No. of outpatients	279,□56
Annual No. of inpatients	41,689
Annual No. of death at hospital	85
No. of MD	42
No. of medical staff except MD	499

Table 3bc: Annual No. of Inpatients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Inter-medicine	10	10,253
2	Obstetrics	11	9,525
3	Pediatrics	10	9,206
4	Surgery	13	5,199
5	Infectious disease	2	3,140
6	Emergency outpatients	2	1,628
7	ENT	9	1,144
8	Traditional medicine	1	587
9	Tuberculosis	2	469

## (2) Facility and equipment

### 1) Facility

Although the existing building is still in use, the hospital expansion and improvement plan up to 2015 was prepared and submitted to PPC, which is expected give approval soon, in order to alleviate the congestion. The plan includes the construction of 6 stories building to accommodate 500 patients and the trainings of 80 medical staff. The will start soon and is scheduled to complete in 2013.

### 2) Equipment

Almost all equipment is new, because such equipment is leased from the private company. Hospital rents equipment without charges, and they purchase the consumable parts (spare parts and regents) from this company and pays a part of hospital income to this company. They have 3 maintenance engineers, but the equipment is not well maintained. Although the private company maintains most of the equipment, it would be necessary to change the approach where hospital pays attention for equipment maintenance process.

### (3) Medical staff

The characteristic of medical staff at this hospital is that there are staffs of doctor's degree but no Specialist II. This situation implies there is no leader of teaching doctor. And 20% of doctors are assistants. Lack of teaching staff for systematic education and the existence of group who may take longer time in learning is the situation of this hospital. This situation must be well counted in the planning of equipment procurement and trainings.

Table 3bd: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	1				
Master	4				
Specialist II	0				
Specialist I	29	Master			1
General Doctor	52	Bachelor	7	3	7
Assistant Doctor	21	Middle Level	157	37	24
		Primary Level	16	0	0
Total	107	Total	180	40	32

(4) Referral system

This hospital has referred around the same number of 1,300 patients to the upper level hospital in 2008 and 2009. They expect to decrease the number of referred case in 2010, as they have started the brain surgery. However, as 370,000 patients received the hospital services in 2009, the number of referral case is considered relatively small at 0.4%. The number of patient referred from the lower level hospitals is not known. The location of Sa Dec Inter-District General Hospital surrounded by the branches of Mekong River might be one of the reasons to make difficult for referral service, so that the provision of complete medical service at this hospital would be important.

(5) Environment control

Infection control	Infection control department has 33 staffs. Used clothes and linens for all patients and medical staffs is washed with 2 washing machines, packed, and the metal tools are packed. After that, packed linens and metal tools are sterilized with 3 autoclaves, and stored them at the store room. The facility of infection control department is following to Circular No18/2009/ TT-BYT, and well maintained,.
Waste water treatment system	Drain piping system of the hospital is divided into two: surface water sewage system (rain water) and waste water sewage system discharged from the hospital's departments. The hospital has central waste water treatment facility with the capacity of 300m <sup>3</sup> a day. But all departments do not have pretreatment system. Waste water from departments, including the ones of infectious disease ward and surgical department goes directly into central waste water treatment facility through the hospital sewage system. Waste water coming from kitchen goes to the rainwater sewage system without grease trap for grease removal. The capacity of central waste water treatment facility cannot afford to treat the total volume of waste water from the hospital in a limited time. One of the hospital kitchens is located next to the incinerator, which expose a risk to be contaminated with infection diseases. The quality of waste water at the outlet of treatment plant and incinerator needs to be closely monitored. The work plan of 2010 includes the requirements to implement proper central waste water treatment of solid and liquid wastes as well as upgrading the system of waste water treatment to meet the standard. Plans to organize training course on infection control are also mentioned.
Solid waste treatment system	The incinerator has a capacity of 200-300 kg/day and hazardous waste solid of the hospital is 70 kg/day, which allows the hospital to accept more solid disposals. Test



	result of the incinerator is not available.
Training for infection control	Although the hospital prepares training plan for medical staff, the training on medical waste management is not included. Training on waste management is under the responsibility of infection control department in the planning and implementation for the hospital staff.
Plan for environment management	Development plan from now to 2015 has been prepared but the plan to improve the central waste water treatment facility and incinerator is not included.
Points for improvement	<ul style="list-style-type: none"> <li>a) Waste water treatment system <ul style="list-style-type: none"> <li>· Pre-treatment of waste water is needed before sending to the central waste water treatment facility.</li> <li>· As testing result shows, the system should be improved to reduce TSS, BOD5, H2S, PO4+ and total coli form to a standard level.</li> </ul> </li> <li>b) Solid Waste Treatment <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely.</li> <li>· The propagation of solid waste segregation and hospital hygiene should be done.</li> </ul> </li> <li>c) Training Activity <ul style="list-style-type: none"> <li>· Enhancement of human resource development for environment management is needed.</li> </ul> </li> </ul>

### 3.2.14 Tien Giang Provincial Obstetric Hospital

#### (1) Characteristics

Tien Giang Province has the Tien Giang Provincial General Hospital equipped with around 650 beds and 23 clinical departments including inter medicine, surgery, pediatrics, etc. The Tien Giang Provincial Obstetric Hospital has therefore obstetric and gynecology departments only. For the diagnosis, they have only image diagnosis department, in addition to emergency outpatients, surgery and recovery departments. They plan to add pediatric service, to be separated from the provincial general hospital. Main services are for the deliveries, and the patients for gynecology are small. Partly because of the old facilities, their current services are limited to medical examination for pregnant woman, emergency and surgery as an obstetric center, and it is difficult to provide the new born care after the abnormal delivery and the treatment for gynecological disease such as uterine tumor. The future expansion plan should include comprehensive system and services.

Table 3be: General Information

Type of hospital	Specialized
Distance to the nearest upper level hospital	75 km (HCM)
No. of bed: authorized → actual	150 → 215
Bed occupancy rate	100 %
Average length of stay (days)	4.0
Annual No. of outpatients	NA
Annual No. of inpatients	13,572
Annual No. of death at hospital	1
No. of MD	17
No. of medical staff except MD	148

Table 3bf: Annual No. of In patients in Top 10 Departments

Rank	Department	MD	IPD/year
1	Emergency	3	8,517
2	Obstetrics	2	8,436
3	Operation room · anesthesia	3	6,497
4	Gynecology	2	2,231

## (2) Facility and equipment

### 1) Facility

DOH prepared the new building construction plan by 2015, and it was approved in May 2009 by PPC. The plan is to increase the beds from 150 to 200. They have applied for the government bond for the construction of this new building. Although the original plan was approved to expand the buildings as obstetric hospital, MOH requested the hospital to incorporate the service for pediatric to utilize the government bond. DOH agrees to this request in principle, and the plan is being revised for approval of PPC. The construction is scheduled to complete in 2014.

### 2) Equipment

Most of the equipment is obsolete and short in quantity. The current facility is located in the property of army hospital and too small to install the large sized equipment. They have only 1 maintenance engineer, and the equipment is not well maintained. Some equipment such as x-ray machine and ultrasonic equipment are maintained by the private company under the contract.

### (3) Medical staff

To the Consultant's interview for collecting the information with the questionnaire, the hospital staff could not provide adequate information, as they are in a difficult situation of changing their plan to obstetric and pediatric hospital. Therefore the data which had been collected in the pre-feasibility study (2008) was used, though there are some discrepancies between these data and the ones in the above general information.

Although this is a specialized hospital, they have only 1 Specialist II. On the other hand, they have a decent number of middle class nurses. This composition of medical staff implies that the hospital service is focused on the delivery service.

Table 3bg: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	0				
Master	2				
Specialist II	1				
Specialist I	9				
General Doctor	7	Bachelor	1	5	2
Assistant Doctor	5	Middle Level	6	72	3
		Primary Level	0	0	0
Total	24	Total	7	77	5

### (4) Referral system

On this item also, no detail data was given by the hospital. From the interview data, the

number of patients referred to the upper level hospital was 576 in 2007, 552 in 2008 and 315 in 2009, which shows the decreasing trend. It is not clear, however, if such patients were referred to a specialized doctor at the hospital such as Tien Giang Provincial Obstetric Hospital or hospital at Ho Chi Minh City, as such patients are of gynecology disease cases.

(5) Environment control

Waste water treatment system	At present, the hospital does not have own building. The hospital is using buildings for administration, emergency and infection control department from Army Hospital, and buildings for the other clinical services from Provincial General Hospital. The drain piping system of the hospital does not separate for surface water (rain water) and waste water from each department. An area at Army Hospital does not have the waste water treatment system and settling tanks. Medical waste water without treatment is discharged to Tien River through public sewage system. Waste water at Provincial General Hospital is sent to central waste water treatment system of Provincial General Hospital, and discharged to the public sewage system. The data of the hospital waste water is not available.
Solid waste treatment system	For general solid waste, the hospital has a contract with city environmental company to transport and dump general solid waste. The hospital produces daily 45kg of medical hazardous waste. Medical waste segregation and storage in the hospital is carried out in accordance with the Decision 43/2007/QĐ-BYT on medical waste management. The hospital also conducts training for all staffs in the hospital on waste segregation and risks of medical waste. For medical hazardous waste, the hospital has a contract with the Cai Lay Hospital and Cho Gao Hospital to dump them.
Training for infection control	The hospital conducts the training for waste management only once a year for all the staffs. They do not have the training plan.
Plan for environment management	Future development plan is being adjusted and to be approved by the authorities.
Points for improvement	Training plan and environment improvement is necessary under the strong leadership.

3.2.15 C Da Nang Central General Hospital

(1) Characteristics

C Da Nang Central General Hospital is the general hospital administrated by Da Nang City, and has ENT, ophthalmology, infectious disease, physiotherapy and others in addition to inter medicine and surgery. As the city has specialized hospitals for pediatrics and obstetrics, this hospital does not have these departments. The number of outpatients is 723 per day in average, and the inpatients of inter medicine and emergency outpatients share 59%. Number of clinical departments is not many, and the service looks limited to inter medicine and surgery only. However, this hospital serves as a regional hospital receiving the patients from adjacent provinces. On the other hand, they have upper level hospitals in Hue which is 100 km away from this hospital. With the economic development of the city and having many patients of chronic diseases as an urban pattern, this hospital is planning to introduce the high technologies. They are accumulating the experiences of sophisticated technologies such as open heart surgery with angiography and cancer treatment. The hospital used to serve for high government officials

only but it is currently open to the public, so that the people in this area enjoy the high level of medical technologies.

Table 3bh: General Information

Type of hospital	Central general
Distance to the nearest upper level hospital	100 km (Hue)
No. of bed: authorized → actual	450 → 550
Bed occupancy rate	93 %
Average length of stay (days)	12.5
Annual No. of outpatients	188,074
Annual No. of inpatients	12,218
Annual No. of death at hospital	33
No. of MD	132
No. of medical staff except MD	412

Table 3bi: Annual No. of In patients in Top 10 Departments

Rank	Department	MD	IPD/Year
1	Radiation	3	6,927
2	Inter-medicine	39	5,842
3	Emergency outpatients	8	4,572
4	Surgery	19	2,771
5	Physiotherapy	4	2,648
6	Operation room • anesthesia	4	2,051
7	Ophthalmology	3	1,844
	Dental surgery	7	
	ENT	4	
8	ICU	11	1,186
9	Infectious disease	3	869

## (2) Facility and equipment

### 1) Facility

As this hospital was authorized in 2006 to serve for 9 adjacent provinces, new building construction is being implemented with the approval of PPC and be completed in 2010.

The improvement plan up to 2020 was approved by MOH, which shows 2020 targets with the improvement framework toward 2015. The target for 2015 is that the hospital becomes a high-tech hospital and to substantially serve for all 9 provinces by 2010. The number of beds is 400 in 2008, 450 in 2009, 650 in 2010 and reaches to 1,000 by 2020.

### 2) Equipment

They have medical equipment to a certain level, but many are old and short in quantity. In line with the policy of MOH, this hospital is expected to provide the high level of services and plans to send their staff to upper level hospital for the trainings. They have 8 maintenance engineers and the equipment is well maintained. Some equipment for image diagnosis, laboratory, heart diseases, ophthalmology, and endoscopes are maintained by the private company under the contract.

### (3) Medical staff

A half of the doctors are specialized, and they have no assistant doctor. The staffing is made to promote the services of high level with the high technologies. Many of the master degree staff is specialized in public health, so that it is questionable if the learning in public health can be well combined with the services of high technologies. Among the 15 candidate hospitals, most of them have the doctors and nurses in the ratio of 1 to 2, while this hospital has the nurses

of less than double of the doctors. Although there is not a significant gap, attention should better be paid on this.

Table 3bj: Educational Background of Major Medical Staff

Education Background	Dr.	Education Background	Nurse	Midwife	Technician
Doctor	1				
Master	22				
Specialist II	8				
Specialist I	36	Master			1
General Doctor	54	Bachelor	17		8
Assistant Doctor	0	Middle Level	192		41
		Primary Level	2		2
Total	121	Total	211	0	52

#### (4) Referral system

This hospital is expected to play an active role in promoting the referral system as the central general hospital. In 2009, they referred 640 patients to the upper level hospitals and received 6,500 patients from the lower level hospitals. Considering the functional balance of many clinical departments of the hospital, the current situation of receiving many patients from the lower level hospitals and referring the limited number of patients would be the result of well functioning of referral system between the hospitals

#### (5) Environment control

Waste water treatment system	The sewage system is set up in the hospital. Piping lines are connected with all buildings and departments to the central waste water treatment facility. Waste water after treatment is directly sent to public sewage system of the city. On the sewage system connected from each department to the treatment plant, there are small septic tanks at every 20 meters, and waste water from departments goes into settling tank of 450m <sup>3</sup> before pumping to central waste water treatment facility automatically. The capacity of the treatment facility is 600 m <sup>3</sup> a day. The waste water currently produced by hospital with 550 beds is about 400m <sup>3</sup> a day, so that the facility can handle waste water to be produced when the building expansion to 650 beds is completed. The central waste water treatment facility is maintained every 3 months and is dredged once a year for cleaning. Water going out from central waste water treatment facility is tested by the Provincial Department of Environment every 3 months.
Solid waste treatment system	Hospital solid waste is divided into medical hazardous waste and non-hazardous waste in separate containers. Every day, garbage collectors of administrative department collect waste and keep it in the storage in the hospital. In the storage, there are two areas: general waste and hazardous waste. As the new storage for general and hazardous waste is under construction, storage of hazardous waste is provisional which is 20 feet container and air-conditioned. Storage facility for general waste is not provided at present. The hospital has a contract with private company for transportation and disposal of both wastes. At the moment, the hospital does not have incinerator. Waste recycling is not done.
Training for infection control	Though the training plan for infection control department for the next five years is submitted, the training activities relating to environment management and audit is not

	included in the plan. The waste management team of hospital visits departments weekly to check and remind segregation and environmental sanitation hygiene in general, and the hospital hygiene inspection team under vice-director also checks departments in every month. However, the hospital does not have training plan for the staff on classification of waste as well as the detail tasks of environment management for hospitals in general. Staffs in the hospital receive information of environment management through direct discussion; therefore there is still a need for improvement through the trainings. The hospital also lacks placard or posters for instructions of waste classification and manual to guide patients and visitors.
Plan for environment management	New buildings are now under construction, and additional waste treatment facility will be constructed in the new building. Construction plan includes new medical hazardous waste and non-hazardous waste storage and medical sterilization room with 1 autoclave, to be completed in the end of 2010. Plan of the hospital environment management (2010-2015) is-not clear. And the plan of the medical environment management and infection control is not included.
Points for improvement	<p>a) Waste water treatment system</p> <ul style="list-style-type: none"> <li>· Pre-treatment of waste water is needed before sending to the central waste water treatment facility. .</li> <li>· As testing result shows, the system should be improved to reduce the Ammonium and Total coli form to a standard level.</li> </ul> <p>b) Solid Waste Treatment</p> <ul style="list-style-type: none"> <li>· Segregation of solid waste should be done completely</li> <li>· The publicity of solid waste segregation and hospital hygiene should be done</li> </ul> <p>c) Training Activity</p> <ul style="list-style-type: none"> <li>· Enhancement of human resource development for Environment management is needed</li> </ul>

### 3.3 Hospital management

#### 3.3.1 Hospital financing

Securing the sound financial management is essential for the public hospital to maintain the quality and stable medical service to meet the people's expectation, because, the mandate of public hospitals is to provide the "medical services as public goods" and to ensure the adequate level of medical services, regardless of its profitability. However, the public hospital is not allowed to put pressure on the provincial budget by leaving the hospital's management inefficiency, despite the above mandates as a public property. It is therefore necessary therefore to comprehend the hospital management precisely and to evaluate their financing capability. In principle, to grasp the financial condition, cost accounting of each department and section is useful. It is to know and analyze which department/section is contributing to the management (for example, if the number of surgery and laboratory test is contributing to the hospital income), and which activity/service has problem in financial management (for example, if the longer length of patient stay reduces the turnover rate and brings about the reduction of income from inpatients), with the profit and loss statement to be prepared by each clinical department or section. However, it is difficult to obtain such detail accounting data of each department/section from the hospital. This section shows therefore what can be seen as a result of analysis of overall financial situation of the hospitals.

### 1) Hospital income

The policy of Vietnam in the hospital financing addresses the reduction of financial burden and creation of comfortable conditions for the patients, by raising the funds from the Government budget and health insurance. As shown in the following table, the amount of Government budget and health insurance reaches 70% of total income in average, at the most of hospitals. The Government policy is seen in this data.

Only the Tien Giang Provincial Obstetric Hospital among the candidate hospitals depends more than 50% on the hospital fee paid by the patients, and less health insurance. This may be because the hospital collects from the patients a part of the cost of equipment leased from the private company. This practice of the hospital however, cannot be said wrong. This province has more than U.S. \$1,000 per capita income, and if the patients have ability to pay, such patients can enjoy better and high quality of service, while the poor can be covered by the health insurance. This can be a way to ensure the sustainability of hospital service. On the other hand, the Binh Dinh Provincial General Hospital depends on Government budget by less than 10%, and relies on the “Other”. The “Other” is the financial support of the Government, which is given through the Government Bond purchased by the hospital (fund comes from PPC), and they will implement the improvements. This is the latest policy of the Government, and this system can also be an evidence of sustainability. If the province can afford to refund the investment, the hospital improvement can be managed within the country.

In selecting the target hospitals from the viewpoint of hospital management, the attention should be paid to a case that the patient’s ability to pay is considered low based on the GDP per capita and the hospital still relies on the hospital fee to be paid by the patients. This case may have a possibility of forcing the financial burden to the patients. At the same time, there is a high possibility that the provincial government might have not allocated enough budgets and lower level of interest in the health sector. This case is considered that the provincial support for the future hospital improvement and sustainability of hospital operation can hardly be guaranteed. In selecting the hospitals, the background should be studied, when the hospital fee alone is remarkably big.

Table 3bk: Source of Income at Hospitals (2009)

Candidate Hospital	Total (VND1,000)	Gov. Budget	Health Insurance	Hospital Fee	Others
Ha Giang Provincial General	86,300	26%	57%	5%	12%
Bac Giang Provincial General	92,634	17%	50%	15%	18%
Son Tay Inter-District General Hospital	49,812	43%	35%	20%	2%
Ha Nam Provincial General Hospital	62,853	32%	44%	22%	1%
Nam Dinh Provincial Obstetric Hospital	21,093	43%	25%	31%	1%
Thai Binh Provincial Pediatrics Hospital	50,139	86%	12%	2%	0%
Thanh Hoa Provincial Pediatrics Hospital	56,786	24%	67%	3%	6%
Nghe An Provincial Pediatrics Hospital	56,547	68%	24%	6%	2%
Binh Dinh Provincial General Hospital	297,923	10%	27%	14%	48%
Lam Dong Provincial General Hospital	86,835	25%	33%	31%	11%

Ninh Thuan Provincial General Hospital	59,384	42%	30%	24%	4%
Tay Ninh Provincial General Hospital	78,713	28%	35%	33%	4%
Sa Dec Inter-District General Hospital	66,443	21%	37%	28%	15%
Tien Giang Provincial Obstetric Hospital	17,143	30%	16%	53%	2%
C Da Nang Central General Hospital	85,990	57%	39%	5%	0%
Average	77,906	37%	35%	19%	8%

Source: Answers to the Questionnaire and interview data

## 2) Hospital expenditure

The 15 candidate hospitals vary in scale and specialty and the total amount of expenditure also varies. However, the allocation of medical staff seems to be made at a similar ratio, based on the number of beds and patients, aiming at the balanced medical staff allocation. The remuneration can be said, therefore, as one of the fixed cost items, among all expenditures, and the ratio of remuneration in reality shows 33% in average with  $\pm 7\%$ . In the other items, some expenditures shows protruding but most of them are within a close range. With this data, though the hospital varies in the services, the approaches of hospital management in medical service and facility/equipment maintenance seems not to make big difference among the hospitals, and the cost control of each hospital will not give influence to the selection of the target hospitals for the Phase II project.

Table 3bl: Hospital Expenditures (2009)

Candidate Hospital	Total (1,000VND)	Remuneration	Medical Service(Excl. Consumables)	Medicine/Consumables	Maintenance	Investment
Ha Giang Provincial General Hospital	82,733	27%	10%	54%	1.5%	4.7%
Bac Giang Provincial General Hospital	91,183	31%	10%	53%	0.9%	7.7%
Son Tay Inter-District General Hospital	47,354	28%	6%	50%	2.9%	8.9%
Ha Nam Provincial General Hospital	62,853	35%	11%	49%	1.1%	1.5%
Nam Dinh Provincial Obstetric Hospital	21,093	46%	10%	35%	3.1%	0.8%
Thai Binh Provincial Pediatrics Hospital	25,682	26%	13%	36%	1.3%	13.5%
Thanh Hoa Provincial Pediatrics Hospital	56,165	26%	10%	43%	0.6%	5.0%
Nghe An Provincial Pediatrics Hospital	56,547	23%	25%	37%	1.0%	8.3%
Binh Dinh Provincial General Hospital	295,369	21%	18%	30%	0.6%	7.8%
Lam Dong Provincial General Hospital	82,973	31%	47%	NA	NA	7.8%
Ninh Thuan Provincial General Hospital	56,711	41%	19%	34%	2.0%	2.8%
Tay Ninh Provincial General Hospital	74,457	40%	22%	37%	2.0%	1.0%
Sa Dec Inter-District General Hospital	66,443	34%	21%	38%	0.8%	0.0%
Tien Giang Provincial Obstetric Hospital	15,333	38%	14%	45%	1.2%	9.1%
C Da Nang Central General Hospital	79,353	43%	4%	43%	1.5%	8.3%
Average	74,283	33%	16%	38%	1.5%	5.8%

Source: Answers to the Questionnaire and interview



### 3.3.2 Hospital operation

In this section, hospital organization is discussed for the efficient operation of the hospital. Concretely, it is to see if the hospital is responding to the patient's needs, if it is providing the service with quality, if it is maintaining the necessary medical staff, and other systems and structures, of which the hospital should always keep in their mind and correspond to the needs with flexibility. In this section, the current situation is studied, with the data of bed occupancy rate, experience of medical service (number of surgery and testing, number of out and inpatients, etc.) and others.

#### (1) Capacity of acceptance of patients

In the relationship between the bed occupancy rate and average length of stay, the higher is bed occupancy rate the longer the length of stay, which is in an inverse proportion. At present, 13 candidate hospitals show more than 100% of bed occupancy rate, and operate with the beds more than authorized. As they suffer from the shortage of beds, they seem to try to shorten the patient's length of stay, to increase the turnover ratio. However, it does not mean that they are discharging the patients who have not completed the treatment, but releasing them only after the patients have passed the acute conditions and become stable. It can be said that they are fulfilling the mission of the hospital. Considering this shorter stay will lessen the financial burden of patients, and full and comprehensive care is not available at the hospital but patients family takes care as usual, the average length of stay around 10 days can be considered as appropriate or limitation. C Da Nang Central General Hospital shows comparatively longer length of stay, and it may be attributable to the long recovery period of the patients who had high level of service such as brain or heart surgeries at the hospital. It can be said at least that the current situation is not favorable for the patients and it is due for the hospitals to plan the expansion of facilities.

Table 3bm: Hospital Operation (2009)

Candidate Hospital	Type	No. of Dept.	No. of Beds	Bed Occupancy Rate (%)	Average Length of Stay(Days)	Average No. of Outpatients /Day	Average Annual No. of Surgery	Average Annual No. of Tests
Ha Giang Provincial General Hospital	General	19	400	113	8.3	318	4,352	648,042
Bac Giang Provincial General Hospital	General	17	550	136	9.2	4,032	5,625	3,364,662
Son Tay Inter-District General Hospital	General	15	420	126	6.2	345	2,814	819,975
Ha Nam Provincial General Hospital	General	20	550	153	6.6	291	4,749	987,419
Nam Dinh Provincial Obstetric Hospital	Specialized	12	180	167	6.8	52	3,735	231,896
Thai Binh Provincial Pediatrics Hospital	Specialized	5	200	164	7.6	160	NA	84,656
Thanh Hoa Provincial Pediatrics Hospital	Specialized	13	300	108	11.7	200	2,835	59,9478

Nghe An Provincial Pediatrics Hospital	Specialized	22	240	174	5.7	33	6,396	52,0948
Binh Dinh Provincial General Hospital	General	33	900	160	9.5	1,441	15,022	3,846,056
Lam Dong Provincial General Hospital	General	28	525	103	6.0	851	7,734	858,379
Ninh Thuan Provincial General Hospital	General	19	500	110	6.2	470	12,586	240,405
Tay Ninh Provincial General Hospital	General	31	500	125	6.1	1,066	1,066	13,018
Sa Dec Inter-District General Hospital	General	18	230	131	5.3	1,011	4,773	1,312,429
Tien Giang Provincial Obstetric Hospital	Specialized	NA	150	71	4.0	268	2,813	350,942
C Da Nang Central General Hospital	General	30	550	95	12.4	637	2,051	383,050

Source: Answers to the Questionnaire and interview

## (2) Current situation of medical services

High bed occupancy rate means that they accept many inpatients. As a reason of hospitalization, it can be presumed that they did surgeries. As most of candidate hospitals are providing secondary and tertiary emergency services, they must have received the patients of traffic accident, cerebral infarction and myocardial infarction. The table below is not completely representing the presumed situation but the trend shows that the more is the number of surgery, the higher the bed occupancy rate in the general hospitals having the surgical department. In the pediatric hospital, major services are for inter-medicine including fever and diarrhea even to many inpatients, and the obstetric hospital's services is mainly for the delivery, both of which require only a short stay at the hospital. And the bed occupancy rate will not increase, corresponding to the number of surgery.

In case the number of surgery is less and bed occupancy rate is high at the general hospital, they seem to have treated the patients mainly with the medicine in the inter-medicine department or have kept the patients who did not have to stay long. In most of the candidate hospitals, the number of inpatients is proportionate to the number of surgery, so that the medical service is considered to be extended corresponding to the needs.

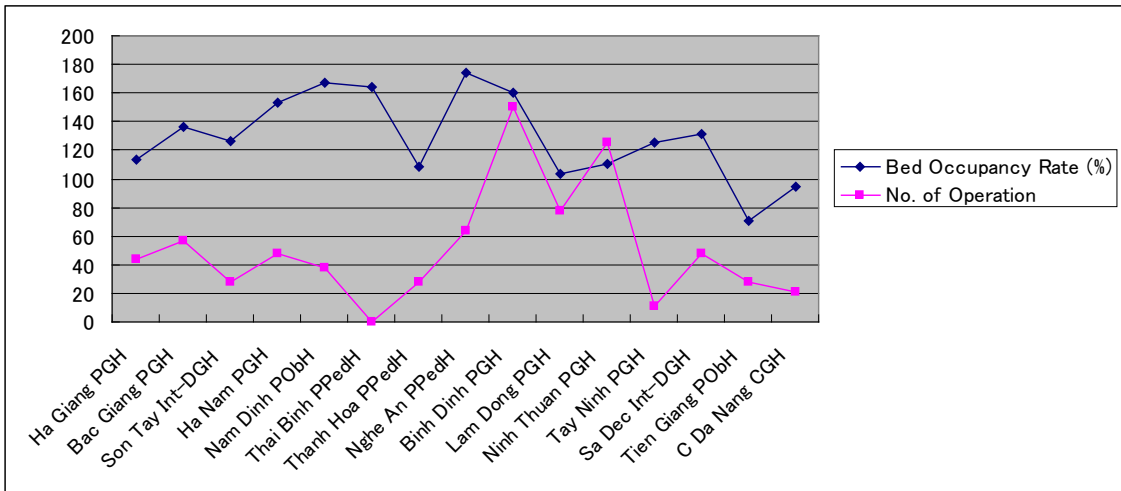


Figure 3a: Relationship between Bed Occupancy Rate and Number of Surgery

On the other hand, the bigger number of tests at the general hospital corresponds to the bigger number of outpatients, so that the periodical examination for the chronic case is presumably done. As the treatment of non-infectious disease and chronic disease is one of the tasks of the secondary hospital, it is judged that the hospital is fulfilling their mission depending on the needs. As many tests do not correspond to the bed occupancy rate on the data, it is presumed that they have not kept the patients for long by providing many tests and examination until they are cured. The patients have presumably stayed at hospital for surgery or other treatment and only a few for long time recuperation.

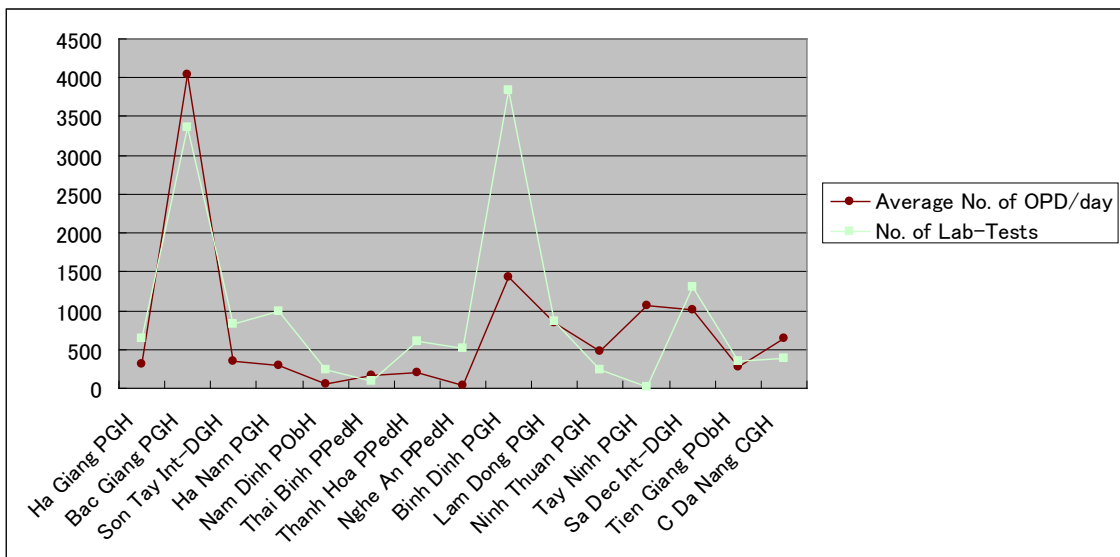


Figure 3b: Relationship between Number of Outpatients and Tests

Among the various kinds of tests, Tay Ninh Provincial General Hospital, Bac Giang

Provincial General Hospital and Binh Dinh Provincial General Hospital shows the big number of sample tests. Particularly, since the biochemistry test and hematology test are the routine tests for the examination of the first-visiting patients, the number of such tests corresponds to the number of outpatients. However, in case of Tay Ninh Provincial General Hospital, their hospital fee is comparatively bigger, so that it can be considered that the charges for these tests may be incorporated in the hospital fee. The number of the tests however needs to be justified by the information on the category of cases of each patient of each department and degree of seriousness of patients, and it cannot be justified with the information collected through the study.

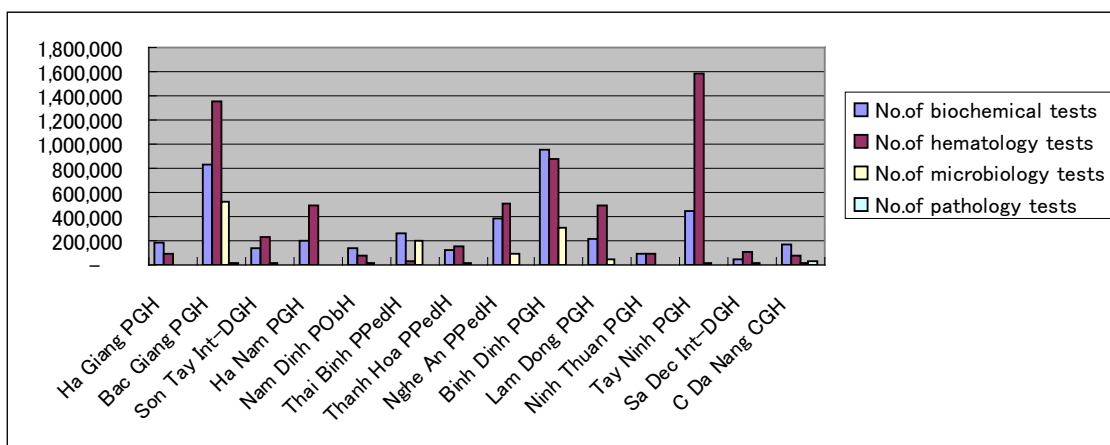


Figure 3c: Number of Each Sample Tests

Note: Tien Giang Provincial Obstetric Hospital is excluded as the data is not available.

In addition, for the physiological examination, the data shows proper non-penetration testing<sup>6</sup> practice that the number of X-ray and ultrasound testing is bigger than that of CT scan and endoscopy. In these tests, the number at the above mentioned 3 hospitals, namely Tay Ninh Provincial General Hospital, Bac Giang Provincial General Hospital and Binh Dinh Provincial General Hospital hospitals, are big.

<sup>6</sup> “Non-penetration testing” means the tests of non-bleeding without the need for incision or needling, such as physiological function tests including electrocardiogram, ultrasonography and electroencephalograph, x-ray (except angiography), and endoscope.

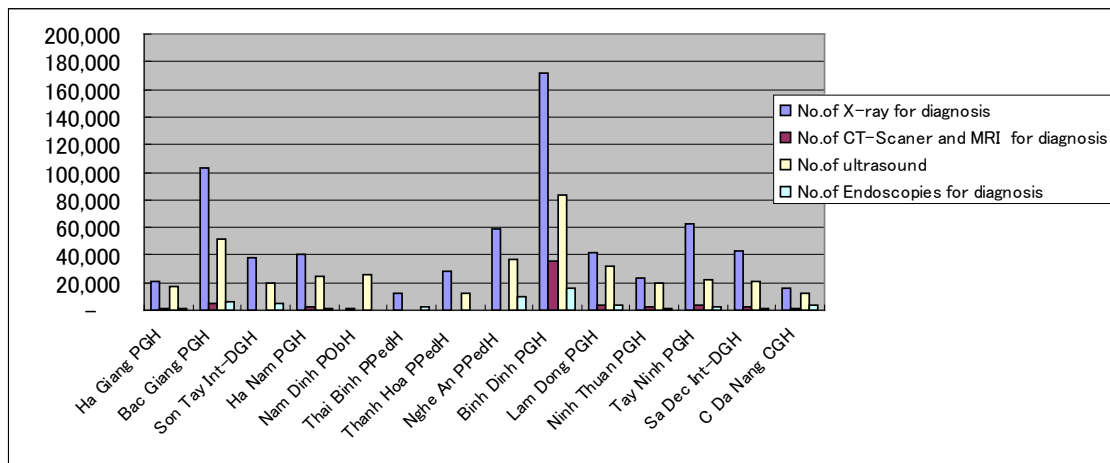


Figure 3d: Number of Each Physiological Examination

Note: Tien Giang Provincial Obstetric Hospital is excluded as the data is not available.

In general, hospitals are not trying to earn more income from unnecessary surgeries, but the testing is easy and readily available both for the hospital and the patients, so that many tests tend to be applied, and may be considered as one of the income sources. However, they do not endeavor to repeat the tests only to increase the patient's financial burden, but provide them with the tests for the precise diagnosis as required, as the secondary medical service. Presently, almost no sophisticated equipment which requires certain operational expenses is used at the hospitals. Within the patients' ability to pay, the hospitals seems applying the tests and examination as required with the existing equipment. It can be said therefore that they are providing the different quality of services, depending on their level of technologies, and accumulating the experiences through the examination and treatments.

### 3.3.3 Training needs

Efforts are being made on the human resource development, such as sending the staff to upper level hospitals by hospital or providing the fund by the province for acquiring the degree, etc. Most of candidate hospitals is expected to provide the secondary or tertiary emergency medical services<sup>7</sup> as the secondary hospitals but some hospitals are providing the high level of services to the patients of chronic diseases (tumor, heart surgery, etc.). For the high level of services, training at higher level or specialized hospitals or study abroad is provided to a certain doctors, but this is not the evidence that they are providing the complete fundamental services at the hospital. Because, through the field survey, some hospitals are observed to be at the low level of service of daily administration, including infection control, amenity for the patients and

<sup>7</sup> Secondary emergency service: service for the patient who needs hospitalization for treatment, such as pneumonia and cerebral infarction. Tertiary emergency service: service for the patient who cannot be treated at the secondary emergency service and needs high level of service of different departments or for the acute patients, such as myocardial infarction, mass bleeding trauma and serious burn.

their families, analytic capability in bacteriological examination at laboratory and in pathology department, and patient care at ICU. More specifically, in the NICU which needs “Strict control of temperature, oxygen, nutrition and infection control”, observed are, for example, low temperature in the room which keeps the window open for the staff, low temperature where the patients wear the thin uniformed nightclothes and sheets while the windows kept open as those are broken. At the hospitals which have not established the fundamental services for the patients like the hospitals mentioned above, they may slight the physical risk of the patients if they are going to provide the high level of service.

Therefore, it is recommendable therefore that the training should focus on these fundamental and common fields as well. Specifically speaking, training on hospital management for the management group or infectious disease control will be effective. Training on the use of procured medical equipment, on top of fundamental training, will be advisable

#### 3.3.4 IT development needs

From the result of field survey, it can be hardly said that the hospitals are developing the local area network within the hospital but some hospitals such as Ha Giang Provincial General Hospital, Thanh Hoa Provincial Pediatrics Hospital and Lam Dong Provincial General Hospital are using the “Medisoft” provided by MOH, and connect the ICU and the other clinical departments. Most of the other hospitals are facing the problems of lack of computers and network for the IT development, so that the situation resulted in the diagnosis of patient with the accumulated data of patient visits, or in the information fragmentation extending the multiple clinical departments (for example, partial records from multiple departments of the patients who have received the services from emergency outpatient department to internal medicine, or transferring from ICU to surgical department after the surgery, etc.)

MOH is encouraging the hospitals to develop the IT system in each hospital for information sharing and electric data saving, and each hospital is studying the possibility of IT development. Further to encouraging each hospital on IT development with the recognition of importance of IT, MOH is planning the networking between higher level hospitals and lower level hospitals to be developed in the near future. This plan contributes to the case such as; when the patients is referred back to the provincial hospital from the higher level hospital after he/she has recovered to a certain level and the information on the treatment method and process at the higher level hospital be provided to the Provincial hospital; or in an emergency case, the provincial hospital can seek for an advice of specialized doctor of upper level hospital on the treatment plan, without sending the patient to the upper level hospital. This policy of IT development is considered to be valid particularly to solve the problems of the hospital, which is far from the upper level hospital, and it will be needed to establish the communication systems in the hospital and to systematize the process of remote diagnosis between the hospitals.

### 3.3.5 Result of MOH's annual evaluation of candidate hospital

At the end, MOH's annual evaluation of candidate hospital for the past 3 years is summarized below. This evaluation is done both on private and public hospitals, in accordance with the guidebook of MOH (placed on the MOH homepage), with the scoring system of 100 points of total on the hospital's features (separately from general to specialized services, from province to district levels, etc.). The evaluation method is that the hospitals will evaluate by themselves at first, and submit the result to DOH. Then the evaluation officers of DOH will evaluate the result in usually November every year. For the central hospitals administrated by MOH such as Bach Mai Hospital or C Da Nang Central General Hospital, evaluation team of MOH is sent to such hospital for evaluation. The evaluation points are grouped in to 3 categories; resources (infrastructure, equipment, human resource), implementing function and task (examination and treatment, training, researching, prophylaxis, international cooperation, economic management), and implementation of some regulations of government (planning, storing medical files/records, permanent emergency, diagnosis, consultation, information, etc.), and 145 questionnaire is provided. The average point of 15 candidate hospitals in the past 3 years is 90, which is more than 80 points in all hospitals. What can be said from this result is that there is a possibility, such as Tien Giang Provincial Obstetric Hospital, of getting a lower point in 2007 in spite of getting higher point in the previous year. Unless the hospital keeps its effort, they can get a lower point even they have obtained higher point in the previous year. This evaluation system requires the hospital to keep its efforts all through the year to reach to a certain level of standard. The system is considered to be fulfilling the purpose as the evaluation which leads to the hospital improvement based on the objective and mutual understanding with self-evaluation and external-evaluation.

Table 3bn: MOH's Annual Evaluation of Hospital (2007-2009)

No.	Candidate Hospital	2007	2008	2009	Average of 3 Years
1	Ha Giang Provincial General	94.75	93.00	87.95	91.90
2	Bac Giang Provincial General	86.30	93.24	89.10	89.55
3	Son Tay Inter-District General Hospital	94.30	93.00	89.85	92.38
4	Ha Nam Provincial General Hospital	94.00	90.01	93.30	92.44
5	Nam Dinh Provincial Obstetric Hospital	81.50	77.47	81.43	80.13
6	Thai Binh Provincial Pediatrics Hospital	NA	83.30	81.80	82.55
7	Thanh Hoa Provincial Pediatrics Hospital	NA	94.00	96.00	95.00
8	Nghe An Provincial Pediatrics Hospital	96.50	95.36	93.78	95.21
9	Binh Dinh Provincial General Hospital	93.00	94.75	92.70	93.48
10	Lam Dong Provincial General Hospital	83.50	94.75	88.22	88.82
11	Ninh Thuan Provincial General Hospital	94.00	95.00	93.65	94.22
12	Tay Ninh Provincial General Hospital	94.25	94.25	90.09	92.86
13	Sa Dec Inter-District General Hospital	92.00	93.00	91.00	92.00
14	Tien Giang Provincial Obstetric Hospital	69.10	93.24	79.18	80.51
15	C Da Nang Central General Hospital	98.00	95.35	96.22	96.52
	Average	78.08	91.98	89.62	90.51

Source: Annual Evaluation of MOH

## **Chapter 4 Evaluation of Phase I Project and lessons learnt**



## 4. Evaluation of Phase I Project and lessons learnt

### 4.1 Current situation, finding and lessons of Phase I Project

With the aim of applying the key lessons to the Phase II Project, the mid-term evaluation of Phase I Project was conducted as a part of SAPROF, during the period of May to June, 2010. The questionnaire prepared by the consultants and answers from the hospitals are attached as Appendix 2. Major findings and lessons learned by each stakeholder are summarized below. The Phase I Project was completed by the end of November, 2010.

Table 4a: Major findings and lessons learnt

Target Hospital	Major Findings and Lessons Learnt
Ha Tinh Provincial General Hospital	<p>Progress:</p> <ul style="list-style-type: none"> <li>- All procured equipment has been completely delivered and installed by around the middle of August 2010. The procured and installed equipment has not been placed in full operation yet.</li> <li>- All training courses except 1 course have been finished.</li> </ul> <p>Achievements:</p> <ul style="list-style-type: none"> <li>- 2 sets of dialysis are in full operation, with which the number of patients have increased almost double. Other equipment including endoscope, electrocardiogram, ophthalmology equipment, oxygen supply system, surgical equipment, etc. are fully utilized and maintained, which has been contributing to the service improvement.</li> <li>- Number of referred patient to upper level hospital is decreased by around 25% in the first quarter of the year, compared with the last year, subject to further confirmation on direct causal relationship.</li> </ul> <p>Lessons:</p> <p>Inputs were properly made to respond to the needs in terms of quality and quantity. However, the training and equipment procurement took longer time than planned. From viewpoint of overall project management, such unexpected delay would cause additional delay in the other activities concerned with the training and equipment. Hence, scheduling should be considered to keep enough spacing of time for next coming activities in the Phase II Project.</p>
Lang Son Provincial General Hospital	<p>Progress:</p> <ul style="list-style-type: none"> <li>- Equipment procured have been partially delivered and installed, and the last equipment was planned for delivery by the end of October 2010. And its maintenance is being done in accordance with annual/monthly plan but training to maintenance staff deemed necessary.</li> <li>- Out of the total of 33 training courses, 32 courses have finished, with remaining 1.</li> <li>- Hospital maintained the HPIU consisting of 7 members who are all full-timers. For the equipment procurement, outside experts were employed under a contract; medical equipment engineer (2), financial expert (1), building engineer (2) and an expert from Provincial Health Service.</li> </ul> <p>Achievements:</p> <ul style="list-style-type: none"> <li>- The equipment which was procured is the basic needs for the service and such equipment is as hospital planned, training was and being conducted. Content, period of courses, and number of trainees were satisfactory to the needs.</li> <li>- Intuitively, the HPIU is functioning and does not have communication problem with parties concerned. HPIU appreciates advice and suggestion of CPMU and consultants.</li> </ul>

	<p>Lessons:</p> <ul style="list-style-type: none"> <li>- The training needs some improvements; the training faced (1) delay of payment to training institutions due to the complicated procedures with which the hospital is not familiar; (2) difficulty in managing the staff assignment to the service and training, as the training is concentrated in January to August 2010, although concentrated training is effective.</li> <li>- The main reason why the training could not be started earlier is the time consumed for the contract negotiation with the training institution which was 1.5 months.</li> <li>- Training in Japan for hospital management and clinical technology, total of 4 to 5 staff is suitable. The composition of trainees is ideal, half of which is for management and the other is for clinical technology. In terms of the project implementation period, the original plan of 24 months in the Phase I Project is considered short. 36 months could be better for more deliberate consideration and transfer of technology in the Phase II.</li> </ul>
Thai Nguyen Central General Hospital	<p>Progress:</p> <ul style="list-style-type: none"> <li>- Delivery schedule of ICB package was delayed but they have been delivered in August 2010. Delivery of some equipment of LCB package is delaying because of political problem in Thailand. Remaining equipment will be delivered in November 2010.</li> <li>- The trainings at domestic institutions have been completed except 1 course.</li> </ul> <p>Achievements:</p> <ul style="list-style-type: none"> <li>- The equipment was procured as planned and satisfies the needs. However, hospital wishes to procure more, if the budget allows.</li> <li>- The training meets the demand in terms of objective and content. Hospital however expects to send more staff for longer period for both domestic and international training.</li> </ul> <p>Lessons:</p> <ul style="list-style-type: none"> <li>- The assignment period of international consultants in charge of “medical equipment” and “training” was shorter than hospital expected, as these were the main components of the project.</li> <li>- It was necessary during the implementation to reinforce the HPIU with the outside expert. Particularly, ICB needs to be done in compliance with the JICA Guidelines, which is difficult to understand and follow from the bid preparation up to the payment.</li> </ul>
MOH/CPMU	<p>Lessons:</p> <ul style="list-style-type: none"> <li>- Phase I Project provided on the job training for each hospital in procurement of equipment, including preparation of tender documents for international bidding both in English and Vietnamese language. However, it is still recommended that ICB should be managed by a central committee and LCB managed by hospital.</li> <li>- The size of bid packages for LCB should not be bigger than 200 Billion VND to secure fair bidding. It would be appropriate in between 30 to 50 Billion VND.</li> <li>- As for the training plan, bottom-up approach made it difficult to adjust the plan after it was prepared. To ensure effectiveness and efficiency of the training, not only taking into account the actual demands from hospitals, but also the comprehensive management is necessary.</li> <li>- Bigger budget should be allocated for consulting services and training.</li> </ul>

Source: Answers to Questionnaire prepared by SAPROF team

#### 4.2 Midterm evaluation of Phase I Project

Description of the five evaluation criteria that were applied in the analysis for the midterm evaluation is given in the table below.

Table 4b: Description of Five Evaluation Criteria

Five Criteria	Description
Relevance	Relevance of the Project is reviewed by the validity of the Project Purpose and Overall Goal in connection with the government development policy and the needs in Vietnam.
Effectiveness	Effectiveness is assessed to what extent the Project has achieved its Project Purpose, clarifying the relationship between the Project Purpose and Outputs.
Efficiency	Efficiency of the Project implementation is analyzed with emphasis on the relationship between Outputs and Inputs in terms of timing, quality and quantity.
Impact	Impact of the Project is assessed in terms of positive/negative, and intended/unintended influence caused by the Project.
Sustainability	Sustainability of the Project is assessed in terms of political, financial and technical aspects by examining the extent to which the achievements of the Project will be sustained after the Project is completed.

(1) Relevance

1) Consistency of the Project Purpose with the Vietnamese Health Policies

Relevance is high in terms of policy and needs in Vietnam, Japanese policy of Official Development Assistance (ODA) to Vietnam, and project design.

The national health policy “Strategy of Protection and Care of the People’s Health for the Period of 2001-2010” aimed that building or upgrading the provincial and regional hospitals to be extended nationwide. Also, the Five Year Socio-economic Development Plan (2006-2010) addressed the needs of strengthening public health care through improving hospitals in provinces and network between medical institutions. The northern part of Vietnam is not the worst in health situation, but aging medical facilities and equipment are left as they were. There was not much assistance from donors operated in the health sector in the Northern provinces so that hospitals could not afford large budget for drastic hospital improvement. Many patients seeking for reliable medical services, prefer to go to upper level hospitals such as Bach Mai Hospital in Hanoi, rather than to local provincial hospitals, which they consider not meeting the standard due to lack of optimal medical technologies. This led to the overload of the top referral hospital while the provincial hospitals became hollow. To solve this situation and to build-up the optimal referral system, MOH requested JICA ODA loan for the improvement of provincial and regional hospitals in the northern area. As the pilot project, to reduce the overloaded burden of top referral hospitals such as Bach Mai Hospital, the hospitals that send patients to top referral hospitals in Hanoi were selected. Hence, the Phase I Project meets their national plan, which attempts to develop the healthcare system and to provide the medical services with higher quality.

2) Consistency of the Project Purpose with Japan’s Aid Policy

The ODA policy of the Government of Japan for the health sector of Vietnam focuses on the strengthening the function of medical facilities, infection control and improvement of reproductive health. According to this policy, the concept of the Phase I Project is designed to

meet these objectives through supporting technical training to solve serious deficiency in technology and management expertise in the selected hospitals.

## (2) Effectiveness

### 1) Achievement of Project Purpose

Effectiveness needs to be evaluated upon the input for hospital improvement and the process of the project implementation. From the aspect of the technology improvement, the new equipment and training on new techniques provided in the Phase I Project made the 3 hospitals stand on the starting point of modern medicine with technology. However, it would be appropriate to evaluate the achievement level of the overall improvement of medical services at least 5 years after completion of the project, to assess the stability of providing improved service and technology development.

Also training inputs were good enough to master basic skill at the beginning. It is expected to monitor the progress periodically even after completion of Phase I Project, because the medical technology is one of constantly advancing fields.

### 2) Appropriateness of implementation method

The three hospitals (Thai Nguyen, Lang Son, and Ha Tinh) were selected based on the following criteria; i) being located outside the catchment area of Bach Mai Hospital, ii) no previous experience of similar assistance from the other donors, and iii) capacity of hospital buildings for equipment installation.

As a fact, Bach Mai Hospital was accepting many patients from those provinces, due to the inadequacy of treatment in those hospitals. Although it is difficult to evaluate the accurate potential of decreasing the number of referral case to Bach Mai Hospital from the target hospitals soon after the installation of medical equipment and training, the selection criteria and selected hospitals were appropriate in terms of responding pressing demand for improvement of medical service and capability of comprehensive hospital management.

The flow of implementation process, such as after feasibility study, procurement of equipment and operating training courses, were mostly completed on time as planned, though partially there was a delay but some process were accelerated to catch up. There was no specific obstructive factor on the implementation method, and the effectiveness of taken method is approved.

## (3) Efficiency

### 1) Progress Management of the Project Activities

The efficiency of the Phase I Project is generally high though several factors vitiated the progress of the project activities. Contributing Factors for Efficiency were the organizational

set-up of Hospital Project Implementation Units (HPIUs) organized by the hospitals as well as CPMU under MOH.

Comprising of full-time staff and in-house-consultants in HPIU was quite efficient for the equipment procurement at the hospital. The communication between CPMU and HPIUs became identified as the characteristic different approaches in the process of implementation. For instance, only Thai Nguyen Hospital did not employ consultants for equipment procurement, and this made the hospital to delay in tender procedure such as approval of tender document. Thus, HPIU recognized a need of improvement of management capability.

One of the major barriers against Efficiency was lack of experience of dealing with JICA ODA Loan project. All implementing and collaborating organizations were confused by the procedure, documentation, and in timely actions.

## 2) Utilization of procured equipment

The advanced technology through newly procured medical equipment and technical training made a significant benefit on the utilization of equipment and improvement of medical services. Not only by new high-volume automatic examination in laboratory and diagnosis, but also by uplifted motivation, the hospital staffs work harder and faster in the routine job. The following table shows the improved performance at Lang Son Provincial General Hospital.

Table 4c: Improvement of Lang Son Provincial General Hospital

Item	Lang Son Provincial General Hospital (As of Sep. 2010)				
	Hospital Plan	Actual	Achievement ratio against plan (%)	Equipment input	Training input
X-ray diagnosis	32,220	27,286	84.7	○	×
Ultrasound diagnosis	14,440	16,617	115.0	○	○
Endoscopy diagnosis	3,330	3,483	104.6	○	○
Biochemistry test	377,000	295,685	78.4	○	×
Microbiology test	11,000	3,465	31.5	×	×
Number of operation	4,110	3,386	82.4	○	○
Average length of stay	7	6.5	107.7	○	○
Bed occupancy rate	100%	100.6	99.4	○	○
Morbidity rate in hospital	<0.6	0.3	200.0	○	○

## 3) Synergetic effect of training and new equipment

Technical training to support operation of new medical equipment and to improve the capability of medical service technology present a synergetic effect of inputs of equipment and training as shown in the above table. This means that the training was efficient to achieve the project purpose sooner. Training was conducted for not so long term, but it seems that the trainers enlightened on how to operate equipment effectively and correctly. To keep this effect, hospital staffs need to maintain their knowledge and skills by continuous education.

#### (4) Impact

As the prediction from the input and activities at present the project purpose is being achieved, because improvement of hospitals will secure physical accessibilities of certain medical services to provincial residents. Decreasing numbers of patients referred to higher level hospitals can be an evidence for ensuring the hospital capacity development.

The national health strategies and development plans are assumed to consistently address the importance of providing better medical services. So that this policy stability satisfies external condition to achieve the project goal. Particular negative impact has not been reported so far.

#### (5) Sustainability

Sustainability of the benefits realized by the Project is expected on the condition that hospitals can obtain continuous modest assistances.

##### 1) Political and Institutional Aspects

According to the national health plan, strengthening provincial hospitals is a key to improve health network. Draft Vietnam's Strategy for Socio-Economic Development 2011-2020, which was released in 2010 July, addresses the unsolved problem of overloaded hospitals and the low quality of health services. It puts emphasizes on developing healthcare professionals and improving the quality of healthcare services. This statement approves the continuous policy of strengthening provincial hospital by both tangible (e.g.; facility and equipment) and intangible measures (training).

The 3 hospitals have demonstrated their strengths and further enhanced their organizational capacities in the process of project implementation, which are expected to contribute to project sustainability. In the case of Thai Nguyen Hospital as a central hospital, which is under control of MOH even financially, their close communication and direct institutional connection with MOH led to smooth implementation of the project without depending on PPC basically. Ha Tinh Hospital exercised strong leadership in organizing various comments from staffs and making clear decisions. Lan Song Hospital maintained close consultation with MOH and the project consultants.

As a consequence mutual understanding among the relevant parties, even though their status, backgrounds and characters are so different, contributed to successful operation of the project successfully.

##### 2) Financial Aspects

To continuously provide medical services with high quality, securing enough budgets for

operation/ maintenance including expense for consumables is a clue in hospitals in Vietnam.<sup>8</sup> Two provincial hospitals generally spend 40-50% of the budget for medical consumables, and Thai Nguyen Hospital spends approximately 20-25%. Thai Nguyen Hospital plays a role of teaching hospital, so that the hospital has to provide a certain amount of fund for other purposes than medical service. All of three hospitals receive income of insurance and user fee, and they have increased budget allocation for consumables year by year. With this increases, hospitals plan to activate the medical services, and also consider contributing to financial sustainability.

In general, PPC provides 5-8% of the state budget constantly for health sector, and this is quite average or lower compared to neighboring countries. Introducing new medical technology however usually increase hospital expenses. Current public spending of PPC for health sector is somehow sustainable to manage current technology, but it will be more stable if PPCs provide over 8% of state budget for health sector to cover additional expenses of the technology improvement.

### 3) Technical Aspects

The demand for new technology is a hope for the medical staffs and patients, especially who are able to pay out-of-pocket medical cost. Besides, Health Care Fund for Poor (HCFP) will reduce the financial burden on vulnerary groups and give them opportunities to receive advanced treatments. These hospital services with new technology can be an ordinary practice, when these services are frequently extended to the patients. This frequent service will produce the opportunity for the medical staff to further improve the technology and inspire them to learn more. The new technology introduced in the Phase I Project is mostly at the middle level such as ultrasound and endoscopes, which is cost-effective in less consumable and high performance in diagnosis without invasiveness. Such diagnoses will also make the medical staffs feel at ease released from the risk of medical accidents and to keep willingness to work.

Medical workers are produced more than the post of civil servants, and many medical workers seek for the good position for stability and income, and work in the provincial level hospitals as contractors and volunteers waiting its vacancy. This situation assures that the settlement of the trained staffs in the hospital. Also provincial level hospitals have more opportunity to receive training due to the several expertises of departments. This attracts medical workers to grade up their skills and potential for better income in the future.

As a support from outside hospitals, MOH provides learning opportunity and PPCs support budget for the training. This understanding on the medicine is expected to continue, so that the continuous education will further improve the staff's technical level.

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<sup>8</sup> Usually personnel expenses are the main expenditure and big burden for the public hospital. However, most of the public hospitals in Vietnam are regulated in the number of staff to employ. Thus, personnel expenses are regarded as fixed cost, and to ensure the budget for consumable and operation/maintenance costs is the keys to how well the hospital can provide medical services continuously.

### 4.3 Lessons for the Phase II Project

Lessons from the implementation and midterm review of the Phase I Project are to be utilized for the Phase II project as follows.

#### 4.3.1 Planning Stage

In the midterm review of the Phase I Project, relevance and effectiveness was confirmed. Thus it is considered appropriate to set the project goal for the Phase II Project in the same direction and method and to adopt lessons and learnt from its experiences. It is expected that target hospitals have clear, rational and urgent needs for the project, and adequate capabilities for implementation and sustainability of project.

In assessing the project needs, it is hard to compare candidate hospitals under the identical condition. However, solving the existing problems of the referral system should be prioritized at all candidate hospitals. It is because the inadequate medical service at provincial level hospitals is one of the main causes of overload in top referral hospitals. In prioritizing the candidate hospitals, therefore, it should be focused on which hospital can effectively contribute to promote the comprehensive solution.

For project sustainability, selected hospitals should have capabilities to attain the goal and to maintain the project outcomes. It is essential to maintain sufficient human resources who will learn and perform in evidence-based medical services. Appropriate financial capacity is also substantial to bear expenditure for operation and maintenance including purchase of necessary medical consumables, training fee, and personnel cost for qualified medical staffs. Managing board shall also be assessed on their strength of their organization structure, leadership, and ethical operational skill for medical service provisions.

A good practice drawn from Phase I Project, is importance of sharing common understanding on not only the project goal, process and method, but also the mid-and-long term vision and concept, among all the concerned parties including hospitals, MOH and other related organizations. This point was discussed in the workshops and consultation meeting at different stages of the project, such as meetings of steering committee or technical committee. If CPMU and HPIU can coordinate management of information in such discussions in good and effective manner, it helps stakeholders to share the project plan equally and clearly.

#### 4.3.2 Implementation Stage

Provision of necessary medical equipment and technical trainings are one of the keys to successful accomplishment of the Phase II Project.

However, the target hospitals do not have enough experiences to manage the entire process of improvement project, because it has little relation to their daily works. It may take a lot of effort to coordinate the demands from different departments, to determine the adequate quality and



quantity of the equipment to meet their needs. Making training plans is also a hard task to select trainees, who will be trainers to disseminate new techniques, and to set durations. Therefore a strong leadership and wide range of management skill are needed to implement the project.

In the Phase I Project, some hospitals employed the consultants to solve those issues independently. The hospitals with assistance of the consultants demonstrated better performance in scheduling and tendering than the others. Hence, necessary solutions to complement hospitals' weakness, such as assistance of consultants as above mentioned, shall be introduced at early stage of the implementation.

Training should also be planned well in advance, due to the limited capacity and availability of the teaching institutions. Most of the teaching hospitals are normally occupied with patients, students, and trainees from other hospitals. Project should not put additional burden on the teaching hospitals, particularly to the top referral hospitals.

During implementation period of the project, CPMU in MOH is required to coordinate with JICA, other related donor agency and international consultants. CPMU's leadership for the hospitals is expected to make necessary decision, especially on the common issue in the hospitals timely.

Periodical evaluation and feedback are necessary, in which all related actors should actively be involved. CPMU, as the central organization, should effectively participate in midterm review and terminal evaluation. CPMU should set the goal and output, and lead monitoring and evaluation in any form by their initiative. It is efficient for project implementation to share the information of achievements among the parties concerned, to unify them in the same vision, and to avoid getting into wrong direction of hospital improvement.

## **Chapter 5 Planning framework for Phase II Project**

## 5. Planning framework for Phase II Project

### 5.1 Objective and approach of provincial hospital improvement

In health sector, the GoV has been making efforts for improvement of regional healthcare services for the patients with investment on equipment and human resources. As a result, Vietnam has revealed rapid improvements in major health indicators and demonstrated good performance in comparison with other countries at the same level of per capita income.

Nevertheless, in many provinces healthcare services are still insufficient both quantitatively and qualitatively. Widening gap between urban and rural area is becoming as one of the major issues. In addition, the sluggish renovation and poor functionality of medical system to the variation of disease structure are also issues to be tackled.

In accordance with the above background and findings mentioned in the preceding chapters, the planning framework for the improvement of provincial hospitals, as the core hospitals in the provinces, are developed. The planning framework shows direct objective and integrated approaches to realize the objective, which are summarized in the table below.

Table 5a: Objective and Approaches

Direct Objective	Approaches/ Outputs	Suggested Activities
Objective: Reinforcement of provincial hospitals to fulfill the local needs for health service in the region, thereby contributing to the optimization of regional health system	Approach 1 To reinforce the basic technologies	Activity 1 - Basic equipment - Fundamental training in Vietnam
	Approach 2 To introduce new technologies for new disease structure	Activity 2 - Modern equipment - Technical training in Vietnam and advanced country
	Approach 3 To improve hospital management	Activity 3 - Management training in Vietnam and advanced country
	Approach 4 To strengthen the technical support to lower level hospitals	Activity 4 - Technical training in Vietnam and advanced country
	Approach 5 To consolidate the linkage with other medical institutions and donors in the region	Activity 5 - Cooperation with other donors' assistance, and other medical facilities and training institutions in the region

Note: The above Direct Objective and Approaches/Outputs are of basic strategy for the improvement of provincial hospitals in the country, and this basic strategy shall be applied and realized in the other hospitals of the country, including the selected ones for the Phase II Project. .

#### 5.1.1 Direct Objective:

Reinforcement of provincial hospitals to fulfill the needs for health service in the region, thereby contributing to optimization of regional health system

As in the Phase I Project, the direct objective of provincial hospital improvement is to reinforce the provincial hospitals, to fulfill the need for health service in the region, thereby contributing to the optimization of regional health system.

Increased capacity of the provincial hospitals will lead to the reduction of the number of patients referred to the upper level hospitals and the increase of training opportunities for lower level hospitals, thereby contribute to optimization of regional medical system. The approaches to reach this objective need in a wide range, as follows, and should be implemented in a integrated manner.

#### 5.1.2 Approach 1: To reinforce the basic technologies

##### Background and rationale:

The basic technology improvement should be prioritized as an essential approach for the provincial hospitals reinforcement.

- The basic function which is common to all clinical services such as laboratory and pathology are fundamental basis for integration and development of medical service. Human resource development and training on these basic functions are essential in order to provide medical services in appropriate and effective manner.
- Particularly, establishment of sufficient capacity for fundamental services is indispensable for diversification of services to respond emerging diseases Without strengthening these fundamental services, introduction of new medical technologies is not only inefficient but possibly leads to a potential risks such as an occurrence of nosocomial infectious disease.
- (Human resource development)  
In Vietnam, the human resource development has been promoted by various means. One of the effective methods is Direction Office of Health Activities (DOHA) established at DOH and public hospitals. DOHA provides technical assistances from higher to lower level facilities through training, guidance or transfer of technologies. While DOHA has making a certain level of achievements for years, training system nationwide is not adequate yet. It is largely because of the lack of awareness on human resource development, limitation of training resources in terms of facility and staff, and resignation of trained staff.
- Under this situation, the training program for the staffs of provincial hospital should be designed in combination of domestic and overseas, short and mid-and-long term, and other optimum pattern of training courses, based on the long-term vision of human resource development to meet the quantitative and qualitative needs by increasing the number of skilled medical personnel.

Suggested activities:

- To provide basic equipment
- To provide training in Vietnam on fundamental medical services

5.1.3 Approach 2: To introduce new technologies for new disease structure

Background and rationale

The medical service of provincial hospitals is to be improved, so as to satisfy the different need of the provinces, respectively at each hospital.

- The disease structure is changing in Vietnam; malignant tumor, cerebral disease, cardiac disease and other chronic diseases are seen in and around major cities alongside the improvement of living standard. Needs for medical service for these types of diseases are gradually growing, even in the provinces.
- However, needs for medical care for the infectious diseases which still prevail in the country remains high. The levels of medical services at hospitals in remote areas are still behind the ones in cities. Lack of unified standard for the medical services for various infectious diseases is one of the reasons of inadequate medical service for such diseases. As the hospitals will continuously accept many patients of infectious disease, they should also reinforce the clinical capacity to treat infectious diseases as the fundamental service.
- This situation of new disease structure requires, therefore, the medical services both for infectious disease, and non-infectious disease which needs to introduce the new high technology.

Suggested activities:

- To provide advanced equipment
- To provide technical training in Vietnam and advanced country on the new technology

5.1.4 Approach 3: To improve hospital management

Background and rationale

- It is generally observed in many provincial hospitals that senior doctors taking initiative in hospital improvement, by introducing the advanced medical equipment and upgrading the medical service. On the contrary, these doctors tend to pay little attention to existing equipment and human resources in developing future vision of the hospital. As a consequence such hospitals often miss out effective utilization of the existing resources, which is one of the keys for overall functional management.

In tandem with the capacity development of medical staffs and technical improvement of equipment/facilities, the overall hospital management becomes more important to make the most of such increased capacity. Systematic hospital management is essential

to make the best use of investment on capacity development and technical improvement.

- In the technical improvement for medical service, ethical issues should be considered as a core notion of hospital management, since the patient-centered hospital management\* should always be a target. This patient-centered hospital management is to protect rights of patients and to provide the amenity for the patients and their families.

\* Patient-Centered Hospital Management

For instance, if rooms for hospital staff are air-conditioned but patient rooms are not air-conditioned, it implies that the notion of Patient-Centered Hospital Management is not permeate throughout the hospital. Lack of this notion of “Ethics” and “Amenity for Patients and their families” may downplay solicitude for patients and fundamental hospital operation. It could even lead to the possible risks of nosocomial disease or others, even the hospital is provided with the new sophisticated equipment.

- Introduction of IT technologies will contribute to efficient administration of hospitals. It also helps improve quality of clinical services improvement through proper management of patients’ records.
- Environment management is also essential for the sound hospital management to avoid any possible risk of infection to the patients, their families and the people around the hospital.

Suggested activities:

- Management training in Vietnam and advanced country<sup>9</sup>

5.1.5 Approach 4: To strengthen the technical support to lower level hospitals

Background and rationale:

- Many district level facilities serve the patients with still lower level of technology and inadequate equipment and facilities, though the other donors are supporting them for the improvements.
- MOH is implementing the policy of human resource development in health sector and DOHA activities needs to be further promoted. In addition, as per the MOH Decision No. 1816 of May 2008, the rotation of medical staff from higher to lower level hospitals should be accelerated. In the technical training in Vietnam, hospitals are encouraged to rotate their medical staff to lower level
- Awareness of the hospital management board on the importance of consolidating education systems for medical staffs should be raised.

Suggested activities:

- Management training in Vietnam and advanced country

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<sup>9</sup> Management training in Vietnam includes accounting, drug inventory, etc. and the one in the advanced country like Japan includes infection control system, amenity management, etc.

5.1.6 Approach 5: To consolidate the linkage with other medical institutions and donors in the Region

Background and rationale:

- Patients' referral system and training of medical staff of lower level facilities can be realized by the hospitals well functioning with necessary equipment and trained staff, together with the close and smooth communication and coordination between such hospitals.
- The equipment and training of the staff can be provided by the ODA funded project for the expected functioning of target hospitals. However, the hospitals are still expected to strengthen the communication and coordination with other facilities in the province for institutionalizing the referral and training systems.
- The hospitals are expected to establish and strengthen the good relationship with other medical facilities and training institutions in the province for referral service in an emergency case and for the training of their medical staff.
- The hospitals are also expected to coordinate with donors, which are supporting other medical institutions in the same region, for possible collaboration for referral and training systems.

Suggested activities:

- Cooperation with other medical institutions and donors in the same region

5.2 Selection of hospitals for Phase II Project

5.2.1 Survey based criteria by Consultants

Consultants developed the criteria and scoring system for prioritizing the candidate hospitals through the discussion with MOH/ CPMU, as follows. The criteria are largely divided into 6 categories of policy compliance, hospital management, hospital finance, human resource, equipment and environment management.

Category	Points of Criteria
(1) General (Policy compliance)	<ul style="list-style-type: none"> <li>• Does the target hospital meet the national policies (Prime Minister Decision 930/2009/QD-TTg, 47/2008/QD-TTg, 153/2006/QD-TTg, and 30/2008/QD-TTg)?</li> <li>• Is the target hospital far enough to be independent from top 3 central hospitals?</li> <li>• Does the target hospital cover poverty area to provide necessary medical services?</li> </ul>
(2) Hospital management	<ul style="list-style-type: none"> <li>• Does the target hospital have own management and construction plan whenever the hospital is able to operate effectively with significant investment?</li> <li>• Does the target hospital have urgent needs to improve, such as high bed occupancy rate, long length of stay and large numbers of referral to upper hospital?</li> <li>• Does the target hospital accept patients from lower level hospitals following referral system?</li> </ul>
(3) Hospital finance	<ul style="list-style-type: none"> <li>• Does the target hospital have enough revenue from various sources, such as hospital fee from patients and government budget?</li> </ul>
(4) Human resource	<ul style="list-style-type: none"> <li>• Does the target hospital consider and budget for staff training?</li> </ul>
(5) Equipment	<ul style="list-style-type: none"> <li>• Does the target hospital need to update medical equipment to meet the standard as provincial hospital level?</li> </ul>

	<ul style="list-style-type: none"> <li>• Does the target hospital have enough number and capability of human resources to operate and maintain medical equipment?</li> <li>• Has the target hospital ever managed finances, such as budgeting for maintenance and supplying of spare-parts?</li> </ul>
(6) Environment management	<ul style="list-style-type: none"> <li>• Does the target hospital have a moderate waste management system for solid waste and waste water?</li> <li>• Does the target hospital consider the future plan to improve waste management?</li> </ul>

The result of prioritization with these criteria was presented by Consultants in the form of Appendix 6, to MOH/CPMU and JICA.

### 5.2.2 Prioritization of hospitals for Phase II Project

JICA, upon receipt of Consultants prioritization of candidate hospitals, re-examined the point ranking with additional criteria in line with the JICA's policy. MOH has selected the 10 hospitals with the following additional criteria.

Criteria	Reason for Criteria
(1) Availability of investment by Government Bond	<ul style="list-style-type: none"> <li>• If the target hospital is difficult to receive the Government Bond, it means that the JICA project is only the resource and opportunity to be invested for the hospital.</li> </ul>
(2) Task as satellite hospital of central hospital	<ul style="list-style-type: none"> <li>• When the target hospital has a roll as satellite hospital, the hospital is stated as secondary important after central hospitals.</li> </ul>
(3) capability of the project implementation	<ul style="list-style-type: none"> <li>• The target hospital should have capacity to implement the project operation smoothly to finish on time.</li> </ul>

Adopting the above additional criteria, MOH has reviewed priority order among 15 hospitals, and then selected the following 10 hospitals as the target hospitals for Phase II Project, which were concurred by JICA through the discussions.

Table 5b: Selected Target 10 Hospitals

Name of selected hospitals	Number of bed	Name of upper hospital to refer
Bac Giang Provincial General Hospital	550	Bach Mai Hospital
Son Tay Inter-District General Hospital	420	Viet Duc Hospital
Thai Binh Provincial Pediatric Hospital	200	National Hospital of Pediatrics
Nam Dinh Provincial Obstetric Hospital	180	National Hospital of Obstetrics and Gynecology
Nghe An Provincial Pediatric Hospital	240	National Hospital of Pediatrics
C Da Nang Central General Hospital	550	Hue Central Hospital
Binh Dinh Provincial General Hospital	900	Hue Central Hospital
Lam Dong Provincial General Hospital	525	Cho Ray Hospital
Tay Ninh Provincial General Hospital	500	Cho Ray Hospital
Ninh Thuan Provincial General Hospital	500	Cho Ray Hospital



### 5.3 Overview and improvement strategy of each hospital

#### 5.3.1 Bac Giang Provincial General Hospital

Bac Giang Province is located in North-East Region, and populations of poverty are 80,000 people (5% of total provincial population), the highest among selected 10 provinces. Main cause of death in the province and Provincial General Hospital are acute symptoms or emergency cases, and not complicated diseases or lethal status. Main symptoms in the hospital are infectious diseases, therefore the hospital refers patients who need neuro- or abdominal-surgeries to upper level hospital in Ha Noi, where is about 60 km away. The National road to Ha Noi goes across Bac Giang Province, so that the hospital treats lots of severe traffic accident cases about 1,000 cases per year, and 30-40% of accidents need neuro-surgery. The Bac Giang Provincial General Hospital is now under construction and the facilities will be renewal by 2013. However, medical equipment is not planned with the renovation of the facilities. When the hospital is strengthened the function of emergency room, surgery, ICU and diagnosis area, existing traffic accidents and acute cases will be cured and no necessary to refer to upper level hospitals. Additionally, to prevent surgical site infection and post-operative wound infection, current infection control system shall be re-considered.

Table5c: Top 10 Cause of Death in Bac Giang PGH (2007)

No	Name of Diseases	Case
1	HIV leading to infection and parasite	20
2	Disorders related to premature delivery and low weight on delivery	15
3	Inner-skull injuries	9
4	Trauma strokes	5
5	Pneumonia	4
6	viral encephalitis	4
7	Other shocks	4
8	Acute petechial gastritis	3
9	Asphyxiation on delivery	3
10	N/A	

Table: Top 10 Morbidity of Bac Giang PGH (2007)

No	Name of Diseases	Case
1	Bronchitis and small-bronchitis	102
2	Pneumonia	90
3	Acute sore throat and paristhimitis	78
4	Gastric- duodenitis	38
5	High blood pressure	30
6	Rheumathritis and other arthritis	27
7	Other neurological diseases	25
8	Other urinary diseases	25
9	Other injuries	16
10	Appendicotomy	15

#### 5.3.2 Son Tay Inter-District General Hospital

Son Tay Inter-District General Hospital is stated as “satellite hospital” for Viet Doc hospital in Ha Noi. The meaning of “satellite hospital” is a bulwark from referred patients from outside of city and alleviative crowded central hospitals. This is the most important role of the hospital, therefore the hospital is expected to have almost same function as central hospitals. The result of morbidity questionnaire is not appropriate, however, delivery related cases, gastrological symptoms and respiratory diseases are remarkable. To treat those cases, the hospital is required to strengthen the function of surgery, emergency care, ICU and diagnosis areas.

Table 5e: Top 10 Cause of Death in Son Tay IDGH (2007)

No	Name of Diseases	Case
1	Pneumonia	11
2	Respiration and circulation symptoms and signs	10
3	Undefined stroke	6
4	Tuberculosis	5
5	Inner-skull injuries	5
6	HIV	4
7	Other digestive diseases	3
8	Cardiac infarction	2
9	Heart failure	2
10	Heart-rhythm disorders	2

Table 5f: Top 10 Morbidity of Son Tay IDGH (2007)

No	Name of Diseases	Case
1	Acute infant diseases	3,372
2	Maternal disorders related to pregnancy	2,295
3	Normal delivery	1,605
4	Oesophagus diseases	988
5	Vertebral column diseases	974
6	Pneumonia	910
7	Acute bronchitis	852
8	Gastric -duodenitis	614
9	Respiration and circulation symptoms and signs	610
10	Otorhinolaryngologic infection	581

Note: Table 5f "Acute infant diseases" is a speculation due to inarticulate answer from the hospital in the questionnaire

### 5.3.3 Thai Binh Provincial Pediatric Hospital

Thai Binh Province is located in the Red River Delta Region, and getting an industrial zone from agricultural activity as well as neighboring provinces. Thai Binh Provincial Pediatric Hospital is recently becoming independent from the provincial general hospital to be a specialized hospital for pediatrics covering neighboring provinces. New facility is under construction and the building will be furnished by 2013. However, the medical equipment is not included in the plan. Thai Binh Provincial Pediatric Hospital is assigned for specialized hospital to regional coordination with neighboring Nam Dinh Provincial Obstetric Hospital to cover suburban Ha Noi area for maternal and child health. There is no particular data about child health indicator, but the political order of MCH network formation stands significantly. Thus, for the future hospital facility plan which will be finished in 2011, diagnosing and initial treatment for emergency cases is priority for medical equipment supply on the future plan. Concretely, operation theater, ICU, laboratory and neonatology departments are the target for procurement.

### 5.3.4 Nam Dinh Provincial Obstetric Hospital

Nam Dinh Province is located in North-East Region and 100 km away from Ha Noi. Nam Dinh Provincial Obstetric Hospital became independent from provincial general hospital since 2009 with new facilities. To cover the obstetric and gynecology field in neighboring provinces as a specialized hospital, the hospital should provide complete care but still refers severe cases to Ha Noi about 800 patients among 9,000 outpatients/ year. Obstetric care can not wait for severe case and already patients come from rural area to this hospital, so that the hospital needs to reduce the number of referral to upper level facility. Thus, the hospital will be strengthened the field of Ob/Gyn surgery, diagnosis technology, as well as infection control areas. Also the hospital targets to serve premature baby born under 800 g or 28 weeks, and sends medical staffs

for training on abroad.

Table 5g: Top 10 Cause of Death in Nam Dinh P Ob/Gyn Hp (2007)

No	Name of Diseases	Case
1	Injuries due to inner-skull trauma	58
2	Fetus slow development, malnutrition, disorders related to pregnancy and low neonate weight	39
3	Traffic accidents	37
4	Brain bleeding	29
5	Pneumonia diseases	18
6	Other respiratory injuries of new-born period	12
7	Cardiac infarction	11
8	Bacteremia	10
9	COPD	5
10	Suicide	1

Table 5h Top 10 Morbidity of Nam Dinh P Ob/Gyn Hp (2007)

No	Name of Diseases	Case
1	Delivery	8,587
2	Miscarriage threats	712
3	Metro-fibroma	294
4	GEU	268
5	Abortion	229
6	Toxemia of pregnancy	141
7	Follicular cyst	138
8	Placenta Previa	135
9	Myometritis	130
10	Adnexitis	127

### 5.3.5 Nghe An Provincial Pediatric Hospital

Nghe An Province is located between Ha Noi and Hue, and belongs to the North-central coast region. Due to the harsh climate, the poverty rate is 6% as the highest among the selected 10 provinces. However, the capital Vinh City is the 6<sup>th</sup> largest city in Vietnam. Provincial Pediatric Hospital is recently becoming independent from the provincial general hospital to be a specialized hospital for pediatrics covering neighboring provinces. Accordance with the independence of the hospital function, the facility extension will be completed at the end of 2010 without enough medical equipment supply. The hospital has an experience of the technical cooperation by Finland by 2004, so that the hospital is aware of technical rationale. Still morbidity profile is mainly respiratory diseases, but recently congenital defect cases such as septic defect are increasing and the hospital needs to cure the pediatric cardio-surgery time by time. Traffic accidents are also main reason for operation of encephalorrhagy, 7-10 cases per month in average. Thus, the hospital has to cover from neonatal care for abnormality to pediatric surgery such as typical ileus and fracture, with neurology and rehabilitation areas.

Table 5i: Top 10 Cause of Death in Nghe An Province (2007)

No	Name of Diseases	Case
1	Viscera injuries	58
2	HIV	51
3	Pneumonia	34
4	Other respiratory diseases initiated during new-born period	32
5	Heart failure	32
6	Fetus slow development and malnutrition related to premature delivery and low neonate weight	31
7	Other cardiac diseases	18
8	Clinical and para-clinical syndromes and findings	18
9	Traffic accidents	16
10	Respiratory tuberculosis	15

Table 5j: Top 10 Cause of Death in Nghe An PPH (2007)

No	Name of Diseases	Case
1	Other respiratory diseases	246
2	Pneumonia	5
3	Slow fetus development, malnutrition and low neonate weight	5
4	Oxygen deficiency in uterus and asphyxiation on delivery	4
5	Respiratory diseases initiating from the new-born period	3
6	Benign tumors and undefined tumors	2
7	Other diseases arising from the new-born period	1
8	Infection and innate parasite	1
9	Burn and caustic injury	1
10	Other nasosinusal diseases	1

Table 5k: Top 10 Morbidity of Nghe An Province (2007)

No	Name of Diseases	Case
1	Pneumonia	10,671
2	Defined and undefined injuries in other places	8,089
3	Other limb-bone breakage	4,808
4	Rheum arthritis, other poly-arthritis	4,679
5	Other vertebral column diseases	4,483
6	Infection-originated diarrhea, gastritis and enteritis	3,948
7	Bronchitis and small-bronchitis	3,627
8	Bronchitis and pneumonia	3,428
9	Sore throat and tonsillitis	3,097
10	Injuries in neurologic root	3,080

Table 5l: Top 10 Morbidity of Nghe An PPH (2007)

No	Name of Diseases	Case
1	Bellyache and pain in the hip-bone area	9,346
2	Pneumonia	3,396
3	Infection-originated diarrhea, gastritis and enteritis	1,605
4	Acute sore throat and tonsillitis	993
5	Unclassified symptoms, clinical and para-clinical findings	642
6	Broken limb-bones	531
7	Other diseases initiated from the new-born period	484
8	Inner-skull trauma	419
9	Benign tumor and undefined tumors	401
10	Non-hernia paralytic intestine and ileus	301

### 5.3.6 C Da Nang Central General Hospital

Da Nang is one of five centrally governed cities and listed as a first class city. C Da Nang Central General Hospital was stated as special central hospital for government officials exclusively, but gradually opened to the public patients now. This is an opportunity for citizens who can receive the benefit of sophisticated technology within the health insurance. Technically the hospital has advantage for some specialties, such as oncology, cardio- and neuro-surgery, and invasive diagnosis, due to VIP care, and MOH expects to advance existing technology. The hospital has a several technical cooperation with European countries and universities, so that the management awareness is high. The hospital has a potential coming to the forefront in Central Region beside Hue Central General Hospital.

Table 5m: Top 10 Cause of Death in C Da Nang CGH (2007)      Table 5n: Top 10 Morbidity of C Da Nang CGH (2007)

No	Name of Diseases	Case
1	Lung superinfection	7
2	Brain bleeding	3
3	Final-phase cancer	2
4	Nephrosis	2
5	COPD	2
6	Marasmic	2
7	cardiac infarction	1
8	Acute asthma	1
9	Interstitial hepatitis	1
10	Heart failure	1

No	Name of Diseases	Case
1	High blood pressure	412
2	Brain vessel syndrome	329
3	Retinopathy	327
4	Acute pneumonia	259
5	Diabetes	203
6	Gastritis	184
7	Cataract	177
8	Acute sore throat	131
9	Asthma	110
10	Chronic bronchitis	107

### 5.3.7 Binh Dinh Provincial General Hospital

Binh Dinh Province is located in South Central Coast region and about 100km away from both city HCM and Hue. Binh Dinh Provincial General Hospital is also stated as regional hospital, so that covering area is becoming not only Binh Dinh Province. Mortality and morbidity in the province is head injury caused by traffic accident, and cardiologic and urologic symptoms are getting increasing remarkably besides infectious diseases. As the regional hospital, the function of hospital is getting important to treat severe and intractable diseases. Therefore the hospital is expected to strengthen the widely technological field; several surgical field, diagnosis areas, many specialties, accordance with the expansion plan of facility.

Table 5o: Top 10 Cause of Death in Binh Dinh Province (2007)

No	Name of Diseases	Case
1	Acute brain trauma	366
2	Brain bleeding	274
3	Bacteremia shock	133
4	Final-phase heart failure	123
5	Lung, bronchus cancer	121
6	Stomach, liver, Pancreatitis, bile cancer	117
7	Acute cardiac infarction	96
8	Multi-trauma with shocks	94
9	Acute neonate infection, new-born period diseases	89
10	Final-stage nephrosis	61

Table 5p: Top 10 Cause of Death in Binh Dinh PGH (2007)

No	Name of Diseases	Case
1	Head injuries	189
2	Accident injuries	49
3	Infection, parasite infection	41
4	Bacteremia	36
5	Respiratory tuberculosis	27
6	Other diseases in the new-born period	24
7	Brain bleeding	23
8	Oxygen deficiency, asphyxiation on delivery	22
9	cardiac infarction	19
10	Pneumonia	15

Table 5q: Top 10 Morbidity of Binh Dinh Province (2007)

No	Name of Diseases	Case
1	Vertebral column diseases	24,811
2	Digestive diseases	12,045
3	Acute brain trauma	8,741
4	High blood pressure	8,570
5	Coronary arteries diseases	5,134
6	Pneumonia	1,694
7	Urinary gravel	1,650
8	Cancers	1,194
9	Cerebral vascular stroke	955
10	Neonate diseases	744

Table 5r: Top 10 Morbidity of Binh Dinh PGH (2007)

No	Name of Diseases	Case
1	Delivery and pregnancy complications	9,680
2	viral petechial fever	9,517
3	Pneumonia	6,842
4	Accident injuries	6,599
5	High blood pressure	6,150
6	Bronchitis	4,938
7	Sore throat, tonsillitis	4,731
8	Head injuries	4,154
9	Cataract	3,789
10	Diarrhea, stomach diseases	3,697

### 5.3.8 Lam Dong Provincial General Hospital

Lam Dong Province is located in Central Highlands Region, and relatively near from HCM, however, surrounded by poor highlands provinces, and the only province which does not share its western border with Cambodia among Central Highlands Region. Accordingly, Lam Dong Provincial General Hospital has a role to be referred patients from neighboring provinces. The capital, Da Lat is historically developed as a French resort area, so that the hospital has a potential for geographical accessibility even in highland, and has received several European technical cooperation before. The hospital is renovating to expand the facility mainly technological functions. Construction will be finished in 2010. Before renovation the hospital was flat-complex structure, therefore there was a difficulty to transport patients for examination and treatment. New structure is modern central system by gathering operation theater, ICU, laboratories and outpatient departments (OPDs). Procurement of medical equipment was out of scope of renovation, so that the new central functions including OPDs should be strengthen with modern adequate technologies.

Table 5s: Top 10 Cause of Death in Lam Dong Province (2007)

No	Name of Diseases	Case
1	Injuries due to inner-skull trauma	68
2	Fetus low development and malnutrition, disorders related to pregnancy and low neonate weight	51
3	Traffic accidents	38
4	Other special respiratory injuries of new-born period	27
5	Brain bleeding	26
6	Pneumonia diseases	23
7	Bacteremia	18
8	Cardiac infarction	16
9	Suicide	14
10	Heart failure	9

Table 5t: Top 10 Cause of Death in Lam Dong PGH (2007)

No	Name of Diseases	Case
1	Injuries due to inner-skull trauma	45
2	Traffic accidents	38
3	Fetus low development and malnutrition, disorders related to pregnancy and low neonate weight	34
4	Special respiratory injuries in the new-born period	13
5	Pneumonia diseases	12
6	Brain bleeding	8
7	Unclassified clinical and para-clinical syndromes and signs in other places	8
8	Suicide	6
9	Cardiac infarction	4
10	Heart failure	1

Table 5u: Top 10 Morbidity of Lam Dong Province (2007)

No	Name of Diseases	Case
1	Normal deliver	13,382
2	Other injuries and multi-injuries	7,784
3	Traffic accidents	5,950
4	Pneumonia diseases	5,674
5	Acute sore throat and tonsillitis	5,413
6	Other delivery and pregnancy complications	4,502
7	infection-originated diarrhea, gastritis, enteritis	3,170
8	Appendicotomy	2,550
9	Gastritis and duodenitis	2,229
10	Other intestinal infections	2,522

Table 5v: Top 10 Morbidity of Lam Dong PGH (2007)

No	Name of Diseases	Case
1	Traffic accidents	3,910
2	Other injuries and multi-injuries due to defined trauma	3,506
3	Normal delivery	2,584
4	Other delivery and pregnancy complications	1,671
5	Other broken limb-bones	1,474
6	Pneumonia diseases	1,290
7	Injuries due to inner-skull trauma	1,569
8	Acute sore throat and tonsillitis	1,076
9	Appendicitis	974
10	Infection-originated diarrhea, gastritis, enteritis	705

### 5.3.9 Tay Ninh Provincial General Hospital

Tay Ninh province is located the Northeast-south Region, and the boarder with Cambodia. Politically to maintain amicable relations with neighboring country, Tay Ninh Provincial General Hospital accepts the Cambodian patients who cross border. Generally the province itself is low income status, and the hospital has a mission to provide a moderate health services for existing problems. Disease profiles in this province are double structure of communicable and non-communicable diseases, and the hospital is expected to perform the completed care to reduce the burden of patients for transportation far. For this, the hospital gives priority on the diagnosis field, at least to diagnose precisely to define the problem.

Table 5w: Top 10 Cause of Death in Tay Nigh Province (2007)

No	Name of Diseases	Case
1	Cardiac infarction	29
2	Heart failure	22
3	High blood pressure	49
4	Brain trauma	9
5	Mental disorder	7
6	Diabetes	5
7	Liver cancer	4
7	Lung cancer	

Table 5x: Top 10 Morbidity of Tay Nigh Province (2007)

No	Name of Diseases	Case
1	High blood pressure	1,216
2	Diarrhea	975
3	Pneumonia	805
4	Cataract	771
5	Heart failure	610
6	Epilepsy	593
7	Diabetes	544
8	Petechial fever	399
9	Pulmonary tuberculosis	342

### 5.3.10 Ninh Thuan Provincial General Hospital

Ninh Thuan Province is located in the South-East Region, and the total population is the smallest among selected provinces. Currently, main mortality and morbidity are trauma by traffic accidents and infectious diseases, so that surgery can be a demand. However, Ninh Thuan Province is planning to build the nuclear power station. Therefore Ninh Thuan Province prospects the future disease profile change and asks for Ninh Thuan Provincial General Hospital to correspond the occupational hazards in the worst case. Thus, the hospital is required current

situation and future countermeasure, especially accurate diagnosis technology.

Table 5y: Top 10 Cause of Death in Ninh Thuan Province (2007)

No	Name of Diseases	Case
1	Injuries due to inner-skull trauma	27
2	Other respiratory injuries of new-born period	26
3	Brain bleeding	22
4	Pneumonia	15
5	Bacteremia	15
6	Cardiac infarction	12
7	Toxicosis of insecticide	12
8	Pneumonia diseases	10
9	Central nervous system inflammatory	9
10	Heart failure	7

Table 5z: Top 10 Cause of Death in Ninh Thuan PGH (2007)

No	Name of Diseases	Case
1	Inner-skull injuries	26
2	Congenital mental disorder	21
3	Bacteremia	14
4	Cardiac infarction	13
5	Brain bleeding	11
6	Pneumonia	10
7	Heart failure	9
8	Cerebral vascular stroke	6
9	Encephalitis	6
10	Pesticide toxicosis	2

Table 5aa: Top 10 Morbidity of Ninh Thuan Province (2007)

No	Name of Diseases	Case
1	Infection-originated diarrhea and gastritis	3,316
2	Injuries due to defined trauma	2,878
3	Pneumonia diseases	2,440
4	Other virus diseases	1,739
5	Other delivery and pregnancy complications	1,354
6	Acute sore throat and tonsillitis	1,253
7	Appendectomy	1,223
8	Bronchitis and small-bronchitis	855
9	Primary hypertension	823
10	Primary hypertension	772

Table 5ab: Top 10 Morbidity of Ninh Thuan PGH (2007)

No	Name of Diseases	Case
1	Multi soft-tissue injuries	2,468
2	Viral infection	2,270
3	Diarrhea	2,220
4	Pneumonia	1,705
5	Appendicitis	1,131
6	High blood pressure	788
7	Gastritis	636
8	Broken limb-bones	621
9	Inner-skull injuries	411
10	Cerebral vascular stroke	129

#### 5.4 Scope of Phase II Project and expected role of the Vietnamese side

In the Phase II Project implementation, an effort of the Vietnamese side in line with the Health Sector Master Plan (2010-2020) by the Government Decree No.153 is crucial for achieving the project objectives. It is also requisite to coordinate supporting activities of donors, which mainly focusing on improvement of health facilities in district hospitals and health centers, because better donors' coordination will produce greater synergy effect on improvement of the regional healthcare system. They are also expected to coordinate with other medical facilities for patients' referral service and the training of the medical staff in their province, as the basic strategy of hospital improvement. On top of these, there are more rooms that the hospital can do for their service improvement, coordinating and cooperating with DOH, PPC and others.

##### 5.4.1 Scope of the Phase II Project

As in the developed planning framework, there are 5 approaches for reinforcement of provincial hospital capability. From 5 approaches, 3 approaches will be adopted in the Project, and such approaches will need the activities of equipment procurement and training.



#### 5.4.2 Expected role of Vietnamese Counterpart/Government

In the Phase II Project, the major project components are procurement of medical equipment and trainings in Vietnam and other countries including Japan, as well as the consulting service, to be covered by the JICA ODA loan, for the smooth implementation of the Project.

On the other hand, Gov and Vietnamese counterpart should play their roles to make sure of successful achievement of the purpose of Phase II Project, such as approach 4:to strengthen the technical support to lower level hospitals and approach 5:to consolidate the linkage with other medical institutions and donors in the region. Besides these, their expected roles extend to technical (human resource and equipment), financial and institutional aspect in the Project. In each component, assurance of the parties concerned should be confirmed among before or upon commencement of the Project.

##### (1) Technical aspect

The technical sustainability of the hospital is largely subject to 2 factors; namely human resource and equipment.

As for human resource, well-planned periodical trainings for the hospital staff will help the staff to maintain and improve their technical skills, not only for diagnosis and treatment of patients using the procured equipments, but also for proper maintenance of such equipments.

It is therefore important to confirm among MOH, DOH and the hospital to confirm the existence or deployment of new staff necessary the implementation of the Project and sustain the enhanced capacity of the hospital.

##### (2) Institutional aspect

The current hospital fee schedule is planned to be reviewed based on the quality and performance.

Having the proper price system is essential for the project sustainability, and it is therefore expected that the Government including the Peoples' Committee adjust the comprehensive health financing scheme. After the adjustment, it will enable patients to receive adequate medical care at their convenient facilities at reasonable cost, thereby better access to the health care services to a wider range of people, especially for the poor.

To prepare for such price system change, it is recommended that the hospital accounting system should be reviewed and modernized to make the accounting clear to show the costs and expenses for each service or performance at each department, all of which will contribute to the improvement of financial management.

##### (3) Financial aspect

The newly procured equipment will need additional budget for operation and maintenance.

Generally, about 10% of the total cost for procurement of equipment will be additionally required for its operation and maintenance.

Basically a hospital as a management agency is responsible for securing a sufficient budget for all the expenses of hospital activities, because hospitals are expected to be autonomous by the Government Decree No.43 issued in April 2006. However, in reality, the financial sustainability of hospital improvement relies on various sources.

As for hospitals' income, there are some factors beyond hospital's control, such as hospital fee income and insurance payment income, because the fee schedules and insurance coverage are subject to the efforts of the Government and Peoples' Committee. HCFP (Health Care fund for the Poor) obviously should play major role for the insurance coverage for the poor and every effort should be concentrated to maintain the hospital services to the people, especially the poor, with financial assistance of the Government, Peoples' Committee and the donors.

To guarantee the efforts of both Vietnam side and JICA, pending a partial uncertainty in financial assurance for the Project, it is expected that MOH through DOH together with PPC make the official commitment for financial support of securing the budget for operation and maintenance of the hospital, as well as the counterpart fund for the implementation of the Project, as the Phase II Project will be implemented with the JICA ODA Loan.

## **Chapter 6 Formulation of Phase II project**

## 6. Formulation of Phase II project

### 6.1 Project component for improvement of selected hospitals

#### 6.1.1 Examination of target activities to be improved

As the Project adopts 3 approaches of i) to reinforce the basic technologies, ii) to introduce new technologies and iii) to improve the hospital management including IT technology and environment management, the priority targets of hospital activities were examined ahead of identification of project component. In this regard, priority target areas were divided into four categories in this section: medical care (basic and new technologies), hospital management, information technology and environmental consideration.

#### (1) Medical care

The crucial area for improvement of the medical care is prioritized as shown below.

##### Overcoming weakness common to the selected hospitals (basic technologies)

- To strengthen central diagnosis areas,
- To strengthen emergency care service,
- To establish infection control in hospital as a basis for advanced medical care,

##### Assuring hospitals' roles in the regional health system

- To establish or to strengthen a specific department, especially oncology department, so as to meet the change of disease structure from the med- and long-term standpoint,
- To extend and to strengthen specific medical care service as a specialized hospital such as obstetric hospital and pediatric hospital,

##### Overcoming specific shortcomings

- To reinforce medical care service for any disease specific to each hospital, depending on the need of patients, such as traffic accident, local chronic disease, etc.

#### (2) Hospital management

A hospital should be managed financially and clinically in sound and safe manners, in everyday activities based on its long-term future vision. Therefore, it is one of the most crucial issues to establish an effective and efficient hospital management system, which includes a wide variety of activities in a hospital. From the clinical administration point of view, various committees for infectious disease control, patients' amenity and ethics should be organized and functionally operated. IT application to the hospital management is also to promote the effective management as described in the next section. Good practices of all of these can be learned through the overseas trainings including Japan. The training specialized on the hospital management will be useful and efficient for improvement of clinical management for the patients and better administration for the hospital management board. The plan will be designed

to suit these needs.

### (3) Information technology

MOH recognizes the importance of IT development and encourages hospitals to introduce and develop IT system in hospitals and even connecting network among upper level hospitals and lower level hospitals for training purpose.

Although there is no explicit regulation or rules for such a development, IT development should be promoted by utilizing the existing resources without waiting for enforcement of regulatory framework, with a view to realize the maximum benefit for the hospital administration improvement. Particularly, application to cost accounting and patients' record will help promoting the financial sound management and better quality of hospital services for the patients. The training courses will be designed to include these practices in Vietnam.

### (4) Environmental consideration

The points for improvement of environmental consideration for each hospital, comprising waste water treatment and solid waste treatment, are listed in the Chapter3. For prevention of environmental pollution, investment on additional facilities and/or equipment as well as human resource development for environmental management is needed.

Since the investment on such facility construction and/or procurement of equipment is planned to be financed by the GoV, relevant training are also to be conducted by the Vietnamese side. Therefore the Phase II Project will not cover training courses on waste management.

Meanwhile, reinforcement of infection control, which relates closely to waste water treatment and solid waste treatment, is to be an important component of the Phase II Project, as shown before.

## 6.1.2 Identification of Project component

The project components, consisting of procurement of equipment and provision of training course were identified for each target hospital, taking into consideration the lessons learnt from the Phase I Project.

### (1) Selection of equipments to be procured

Selection of equipments was made through the following procedures. First, the requirements of equipments prepared by 10 hospitals were examined from a viewpoint of compatibility with the basic policy of hospital improvement shown in Section 5. Second, equipment was evaluated based on the following criteria:

- Purpose of Use / Need,
- Frequency of use supposed,

- Availability of staff with required skills and experience,
- Training plan for doctors/staffs for utilizing of the equipment,
- Operation and maintenance cost,

The major equipment selected for each hospital is shown in the following section and details are shown in Appendix 9.

## (2) Identification of training courses to be conducted

The scope of training was planned mainly on the basis of MOH policy and the assessment of capability and needs of hospitals, also taking into account the hospital's plan for improvement.

This methodology was adopted based on lessons learnt from the Phase I Project, in which the longer and the more number of trainees should have been done. In fact, limited scope of training was implemented in Phase I Project, as only the hospital's request was considered. Shortly, approach to design a training course was modified from bottom-up to top-down.

The training courses planned comprise the followings:

### Training courses for improvement of medical care

- To strengthen basic technologies in central diagnosis areas such as Pathology, Microbiology, Hematology, endoscopy and image diagnosis,
- To strengthen Technologies for emergency care service, such as ICU, NICU, use of ventilator and hemodialysis,
- To establish and/or strengthen infection control,
- To acquire techniques for using newly procured medical equipments, such as laparoscopy, PET-CT, Gamma knife, Nuclear, cardio-vascular and stent placement,
- To overcome weakness specific to the hospitals found out by the Consultants, including general surgery, plaster surgery, ophthalmology, ENT, odonto-stomatology, infertility and so on.

### Training course for improvement of hospital management and others

- To improve hospital management comprising the 2 courses shown below.
  - i) Training of hospital management staff at hospitals with advanced management system. After learning the importance of functional management system, trainees are expected to take initiatives in restructuring their own hospitals. Training will cover financial management, human resource management, clinical management including the committee discussion and decision making system for infection control, patients amenity and ethics, etc.
  - ii) Training for safe utilization and maintenance of medical equipment
- To acquire knowledge and practical techniques on information technology including LAN, particularly for connecting multiple departments for smooth accounting and comprehensive patient record keeping

39 training courses were planned under the project. Most of them are to be conducted in Vietnam, utilizing the local resources such as central hospitals, and medical universities. Some courses such as hospital management, infection control, radio therapy, pathology, etc. are to be conducted in other country including Japan. The details are as shown in the Appendix 8.

## 6.2 Major equipment and training for each hospital

Major equipment and training selected for each hospital are shown below. Packaged list of equipment is as shown in Appendix 10, and details of trainings in other countries and in Vietnam are shown in Appendix 11.

### (1) Major common equipment

Name of equipment	Note
Ventilator	Essential equipment for ICU, emergency dept. and post operation room
Patient monitor	Essential equipment for ICU, emergency dept. and post operation room
Black and white ultrasound apparatus	Essential equipment for ICU, emergency dept. and obstetric dept.
X-ray mammography	Essential equipment for obstetric dept.
Anesthesia apparatus	Essential equipment for operating theater
Infant incubator	Essential equipment for NICU
Automatic biochemistry analyzer	Essential equipment for biochemistry dept.
Automatic blood cell counter	Essential equipment for hematology dept.
ELISA system	Equipment for microbiology for identification of HIV
Washing machine	Essential equipment for infection control dept.
Autoclave	Essential equipment for infection control dept.

### (2) Major special equipment

Name of equipment	Name of hospital(s)	Note
Phacoemulsification system	Son Tay Inter-District General Hospital, Nghe An Provincial Pediatric Hospital, Lam Dong Provincial General Hospital, Tay Ninh Provincial General Hospital, Ninh Thuan Provincial General Hospital	Equipment for treatment of cataract
Lithotripter system	Bac Giang Provincial General Hospital, Son Tay Inter-District General Hospital, Binh Dinh Provincial General Hospital	Equipment for treatment of renal calculus The number of calculus disease patients are increasing in Vietnam, because of bad quality of drinking water
CT scanner	Nghe An Provincial Pediatric Hospital, Lam Dong Provincial General Hospital, Ninh Thuan Provincial General Hospital	Main object of procurement is for using diagnosis of traffic accidents patients
MRI	Tay Ninh Provincial General Hospital	Main object of procurement is for using diagnosis of spiral, brain cancer
PET-CT	C Da Nang Central General Hospital, Binh Dinh Provincial General Hospital	Equipment is for oncology department; and this equipment is selected based on MOH policy (Improvement of oncology dept.)
Gamma knife	C Da Nang Central General Hospital	Equipment is for oncology department; and this equipment is selected based on MOH policy (Improvement of oncology dept.)
CRRT	C Da Nang Central General Hospital, Binh Dinh Provincial General Hospital,	Continuous Renal Replacement Therapy (CRRT) Equipment for treatment of renal disease

	Lam Dong Provincial General Hospital	The number of renal disease patients are increasing in Vietnam
ERCP	C Da Nang Central General Hospital, Lam Dong Provincial General Hospital, Ninh Thuan Provincial General Hospital	Endoscopic Retrograde Cholangio Pancreatography (ERCP) Equipment for diagnosis of liver, cholangio and pancreas disease patients
Cobalt machine	Lam Dong Provincial General Hospital	Equipment for using radiation treatment of oncology, and this equipment was selected based on MOH policy (Improvement of oncology dept.)

### (3) Major common training course

Training course	Training place
ICU	Vietnam (Training institute <sup>10</sup> , on-site training at target hospital)
Pathology	Vietnam (Training institute, on-site training at target hospital), Japan
Microbiology	Vietnam (Training institute)
Ventilation	Vietnam (Training institute, on-site training at target hospital)
Infection control	Vietnam (Training institute, on-site training at target hospital), Japan
Infectious disease	Vietnam (Training institute)
Hospital management	Vietnam (Training institute, on-site training at target hospital), Japan
IT	Vietnam (Training institute, on-site training at target hospital)
Maintenance of medical equipment	Vietnam (Training institute, on-site training at target hospital)

### (4) Major special training course

Training course	Name of hospital(s)	Training place
Cancer surgery	Bac Giang Provincial General Hospital, C Da Nang Central General Hospital, Tay Ninh Provincial General Hospital, Ninh Thuan Provincial General Hospital	Vietnam (Training institute)
Cancer diagnosis and treatment	Bac Giang Provincial General Hospital, C Da Nang Central General Hospital, Tay Ninh Provincial General Hospital, Ninh Thuan Provincial General Hospital	Vietnam (Training institute)
Radio therapy	Bac Giang Provincial General Hospital, C Da Nang Central General Hospital, Binh Dinh Provincial General Hospital, Lam Dong Provincial General Hospital, Ninh Thuan Provincial General Hospital	Vietnam (Training institute, on-site training at target hospital), Japan
Cardiovascular diagnosis and treatment	Son Tay Inter-District General Hospital, C Da Nang Central General Hospital, Binh Dinh Provincial General Hospital, Tay Ninh Provincial General Hospital	Vietnam (Training institute)
Nutrition	Thai Binh Provincial Pediatric Hospital, Nghe An Provincial Pediatric Hospital	Vietnam (Training institute, on-site training at target hospital)
PET, gamma knife	C Da Nang Central General Hospital, Binh Dinh Provincial General Hospital	Vietnam (Training institute)
Neurosurgery	C Da Nang Central General Hospital	Vietnam (Training institute)
Pregnancies monitoring	Nam Dinh Provincial Obstetric Hospital	Vietnam (Training institute, on-site training at target hospital)

<sup>10</sup> Training institutes includes the central hospitals, medical universities, upper level hospitals, etc.



## **Chapter 7 Cost estimation for Phase II Project**

## 7. Cost estimation for Phase II Project

The project cost includes; procurement of equipment, training and capacity building, consulting services, price escalation, physical contingency, taxes and duties, interest during construction and other charges.

As for procurement of equipment, the cost estimate includes the costs for manufacturing, transportation to project sites at ten target hospitals, installation, start-up and training for operation and maintenance for particular equipment which require such training, and spare parts for 2 years operation.

The total project cost is as shown below.

No	Item	Foreign Currency (a)	Local Currency (b)	
		JPY	VND	Equivalent JPY
1	Equipment procurement	6,594,000,000		
2	Training	65,000,000	72,000,000,000	331,920,000
3	Price escalation for 1-2 above	448,000,000	32,104,000,000	147,999,440
4	Consulting service	209,375,000	13,327,000,000	61,437,470
5	Price escalation for 4 above	12,000,000	5,083,000,000	23,432,630
Sub Total		7,328,375,000	122,514,000,000	564,789,540
6	Physical contingency	366,418,750	6,125,700,000	28,239,477
Grand Total		7,694,793,750	128,639,700,000	593,029,017
Grand Total: (a)+(b)				¥8,287,822,767

Note: Exchange rate: 85.5 JPY/1USD, 0.00461 JPY/1VND

Price Escalation: FC (1.8%), LC (10.5%)

Physical Contingency: 5%

## **Chapter 8 Financial and Economic Analysis of Phase II Project**

## 8. Financial and economic analysis of Phase II Project

Viability of the Phase II Project is analyzed financially and economically. The first part of this section provides a financial analysis of the project. This is followed by an economic analysis which focuses on reduction in opportunity cost among patients and their family, excluding other potential benefits which are difficult to evaluate in monetary terms.

### 8.1 Financial analysis of the project

#### Major assumptions

The Financial analysis is conducted using the following assumptions:

- The project evaluation period is thirty years (2013 – 2042), which is equivalent to thirty year repayment period of the loan.
- Total project cost estimates of VND1.52 trillion, of which VND 1.43 trillion is equipment budget and VND 86 billion is medical staff training.
- Discount rate used is 10% for Net Present Value (NPV).

#### (Revenue)

- With installation of new medical equipments through implementation of the project, it will be possible to practice advanced examination for both inpatients and outpatients. Additionally, advanced medical treatment and services with appropriate examination and management for inpatients will decrease the hospitalization period. As a result, it will lead to the increase in hospital fee even though the amount will be different from one hospital to another depending on what to be installed. It is supposed to find 15% increase at Binh Dinh PGH and C Da Nang CGH as they are planned to be installed with relatively more advanced equipments. For other hospitals 10% increase is supposed.
- High bed occupancy rates presently exceed 100% for most of selected hospitals, reflecting low quality of patients care. In line with improvement of hospital management bed occupancy rate is assumed to decrease below 100%, which leads to decline in revenue of hospital fee.
- The income from health insurance will be changed in proportion to the change in hospital fee. Despite the criterion of health insurance is fixed at the MOH, provincial governorates may adjust the criterion according to the situation of the provinces. Accordingly, the criterion may be different from one province to another. However, this is not put into consideration in this section.
- As it has already been practiced, the government is expected to continue supporting the management of hospitals. The expenditure of the government will increase as the GDP grows. The following table shows the expected annual growth rate of the GDP in Vietnam.

	2011-2015 <sup>a</sup>	2016-2020 <sup>b</sup>	2020- <sup>b</sup>
Annual growth rate of GDP	7.5%	7.0%	6.0%

a: Source : Draft of Socio-Economic Development Strategy (2011-2020)

b: Estimation by Consultant

(Expenditure)

- The expenditure on medicines and other consumable items increases as the medical services expands at hospitals. Therefore, the percentage of increased expenditure is expected to increase similarly to that of hospital fee.
- Personnel cost and maintenance cost are expected to change as the number of beds changes.
- In addition, 5% of equipment fee is capitalized for the maintenance cost of new equipments procured by this project.

(Remarks)

- Each hospital plans to increase the number of beds, which are to be provided by the state budget of Vietnam. Therefore initial investment for additional beds will not influence financial flow of hospitals.
- Estimates of revenue and expenditure in future at each hospital are conducted, taking the latest data (2009) as the starting point.

Financial Internal Rate of Return (FIRR) and Net Present Value (NPV)

Investments in ten selected hospitals, consisting largely of procurement of medical equipment and training of medical staff, are expected to produce a total FIRR of 13.5%. A thirty-year NPV estimate of project investments is VnD814 billion or US\$43.9 million. The value of future returns from the project is worth that much now, and given the proposed costs, the proposed investment presents a viable option financially.

Table 8a shows the FIRRs for the ten target hospitals. Because the government expenditure is relatively small at the Binh Dinh Provincial General Hospital and the Bac Giang Provincial General Hospital, FIRRs for these 2 hospitals are 2.8% and 5.5% respectively, which are lower than Vietnamese commercial bank's long-term loan rate of 12.0%. However, these are higher than planned loan interest rate of 1.3% for the loan.

Table 8a: FIRR and NPV for the Ten Target Hospitals (Unit: %, billion VND)

	Bac Giang PGH	Son Tay IDGH	Thai Binh PPH	Nam Dinh POH	Nghe An PPH
FIRR	5.5	20.0	36.0	7.5	30.1
NPV	-88	144	261	-26	373
	C Da Nang CGH	Binh Dinh PGH	Lam Dong PGH	Tay Ninh PGH	Ninh Thuan PGH
FIRR	14.7	2.8	13.9	19.1	13.8
NPV	164	-343	82	152	94

### Sensitivity Analysis

In case of revenue reduction or expenditure increase, financial viability is deteriorated. The following table shows the result of sensitivity analysis.

Table 8b: Sensitivity Analysis of FIRR

Case	FIRR
Base case	13.5%
Revenue : -10%	8.3%
Revenue : -20%	3.7%
Expenditure : +10%	8.7%
Expenditure : +20%	5.2%

## 8.2 Economic analysis of the project

### Basic concept

Through enhancement of health of local people, the reinforcing capacity of the ten selected hospitals leads to their better quality of life and contributes to the economic growth of the nation.

The purpose of economic analysis is to measure the effectiveness of the project from this broad point of view. However, it is difficult to analyze when it comes to evaluate in monetary terms. In this section, firstly, the benefits expected from this project are listed, and then the cost-benefit analysis is conducted with the special focus on the benefits which is relatively easier to be evaluated in monetary terms.

The followings are benefits of the project:

- (1) To improve the quality of medical services in Vietnam through the improved referral system
  - As the number of patients referred from Provincial hospitals to top referral hospitals decreases, the resources at top referral hospitals can be used more effectively.
  - For lower level hospitals than Provincial hospitals, they will have more hospitals to send patients to. It is also expected for the quality of medical services at local level to improve through strengthened skills at lower level hospitals as the Provincial hospitals transfers their skills.
- (2) To improve the quality of life and relief in daily life
  - Improved medical services through the project will increase the quality of life among local people. And it also leads to the relief in life as the hospitals are more ready to receive patients in case of disease and accidents.
- (3) To decrease opportunity cost among patients and their family
  - Through the reinforcing capacity of Provincial hospitals, it is expected to decrease the opportunity cost of patients and their family to receive medical care from a distant higher level hospital. Because it is common for a family to accompany a patient in

Vietnam, the opportunity cost will be decreased for such family.

- Through the reinforcing capacity of Provincial hospitals, the hospitalization period will be shortened and faster treatment is possible, which also decreases the opportunity cost.

Cost-benefit analysis is implemented focusing on the reduction in the opportunity cost among patients and their family with benefits measured in monetary terms.

#### Major assumptions

The EIRR were estimated using the following assumptions:

- The project analysis period is thirty years (2013 – 2042).
- Regarding referral cases to the upper level hospitals, the followings are assumed.
  - The referral rate will be 2.0%. (Currently average referral rate of ten target hospitals is 10.5%)
  - Five days will be spent for the preparation and transportation of referral cases. It is also considered that a family consisting four members (including the patient) to accompany transportation and accommodation.
- The average length of hospitalization at ten target hospitals is considered to decrease by 30% from the current level, which equals to 7.6 days at current level to 5.3 days on average.
- GDP per capita is used to estimate the monetary value of opportunity cost. The expected growth of GDP is shown in the preceding section of 8.1, and the future population is taken from “the State of The World Population 2010 (UNFPA)”.
- On the other hand, regarding the expenditure on the medicine and other consumable items at ten target hospitals, it is calculated from the proportion of referral cases among patients. For other expenditure, all the costs are capitalized.

#### Economic Internal Rate of Return (EIRR)

As a result of cost benefit analysis, the total EIRR of the project is calculated to be 6.1%. This figure is not very high compared to the opportunity cost for the social capital, as it is usually 10% to 15% in developing countries. However, as mentioned previously, considering the benefits taken in this analysis is only a fraction of all the economical and social benefits, this project is deemed to be economically viable. In addition, it also implicates the effects of the management of selected hospitals are not only to be limited to the improved referral system, but also to lead to improved medical services at national level and better quality of life for the population.

Table 8c shows the EIRRs for the ten target hospitals. As for nine hospitals excluding C Da Nang Central General Hospital, positive EIRRs are calculated with a large distribution. As for C Da Nang Central General Hospital, the relatively small numbers of both inpatients and referrals

to upper level hospitals may lead the EIRR into negative in this analysis where some selected benefits are taken into account.

Table 8c: EIRR for the Ten Target Hospitals

(Unit: %)

	Bac Giang PGH	Son Tay IDGH	Thai Binh PPH	Nam Dinh POH	Nghe An PPH
EIRR	12.6	22.3	27.8	1.4	4.7
	C Da Nang CGH	Binh Dinh PGH	Lam Dong PGH	Tay Ninh PGH	Ninh Thuan PGH
EIRR	-16.8	0.5	19.1	5.8	10.5

### Sensitivity Analysis

In case of benefit reduction or cost increase, economic viability is deteriorated. The result of sensitivity analysis shows EIRR remains positive in the case of 20% reduction in benefit, or in the case of 20% increase in cost.

Table 8d: Sensitivity Analysis of EIRR

Case	EIRR
Base case	6.1%
Benefit : -10%	4.3%
Benefit : -20%	2.6%
Cost : +10%	4.1%
Cost : +20%	1.8%



## **Chapter 9 Implementation plan**

## **9. Implementation plan**

### 9.1 Project implementation scheme

The project implementation will involve Ministry of Health, Department of Health and People's Committee of the ten provinces, ten target hospitals and Consultants, and each hospital improvement under the Phase II Project will be implemented in accordance with the framework designated by the Decree on Issuance of Regulation on Management and Utilization of Official Development Assistance, No.131, for the project implementation with the ODA funds. When the function of each institution is defined for the implementation of the project, following factors of each institution and lessons learnt from the Phase I Project should be taken into account.

#### 9.1.1 Ministry of Health

MOH will be responsible for coordinating with the Ministry of Finance, which will sign the Loan Agreement with JICA, and will be responsible for allocating the budget for repayment of the loan.

In the Phase I Project, CPMU was established under the Department of Planning and Finance of MOH with the function of overall project monitoring and contracting with the Consultants. Equipment procurement by ICB and LCB and medical staff training was contracted by each 3 hospital. However, the equipment procurement procedures were not familiar to each hospital, so that CPMU assisted each hospital by giving advices and suggestions, although the CPMU's capability in administrative work for project implementation with the is not sufficient, mainly due to lack of skilled administrative staffs with experience of JICA ODA Loan. Information sharing mechanism was also weak for timely and mutual communication on the latest situation of the hospitals and project progress.

In the Phase II Project implementation, therefore, it is recommended that the CPMU should be reinforced with more qualified staff in addition to the core staff experienced in Phase I Project. Based on the experiences gained through Phase I Project, CPMU is recommended to monitor the project progress and manage the equipment procurement through ICB. The staffing of CPMU is temporarily recommended as below, and further discussions should be done in MOH for smooth implementation of the Project in accordance with the JICA Guidelines and based on the experiences of Phase I Project.

Table 9a: Recommended Staffing of CPMU (temporary)

Phase II Project			No. in Phase I Project
Position	No.	Assignment	
Director	1	To assume overall management and make final decisions	1
Vice Director	1	To assist the Director	1
Accounting staff	3	To check the statement for payments	2
Medical equipment specialist	2	To check the equipment specifications	-
Procurement specialist	2	To supervise and advice on equipment procurement	-
Training specialist:	1	To supervise and monitor the trainings	1
Monitoring and evaluation specialist	2	To monitor and evaluate the project progress based on the progress report submitted by HPIU and Consultants	1
Secretary	1	To support the CPMU staff in administration	1

For the equipment procurement through ICB, CPMU shall establish a Procurement Committee with the chairperson of CPMU Director and representatives of target hospitals. CPMU will avail the technical service of Consultants in equipment procurement. CPMU shall also act as a window for submitting official documents including technical report, request for concurrence and disbursement for payment, to the other Ministries and JICA.

#### 9.1.2 Department of Health of each province

Involvement of Department of Health (DOH) at each province is important so as to assist the hospitals at ten provinces. In general, DOH receives the mid-and-long term improvement plan of hospital, and requests to the Provincial People's Committee the counterpart fund for the project implementation and operational fund for the hospital. Besides, efforts of DOH to Peoples' Committee for allocating the necessary budget for HCFP and other insurance coverage expansion are encouraged. They shall commit themselves together with Provincial Peoples' Committee to secure the budget for hospital operation to cover the expenses which will not be compensated by insurance payment and hospital fee. Supporting the province with PPC, they are evaluating the performance of each hospital every year.

#### 9.1.3 Provincial People's Committee

Provincial People's Committee has the authority to approve the long-term and annual plans of provincial hospitals in principle. Therefore involvement of Provincial People's Committee is important for the operation of hospital in terms of allocation of necessary project counterpart fund and hospitals operational budget. The priority setting on the health sector by Provincial Peoples' Committee will affect the budget allocation to the hospital and to the health insurance coverage.

#### 9.1.4 Ten target hospitals

Ten target hospitals should be the substantial body for project implementation with necessary technical and administrative staff. The team of hospital project implementation unit (HPIU) will be assisted by Consultants.

In Phase I Project, hospitals employed short-term experts from outside, in the fields of medical equipment, financing, building and local government administration. HPIUs in the Phase II are recommended to formulate the team including the experts well in advance of starting the project.

The HPIU shall implement the project by contracting with the local equipment suppliers through the LCB, domestic training institutions and other necessary services required for the project implementation. HPIU shall prepare and send the monthly progress report to CPMU, so that CPMU be able to compile all reports and submit them to other Ministries and JICA.

### 9.2 Procurement plan

The plans for procurement of consulting service, equipment and training service for the Phase II project are described below.

#### 9.2.1 Equipment procurement plan

The equipment will be procured through International Competitive Bidding (ICB) and Local Competitive Bidding (LCB) in accordance with the JICA Procurement Guidelines. It is recommended that the ICB shall be managed by CPMU and LCB shall be managed by each HPIU. CPMU together with HPIU and Consultants will review the equipment list and packaging plan, when the field survey by Consultants be completed. Any necessary adjustment on the equipment list and packaging plan can be made, if necessary, to meet any changes of requirements, through the discussions among CPMU, HPIU and the Consultants.

For the ICB procurement, CPMU with the assistance of Consultants will implement the bidding in accordance with the JICA Procurement Guidelines. CPMU shall be responsible for implementation of the contract for ICB through the procurement, delivery and payments to the suppliers.

For the LCB procurement, HPIU with the assistance of Consultants will implement the bidding in accordance with the rules and regulations of Vietnam. HPIU shall be responsible for implementation of the contract for LCB through the procurement, delivery and payments to the suppliers.

#### 9.2.2 Training service procurement plan

The training comprises of domestic and overseas training including Japan.

The domestic training will benefit to the larger impact with the minimal cost, for those

technology available at the domestic training institutions. Phase I Project also made the effective use of such domestic resources, within the extent of the availability of technology and capacity of institutions, such as the central hospitals including Bach Mai Hospital, Cho Ray Hospital, Viet Duc Hospital and others and specialized hospitals in obstetrics and pediatrics.

On the other hand, highly advanced technologies, those applications in Vietnam is still limited to specialized treatments, and many of modern practices of basic techniques are only available at institutions abroad including Japan. Such technologies are hospital management including infection control, radio therapy, pathology, etc. In the Phase I Project, the hospital management and specific technology training was done at several public hospitals in Japan.

For the domestic training, it is recommended to conclude separate contracts between each hospital and the training institutions based on the number of trainees and duration of training courses planned by each hospital. Hospitals should be responsible for monitoring the progress of training and reporting to CPMU.

However, the overseas training including Japan should be covered by the consulting service contract with the international consultants, as the contracting for overseas training requires knowledge and experience of international transactions. The training abroad shall be monitored by the consultants.

### 9.2.3 Consulting service procurement plan

The consulting service will be provided in principle by the international consultants in association with the local consultants. In the Phase I Project, the consulting services were generally appreciated by the CPMU and HPIUs with the following comments:

- (1) Communication in both English and Vietnamese languages with documents and others were difficult and time taking factor.
- (2) Performance of international consultants were good, on the other hand locals were satisfactory or relatively poor.
- (3) Assignment period of medical equipment specialist and health education/training expert were shorter than expected, as the main component is equipment and training
- (4) More budget should have been provided for the consulting service and training

The consulting services will be provided under the contract with CPMU, same as in the Phase I Project, to provide the following services to CPMU and HPIU, and the lessons learnt from the Phase I Project mentioned above, will be taken in to account in the planning of consultant assignment schedule.

The services to be provided jointly by international and local consultants as listed below, and the international consultant shall take initiative and leadership in each service, and the local consultants will support the international consultants for smooth implementation of the service

- (1) Field survey on the project sites, at all hospitals
- (2) Review the data and information of Implementation Program for the Project, based on the result of field survey
- (3) Preparation of Tender Documents
- (4) Review and update the training plan
- (5) Tender assistance for prequalification evaluation and tender related assistance for pre-qualification
- (6) Assistance for tender evaluation
- (7) Checking and approval of specifications and drawings of equipment submitted by suppliers/manufacturers
- (8) Supervision of shipment, delivery and installation of equipment at the project sites
- (9) Spot supervision of construction work when necessary
- (10) Supervision of start-up assistance including required training of the equipment done by suppliers/manufacturers at the project sites
- (11) Assistance in preparation of completion report
- (12) Prepare monitoring plan and assist hospitals and MOH in collecting related data
- (13) Transfer of technology through implementation of consulting service
- (14) (Recommendation) Overseas training service

The international together with local consulting firm shall be selected through the short-list method. Proposals in 2 separate envelop shall be invited and evaluated in accordance with the JICA Guidelines. Highest evaluated consultants in the technical proposal will be invited for financial negotiation based on their financial proposal.

The cost estimation for consulting service is as shown in the Appendix 12.

#### 9.2.4 Overall project implementation plan

The overall schedule was drafted in the Table 9b based on the assumption that the disbursement period of JICA ODA loan is 5 years, same as the Phase I Project, from the date of Loan Agreement. Estimated duration of each activity is based on the following assumptions.

- Consultant selection: approximately one year after the Loan Agreement based on the past experience of JICA ODA Loan project.
- Review of F/S and detailed design (5 months): almost same as in Phase I Project (4 months)
- Tender documents preparation (5months): same as in Phase I Project
- Bidding, bid evaluation, equipment procurement contract: approximately one year after the Consultant selection for the first package
- Equipment delivery and installation (2 years): based on the estimation of suppliers
- Preparation of training (6 months): request of HPIU

- Training in Vietnam (3years): as per training plan
- Training in Japan (4 months): as per training plan

Table 9b: Overall Schedule (draft)

Year	1	2	3	4	5
Loan Agreement	▲				
Consultant Selection (10 months)	■				
Consulting Service Contract		▲			
Review of F/S and Detailed Design (5 months)		■			
Tender Document Preparation (5 months)		■			
Bidding Bid Evaluation, Equipment Procurement Contract (one year after Consultant Selection for first package)			■	■	
Equipment Delivery and Installation (2years)			■	■	
Preparation of Training (6 months)		■			
Training in Vietnam (3 years)			■	■	■
Training in Japan (4 months)		■	■	■	
Mid-Term Review			■		

### 9.3 Monitoring and evaluation of the project

#### 9.3.1 Indicators for measuring efficiency of operation

The objective of Phase II Project is to reinforce the provincial hospital to fulfill the local needs for health service in the region, thereby contributing to the optimization of regional health system.

However, to attain improvement of medical service of hospitals it may be affected by external factors such as the financial support of the Government, constant availability of spare parts and consumables, etc. Therefore the evaluation indicators should be set to measure the direct results of project inputs/activities. Recommended evaluation criteria are;(i) the service of operation and intensive/emergency care is improved, (ii) sterilization service is improved, (iii) financial sustainability is improved, and (iv) equipment maintenance capability is strengthened. The objectively verifiable indicators are also selected from the ones which the hospital can easily collect the value as shown below.

Table 9c: Project Design of the Phase II Project

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
(Overall Goal) Improve the medical service at provincial hospitals	- Reduce average hospital mortality by 10% - Reduce average length of stay by 20% - Reduce average number of patients to be referred to higher level hospital by 20%	- MOH service statistics - Hospital statistics	Hospital budget is continuously increased
(Output) 1. The service of operation and intensive/ emergency care is improved.	- Decrease average number of cases of “non-identified cause of death”, by 10%	- Hospital statistics	Drastic change of disease structure does not occur.
2. Sterilization service is improved.	- Reduce the average number of case of “nosocomial infection” by 10%	- Hospital statistics	Emerging infectious disease will not affect.
3. Financial sustainability is improved.	- Increase of annual hospital income in terms of insurance payment and hospitals fee by 20%	- Hospital statistics	Economic condition in the provinces will not deteriorate
4. Equipment maintenance capability is strengthened.	- Necessary maintenance manuals and records are maintained at maintenance department and clinical department	- Hospital statistics	Policies of MOH, DOH and PPC will not change.

### 9.3.2 Conditions of main commitments in loan projects

- (1) The proceeds of the Loan can be used for the purchase of eligible goods and services necessary for implementation of the Project from contractors, suppliers or consultants of the eligible source of countries.
- (2) The final disbursement under the Loan Agreement shall be made not later than the same day and month five (5) years after the effective date of the Loan Agreement, unless otherwise agreed upon between JICA and our Government. Project progress shall be monitored soon after the Loan Agreement is made.

### 9.3.3 Mechanism of project monitoring, assessment and reporting

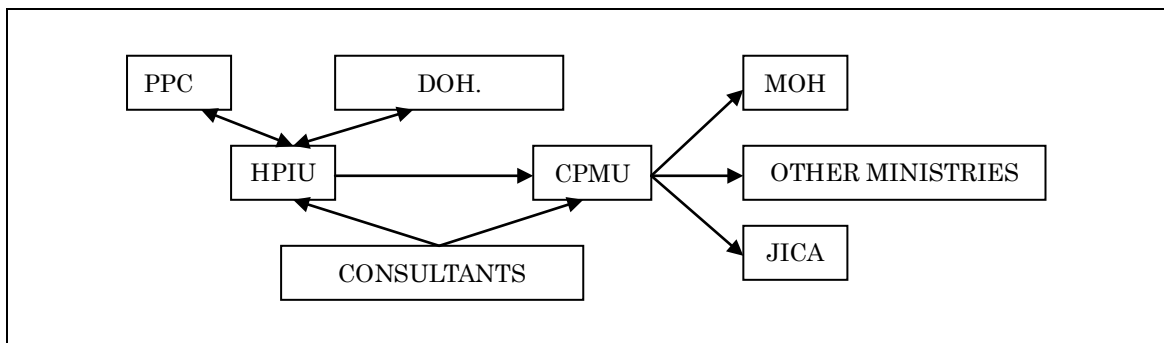
HPIU as the core project implementing body will monitor the project implementation, with the assistance of Consultants, and prepare and submit the monthly report to CPMU. When initiating the project implementation, HPIU shall review the project components in terms of possibility of satisfying the local needs for the service, and identify the baseline values of indicators for project achievements. Such data will be collected and assessed for the changes if necessary on the project components, in the mid-term review and evaluation at the end of the project.

Each HPIU will have to monitor the project progress, on equipment procurement, training,



and the investment on environment improvement. Targeting the synchronized progress of project activities, HPIU should monitor the progress of each component and make necessary adjustment of implementation procedure, in order to avoid any delay or incoherent progress/completion of the project. For this end, HPIU should also coordinate with DOH and PPC for necessary support for budgeting and other resource allocation.

HPIU should submit to CPMU the monthly progress report with the assistance of Consultants. In response to the progress report from HPIU, CPMU shall give feedback of monitoring together with appropriate advices.



## **Chapter 10 Recommendation**

## 10. Recommendation

Below is the recommendation of Consultants addressed to MOH, Provincial DOH, PPC and/or the target hospitals, as well as to ODA policy of JICA to Vietnam, where the text describes. Some of the recommendations are within the reachable range which can be initiated promptly even before the launch of the Project. Some needs a mid-and-long term planning, even including the adjustment of the plan. Consultants expect MOH, DOH, PPC and the hospitals give the careful attention to the recommendations and even to start the discussions for further improvement of healthcare services in Vietnam.

### 10.1 Recommendation for improvement of hospital management

The recommendation for hospital management improvement is on the (1) establishment of future vision and (2) hospital management systems. The economical and health situation of Vietnam has been changing dramatically. In such situation, the improvement of provincial hospitals must be considered from not only their current situation of the region but also the concrete image of the hospital. The improvement plan should always be built on the ground of hospital management including finance, human resources, ethics and future plan.

#### 10.1.1 Establishment of future vision of hospital

Each hospital should establish its future vision, based on the analysis of current situation and future demand forecast, through the discussion with MOH, DOH and PPC. Such vision should be shared among the hospital staff. Currently, most provincial, district and regional hospitals seem, however, to try to upgrade their technical level without clear future vision, though each hospital ought to have functions that are expected to have at present, in accordance with the localities and the policies of MOH, DOH and PPC.

For example, hospitals tend to rely on sophisticated equipment to raise their technical capacity, and not to prioritize the service fundamentally essential for the level up of hospitals such as infectious disease and emergency service.

Socio-economic development in regions and aging of population also make it necessary to diversify medical services at provincial level. Such local characteristics, together with the policies of government and PPC, should be taken into account for elaboration of the mid-and-long term vision of the hospital.

While this recommendation is addressed to all concerned parties about hospital management, it is expected that the hospital itself should formulate a draft mid-and-long term vision and finalize it through discussions with MOH, DOH and PPC.

### 10.1.2 Establishment of hospital management systems

Based on the mid-and-long term vision of the hospitals, functional management systems should be developed so as to bridge the gap between the current situation and the future vision.

For instance, infection control is one of the common issues among hospitals. Hospitals have established the infection control committees in order to tackle this issue but many are not effectively functioning, due to lack of evidence-based monitoring and supervision on infection control and proper guidance on the use of strong medicine such as antibiotic.

New medical technologies are often introduced to the hospital with the initiative of leading medical doctors from their own interest. Before introducing new technologies, the negative effects on patients and violation of patients' fundamental rights should be carefully examined and discussed by the Scientific Technology Committee<sup>11</sup>. However, many of the hospitals have not systematized Scientific Technology Committee by including representatives from third parties. The enhancement of MOH guidance on improvement of this committee is expected.

One of other important issues is the improvement of amenity for patients and their families. Most hospitals do not prioritize to discuss this issue, so that it should be discussed at the management board.

For all of these committees for hospital management, active participation and guidance of MOH is crucial, in parallel with the PPC's support for securing sufficient budget for operation and management of committees.

In the short term, it is recommended that the ten target hospitals should establish functional committees for hospital management. Training courses related to hospital management planned in Phase II Project will give the knowledge and experiences to the ten target hospitals, so that they are expected to initiate the required activities immediately after the training and to improve their service with new equipment technologies under the Phase II Project.

### 10.1.3 Financial management by each hospital

Hospitals generally rely on three funding sources; government budget including from PPC, health insurance and user fees. Among these three sources, standard unit price is set for health insurance and user fees, and the hospital efforts are hardly influencing to the income of insurance and user fee. However, it is important to estimate hospital expenses and possible income, based on the mid-and-long term vision mentioned above. Particularly, the local characteristics such as the share of minority population and the poverty, and the economic growth rate are factors to be statistically counted in the future hospital income projection.

Along with the projection of future expenses and income, the past financial conditions should

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<sup>11</sup> Scientific Technology Committee is a in-hospital organization to supervise clinical treatment how medical technology and medical interference are adopted precisely and ethically. Establishment of the committee is a requirement as well as Infection Control Committee.

be analyzed to study how to compensate the expenses to be accrued in the future.

Through the years, hospitals heavily rely on government budget including the one from PPC as the hospital's efforts are not reflected in their financial improvement. Therefore there should be a system for income retention within the hospitals. Hospitals also should endeavor to improve their capabilities, and the hospital's efforts should be evaluated on the basis of attainment of the target. With this system, the hospitals are encouraged to improve the service and financial conditions. On the contrary, it could be possible to give impose a penalty in case of failure in achieving the target. MOH's support for developing the systems is essential.

#### 10.2 Recommendation for introduction of information technology in hospital

At present the introduction of IT systems and LAN in the hospital is strongly encouraged by MOH. Introduction of such IT technologies will require the experienced engineers and technicians for hardware and software maintenance. It is recommended to train those staff at each of the hospitals using the computers available, and to start using the MOH software, "Medisoft". Any financial support to the hospital for IT development by MOH or PPC is also suggested.

#### 10.3 Recommendation for improvement of environmental management

The needs for investment on facility and equipment for environment management varies by hospital. The development and/or improvement of such facility and equipment will be implemented with the budget of the GoV. It is recommended that the training should be implemented in line with, the facility and equipment improvement. Particularly, training courses for the staff of infection control department should be enhanced because most of them have a limited chance to receive training only once or twice a year and such training does not cost much.

## **APPENDIX**

**SAPROF**  
for  
**PROVINCIAL AND REGIONAL HOSPITAL DEVELOPMENT PROJECT (II)**  
JICA Study Team

**QUESTIONNAIRE FOR HOSPITALS**

<b>1</b>	<b>Basic Data</b>		
1.1	Name of Hospital		
1.6	Covered Province / Districts		
1.7	No. of Districts		1.8 No. of Community
1.12	Population of Covered Area (2009)	Total	
1.13		Male	
1.14		Female	
1.15		Female:15-49 years old	
1.16		Children <5 years	
1.17		Poor People	
1.18	Population Growth Rate of Covered Area		%
1.19	GDP per capita (2009) in the province of hospital	(USD)	

Note: Please refer to related organization such as Provincial Government, for 1.9 – 1.19.

1.20	Have you been a recipient of assistance/donation from foreign countries? (1998-2008)	[ <input type="checkbox"/> ] YES [ <input type="checkbox"/> ] NO If "YES", please fill in the table below.
------	--	---

Year	Contents of Assistance Provided	Source Country / Organization	Amount/Value of Assistance

1.21	<b>Existing Clinical Department</b> (Regarding the diagnosis/treatment department, what types of department do you have in the hospital? Please write down "circle marks" (o) on the number in the department list on right -hand side.)		
		2008	2009
	(1) Examination	(1)	(1)
	(2) Emergency and ICU	(2)	(2)
	(3) General Internal Medicine	(3)	(3)
	(4) Cardiology - Gerontology	(4)	(4)
	(5) Infection Disease	(5)	(5)
	(6) Tuberculosis Disease	(6)	(6)
	(7) Dermatology	(7)	(7)
	(8) Neurology	(8)	(8)
	(9) Mortality	(9)	(9)

(10)	Traditional medicine	(10)	(10)
(11)	Pediatric	(11)	(11)
(12)	General Surgery	(12)	(12)
(13)	Operating and Anesthesia - Intensive	(13)	(13)
(14)	Obstetric Gynecology	(14)	(14)
(15)	Neonatology	(15)	(15)
(16)	Otorhinolaryngology	(16)	(16)
(17)	Maxillofacial and Dentistry	(17)	(17)
(18)	Ophthalmology	(18)	(18)
(19)	Muscular-Bone-Rheumatism	(19)	(19)
(20)	Physiotherapy and Rehabilitation	(20)	(20)
(21)	Neoplasm	(21)	(21)
(22)	Haematology (laboratory)	(22)	(22)
(23)	Hematology and Blood Transfusion	(23)	(23)
(24)	Biochemistry Laboratory	(24)	(24)
(25)	Microbiology Laboratory	(25)	(25)
(26)	Imaging Diagnostic	(26)	(26)
(27)	Functional Diagnostic	(27)	(27)
(28)	Pathology	(28)	(28)
(29)	Infection Control	(29)	(29)
(30)	Pharmacy	(30)	(30)
(31)	Nutrition	(31)	(31)
(32)	Others (Please describe below)		

### 1.22 Morbidity pattern of covered area

(unit:%)

	2008	2009
Infectious Diseases		
Non-Infectious Diseases		
Injury and Accident		

### 1.23 Mortality pattern of covered area

(unit:%)

	2008	2009
Infectious Diseases		
Non-Infectious Diseases		
Injury and Accident		

### 1.24-1.29 Health Indicators of All Population that Provincial or District Hospital is responsible for

1.24	Top ten (10) causes of morbidity in your hospital Please fill name of disease and indicate numbers in columns.	
	2008	2009
1		
2		
3		
4		
5		
6		



7		
8		
9		
10		
<b>1.25</b>	<b>Top ten (10) causes of mortality in your Hospital</b> <b>Please fill name of cause and indicate numbers in columns.</b>	
	2008	2009
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
<b>1.26</b>	<b>Mortality Report : Maternal Deaths</b> <b>Please indicate numbers</b>	
	2008	2009
Total Live Births		
Maternal Deaths		
<b>1.27</b>	<b>Mortality Report : Neonatal Deaths</b> <b>Please indicate numbers:</b>	
	2008	2009
Total Live Births		
Neonatal Deaths		

<b>1.28</b>	<b>Mortality Report : Infant Deaths</b> Please indicate numbers:	
	2008	2009
Total Live Births		
Infant Deaths		
<b>1.29</b>	<b>Mortality Report : Under-5 Mortality Rate</b> Please indicate numbers	
	2008	2009
Total Live Births		
Under-5 Deaths		
Under-6 Deaths (Reference)		
<b>1.30</b>	<b>Infectious Diseases/Tropical Disease Report</b> Please indicate numbers	
	2008	2009
Tuberculosis		
Malaria		
Dengue		
HIV/AIDS		
Infectious Diarrhea		
Dysentery		
Tropical Diarrhea		
Others (Please clarify, if any)		

**Note: Regarding Name of Disease, please use common name or International Statistical Classification of Diseases and Related Health Problems 10 (ICD 10).**

<b>1.31</b>	<b>Operating / Working Hours</b> (Give us please the information on the operating hours in your hospital. Write down please the right figures in the parenthesis in the column on the right-hand side.)	
	From ( ) a.m. to ( ) a.m.	From ( ) p.m. to ( ) p.m.
	Total( )hours/day	
	Does your hospital provide medical service during holidays?	[ ] YES [ ] NO
	Working days per year for consultation and outpatient last year	Days/2009

<b>2. Hospital Activity (Actual Basis)</b>		2008	2009
<b>Capacity statistics</b>			
<b>2.1</b>	<b>Number of Bed</b> Please fill the number by medical department.		
	<b>Total Number of Bed</b>		
(1)	Emergency and ICU		
(2)	General Internal Medicine		
(3)	Cardiology - Gerontology		
(4)	Infection Disease		
(5)	Tuberculosis Disease		
(6)	Dermatology		
(7)	Neurology		
(8)	Mentality		
(9)	Traditional medicine		
(10)	Pediatric		
(11)	General Surgery		
(12)	Obstetric Gynecology		
(13)	Neonatology		
(14)	Otorhinolaryngology		
(15)	Maxillofacial and Densistry		
(16)	Ophthalmology		
(17)	Muscular-Bone-Rheumatism		
(18)	Physiotherapy and Rehabilitation		
(19)	Neoplasm		
(20)	Clinic Haematology		
(21)	Funtional Diagnostic		
(22)	Others (Please describe below)		
<b>2.2</b>	<b>Number of total staff</b>		
<b>2.3</b>	Number of Doctors <sup>1</sup>		
<b>2.4</b>	Number of Nurse <sup>2</sup>		
<b>2.5</b>	Number of Midwives		
<b>2.6</b>	Number of Pharmacist <sup>3</sup>		
<b>2.7</b>	Number of Technicians <sup>4</sup>		
<b>2.8</b>	Others (If any)		
<b>Patient statistics</b>			
<b>2.9</b>	Number of Consultation*		
<b>2.10</b>	Number of Outpatient*		
<b>2.11</b>	Total of outpatient days		
<b>2.12</b>	Number of Inpatient		

<sup>1</sup> Doctors: Medical doctors and higher, Traditional Doctors, Assistant doctors.

<sup>2</sup> Nurse: Higher degree nurses, 2<sup>nd</sup> degree nurses, Elementary nurses

<sup>3</sup> Pharmacist: Pharmacists and higher, Assistant pharmacists, Elementary pharmacists

<sup>4</sup> Technicians: 2<sup>nd</sup> degree medical technicians, 2<sup>nd</sup> degree pharm. Technician, Lab. technician

<b>2.13</b>	Average length of stay of inpatient (day)		
<b>2.14</b>	Total Number of emergency cases in the hospital		

Note: Number of consultation includes number of outpatient and number of people who visited the hospital for having consultation.

		2008	2009
<b>Health Insurance</b>			
<b>2.15</b>	Number of Inpatients insured by insurance		
<b>2.16</b>	Number of Outpatients insured by insurance		
<b>2.17</b>	Number of Inpatients identified as poor people by the current regulation of Vietnamese Government		
<b>2.18</b>	Number of Outpatients identified as poor people		
<b>2.19</b>	Number of consultation for poor people		
<b>Operation</b>			
<b>2.20</b>	Total number of operation		
<b>2.20.1</b>	Number of scheduled operation		
<b>2.20.2</b>	Number of emergency operation		
<b>2.21</b>	Number of Procedure		

<b>Reproductive Health</b>			
<b>2.22</b>	Vasectomy		
<b>2.23</b>	Number of Voluntary abortions		

		2008	2009
<b>Health Examination</b>			
<b>2.24</b>	Test		
<b>2.24.1</b>	Blood test		
<b>2.24.2</b>	Biochemical		
<b>2.24.3</b>	Microbio test		
<b>2.25</b>	Image diagnosis		
<b>2.25.1</b>	X-ray		
<b>2.25.2</b>	Ultrasound		
<b>2.25.3</b>	CT-scanner		
<b>2.26</b>	Endoscope		
<b>2.27</b>	Pathological Test		
<b>2.28</b>	Number of Hemodialysis		

### 3. Human Resource Management / Training

#### 3.3. Continuous Education

Proceeding to the next stage of education (a school of higher grade):

Please fill in number of medical staffs in your hospital and describe the name of school or hospital under the number. Also click full or partial financial support, click financial sponsor for "Financial Resource".

Upgrading	School	Doctor	Dentist	Pharma-cist	Nurse	Technique	Other	Financial Resource				
								full	part	Govt	Prov	hospi-tal
SMS → College												
College → University	Medical Univ.											
	Pharmacy Univ.											
	Other Univ.											
University → Post graduate	Master											
	Doctorate											
	Specialist 1											
	Specialist 2											

#### 3.4. Refresher Training at other hospitals:

Please put numbers of medical staffs to send, fill detail information in the blank, and click full or partial financial support, click financial sponsor for "Financial Resource".

[Training in Vietnam]

Category	No.	Province	Hospital Name	Duration	Field	Financial Resource				
						full	part	Govt	Prov	hospi-tal
Doctor										
Pharmacist										
Nurse										
Technician										
Others										

[Training in Foreign Countries]

Category	No.	Country name	Hospital name	Duration	Field	Financial Resource				
						full	part	Govt	Prov	hospi-tal
Doctor										
Pharmacist										
Nurse										
Technician										
Others										

[Training on Director or Vice-director for Hospital Management]

Category	No.	Province or Country name	Hospital name	Duration	Subjects on Hospital Management	Financial Resource				
						full	part	Govt	Prov	hospi-tal
Director										
Vice-director										
Others										

Continuous In-hospital Training in 2009:

Please describe all planned in-hospital training (DOHA, donor's coordination, etc.) in 2009.

Topics	Duration of Training	Target group	No. of Participants	Lecturer		Financial Resource
				medical grade	comes from...	
1)						
2)						
3)						

4)						
5)						

4.	Finance		
	(Actual Basis)	2008	2009
		(unit: million VND)	
<b>4.1</b>	<b>Revenue</b>		
4.1.1	Government Budget		
4.1.2	Health Insurance		
4.1.3	Hospital Fees		
4.1.4	Aid, Loan		
4.1.5	others		
4.1.6	[Note for relatively big case]		
<b>4.2</b>	<b>Expenditure</b>		
<b>4.2.1</b>	<b>Personnel cost</b>		
4.2.1.1	Salary		
4.2.1.2	Pay		
4.2.1.3	Allowance		
4.2.1.4	Bonus		
4.2.1.5	Social Insurance, Health Insurance		
4.2.1.6	Other Personnel Cost		
<b>4.2.2</b>	<b>Professional/ Specialty expenditure</b>		
4.2.2.1	Office Materials		
4.2.2.2	Communication fees		
4.2.2.3	Conference		
4.2.2.4	Business fee		
4.2.2.5	Hire (training)		
4.2.2.6	Maintenance		
4.2.2.6.1	Medical equipment maintenance		
4.2.2.6.2	Building repairing		
4.2.2.6.3	Other maintenance		
4.2.2.7	Specialty Expenditure		
4.2.2.7.1	Drug		
4.2.2.7.2	Chemical		
4.2.2.7.3	Other materials		
4.2.2.8	Public service		
4.2.2.8.1	Electricity		
4.2.2.8.2	City water		
4.2.2.8.3	Clearing services		
<b>4.2.3</b>	<b>Asset Investment</b>		
4.2.3.1	Buying invisible assets		
4.2.3.2	Buying visible assets		
4.2.3.3	Repairing assets		
<b>4.2.4</b>	<b>Other Expenditure</b>		
4.2.4.1	Establish hospital funds		
4.2.4.2	Other Expenditure		
4.2.5	Tax		
4.2.6	[Note for relatively big case]		

\*If you don't have any change after answering to our previous questionnaire for facilities, you don't need to answer to following.

<b>5.</b>	<b>Facilities</b>	
<b>5.1</b>	<b>Total Land Area of Hospital Site (m<sup>2</sup>)</b>	
	(Write down please the size of hospital property (land area) in "ha" or "m <sup>2</sup> " in the column on the right-hand side.)	ha, or m <sup>2</sup>
<b>5.2</b>	<b>Total Floor Area, Building Ages etc.</b>	
5.2.1	Total Number of Buildings? (How many buildings do you have in the hospital site?)	buildings
5.2.2	Total Floor Area	
(1)	Total Floor Area of All Buildings (m <sup>2</sup> )?	m <sup>2</sup>
(2)	Total floor area per bed (m <sup>2</sup> /bed)?	m <sup>2</sup> /bed
5.2.3	Building Ages	
(1)	What is <b>the oldest building</b> in your hospital? Write down please the name and its completion year.	building name: completion year:
(2)	What is <b>the secondary new building</b> ? Write down please the name and its completion year.	Building name:: completion year:
(3)	What is <b>the newest building</b> ? Give me please the name and its completion year.	building name: completion year:
<b>5.3</b>	<b>Outline of Hospital Building</b> (Regarding the specific rooms shown below, please write down the total number, and its break-down by rough dimensions of width, length and height.)	
5.3.1	Outpatient consultation rooms	Total number: rooms (break-down by dimension) w( )m x l( )m x H( )m: rooms w( )m x l( )m x H( )m: rooms w( )m x l( )m x H( )m: rooms
5.3.2	Treatment rooms for outpatient	Total number: rooms (break-down by dimension) w( )m x l( )m x H( )m: rooms w( )m x l( )m x H( )m: rooms
5.3.3	Intensive care unit (ICU)	Total number: rooms Total bed number: beds (break-down by dimension) w( )m x l( )m x H( )m: rooms w( )m x l( )m x H( )m: rooms
5.3.4	Operating rooms	Total number: rooms (break-down by dimension) w( )m x l( )m x H( )m: rooms w( )m x l( )m x H( )m: rooms w( )m x l( )m x H( )m: rooms
5.3.5	X ray rooms	Total number: rooms (break-down by dimension) w( )m x l( )m x H( )m:

		$w(\quad)m \times l(\quad)m \times h(\quad)m$	rooms rooms
5.3.6	CT Scanner room	Total number: (break-down by dimension) $w(\quad)m \times l(\quad)m \times h(\quad)m$ $w(\quad)m \times l(\quad)m \times h(\quad)m$	rooms rooms rooms
5.3.7	Laboratory	Total number: (break-down by dimension) $w(\quad)m \times l(\quad)m \times h(\quad)m$ $w(\quad)m \times l(\quad)m \times h(\quad)m$ $w(\quad)m \times l(\quad)m \times h(\quad)m$	rooms rooms rooms rooms
5.3.8	Dispensary (Pharmacy)	Total number: (break-down by dimension) $w(\quad)m \times l(\quad)m \times h(\quad)m$ $w(\quad)m \times l(\quad)m \times h(\quad)m$	rooms rooms rooms
5.3.9	Sick-rooms in ward	Total number: (break-down by dimension) $w(\quad)m \times l(\quad)m \times h(\quad)m$ $w(\quad)m \times l(\quad)m \times h(\quad)m$ $w(\quad)m \times l(\quad)m \times h(\quad)m$	rooms rooms rooms rooms
5.3.10	Sick-rooms in isolation ward	Total number: (break-down by dimension) $w(\quad)m \times l(\quad)m \times h(\quad)m$ $w(\quad)m \times l(\quad)m \times h(\quad)m$ $w(\quad)m \times l(\quad)m \times h(\quad)m$	rooms rooms rooms rooms

<b>5.4</b>	<b>The Latest Building Improvement Works</b>	
5.4.1	Year of the latest building improvement? (Write down please the year when your hospital conducted the latest works of building improvement in the column on the right-hand side.)	
5.4.2	Type of improvement works? (What type of improvement works did you conduct? Please choose your answer from a-c, and give it circle mark (o).)	a. "new building construction" b. "repair works" c. Other ( )
5.4.3	Total Floor Area (m <sup>2</sup> ) in case the improvement works included the construction of new buildings?	m <sup>2</sup>
5.4.4	Function of the new building in case the improvement works included the construction of new buildings?	



5.4.5	Total Cost of Building Improvement Works in VND? (Write down please the total cost, and its break-down in the column on the right-hand side.)	Total cost: VND (break-down) cost of building construction: VND cost of repair: VND other cost: VND
5.4.6	Financing Source for the Improvement Cost? (Who paid the improvement cost? Central government (MOH)? Provincial government (PPC)? Or, Your hospital itself? Please choose the answer from a-d, and give it circle mark.)	a. "Central government (MOH)" b. "Provincial government (PPC)" c. "Hospital" d. Other ( )
<b>5.5</b>	<b>Current Condition of Electric Power Supply</b>	
5.5.1	Supplier name (company name)? (Write down please the name of supplier of electricity.)	
5.5.2	Type of Electricity? (Can You use both of single phase and 3 phase electricity in your hospital? Please choose the answer from the right-hand side column.)	"only single"/ "both of single and 3-phase"
5.5.3	Stability of power supply? (What about the supply condition? Is it stable? Power failure happens often? Or, voltage is unstable? Please choose the right answer from the right-hand side column.)	"stable"/ "often failure" / "voltage unstable"
5.5.4	Average monthly consumption (KWH/month)?	KWH/month
5.5.5	Unit price of power consumption (VND/KWH)?	VND/KWH
5.5.6	Total electric load in the hospital (KVA)? (Regarding this item, it is necessary to calculate both of building equipment load (lighting, air-conditioning etc.) and medical equipment load (autoclave, x-ray, ct etc..))	KVA
5.5.7	Location of nearest electric mainline and its voltage? (Where the electric mainline is located? Write down please the street name which the mainline is along with, and its voltage.)	Street name: Voltage:
5.5.8	Capacity of transformer (KVA)?	KVA
5.5.9	Capacity of generator for emergency power supply (KVA)?	KVA
<b>5.6</b>	<b>Current Condition of City Water Supply</b>	
5.6.1	Supplier name (company name)?	
5.6.2	Water suspension? (What about the water supply condition? Suspension does not happen? Or, it often happens? Please choose the right answer from the right-hand side column.)	"not happen"/ "often happen"
5.6.3	Average monthly consumption (m <sup>3</sup> /month)?	m <sup>3</sup> /month
5.6.4	Unit price of city water (VND/m <sup>3</sup> )?	VND/m <sup>3</sup>
5.6.5	Location of nearest mainline of city water? (Where the electric mainline is located? Write down please the street name)	Street name:
5.6.6	Capacity of water reservoir (m <sup>3</sup> )?	m <sup>3</sup>
5.6.7	Capacity of elevated water tank (m <sup>3</sup> )?	m <sup>3</sup>
5.6.8	Volume of well water in case the hospital has its own well (If your hospital has its own well, write down please its average supply volume, and whether it is usually used or seasonally used.)	m <sup>3</sup> /day, or m <sup>3</sup> /month "full-time use"/ "seasonal use"
<b>5.7</b>	<b>Hot Water/ Steam Supply</b>	
5.7.1	Centralized hot water and/or steam supply system exist or not?	centralized hot water supply: "exists"/ "not exists" centralized steam supply: "exists"/ "not exists"
5.7.2	Capacity of boiler?	ton/day, or ton/month
5.7.3	Target rooms of hot water/ steam supply?	
5.7.4	Average monthly consumption of hot water/ steam?	hot water supply: m <sup>3</sup> /month steam supply: m <sup>3</sup> /month
5.7.5	Average monthly consumption of fuel for boiler?	fuel name:

		consumption: m <sup>3</sup> /month	
5.7.6	Unit price of fuel (VND/m <sup>3</sup> )?		VND/m <sup>3</sup>
<b>5.8</b>	<b>Fuel Gas (LPG) Supply</b>		
5.8.1	Supplier name (company name)?		
5.8.2	Type of supply system (Regarding the fuel gas supply, which system do you use, "centralized system with gas tank" or "portable gas cylinder"? And what type of gas?)	"centralized system"/ "portable gas cylinder" name of gas:	
5.8.3	Capacity of gas tank in case of "centralized system"?		m <sup>3</sup>
5.8.4	Capacity of 1 cylinder, and total number of cylinder usually kept in case of "portable cylinder system"?	capacity: total number:	m <sup>3</sup> /cylinder pieces
5.8.5	Target rooms of fuel gas supply?		
5.8.6	Average monthly consumption (m <sup>3</sup> /month)?		m <sup>3</sup> /month
5.8.7	Unit price of fuel gas (VND/m <sup>3</sup> )?		VND/m <sup>3</sup>
<b>5.9</b>	<b>Medical Gas Supply</b>		
5.9.1	Oxygen		
(1)	Supplier name (company name)?		
(2)	Type of supply system?	"centralized tank system"/ "portable cylinder system"	
(3)	Capacity of liquefied oxygen tank in case of centralized system?		m <sup>3</sup>
(4)	Capacity of 1 cylinder, and total number of cylinder used in case of individual portable cylinder system?	capacity: total number:	m <sup>3</sup> /cylinder pieces
(5)	Target rooms of oxygen gas supply?		
(6)	Average monthly consumption (m <sup>3</sup> /month)?		m <sup>3</sup> /month
(7)	Unit price of oxygen gas (VND/m <sup>3</sup> )?		VND/m <sup>3</sup>
5.9.2	Compressed Air		
(1)	Type of supply system?	"centralized tank system"/ "portable cylinder system"	
(2)	Target rooms of oxygen air supply?		
<b>5.10</b>	<b>Air-conditioning System</b>		
5.10.1	Type of air-conditioning system?	"centralized system"/ "individual package type"	
5.10.2	Electric load of main cooling unit in case of centralized system?		KVA
5.10.3	Average electric load of individual unit, and total unit number in case of individual package type system?	av. electric load total number	KVA/unit units
5.10.4	Target rooms to be equipped with air-conditioning?		
5.12.4	In case of medical radioactive garbage?	a. "Public service of garbage collection" b. "dumping area owned by hospital" c. Other ( )	
5.12.5	Incinerator Do you have incinerator in your hospital? In case you have it, please describe what kind of garbage you burn by the incinerator.	"Yes, we have" / "No, we do not have" Purpose:	
<b>5.13</b>	<b>Building Maintenance</b>		
5.13.1	Number of staff who is in charge of building maintenance?		persons
5.13.2	Average yearly budget for building maintenance?		VND/year
5.13.3	Frequency of maintenance work on building?		times/year
5.13.4	Date of latest maintenance/ repair work?		(day/month/year)
5.13.5	Content of maintenance/ repair work mentioned above?		

<b>6.</b>	<b>EQUIPMENT</b>
<b>6.1</b>	<b>Existing equipment</b>

No.	Type of Equipment	Quantity	Condition	Year Acquired	Frequency of Use
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
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			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		
			[ ] Operational [ ] Needs Repair [ ] No longer repairable		

(If the above space is not enough for filling all, please use the other paper(s) you prepare.)

6.2 Are spare parts and consumables for equipment easily procured? [ ] YES [ ] NO

Why?

—

6.3 Are spare parts and consumables for equipment always available? [ ] YES [ ] NO

Why?

—

6.4 Is the hospital system for maintaining the equipment [ ] Good [ ] Adequate [ ] Bad.

Why?

—

6.5 How would you consider the maintenance performance of the equipment manufacturers/agents?

[ ] Good [ ] Adequate [ ] Bad.

Why?

—

**Requirements to be attached with filled questionnaire**

- (1) Photocopy of Drawing of Existing Building-Layout in the Hospital Site
- (2) Photocopies of Floor Plan Drawings of Main Buildings in the Hospital
- (3) Photocopy of Receipt of Monthly Payment on Electricity and City Water (receipts of recent 3 months)
- (4) Photocopy of Result Paper on Water Quality Analysis for Treated Water discharged from Waste Water Treatment
- (5) Photocopy of Organization Chart of Hospital

<b>7</b>	<p><b>Management</b></p> <p>Please assess the managerial capacity to provide leadership and ability to implement necessary changes to better function the hospital in 'patient-centered' way. We expect the director of the hospital to describe answers by himself/herself.</p>
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Management indicators will be made by the statistics above. The main indicators are as follows.

<b>Management Indicator (Efficiency)</b>		<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>M.1</b>	Bed Occupancy Rate (%): (total inpatient days)/[(No. of Bed)x365]					
<b>M.2</b>	Average days of stay per inpatient (day): (total inpatient days) / (number of patient)					
<b>M.3</b>	Number of Inpatients per day (person): (total of inpatient days) / 365					
<b>M.4</b>	Average days of outpatient (person): (total outpatient days) / (number of outpatient)					
<b>M.5</b>	Number of outpatient per day(person): (total of outpatient days) / (working days for outpatient)					
<b>Management Indicator (Effectiveness)</b>						
<b>M.6</b>	Patient / Hospital Staff Ratio (No of inpatient per day+ consultation per day) /(Number of Staff)					
<b>M.7</b>	Patient / Doctor Ratio (No of inpatient per day+ consultation per day) /(Number of Doctor)					
<b>M.8</b>	Patient / Nurse Ratio (No of inpatient per day+ consultation per day) /(Number of Nurse)					
<b>M.9</b>	Nurse / Doctor Ratio (No. of Nurse) / (No. of Doctor)					
<b>M.10</b>	Staff / Doctor Ratio (No. of other staff except doctor)/(No. of Doctor)					
<b>[Stability / Soundness]</b>						
<b>M11</b>	Hospital fees Ratio (Hospital fees) / (Total Revenue)					
<b>M12</b>	Personnel Cost Ratio (Personnel Cost) / (Total Expense)					
<b>M13</b>	Drug Cost Ratio (Drug Cost)/ (Total Expense)					
<b>M14</b>	Investment Ratio (Asset Investment)/ (Total Expense)					
<b>M15</b>	Maintenance Cost Ratio (Maintenance & Repair cost) / (Total Expense)					

<b>7.1</b>	(Director) Please describe the length of current leadership (length of his/her tenure as the director, vice-director of the hospital). Is there any management training he/she attended?	
<b>7.2</b>	(Improvement) What changes you made in the hospital during your tenure as the director? What activities did you practice for environment improvement? For example: Quality Control (QC) activities, Cleaning	

	campaign, etc.	
<b>7.3</b>	(Issue) List top 5 priorities as the director you would like to strengthen in your hospital.	1 2 3 4 5
<b>7.4</b>	(Required Resources) In order to attain those 5 priority areas, what kind of resources do you need? And, how do you use these resources?	
<b>7.5</b>	(Vision) Address your 5-year plan of your hospital. What do you envision your hospital should be in 5 years?	
<b>7.6</b>	(Management indicator) To evaluate the hospital management, what kind of indicators do you use in your hospital? Please show us 5 important indicators. (e.g. bed occupancy rate, number of patient, etc)	
<b>7.7.1</b>	(Management Information System) Do you have LAN as Management Information System (MIS)? If you have, please describe the outline of your MIS. If you do not have, please describe your plan of MIS.	
<b>7.7.2</b>	For processing of financial data and patient record how do you manage this information? Please describe in detail.	
<b>7.8</b>	(Management of Medical Equipment) How do you usually maintain and/or repair the medical equipment in your hospital?	
<b>7.9</b>	(Management of Medical Equipment) How do you get effectively the budget of medical equipment maintenance? And, what kind of procedure do you have to pay the charge of medical equipment maintenance?	

<b>Quality of medical care</b>		
<b>7.10</b>	Number of defibrillators in your hospital and log of incidents you used them.	
<b>7.11</b>	(Please answer following question on caesarian section if your hospital provides obstetric care) Rate of caesarian section among deliveries in your hospital in 2007.	

7.12	(Please answer following question on emergency craniotomies if your hospital provides trauma care) Number of emergency craniotomies conducted for brain injuries in 2007.	
7.13	(Please answer following question on the use of ECG machine if you provide care for adult patients) Number of ECG machine other than physical examination department in 2007.	
7.14	(Emergency case management) You are consulting a patient in your diabetes clinic, one of the patients waiting in the waiting room seems to have syncopal episode while he was waiting to see you. Your clinic is busy and at least 50 more patients are waiting to see you. Where you send this patient? Whom you ask to see this patient.	
7.15	(Risk case management) In your busy pediatric clinic today, you noticed you saw 5 cases of measles in age between 5 to 7 years old. What would you do as the director of hospital?	

Referral System		
7.16.1	How many cases you referred to higher level hospitals and received counter referred patients from higher level hospitals in the last 5 years?	[refer to higher level hospitals]  [counter-refer from higher level hospital]
7.16.2	Give us hospital name you referred and receive counter-refer please, and what are the top 5 diseases in the referred/counter-referred cases in the last 5 years?	
7.17.1	How many cases you received referred patients from lower level hospitals and counter referred to lower hospitals in the last 5 years?	[refer from lower level hospitals]  [counter-refer to lower level hospital]
7.17.2	Give us hospital name you received referred patients and counter-referred please, what are the top 5 diseases in referred/ counter-referred cases in the last 5 years?	

DATE OF ENTER: \_\_\_\_\_

Name of Respondent: \_\_\_\_\_ Position: \_\_\_\_\_  
Please Print Name and Sign Above

Tel: \_\_\_\_\_ E-mail : \_\_\_\_\_

Approved by Director or Deputy Director: \_\_\_\_\_  
Please Print Name and Sign Above

Seal

**THANK YOU FOR YOUR COOPERATION**

**Questionnaire and answers for pilot project evaluation  
(for CPMU and HPIU)**

<b>QUESTIONNAIRE</b>	CPMU	HPIU
<b>(Efficiency Evaluation)</b>		
1. Are the number of dispatched experts (consultants) and duration of their stay appropriate, minimal or far excess to what is required, and in comparison with the original plan in Pilot Study?	○	○
<b>(Plan in Pilot Study)</b>		
(International Consultants)		
1 Team leader 10.0MM		
2 Hospital management specialist 5.0MM		
3 Medical service expert 6.0MM		
4 Health education expert 2.0MM		
5 Medical equipment specialist 18.5MM		
6 Tender documents specialist 2.0MM		
7 Medical facility specialist 6.0MM		
TOTAL 49.5MM		
(Local Consultants)		
1 Assistant hospital management specialist 7.0MM		
2 Assistant medical service expert 6.0MM		
3 Assistant health education expert 2.0MM		
4 Assistant medical equipment specialist 18.5MM		
5 Assistant tender documents specialist 2.5MM		
6 Cost estimator 4.0MM		
7 Assistant medical facility specialist 6.0MM		
TOTAL 46.0MM		
<b>(Actual Assignment)</b>		
(International Consultants)		
1 Team leader 5.42MM		
2 Hospital management specialist 1.60MM		
3 Medical service expert 1.30MM		



4	Health education expert	4.28MM
5	Medical equipment specialist	12.635MM
6	Medial facility Expert	10.86MM
7	Financing and Accounting Specialist	2.91MM
TOTAL		39.00MM

(Local Consultants)

1	Assistant hospital management specialist	4.99MM
2	Assistant medical service expert	5.31MM
3	Assistant health education expert	12.81MM
4	Assistant medical equipment specialist	6.80MM
5	Assistant facility expert	5.36MM
6	Assistant procurement specialist	7.73MM
7	Assistant financing and accounting specialist	2.96MM
TOTAL		46.0MM

**Thai Nguyen Regional Hospital:**

- (1) Able to prioritize the importance of international consultants specialty;  
 ( according to the above numbers):5, 4, 7, 2, 3, 1, 6
- (2) Local consultants seldom made contact with the hospital

**Lang Son Provincial General Hospital:** It is reasonable

2, Were the item, volume and amount of procured equipment and its maintenance conditions appropriate, to the needs and to the original plan in Pilot Study?

**Thai Nguyen Regional Hospital:** Yes appropriate.

**Lang Son Provincial General Hospital:** Yes they are appropriate

**Ha Tinh Provincial General Hospital:** Appropriate

3. Was the number of hospital staff trained in Japan in domestic institutions, as well as duration of their stay appropriate, minimal or excess to what is needed, and to the original plan in Pilot Study?

(Original Plan in Pilot Study)

- (1) Training in Japan;2 participants of hospital management from each hospital for 2 weeks, and 4 in circulatory disease and 2 in cancer of Thai Nguyen for



each 2 weeks	<input type="radio"/>	<input type="radio"/>
<b>Thai Nguyen Regional Hospital:</b> 2 participants of hospital management for 2 week for training in Japan were appropriate.		
<b>Lang Son Provincial General Hospital:</b> Training in Japan was appropriate, and we are proposing for 2 to 3 staff to be trained on circulatory diseases, cancer and emergency care in disaster	<input type="radio"/>	<input type="radio"/>
(2) Training in Vietnam: general and emergency operation, maternal and newborn care, patient record management and maintenance of medical equipment from 1 to 3 weeks	<input type="radio"/>	<input type="radio"/>
Thani Nguyen   510	<input type="radio"/>	<input type="radio"/>
Lang Son       242		<input type="radio"/>
Ha Tinh        342		
<b>Thai Nguyen Regional Hospital:</b> It is in line with the requirement and preliminary plan of the pilot phase		
<b>Lang Son Provincial General Hospital:</b> It is in line with the requirement and preliminary plan of the pilot phase.		<input type="radio"/>
<b>Ha Tinh Provincial General Hospital:</b> Both trainings in Japan and Vietnam appropriate		
<b>CPMU:</b> Both trainings are OK.	<input type="radio"/>	<input type="radio"/>
4. Was the purpose, content, period and selection of participants to the training appropriate to the needs?	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	
<b>Thai Nguyen Regional Hospital:</b> Yes		
<b>Lang Son Provincial General Hospital:</b> Yes		
<b>Ha Tinh Provincial General Hospital:</b> Appropriate		
<b>CPMU:</b> Yes	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>
5. Was the Pilot Project implemented as planned (schedule, component, implementation organization, etc.)? If there is any change from the plan, what is the change, reason and countermeasure? Was the plan appropriate for implementation?	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>

<p>Original planned schedule of the project in Pilot Study was 24 months after commencement of project.</p> <p><b>Thai Nguyen Regional Hospital:</b> The component did not change. However, schedule has been delayed. Because the government project mechanism was changed and the project management capacity. (This is the implication of Decree No. 43 and the weak management capability of HPIU).</p> <p><b>Lang Son Provincial General Hospital:</b> The Pilot Project was generally implemented as planned. However, the original plan of the project was only 24 months (for project implementation after the commencement), which is quite short. Because it took time for JICA and PPC approvals on feasibility studies, bidding price estimates, bid planning, invitation for bids, bid evaluation, procurement contracts, liquidation, etc.</p> <p><b>Ha Tinh Provincial General Hospital:</b> It was not implemented as planned. The rate of progress was slow.</p> <p><b>CPMU:</b> It was delayed by 4 months at planning stage, and at implementation stage, it was slow too.</p> <p>6. Is the total budget of the Pilot Project sufficient or minimum required?</p> <p>JICA ODA loan for Pilot Project was 1,805 Million Yen.</p> <p><b>Thai Nguyen Regional Hospital:</b> It is minimum required.</p> <p><b>Lang Son Provincial General Hospital:</b> It is sufficient.</p> <p><b>Ha Tinh Provincial General Hospital:</b> Minimum required.</p> <p><b>CPMU:</b> Minimum</p> <p>7. Are the number of CPMU and HPIU staff appropriate? Also CPMU and HPIU staff were assigned on full-time basis?</p> <p><b>Thai Nguyen Regional Hospital:</b> All HPIU members are part time, like 50%</p> <p><b>Lang Son Provincial General Hospital:</b> Yes, Lang Son has 7 part time staff/members.</p> <p><b>Ha Tinh Provincial General Hospital:</b> Appropriate</p> <p><b>CPMU:</b> 5/9 is full time staff</p> <p>8. Are planned function/responsibility, ability and outputs of CPMU and HPIU are satisfactory to the needs? And, was any reinforcement of capacity made during</p>		
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<p>the project period?</p> <p><b>Thai Nguyen Regional Hospital:</b> Yes</p> <p><b>Lang Son Provincial General Hospital:</b> Yes, and because of strict project requirements, Lang Son had to hire consultants to do tender documents appraisal.</p> <p><b>Ha Tinh Provincial General Hospital:</b> Satisfactory.</p> <p><b>CPMU:</b> Yes, especially bidding, procurement liquidation and management.</p> <p>9. Was the equipment timely procured, to the needs and to the original plan in Pilot Study?</p> <p style="padding-left: 40px;">The original schedule in Pilot Study is 17,5 months from the first bidding up to the delivery of all equipment.</p> <p><b>Thai Nguyen Regional Hospital:</b> No</p> <p><b>Lang Son Provincial General Hospital:</b> Yes</p> <p><b>Ha Tinh Provincial General Hospital:</b> Appropriate and 17.5 months are OK.</p> <p><b>CPMU:</b> Slow</p> <p>10. Were the hospital staff timely trained in Japan and in domestic institutions?</p> <p style="padding-left: 40px;">Original plan in Pilot Study was to conduct all trainings after the equipment installed ad hospitals.</p> <p><b>Thai Nguyen Regional Hospital:</b> Yes</p> <p><b>Lang Son Provincial General Hospital:</b> Generally yes, but all trainings (equipment management, health human resources management, patient care) that are not related to project's equipments should be conducted at the middle of project timeframe.</p> <p><b>Ha Tinh Provincial General Hospital:</b> Slow.</p> <p><b>CPMU:</b> Yes</p> <p>11. Were the discussion and technical advice on the equipment procurement plan, training plan and their implementation timely made?</p> <p><b>Thai Nguyen Regional Hospital:</b> Yes</p> <p><b>Lang Son Provincial General Hospital:</b> Yes</p> <p><b>Ha Tinh Provincial General Hospital:</b> Appropriate</p> <p><b>CPMU:</b> Yes</p>		
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12. Was the Pilot Project timely implemented in general?

**Thai Nguyen Regional Hospital:** Late

**Lang Son Provincial General Hospital:** Yes

**Ha Tinh Provincial General Hospital:** Appropriate

**CPMU:** Yes

13. Did any meeting held timely as proposed by CPMU, HPIU and Consultants well function? Was the result of meeting incorporated to the project activity whenever needed?

**Thai Nguyen Regional Hospital:** Yes

**Lang Son Provincial General Hospital:** Yes

**Ha Tinh Provincial General Hospital:** Yes

**CPMU:** Yes

14. Communication among CPMU, HPIU and Consultants were satisfactory? If not, what were the problems and reasons?

**Thai Nguyen Regional Hospital:** Yes

**Lang Son Provincial General Hospital:** Yes

**Ha Tinh Provincial General Hospital:** Good.

**CPMU:** OK

15. Was the good support from concerned organization, if any.

**Thai Nguyen Regional Hospital:** Yes

**Lang Son Provincial General Hospital:** Yes, Provincial department of health, department of planning and investment, department of finance, treasury, CPMU, SSC consultants, MOH, MOF

**Ha Tinh Provincial General Hospital:** Good.

**CPMU:** OK

16. How was the linkage with other project or technical assistance of JICA and other donor?

<p><b>Thai Nguyen Regional Hospital:</b> No linkage</p> <p><b>Lang Son Provincial General Hospital:</b> It was good.</p> <p><b>Ha Tinh Provincial General Hospital:</b> Good.</p> <p><b>CPMU:</b> Yes, there a bit of link with JICA training at Bach Mai Hospital.</p>																																						
<p><b>(Effectiveness Evaluation)</b></p> <p>17. No. of operation</p> <p>(1) What is the percentage of increase in the number of operation at each hospital?</p> <table border="0"> <thead> <tr> <th></th> <th>(Baseline in 2004)</th> <th>(2009)</th> </tr> </thead> <tbody> <tr> <td>Thai Nguyen</td> <td>5,057</td> <td>12,079</td> </tr> <tr> <td>Lang Son</td> <td>2,470</td> <td>4,405</td> </tr> <tr> <td>Ha Tinh</td> <td>2,898</td> <td>3,246</td> </tr> </tbody> </table> <p>Target in 2012 is 10% increase.</p> <p>(2) What are the factors contributing to/inhibiting the purpose achievement?</p> <p><b>Thai Nguyen Regional Hospital:</b></p> <p><b>Lang Son Provincial General Hospital:</b> Increased by 78% because of better management, trained staff and new equipment</p> <p>18. No. of cases of “non-identified cause of death”</p> <table border="0"> <thead> <tr> <th></th> <th>(Baseline in 2004)</th> <th>(2009)</th> </tr> </thead> <tbody> <tr> <td>Thai Nguyen</td> <td>7</td> <td>None</td> </tr> <tr> <td>Lang Son</td> <td>None</td> <td>None</td> </tr> <tr> <td>Ha Tinh</td> <td>15</td> <td>13</td> </tr> </tbody> </table> <p>Target in 2012 is 10% decrease.</p> <p>(2) What are the factors contributing to/inhibiting the purpose achievement?</p> <p><b>Thai Nguyen Regional Hospital:</b></p> <p><b>Lang Son Provincial General Hospital:</b> Because of quality improvement in examination and treatment.</p> <p>19. What is the average number of “nosocomial infection” case?</p> <table border="0"> <thead> <tr> <th></th> <th>(Baseline in 2004)</th> <th>(2009)</th> </tr> </thead> <tbody> <tr> <td>Thai Nguyen</td> <td>Not available</td> <td>Not available</td> </tr> <tr> <td>Lang Son</td> <td>141</td> <td>125</td> </tr> <tr> <td>Ha Tinh</td> <td>186</td> <td>168</td> </tr> </tbody> </table> <p>Target in 2012 is 10% decrease.</p>		(Baseline in 2004)	(2009)	Thai Nguyen	5,057	12,079	Lang Son	2,470	4,405	Ha Tinh	2,898	3,246		(Baseline in 2004)	(2009)	Thai Nguyen	7	None	Lang Son	None	None	Ha Tinh	15	13		(Baseline in 2004)	(2009)	Thai Nguyen	Not available	Not available	Lang Son	141	125	Ha Tinh	186	168		<p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p>
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(2) What are the factors contributing to/inhibiting the purpose achievement?

**Thai Nguyen Regional Hospital:**

**Lang Son Provincial General Hospital:** Effective work of hospital infection control committee, infection control equipment, improvement of hospital environment and better attitude of health staff in hand washing and patient's room hygiene.

20. What is the annual hospital income in terms of insurance payment and hospital fee at each 3 hospital?(in Million VND)

	(Baseline in 2004)	(2009)
Thai Nguyen	19,417	76,321
Lang Son	7,691	49,928
Ha Tinh	15,603	48,339

Target in 2012 is 20% increase.

(2) What are the factors contributing to/inhibiting the purpose achievement?

**Thai Nguyen Regional Hospital:**

**Lang Son Provincial General Hospital:** Health economic has got attention. And the hospital has attracted more clients for examination and treatment.

Year	2004	2005	2006	2007	2008	2009
Insurance	3,608	5,208	8,845	17,164	29,529	35,505
Fee	3,792	5,111	6,996	9,328	10,141	14,423

21. Are the maintenance manuals and records maintained at maintenance department and clinical department at hospital?

	(Baseline in 2004)	(2009)
Thai Nguyen	Only clinical laboratory	At the departments
Lang Son	Almost none	At Material & Maintenance Dept.
Ha Tinh	Almost none	Maintenance Dept. & all clinical Dept. with maintenance manuals and records

(2) What are the factors contributing to/inhibiting the purpose achievement?

<p><b>Thai Nguyen Regional Hospital:</b> <b>Lang Son Provincial General Hospital:</b></p>																										
<p><b>(Impact Evaluation)</b> 22. Hospital mortality</p> <p>(1) What is the percentage of hospital mortality at the hospital?</p> <table> <thead> <tr> <th></th> <th>(Baseline in 2004)</th> <th>(2009)</th> </tr> </thead> <tbody> <tr> <td>Thai Nguyen</td> <td>1.20</td> <td>189/33,700=0.56</td> </tr> <tr> <td>Lang Son</td> <td>0.67</td> <td>0.27</td> </tr> <tr> <td>Ha Tinh</td> <td>1.12</td> <td>0.89</td> </tr> </tbody> </table> <p>Target in 2012 is 10% decrease.</p> <p>(2) What are the factors contributing to/inhibiting the purpose achievement?</p> <p><b>Thai Nguyen Regional Hospital:</b> <b>Lang Son Provincial General Hospital:</b> Because of improvement of examination and treatment quality and new equipment</p> <p>23. Average length of stay</p> <p>(1) What is the average length of stay at the hospital?</p> <table> <thead> <tr> <th></th> <th>(Baseline in 2004)</th> <th>(2009)</th> </tr> </thead> <tbody> <tr> <td>Thai Nguyen</td> <td>9.6 days</td> <td>8.0 days</td> </tr> <tr> <td>Lang Son</td> <td>6.2 days</td> <td>6.9 days</td> </tr> <tr> <td>Ha Tinh</td> <td>9.0 days</td> <td>8.0 days</td> </tr> </tbody> </table> <p>Target in 2012 is 20% decrease.</p> <p>(2) What are the factors contributing to/inhibiting the purpose achievement?</p> <p><b>Thai Nguyen Regional Hospital:</b> <b>Lang Son Provincial General Hospital:</b> Although health staff capability is improving and higher techniques are applied in endoscopic surgeries, dialysis and T3-T4, FSH test, the patients can come to Lang Son hospital, instead of going to central hospital. With better equipments and technical capability of hospital, patients could stay for treatment in Lang Son insted of sending them to upper level hospitals. Other reason is that many difficult and chronic diseases of senior citizens can be treated in Lang Son hospital (like hemorrhage of brain). So the ALOS increased by small percentage.</p>		(Baseline in 2004)	(2009)	Thai Nguyen	1.20	189/33,700=0.56	Lang Son	0.67	0.27	Ha Tinh	1.12	0.89		(Baseline in 2004)	(2009)	Thai Nguyen	9.6 days	8.0 days	Lang Son	6.2 days	6.9 days	Ha Tinh	9.0 days	8.0 days		<p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p> <p>○</p>
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24 Average number of patients referred to upper level hospital

(1) What is the average number of patients referred to upper level hospital?

(Baseline in 2004) (2009)

Thai Nguyen	76	995
Lang Son	1,033	1,012
Ha Tinh	658	527

Target in 2012 is 20% decrease.

(2) What are the factors contributing to/inhibiting the purpose achievement?

**Thai Nguyen Regional Hospital:** The data of 2004 is for referred in-patients only. A total referred patient in 2004 was about 720. The reason why the number of referred patients increases is; hospital has not improved its service with newly procured equipment yet, as the trainings are not completed, and hospital accepted and had to send more serious patients such as brain hemorrhage and disaster related disease/injury.

**Lang Son Provincial General Hospital:** Improvement of examination and treatment quality and new equipment

25. Average number of out-patients from your Province or the Region

(1) What is the average number of out-patients from your Province or Region in the past 3 years?

	Thai Nguyen	Lang Son	Ha Tinh
2007	3,135	5,204	1,811
2008	3,327	7,325	2,435
2009	4,694	11,648	2,574

(2) What are the factors contributing to/inhibiting the purpose achievement?

**Thai Nguyen Regional Hospital:**

**Lang Son Provincial General Hospital:** Improvement of examination and treatment quality and new equipment

26. Was there any other positive or negative impact of the project, in technical institutional or other aspect?





<p>equipment procurement, procedures of planning and project management, etc.  <b>Ha Tinh Provincial General Hospital:</b> Most of them understood.  <b>CPMU:</b> Medium level</p> <p>(2) Were the urgency and priority of the Pilot Project well understood by the Pilot Study?  <b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b> Yes</p> <p>(3) Was the decision to implement the Pilot Study appropriate?  <b>Thai Nguyen Regional Hospital:</b> All appropriate on the above (1) to (3)  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Appropriate  <b>CPMU:</b> Yes</p> <p>29. Relevance of project planning process  (1) Was the target level of output relevant?  <b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Planning process is late.  <b>CPMU:</b> Yes</p> <p>(2) Was the target level of project purpose relevant?  <b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Planning process is late.  <b>CPMU:</b> Yes</p> <p>(3) Was the content of the project planning appropriately made?  <b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Appropriate  <b>CPMU:</b> Yes</p> <p>(4) Were the item, volume, and quality of the input appropriate?</p>		
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<p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Yes.  <b>CPMU:</b> Yes</p> <p>(5) Was the project implementation system of Japan ODA loan fully understood?  <b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b> Yes</p> <p>(6) Was the process of project planning relevant?  <b>Thai Nguyen Regional Hospital:</b> Relevance of planning process is identified as;  - Took long time for project establishment study  - Language barriers  - Different opinions on medical equipment(existing equipment replacement or applying new modern equipment)  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Slow  <b>CPMU:</b> Yes</p> <p>30. Relevance of project implementation schedule  (1) Was the project implementation schedule appropriately fixed?  <b>Thai Nguyen Regional Hospital:</b> Yes  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Not appropriate  <b>CPMU:</b> Yes</p>		
<p><b>(Sustainability Evaluation)</b>  31. Organizational and institutional sustainability  (1) Are there policy support to the implementing agency (CPMU and HPIU)?  <b>Thai Nguyen Regional Hospital:</b> There was a governmental change in mechanism. So, the progress of the project has changed.  <b>Lang Son Provincial General Hospital:</b> The project should have policy support to the implementing agency.  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b> Yes. However, the project should provide additional grant with higher norm for the project's beneficiaries.</p>	<p><input type="radio"/></p> <p><input type="radio"/></p> <p><input type="radio"/></p> <p><input type="radio"/></p> <p><input type="radio"/></p>	<p><input type="radio"/></p> <p><input type="radio"/></p> <p><input type="radio"/></p> <p><input type="radio"/></p> <p><input type="radio"/></p>

<p>(2) Are there also policy support to regional healthcare system improvement and mid-and-long term hospital improvement?</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b> Yes</p>	<input type="radio"/>    <input type="radio"/>	<input type="radio"/>    <input type="radio"/>
<p>(3) Is administrative and operational system well organized in the implementing agency (CPMU and HPIU)?</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes in Lang Son  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b> Yes</p>	<input type="radio"/> <input type="radio"/>   <input type="radio"/>	<input type="radio"/> <input type="radio"/>   <input type="radio"/>
<p>(4) Does the implementing agency (CPMU and HPIU) have the managing ability (internal regulations, manuals, standards, etc)?</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b>Yes</p>	<input type="radio"/>    <input type="radio"/>	<input type="radio"/>    <input type="radio"/>
<p>(5) Does the implementing agency (CPMU and HPIU) have enough support of other concerned organization such as private sector?</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes, Lang Son HPIU has got fully/comprehensive support from Lang Son province, CPMU, SSC.  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b>Yes</p>	<input type="radio"/>    <input type="radio"/>	<input type="radio"/>    <input type="radio"/>
<p>(6) Was there any improvement or any change was made on the hospital management to improve the sustainability?</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Periodically hospital management meeting(monthly and quarterly)  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b> Yes</p>	<input type="radio"/>    <input type="radio"/>	<input type="radio"/>    <input type="radio"/>

<p>32. Financial sustainability</p> <p>(1) Is operating expenses securely acquired?</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes, because mountainous feature of this province.  <b>Ha Tinh Provincial General Hospital:</b> Yes  <b>CPMU:</b> CPMU has no income.</p> <p>(2) Is the official financial support guaranteed?</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Yes</p> <p>(3) Does the implementing agency (CPMU and HPIU) have its own revenue source? Is it used for the operating expenses?</p> <p><b>Thai Nguyen Regional Hospital:</b> VND and Japanese currency exchange rates were different when designing the project (Japanese Yen 1 = VND143) and signing procurement contracts (Japanese Yen 1 = VND 192). So it made difficult for domestic bids.  <b>Lang Son Provincial General Hospital:</b> Lang Son HPIU has no own revenue source.  <b>Ha Tinh Provincial General Hospital:</b> No  <b>CPMU:</b> The government has provided function allowance (80% government salary for each CPMU member)</p> <p>33. Technical sustainability</p> <p>(1) Is the transferred technology properly used (CPMU and HPIU)?</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes  <b>Ha Tinh Provincial General Hospital:</b> Yes</p> <p>(2) Are the trained staff members appropriately posted? And, how such trained staff can be maintained in the CPMU and HPIU.</p> <p><b>Thai Nguyen Regional Hospital:</b>  <b>Lang Son Provincial General Hospital:</b> Yes, and they may work in the Phase II project hospitals.</p>		
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<p><b>Ha Tinh Provincial General Hospital: Yes</b></p> <p>(3) Are the facilities and equipment maintained (CPMU and HPIU)?</p> <p><b>Thai Nguyen Regional Hospital:</b> No change in comparison with the original plan.</p> <p><b>Lang Son Provincial General Hospital: Yes</b></p> <p><b>Ha Tinh Provincial General Hospital: Yes</b></p>		
<p><b>LESSONS LEARNT</b></p> <p>1.What are the lessons learnt so far from the Pilot Project Implementation(Equipment procurement, training, implementation organization and system, and others)</p> <p><b>Thai Nguyen Regional Hospital:</b></p> <ul style="list-style-type: none"> <li>- Should have PMU that has capacity (including communication skill in a foreign language) and experience to satisfy project’s requirements</li> <li>- Should pay more attention to HPIU capacity improvement.</li> <li>- Should have one kind of implementing sample/format document.</li> <li>- We are proposing a project extension. Especially, Vietnam government’ counterpart fund for equipments maintenance which is able to use for 2 years after they are imported.</li> <li>- Assigned responsibility of the project’s stakeholders should be clear from the beginning to the end.</li> </ul> <p><b>Lang Son Provincial General Hospital:</b></p> <ul style="list-style-type: none"> <li>- Equipment procurement, training bases on Lang Son hospital requirements.</li> <li>- Equipment’s qualifications got the consultation from CPMU and SSC.</li> <li>- We had good, timely collaboration between Lang Son HPIU and CPMU, SSC, JICA and Lang Son authorities.</li> </ul> <p><b>Ha Tinh Provincial General Hospital:</b></p> <p>At the pre-feasibility stage, there was lack of systematic organization: the beneficial hospitals did not get an overview of general, basic project’ issues. The hospitals were confused with implementing methodology. So, they were not active to develop equipment list for investment.</p> <p><b>CPMU:</b></p> <ul style="list-style-type: none"> <li>- Train and provide on-the-job training for each beneficial hospital (in procurement. bidding)</li> <li>- For international procurement, we/each hospital need tender documents in English and Vietnamese.</li> <li>- Should not have high value (200VND Billions) tender package.</li> </ul>		

<p>For training need assessment, bottom-up procedure cause difficulty to refuse the hospital requirement later.</p> <ul style="list-style-type: none"> <li>- The project should have more funding to the Consultant</li> </ul> <p>2. What are the recommendation and suggestion to make improvement over the lessons?</p> <p><b>Thai Nguyen Regional Hospital:</b></p> <p><b>Lang Son Provincial General Hospital:</b> HPIU in Lang Son has to report to and sometimes seek helps timely from CPMU, SSC, PPC</p> <p><b>Ha Tinh Provincial General Hospital:</b></p> <p>The international consultants who worked for the pre-feasibility study put the hospital at lower level of technical capability. So the invested techniques are at the medium or low levels. And the beneficial hospital has not got the equipments that meet the development goals like endoscopic equipments, MRI (they are appropriate for provincial hospital - according to MOH guidelines). Finally, the project's hospitals have not got these equipments, and it influences the hospital's development.</p> <p><b>CPMU:</b></p> <ul style="list-style-type: none"> <li>- International bidding should be managed by central representatives.</li> <li>- National/local bidding is managed by the hospitals</li> <li>- Reasonable price of each tender package should be VND30-50 Billions</li> </ul> <p>3. Is there any area which still needs to be done for the intended improvement? If any, what is the area and what should be done by Vietnamese side and be expected for JICA ODA loan?</p> <p><b>Thai Nguyen Regional Hospital:</b></p> <p><b>Lang Son Provincial General Hospital:</b></p> <p><b>Ha Tinh Provincial General Hospital:</b></p> <p>The project's rate of progress (program – action plan) was slow/delayed. It has affected the qualification of the project activities.</p> <p><b>CPMU:</b> From JICA side, more funding for Consultants and trainees: Norm should be higher.</p> <p>4. Is the extension of period of Pilot Project required?</p> <p><b>Thai Nguyen Regional Hospital:</b></p> <p><b>Lang Son Provincial General Hospital:</b> We are proposing 9-12 months extension.</p>		
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<p><b>Ha Tinh Provincial General Hospital:</b></p> <p>Vietnam administrative reform is necessary to shorten the progress for paper approval.</p> <p><b>CPMU:</b> The government has not approved for additional procurement (with remaining VND37 Billions). The project extension would be necessary if the government had approved.</p>		
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## Questionnaire and Answers on Performance of International and Local Consultants in Pilot Project

(Answered by CPMU)

	Terms of Reference	International and Local Consultants	MOH/CPMU EVALUATION	HPIU EVALUATION
1	Field validation on the pilot project sites(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor
2	Review and finalize basic and detail design of the equipment for procurement(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor
3	Review and update the training plan(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor

4	Bidding and contracting assistance(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
		(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
5	Procurement supervision(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
		(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
6	Supervision of startup assistance(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
		(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
7	Transfer of technology through implementation of consulting services(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
		(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)

8	Prepare project monitoring plan(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
9	Supervise and monitor the development of HCFP in the target provinces(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
10	Facilitate the implementation of the national guidelines for referral system(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
11	Update and review the training plan for medical staff and project(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)

(Answered by Ha Tinh Provincial General Hospital)

	Terms of Reference	International and Local Consultants	MOH/CPMU EVALUATION		HPIU EVALUATION	
			(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
1	Field validation on the pilot project sites(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
2	Review and finalize basic and detail design of the equipment for procurement(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
3	Review and update the training plan(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)

4	Bidding and contracting assistance(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	☐(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory ☐(c) Relatively poor (d) Poor	(Reason/Remarks)
5	Procurement supervision(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	☐(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory ☐(c) Relatively poor (d) Poor	(Reason/Remarks)
6	Supervision of startup assistance(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	☐(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory ☐(c) Relatively poor (d) Poor	(Reason/Remarks)
7	Transfer of technology through implementation of consulting services(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	☐(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory ☐(c) Relatively poor (d) Poor	(Reason/Remarks)

8	Prepare project monitoring plan(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	☑(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
9	Supervise and monitor the development of HCFP in the target provinces(ability, output, timeliness, duration and others)	(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
10	Facilitate the implementation of the national guidelines for referral system(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	☑(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
11	Update and review the training plan for medical staff and project(ability, output, timeliness, duration and others)	(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)

(Answered by Lang Son Provincial general Hospital)

		HPIU EVALUATION	
Terms of Reference	International and Local Consultants		
1	Field validation on the pilot project sites(ability, output, timeliness, duration and others)	International Consultants (International Consultants)  (Local Consultants)	The international consultants have experience, enthusiasm and responsibility.  The national consultants have experience, enthusiasm and responsibility.
2	Review and finalize basic and detail design of the equipment for procurement(ability, output, timeliness, duration and others)	International Consultants  (Local Consultants)	The consultants checked available and requested equipments, the number of patients at each department before and after the procurement. All the works have been done timely.  The consultants checked available and requested equipments, the number of patients at each department before and after the procurement. All the works have been done timely.
i3	Review and update the training plan(ability, output, timeliness, duration and others)	International Consultants  (Local Consultants)	The consultants worked specifically in each department to find out training demands. The activities' outcomes are good. However, many activities happened at the end of the project. It affects the hospital's services (examination, treatment).  The consultants worked specifically in each department to find out training demands. The activities' outcomes are good. However, many activities happened at the end of the project. It affects the hospital's services (examination, treatment).



4	Bidding and contracting assistance(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	<input type="checkbox"/> (a) Good <input type="checkbox"/> (b) Satisfactory <input type="checkbox"/> (c) Relatively poor <input type="checkbox"/> (d) Poor	<p>The consultants actively supported in preparing bidding document, calling for bid, tender evaluation, contract negotiation and contract award.</p> <p>The consultants actively supported in preparing bidding document, calling for bid, tender evaluation, contract negotiation and contract award.</p>
5	Procurement supervision(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	<input type="checkbox"/> (a) Good <input type="checkbox"/> (b) Satisfactory <input type="checkbox"/> (c) Relatively poor <input type="checkbox"/> (d) Poor	<p>The consultants monitored the procurement closely and timely. They supervised and sped up the investors. They reminded all contractors to provide equipments in line with requested items in the contracts.</p> <p>The consultants monitored the procurement closely and timely. They supervised and sped up the investors. They reminded all contractors to provide equipments in line with requested items in the contracts.</p>
6	Supervision of startup assistance(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	<input type="checkbox"/> (a) Good <input type="checkbox"/> (b) Satisfactory <input type="checkbox"/> (c) Relatively poor <input type="checkbox"/> (d) Poor	<p>The consultants did the provided equipments' tests at each department of the hospital.</p> <p>The consultants did the provided equipments' tests at each department of the hospital.</p>
7	Transfer of technology through implementation of consulting services(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	<input type="checkbox"/> (a) Good <input type="checkbox"/> (b) Satisfactory <input type="checkbox"/> (c) Relatively poor <input type="checkbox"/> (d) Poor	<p>The consultants helped our hospital to get other services from the contractors, the producers through all procurement contracts.</p> <p>The consultants helped our hospital to get other services from the contractors, the producers through all procurement contracts.</p>

8	Prepare project monitoring plan(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	Supervised and monitored plans are specific, feasible in our hospital.  Supervised and monitored plans are specific, feasible in our hospital.
9	Supervise and monitor the development of HCFP in the target provinces(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
10	Facilitate the implementation of the national guidelines for referral system(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
11	Update and review the training plan for medical staff and project(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	The project has lasted for many years, the hospital reported to the consultants changes of the number of trainees at some short courses. So the consultants updated timely to get better results/high effectiveness.  The project has lasted for many years, the hospital reported to the consultants changes of the number of trainees at some short courses. So the consultants updated timely to get better results/high effectiveness.

(Answered by Thai Nguyen Central General Hospital)

		THAI NGUYEN EVALUATION	
Terms of Reference	International and Local Consultants	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
1	Field validation on the pilot project sites(ability, output, timeliness, duration and others)	(Local Consultants)	(Reason/Remarks)
2	Review and finalize basic and detail design of the equipment for procurement(ability, output, timeliness, duration and others)	(International Consultants)	(Reason/Remarks)
		(Local Consultants)	(Reason/Remarks)
3	Review and update the training plan(ability, output, timeliness, duration and others)	(International Consultants)	(Reason/Remarks)
		(Local Consultants)	(Reason/Remarks)

4	Bidding and contracting assistance(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
5	Procurement supervision(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
6	Supervision of startup assistance(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
7	Transfer of technology through implementation of consulting services(ability, output, timeliness, duration and others)	(International Consultants)  (Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor  (a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)

8	Prepare project monitoring plan(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
		(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
9	Supervise and monitor the development of HCFP in the target provinces(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
		(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
10	Facilitate the implementation of the national guidelines for referral system(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
		(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
11	Update and review the training plan for medical staff and project(ability, output, timeliness, duration and others)	(International Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)
		(Local Consultants)	(a) Good (b) Satisfactory (c) Relatively poor (d) Poor	(Reason/Remarks)

## **Policy and regulation on medical waste management**

### **1. List of Policy, Strategy, Direction and Regulation**

#### **1.1 Policy, Strategy and Direction**

- Decision No 256/2003/QĐ-TTg dated 2/12/2003:  
Prime Minister on approval of national strategy for environmental protection until 2010 and orientation to 2010
- Directive No 41/2004/NQ/TW dated 15/11/2004:  
Political Ministry on environmental protection in period of industrialization and modernization
- Decision No 328/2005/QĐ-TTg dated 12/12/2005:  
Prime Minister on approval of national plan for environmental pollution control until 2010
- Decision No 64/2003/QĐ-TTg dated 22/4/2005:  
Prime Minister on approval of plan for thorough treatment of facilities causing serious pollution (including medical facilities)
- Decree No 81/2007/NĐ-CP dated 23/5/2007:  
Prime Minister defining professional environmental-protection organizations and sections at state agencies and state enterprises
- Decision No. 1873-QĐ-BYT dated 30/11/2009:  
Master plan for environmental protection in health sector from 2009 to 2015

#### **1.2 Regulations**

##### **(1) General environmental regulations**

- Law on Environmental protection 2005
- Decree No 80/2006/NĐ-CP dated 9/8/2006:  
Government providing detailed regulations and guidance on implementation of Laws on environmental protection
- Decree No 81/2006/NĐ-CP dated 9/8/2006:  
Government on sanctions of administrative violence to environmental protection
- Decree No 81/2007/NĐ-CP dated 23/5/2007:  
Prime Minister regulating organization of environmental protection unit in state organizations and enterprises
- Circular No 07/2007/TT-BTNMT dated 03/7/2007 of Ministry of Natural resource and Environment guiding classification and list of polluted facilities needed to be treated

- Decree No 21/2008/NĐ-CP dated 28/2/2008:  
Government revising and updating
- Decree No 80/2006/NĐ-CP dated 9/8/2006 of Government

**(2) Regulations on solid waste management**

- Decree No 59/2007/NĐ-CP dated 9/4/2007:  
Government on solid waste management
- Circular No 13/2007/TT-BXD dated 31/12/2007:  
Ministry of Construction providing guidance on some clauses in Decree No 59/2007/NĐ-CP dated 9/4/2007 of Government on solid waste management
- Decree No 174/2007/NĐ-CP dated 29/11/2007:  
Government on environmental protection charges regarding solid waste
- Circular No 39/2008/TT-BTC dated 19/5/2008:  
Ministry of Finance providing guidance on implementation of Decree No 174/2007/NĐ-CP dated 29/11/2007 of Government on environmental protection charges regarding solid waste

**(3) Regulations on hazardous waste management**

- Decision No 155/1999/QĐ-TTg dated 16/7/1999:  
Prime Minister promulgating Regulations on hazardous waste management
- Decision No 23/2006/QĐ-BTNMT dated 26/12/2006:  
Ministry of Natural resource and Environment promulgating the list of hazardous waste
- Circular No 12/2006/TT-BTNMT dated 26/12/2006:  
Ministry of Natural resource and Environment guiding practical conditions and procedures to document, registry, license, practice, code hazardous waste management

**(4) Regulations on medical waste management**

- Decision No 1895/1997/BYT-QĐ dated 19/09/1997:  
Promulgating Regulations on hospital management
- Decision No 43/2007/QĐ-BYT dated 30/11/2007:  
Ministry of Health promulgating Regulations of medical waste management
- Official letter No 7164/BYT-KCB dated 14/10/2008:  
Minister of Health on Reinforcing Implementation of Medical Waste Treatment and Management

**(5) Regulations on medical waste water management**

- Decree No 67/2003/NĐ-CP dated 13/6/2003:  
Government on environmental protection charges regarding wastewater

- Inter-ministerial circular No 125/2003/TTLT-BTC-BTNMT dated 18/12/2003:  
Ministry of Finance and Ministry of Natural Resource and Environment guiding implementation of Decree No 67/2003/NĐ-CP dated 13/6/2003 of Government on environmental protection charges regarding wastewater
- Inter-ministerial circular No 106/2007/TTLT/BTC-BTNMT dated 6/9/2007:  
Ministry of Finance and Ministry of Natural Resource and Environment revising and updating Inter-ministerial circular No 125/2003/TTLT-BTC-BTNMT

## **(6) Other regulations**

### Infectious diseases control

- Law on prevention and control of infectious diseases control, No: 03/2007/QH12 dated issued on 21/1/2007
- Circular No. 18/2009/TT-BYT dated 14/10/2009  
Guiding organization and implementation of infection control in medical facilities

### Hospital facility

- TCXDVN 365(2007) General Hospital Design Guideline

### Radioactive substance management

- Circular No 14/2003/TT-BKHCHN dated 11/7/2003 of Ministry of Science and Technology  
Guiding safe transportation of radioactive substances
- Decree No 51/2006/NĐ-CP dated 19/5/2006 of Government regulating penalization of administrative violence to radioactive safety and control

### Environmental, Design or Technical Standards

- TCVN 6560:1999 Air quality-Emission Standards for Medical Solid Waste Incinerator - Allowable limits
- TCVN 6706:2000 Hazardous waste - Classification
- TCVN 6706:2000 Hazardous waste - Warning signs
- TCVN 6696-2000 Sanitary landfill for solid waste - General requirements of environmental protection
- TCXDVN 261-2001 Solid waste landfill - Design standard
- TCXDVN 320:2004 Hazardous waste landfill - Design standard
- TCVN 7380:2004 Medical solid waste incinerators - Specifications
- TCVN 7381:2004 Medical solid waste incinerators - Assessment and appraisal methods
- TCVN 7382:2004 Hospital waste water - Discharge standard
- TCVN 5945:2005 Industrial waste water - Discharge standard
- QCVN 02:2008/BTNMT National technical regulation on the emission of medical solid waste incinerators



### **1.3. Standard and Guideline**

#### **1.3.1 Incinerator**

TCVN 7380:2004: Medical solid waste incinerator: Specification

TCVN 7381:2004: Medical solid waste incinerator: Assessment and appraisal methods

TCVN 6560:2005: Medical solid waste incinerator: Emission control

#### **1.3.2 Waste Water Treatment**

TCVN 7382:2004: Hospital waste water: Effluent standards

TCVN 5945:2005: Industrial waste water: Effluent standards

#### **1.3.3 Infection Control Activity**

Circular No. 18/2009/TT-BYT dated 14/10/2009

## **2. Summary of the Laws, Decisions and Decrees listed shown above**

### **2.1 Law**

(1) Law No: 52/2005/QH11 dated 29/11/2005

Article 39 Environmental protection in hospitals and other medical establishments

- 1) Hospitals and other medical establishments must comply with the following environmental protection requirements:
  - a) Having a system or measures to collect and treat medical waste water, which operates on a routine basis and meets environmental standards;
  - b) Arranging specialized equipment to sort at source pathological materials and medical garbage;
  - c) Taking measures to treat and incinerate pathological materials, medical garbage and expired medicines, ensuring environmental sanitation and standards;
  - d) Having plans, facilities and equipment to prevent and respond to environmental incidents caused by medical wastes;
  - e) Solid wastes and waste water discharged from patients' daily life must be pre-treated to eliminate contagious germs before transfer to concentrated treatment and incineration establishments.
- 2) Hospitals and other medical establishments treating transmissible diseases must be isolated from residential areas and water sources. New hospitals and other medical establishments treating transmissible diseases must not be built within residential areas.
- 3) X-ray establishments, medical instruments and equipment using radioactive substances must meet nuclear safety and radiation safety requirements provided for in Article 89 of this Law and the law on nuclear and radiation safety.
- 4) Laborers in hospitals and other medical establishments engaged in activities related to medical wastes must be equipped with protective clothes and equipment to protect them

from contracting diseases from medical wastes.

- 5) The Ministry of Health shall collaborate with concerned ministries, ministerial-level agencies, Government-attached agencies and provincial-level People's Committees in directing and organizing the collection of statistics on discharging sources and assessing the pollution levels in hospitals and other medical establishments; work out measures to remedy environmental pollution and guide and inspect the observance of the environmental protection law by hospitals and other medical establishments.

## 2.2 Decision

- (1) Decision No 43/2007/QĐ-BYT dated 30/11/2007:

Ministry of Health/ Promulgating Regulations on Health Care Waste Management

- This regulation exclusively regulates all kinds of wastes generated at health care facilities. However in spite of increasing the case of zoonotic infection such as bird flu and swine flu veterinary laboratories or facilities are not covered as an infectious waste generator and infectious wastes likely generated at a veterinary laboratory or facilities are not included in this regulation.
- Terminology of health care waste or definition of health care waste in this regulation does not clearly mention the manner that different definition of wastes can be well understood by waste generators. Terminology of wastes is not used correctly or consistently throughout the regulation. Description of infectious waste in Clause 6 is not concrete so that generators may have difficulty in proper segregation.
- Non-burning technologies are recommended for surgical waste, often called as anatomical or pathological wastes in this regulation, but it is recognized internationally that non-burn technologies such as an autoclaving and micro wave irradiation are not recommended for these wastes. Technologies for sharps are prescribed as burning or burial, but autoclaving and micro wave technologies are also applicable for their treatment.
- “Return to suppliers” as option of some type of health care waste treatment is not clearly described to ensure safe treatment of hazardous healthcare waste.
- Technical descriptions for container, storage, on- and off-site transportation are not sufficient.

- 1) General

- a) Hospital waste refer to solid, liquid, and gas waste. Hospital waste causes environmental pollution and is the source of infectious diseases; therefore waste treatment work is an important task of hospital.
- b) The hospital’s decontamination department shall be responsible to organize the implementation and supervision of hospital’s waste treatment work.

c) A hospital waste dump shall be built with roof and wall around and located in the northwest portion of the hospital.

2) Specific stipulations:

a. Solid waste treatment

a.1 Person who produces solid waste shall collect it himself and put it in the place stipulated.

a.2 Solid waste is classified into 4 kinds and contained in nylon bag or solid box as stipulated:

- Green nylon bag contains non-toxic waste.
- Yellow nylon bag contains contaminated waste.
- Solid box contains sharp, pointed waste.
- Black nylon bag contains chemical, radioactive materials, and toxic drugs

a.3 The orderly of the department and patient's room is responsible for the following:

- Place dustbin with nylon bags at stipulated positions.
- Collect waste from patient's room, operating room to put in dept's waste dump
- The nylon bag with waste occupying two thirds of it, stick a label with name of dept and patient's room to it.
- Clean dustbin everyday.

a.4 Environmental hygiene staff is responsible to:

- Transport waste with barrow from department to hospital waste dump.
- Waste shall be transported twice a day, in the morning and the afternoon or when it is necessary.
- Patient's organs or part of body shall be separately collected and transported to mortuary for burying or burning.

a.5 Waste treatment

- The Hospital Director is held responsible for the following:
  - ii. Building a waste incinerator in accordance with technological standard.
  - iii. Ensuring conditions to treat waste.
  - iv. Environmental company shall daily transport non-toxic waste to public dump for treatment under a contract signed by hospital and the company.
- The Environment staff is held responsible for:
  - i. The burying of contaminated waste 50 cm deep from the ground or burn it at stipulated place.
  - ii. Disinfect and mechanically treat sharp and pointed waste before burning or burring it 50 cm deep from the ground.
  - iii. Dissolving radioactive materials and toxic drug or treat it in accordance with stipulation on chemical waste treatment.

- iv. Treat reused tools as dustbin and barrow in accordance with regulation on hospital's anti infection.

b. Liquid waste treatment

- b.1 Hospital director is responsible to ensure a sewerage system, underground tank to contain and treat liquid waste from lab room, X-Ray room, clinical dept, other service rooms and storm water.
- b.2 Environmental hygiene staff is responsible for dredging the sewerage system, and treating wastewater with physical-chemical or bio method before joining public drainage system, lake, or river.
- b.3 Hospital staff is prohibited from pouring dangerous liquid waste into public sewerage system before neutralizing.

c. Gas waste treatment

- c.1 Hospital director is responsible to building a chimney system of incinerator and gas furnace in accordance with technological standards.
- c.2 Bio-chemical lab room shall be equipped with a "chamber" system as stipulated.

d. Organize implementation

- d.1 Hospital director is responsible for:
- Organizing and assigning work for staff and unit of waste treatment line.
  - Implementing adequate supply of protective means for work to treat waste, and ensuring safety for staff.
  - Implementing periodical health examination of staff for waste treatment.
- d.2 Head of sterilization department is responsible to organize implementation and supervise staff to implement waste treatment work as stipulated.
- d.3 Staff of waste treatment is responsible to strictly implement stipulation on technique, labor protection, maintenance and use of equipment.

(2) Decision No 1873/2009/QD-BYT dated 28/05/2009

Master Plan for Environment Protection in Health Sector from 2009 to 2015

### **2.3 Standard or Guideline**

(1) TCVN 7380:2004: Medical solid waste incinerator and specification

- Scope of application of this Specification is not in the line of definition of wastes described in Regulations of Health Carte Waste Management. This Specification covers infectious wastes grouped by A, B, C, D and E. However Group E is not defined in Regulations of Health Carte Waste Management.
- It is mentioned cytotoxic waste is not covered by this Specification even though combustion temperature is prescribed as not lower than 800C in the primary combustion chamber and as

not lower as 1050 C in the secondary combustion chamber. However as mentioned in the Annex 2 of Regulations of Health Care Waste Management, most cytotoxic drugs are thermally destructed at up to 1000 C. Apparently there is a contradiction between two legal documents.

- Unburned contents of ash seem to be too low and its measurement methods are not scientific or unclear. There is no description of air pollution control devices in this Specification.
- TCVN 7381:2004: Methodology of assessment and appraisal for medical solid waste incinerator  
: List of parameters need to be appraised

Table Appraisalment for exhaust air

Parameter (TCVN 6560)		Formula	Unit	Acceptable limitation	Appraise method
1.	Dust		mg/m <sup>3</sup>	115	TCVN 7241: 2003
2.	Flohydric acid	HF	mg/m <sup>3</sup>	2	TCVN 7243: 2003
3.	Clohydric acid	HCl	mg/m <sup>3</sup>	100	TCVN 7244: 2003
4.	Carbon monoxide	CO	mg/m <sup>3</sup>	100	TCVN 7242: 2003
5.	Nitrous Oxide	Nox	mg/m <sup>3</sup>	250	TCVN 7245: 2003
6.	Sulfur dioxide	SO <sub>2</sub>	mg/m <sup>3</sup>	300	TCVN 7246: 2003
7.	Mercury	Hg	mg/m <sup>3</sup>	0.55	TCVN 7557 – 2 : 2005
8.	Cadimi	Cd	mg/m <sup>3</sup>	0.16	TCVN 7557 – 3 : 2005
9.	Lead	Pb	mg/m <sup>3</sup>	1.2	TCVN 7557 – 3 : 2005
10.	Other heavy metal (As, Sb, Ni, Co, Cr, Pb, Cu, Sn, Mn)		mg/m <sup>3</sup>		Will be published
11.	Total organic component		mg/m <sup>3</sup>		Will be published
12.	Total Dioxin/ Furan Dioxin Furan	C <sub>12</sub> H <sub>8</sub> -NCl <sub>n</sub> O <sub>2</sub> C <sub>12</sub> H <sub>8</sub> -NCl <sub>n</sub> O	ng – TEQ/Nm <sup>3</sup>	2.3	TCVN 7556 – 1 : 2005 TCVN 7556 – 2 : 2005 TCVN 7556 – 3 : 2005
<p><b>Remark</b>            N: clo atomic number            N*: 2 ≤ n ≤ 8            TEQ is toxic level equivalent to 2,3,7,8-tetraclor dibenzo-p-dioxin based on international coefficient toxic level.</p>					

(2) TCVN 7382:2004 and TCVN 5945:2005

TCVN 7382:2004: Effluent standards for hospital waste water

TCVN 5945:2005: Effluent standards for industrial waste water:

- Some of the value of parameters and pollutant concentration of hospital waste water effluents (See Annex I-4) are not consistent with INDUSTRIAL WASTE WATER DISCHARGE STANDARDS (TCVN 5945-1995) in terms of discharge point categorization and the limited values. Since discharging points Level I and II of TCVN 7382:2004 correspond to B and C in TCVN 5945-1995, limited values of effluent parameters for these discharge points should be same.
- Number of effluent parameters of hospital waste water regulated by this standard is 12 including pH, SS, BOD5, S<sup>2-</sup>, NO<sup>3-</sup>, NH<sup>3+</sup>, Lipid, PO<sup>43-</sup>, Total coli form, Bacteria causing intestinal diseases (Salmonella, Shigella, Vibrio cholera),  $\alpha$ -radioactivity,  $\beta$ -radioactivity. However it is noted that other parameters of the effluents should follow the standards of Industrial Waste Water Discharge Standards. This means that regulated parameters of hospital effluent are expanded. If so, parameters in Table 1 of Water Quality – Hospital Waste Water –Discharge Standard should include all parameters regulated in Industrial Waste Water Discharge Standards. Otherwise health care facility or monitoring team would ignore some parameters to analyze.

Table TCVN 7382:2004 Limited value of parameters and pollutant concentration

Parameter	unit	Limited Value		Analyzing methods	
		Level 1	Level 2		
1	PH		6.5~8.5	6.5~8.5	TCVN 6492:1999 (ISO 10523:1994)
2	SS	mg/L	50	100	TCVN 6625:2000 (ISO 11923:1997)
3	BOD5	mg/L	20	30	TCVN 6001:1995 (ISO 5815:1989)
4	Sulfide (S <sup>2-</sup> -calculated by H <sub>2</sub> S)	mg/L	1.0	1.0	TCVN 4567:1988 Or SMEWW 4500 - S <sup>2-</sup>
5	Ammonium (NH <sub>4</sub> <sup>+</sup> -Calculated by N)	mg/L	10	10	TCVN 5988:1995 (ISO 5664:1984)
6	Nitrate (NO <sub>3</sub> <sup>-</sup> -Calculated by N)	mg/L	30	30	TCVN 6180:1996 (ISO 7890-3:1988 (E))
7	Oil and grease	mg/L	5	10	SMEWW 5520 – B
8	Phosphate (PO <sub>4</sub> <sup>3-</sup> )	mg/L	6	6	TCVN 6494 – 2: 2000 (ISO 10304 -2 : 1995)
9	Total Coli form	MPN/100 mL	5,000	5,000	TCVN 6187-1: 1996 (ISO 9308-1:1990 (E)) Or TCVN 6187-2:1996 (ISO 9308-2:1990 (E))
10	Bacteria causing intestinal diseases				
	Salmonella	-	KPHD	KPHD	SMEWW 9260 B
	Shigella	-	KPHD	KPHD	SMEWW 9260 E
	Vibrio cholera	-	KPHD	KPHD	SMEWW 9260 H

Parameter	unit	Limited Value		Analyzing methods	
		Level 1	Level 2		
11	Alpha radioactivity	Bq/L	0.1	0.1	TCVN 6053:1995 (ISO 9696:1992)
12	Beta radioactivity	Bq/L	1.0	1.0	TCVN 6291:1995 (ISO 9697:1992)

Legend - : Not exist the data  
 KPHD: undetectable  
 Level I: Medical waste water discharge to water body with different using purposes  
 Level II: Medical waste water discharge to municipal sewerage, designated place

Table TCVN 5945:2005 Parameters in waste water need to be appraised

Parameter (TCVN 5945)	Unit	Limited value			Appraise method	
		A	B	C		
1	Temperature	°C	40	40	45	TCVN 4557: 1988
2	pH		6-9	5.5-9	5-9	TCVN 6492: 1999 (ISO 10523:1994)
3	SS	mg/L	50	100	200	TCVN 6625: 2000 (ISO 11923:1997)
4	Arsenic (As)	mg/L	0.05	0.1	0.5	TCVN 61822: 1996 (ISO 6595: 1982(E))
5	Cadmium (Cd)	mg/L	0.005	0.01	0.5	TCVN 6193: 1996 (ISO 6288: 1986 (E)) TCVN 6197: 1996 (ISO 5961: 1984 (E))
6	Lead (Pb)	mg/L	0,1	0,5	1	TCVN 6193: 1996 (ISO 8286: 1986)
7	Chromium VI (Cr <sup>6+</sup> )	mg/L	0.05	0.1	0.5	TCVN 6222: 2000 (ISO 9174:1990)
8	Copper (Cu)	mg/L	2	2	5	TCVN 6193: 1996 (ISO 8286: 1986 (E))
9	Zinc (Zn)	mg/L	3	3	5	TCVN 6193: 1996 (ISO 8286: 1986)
10	Manganese (Mn)	mg/L	0.5	1	5	TCVN 6002: 1995 (ISO 6333: 1986)
11	Nickel (Ni)	mg/L	0.2	0.5	2	TCVN 6193: 1996 (ISO 8286: 1986)
12	Iron (Fe)	mg/L	1	5	10	TCVN 6177: 1996 (ISO 6332: 1988 (E))
13	Tin (Sn)	mg/L	0.2	1	5	SMEWW 3111 – B
14	Mercury (Hg)	mg/L	0.005	0.01	0.01	TCVN 5989: 1995 (ISO 5666/1:1983)

**Remark:**

A: Industrial waste water has parameter values and concentration of pollutant materials equal or smaller than value recorded in column A can be discharged into freshwater area using domestic water supply.  
 B: Industrial waste water has parameter values and concentration of pollutant materials bigger than value in column A but equal or smaller than value in column B can be discharged into other freshwater areas, expect freshwater area in A.  
 C: Industrial waste water has parameter values and concentration of pollutant materials bigger than value in column B but smaller than value in column C is only discharged into areas stipulated such as separate lake for waste water, drainage system of waste water treatment plant.)

**Form of Evaluation Summary of Hospital (MOH, 2009)**  
**(Sample Score)**

No	The content to be checked	Number of indicator	The sequence of checked indicator	Standard Mark	Achieve Mark	Deductible Mark	Total	Ratio of achiveable and standard %
<b>I</b>	<b>Resources</b>	<b>23</b>	<b>(1- 23)</b>	<b>17.00</b>	<b>12.00</b>		<b>12.00</b>	<b>70.59</b>
1	Infrastructure	11	1-11	6.00	6.00		6.00	100.00
2	Equipment and materials for patient care	4	12-15	3.00	2.75		2.75	91.67
3	Labor structure and capability	8	16-23	8.00	3.25		3.25	40.63
<b>II</b>	<b>Implementation of the hospital's function and tasks</b>	<b>25</b>	<b>(23-47)</b>	<b>22.25</b>	<b>19.25</b>		<b>19.25</b>	<b>86.52</b>
1	Examination and treatment	9	24-32	9.50	7.25		7.25	76.32
2	Training	2	33-34	2.00	1.75		1.75	87.50
3	Scientific research	2	35-36	2.50	2.00		2.00	80.00
4	Referral support	3	37-39	3.00	3.00		3.00	100.00
5	Prevention	2	40-41	1.00	1.00		1.00	100.00
6	International cooperation	1	42	0.50	0.50		0.50	100.00
7	Economic management	6	43-48	3.75	3.75		3.75	100.00
<b>III</b>	<b>Government regulations' compliance</b>	<b>96</b>	<b>(48-144)</b>	<b>60.75</b>	<b>58.84</b>		<b>58.84</b>	<b>96.86</b>
1	Planning	2	49-50	2.00	2.00		2.00	100.00
2	Medical records storage	1	51	1.00	1.00		1.00	100.00
3	Patients' council	1	52	0.50	0.50		0.50	100.00
4	Medical uniform for patients and staff	2	53-54	1.50	1.50		1.50	100.00
5	To be on duty and doing emergency tasks	8	55-62	4.00	4.00		4.00	100.00
6	Diagnostic, medical records and prescription	9	63-71	6.00	6.00		6.00	100.00
7	Consultation for entry, referral, and discharge	3	72-74	2.00	2.00		2.00	100.00
8	Information, report, information technology	3	75-77	3.00	3.00		3.00	100.00
9	Nursing and patient care	10	78-87	8.00	8.00		8.00	100.00
10	Premature baby care	2	88-89	1.00	1.00		1.00	100.00
11	Infection control	8	90-97	4.00	4.00		4.00	100.00
12	Drug and treatment council	12	98-109	6.00	5.25		5.25	87.50
13	Dealing with deaths	2	110-111	1.00	1.00		1.00	100.00
14	Monitoring and supervision	3	112-114	1.50	1.50		1.50	100.00
15	Medical ethic and communication	6	115-120	7.00	5.84		5.84	83.43
16	Examination department	6	121-126	3.00	3.00		3.00	100.00
17	Nutrition department	3	127-129	2.50	2.50		2.50	100.00
18	Surgery and operation theatre	4	130-133	2.00	2.00		2.00	100.00
19	Traditional medicine	4	134-137	2.00	2.00		2.00	100.00
20	Laboratories and imaging diagnostic department	7	138-144	2.75	2.75		2.75	100.00
	<b>Total</b>	<b>144</b>	<b>144</b>	<b>100</b>	<b>90.09</b>		<b>90.09</b>	<b>90.09</b>

**Result classification**

Name of the hospital

**Good**



## Existing equipment list

## Appendix 6

No.	Standard Equipment	Number of Existing Equipment													
		Ha Giang Provincial General Hospital	Bac Giang Provincial General Hospital	Son Tay Inter-District General Hospital	Ha Nam Provincial General Hospital	Nam Dinh Provincial Obstetric Hospital	Thai Binh Provincial Pediatric Hospital	Thanh Hoa Provincial Pediatric Hospital	Nghé An Provincial Pediatric Hospital	Binh Dinh Provincial General Hospital	Lam Dong Provincial General Hospital	Ninh Thuan Provincial General Hospital	Tay Ninh Provincial General Hospital	Sa Dec Inter-District General Hospital	Tien Giang Provincial Obstetric Hospital
<b>Department of Emergency Intensive Care</b>															
1	Electrocardiograph 3 channel									12		5	1	(N.A.)	
2	Defibrillator			2							1	2			1
3	Ventilator		11		4			1			6				8
4	Mobile ventilator														1
5	External pace maker										1				
6	Bedside monitor	9	3		2			2	10						7
7	Electric syringe pump	5	3					2			7				3
8	Ultrasonic nebulizer				1										
9	Infusion pump			2								2			
10	Infant incubator	2		2	5	3		5							
11	Phototherapy lamp for jaundice				5					1	3				
12	Mobile X - ray radiographic apparatus				1			1		1					
13	Portable ultrasound apparatus			1											
14	Electric suction pump	6	4		1										
15	Water treatment system for hemodialysis machine										1				2
16	Electric suction pump	12	13	19	1			3	5				15		24
17	Blood pressure monitor														1
18	Electric continuous suction pump			3	1										
19	Airborne disinfection for surfaces			2											
20	Continuous blood dialysis unit														1
21	Medical gas system			1											
<b>Intensive Care Unit &amp; Antitoxic Department</b>															
1	Care infant warming system	1										10			
2	Phototherapy lamp for jaundice									1	3				
3	Monitor patient 7 parameter												1		
4	Electric syringe pump										7				
5	Infusion pump										2		20		
6	CPAP Ventilator							2							
7	Dialysis machine								10		6	3			8
8	Dialyzer reprocessing system														2
9	Blood gas analyzer														1
10	Electrolyte analyzer								2						
11	Electric continuous suction pump				1										
12	Mobile X - ray radiographic apparatus								1						
13	Ultrasonic nebulizer									2			4		4
<b>DEPARTMENT OF OPERATING AND ANESTHESIA INTENSIVE CARE</b>															
1	Anesthesia apparatus with ventilator	1		3							2				1
2	CPAP Ventilator										2				
3	Anesthesia apparatus	1				1		1		6		7	4		3
4	Electro surgical unit	1				1							4		1
5	Electric suction pump				7					5		12	3		
6	Ventilator			3	10					5					10
7	Multifunction ventilation system														1
8	Electro surgical unit	3	6	5	5	1		7	2	1					
9	Oxycap monitor														3
10	Monitor patient OT with 7 parameter	1											4		
11	Monitor patient OT with 7 parameter (non EtCO2)										4				
12	Ophthalmotomy microscope unit for cataract									1					
13	ENT surgery microscope unit														
14	Laparoscopy system			1						3					1
15	Defibrillator+pace maker								1						1
16	Bedside monitor	1													2
17	Central monitor system									2					
18	Electrocardiograph				1										3
19	C - Arm X - ray apparatus (for operation room)							1							2
20	Bone drill, electric type				1						1	2			1
21	Infusion pump								8						
22	Electric syringe pump, different types								19		2				

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		Ha Giang Provincial General Hospital	Bac Giang Provincial General Hospital	Son Tay Inter-District General Hospital	Ha Nam Provincial General Hospital	Nam Dinh Provincial Obstetric Hospital	Thai Binh Provincial Pediatric Hospital	Thanh Hoa Provincial Pediatric Hospital	Nghie An Provincial Pediatric Hospital	Binh Dinh Provincial General Hospital	Lam Dong Provincial General Hospital	Ninh Thuan Provincial General Hospital	Tay Ninh Provincial General Hospital	Sa Dec Inter-District General Hospital	Tien Giang Provincial Obstetric Hospital	C Da Nang Central General Hospital
23	Orthopedic operating table, hydraulic type				1							1				
24	Operating table	5	7	3	6	6				7					3	
25	Delivery OT table										1					
26	O&G surgery table				11											
27	Major universal operating table	1			2			6	3						2	
28	Mobile operating light standing type, 60,000 - 80,000 lux							4								
29	Operating light	4		3					2	7						
30	UV light	2			7											
31	Ceiling operating light, dual with camera and monitor		3	2				1							5	
32	Ceiling operating light, dual				8							8				
33	Operating light, single			1				4								
34	Cold light for examining														1	
35	Major operating instrument set							3			2					
36	Bone surgery instrument set			1								1				
37	Medium operating instrument set	2		2				3			10					
38	Minor operating instrument set										2					
39	Venotomy surgery instrument set											10				
40	Hemorrhoid surgery instrument set				1							1				
41	Maxillo facial surgery instrument set											2				
42	Urology surgery instrument set											2				
43	Urology endoscopy stem									1					1	
44	Sigmoidoscope system			1					1							
45	Prostatectomy operating instrument set											1			1	
46	Prostatectomy endoscopic system											1				
47	Spine endoscopy system														1	
48	Operating instrument set for orthopedic			2				1				2				
49	Thoracic operating instrument set							1								
50	Delivery surgical instrument set											5				
51	Infant and children surgical instrument set															
52	Micro operating instrument set for ear											4				
53	Operating instrument set for larynx							1				1				
54	Nervous surgery instrument set			1								1				
55	Nervous - Brain surgery instrument set							1			3	2				
56	Brain, spine, nervous surgery instrument set			1												
57	Nervous - Brain surgery instrument set include bone drill and saw			1												
58	Femoral fixation instrument set		1													
59	Upper limb instrument set		1													
60	Multifunctional orthopedic drill			1												
61	Neo spine high speed drill									1						
62	Nervous instrument set			1												
63	Neurosurgery OT table			2												
64	Burn & scarce reconstruction instrument set							1								
65	Abdominal instrument set							1								
66	Operating instrument set for gastrectomy, liver, gall											5				
67	ENT surgery instrument set											2				
68	Operating instrument set for nasal cavity			1												
69	ENT endoscopic instrument set											1	1			
70	Operating instrument set for venotomy			2								1				
71	Blood storage refrigerator	1	1	2						2						
72	Refrigerator					7				1						
73	Electric oven														3	
74	Anesthesia apparatus with ventilator		4					3								
75	Pulse - Oxymeter									2						
76	Oxygen tank					7										
77	Anesthesia apparatus with ventilator									13						
78	Electrical surgical unit									4					3	
79	Uterine surgical instrument set												1			
80	Surgery microscope unit			6								1				
81	Neurology operating microscope									1						
82	Colour ultrasonic system 3D			1												
83	Gastrofiberscope with light source											3				

## Existing equipment list

## Appendix 6

No.	Standard Equipment	Number of Existing Equipment														
		Ha Giang Provincial General Hospital	Bac Giang Provincial General Hospital	Son Tay Inter-District General Hospital	Ha Nam Provincial General Hospital	Nam Dinh Provincial Obstetric Hospital	Thai Binh Provincial Pediatric Hospital	Thanh Hoa Provincial Pediatric Hospital	Nghé An Provincial Pediatric Hospital	Binh Dinh Provincial General Hospital	Lam Dong Provincial General Hospital	Ninh Thuan Provincial General Hospital	Tay Ninh Provincial General Hospital	Sa Dec Inter-District General Hospital	Tien Giang Provincial Obstetric Hospital	C Da Nang Central General Hospital
84	Abdominal endoscopy system with video							1								
85	Abdominal endoscopy system		1								1	2				
86	Colonofiberscope with light source			1						3		1				
87	ICU bed				3	2										
88	Scrub station	2														
89	Bone traction							1								
90	Lazer CO2				1											
91	Plaster cutting saw							1								1
92	Sterlum saw							1								
93	Electric bone drill											1				
94	Microtome, cryostat			1												
95	Ventilator							5								
96	Table operating hydraulic general				1							8				4
97	DR x-ray system for F/R															1
98	Operating table		3													
99	Humidifier	2						1		2						4
100	Oxygen concentrator			10	2			1		1						1
<b>DEPARTMENT OF OBSTETRIC GYNECOLOGY (INCLUDING NEWBORN)</b>																
1	Colposcope				1							1				
2	Colposcope with camera				2						1		1			
3	Colposcope with video	1		1									1			
4	Doppler fetal apparatus	2		1	1	10				2	6	10	4			
5	Diathermy apparatus for cervix surgery	1		1	2					13	1	12				
6	Ventilator	2		1	1							15				1
7	Ventilator for children										2					
8	Infant incubator	1						3					2			
9	Newborn ICU bed				2											
10	Nebulizer				1				5							
11	Defibrillator and pacemaker				1											
12	Electric syringe pump	4		18	1			7								14
13	Infusion pump							5								
14	Bedside monitor				1				5		2		1			
15	Monitor patient bedside 5 parameter		5									1				
16	Monitor fetal										8					
17	Bilirubin meter							1								
18	Ovary tubal insufflator					1										
19	Amnioscope					1										
20	Anesthesia apparatus with ventilator			3												
21	Electric suction pump				2					4			2			
22	Humidifier									2			2			
23	General B & W ultrasonic system	1	2	1		2						3	1			2
24	Fetal pH meter															
25	Colposcope with diathermy									2						
26	Stereo-microscope with heater												1			
27	Bacterium culture cabinet															1
28	Incubator 30oC - 300oC		1													
29	Centrifuge	3			4					6			1			
30	Electrical surgical unit									3		6				
31	Oxygen concentrator					3			1	1						2
32	Pipette Pump-Scienware BEL- AIR Products		4													
33	Pipette set			24												
34	Obstretic surgical instrument set			2		3										
35	Obstretic suction unit	1		2	1							4	1			
36	O&G instrument set			3		1										
37	Delivery OT table	12		3	3	12						10				
<b>PEDIATRICS DEPARTMENT</b>																
1	Electrocardiograph													1		
2	Ventilator for children		2					5	6	3			2			
3	Advanced ventilation system							2								

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4	Electric suction pump		5	19		13	4	3	5					2		7
5	Electric shock apparatus			1			2					1	1			2
6	Infant ventilator										1					
7	Portable ventilator												1			
8	CPAP ventilator									3			1			
9	Infusion pump automatic										1		10			
10	CPAP ventilator		6						3							
11	Monitor patient bedside 5 parameter		1				5				2		1			
12	Ultrasonic nebulizer						2			2			1			2
13	Nebulizer				6	1	28		1				2			7
14	Ultrasound B/W with 2 probes (verigal probe) + printer										1					
15	Monitor patient with 7 parameter							7								
16	Central monitor system									3						
17	Infant incubator		2							2	1	6	2			
18	Infant warmer				1						1					
19	Portable pulse oxymeter	4					5			2			1			
20	Pulse - Oxymeter			3												
21	Phototherapy lamp for jaundice		2						2	1	3	4	7			
22	Electric syringe pump	2								5	1		5			
23	Syringe pump												2			
24	Infusion pump									1	1					3
25	Refrigerator	1														
26	Endotracheal set			12		5										2
27	Electric suction pump									5						
28	CPAP ventilator										1	9				
29	Portable ultrasound apparatus												1			
30	Anesthesia with ventilator system for neonatal								4							
31	Electrical OT table			2												
32	Electrical OT table for X ray system									1						
33	Multifunctional ICU bed	2							8							
34	Care infant warming system									2						
35	Oxygen concentrator				1				3	1			1			
36	Glucose monitoring machine			4						2			3			2
<b>DEPARTMENT OF IMAGING DIAGNOSTIC</b>																
1	CT - SCANNER system with contrast media injector				1			1		4	1	1	1			1
2	CT - SCANNER system 64 slide										1					
3	CT - Scanner system	1														
4	Lazer printer	1							1	3						1
5	MRI (magnetic resonance imaging system)									2						
6	MRI system 1.5 tesla									1						
7	Radiographic and fluoroscopic X - ray TV. System, > 500 mA; 2 X - ray tubes and 2 tables			1				1		1		1				1
8	General X ray system								1	1						1
9	DR x-ray system							1								
10	General radiographic and fluorographic X - ray system > 500 mA, 2 X - ray tubes and 2 tables										3	1				
11	General radiographic X - ray apparatus 300 mA															
12	Mobile X - ray radiographic apparatus			1												
13	Mobile X - ray radiographic apparatus								1		1		5	1		1
14	C - Arm X - ray apparatus (for operation room)									1			1			
15	Digital colour Doppler ultrasonic system with colour printer and black white printer							2	1	8	1					
16	4D colour ultrasound with 3 probe, with colour printer, B/W printer											1				
17	4D colour ultrasound	1														1
18	General B & W ultrasonic system									4	1	3				
19	Portable ultrasound apparatus								1		1					
20	X - ray film auto processing machine			1	3				1	2	2	2	1			2
21	Colour ultrasonic system 3D													2		
22	Digital X-ray system									3	1					
23	X - ray system	1	4	2	4					7	2			2		
24	CR system with laser printer								1							
25	Illuminator			11	15				3							21
26	Humidifier				6				3		5					1

## Existing equipment list

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No.	Standard Equipment	Number of Existing Equipment														
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27	Oxygen concentrator				2						1					
28	Patient trolley		1	4	17	19										
29	Injection trolley			50		35										
30	X-ray protection coat														5	
31	Grid for x-ray system														6	
<b>LOGY AND BLOOD TRANSFUSION</b>																
1	Automatic blood cell counter 18 or 22 parameters	1		2			2	1		5	1	6			2	
2	Automatic blood cell counter 26 parameters							1								
3	Tytometry Follow Cell counter				2											
4	Hematology cell counter	1							4	1	1	2				
5	Automatic blood cell counter 32 parameters									1						
6	Polymerase Chain Reaction														1	
7	Automatic blood coagulator apparatus									1						
8	Semi automatic blood coagulator apparatus						1	1								
9	Blood coagulator apparatus			1	1			1	1				1		1	
10	Blood gas analyzer							1		1	1					
11	Elisa system									1	1				1	
12	Pipette + shell (fun set: 10 - 100ml, 20 - 200ml, 100 - 1000ml)											1				
13	Shaker with scale for blood receive			1				1				1				
14	Refrigerator - 35oC		1		2										4	
15	Refrigerator - 30oC				2					3						
16	Centrifuge	1				3							4		3	
17	Refrigerated centrifuge for blood tube and bag							1								
18	Binocular microscope	2	6		1			2							3	
19	Thrombosshaker														2	
20	Hematocrit measument			1												
21	Refrigerator 200 liters										1					
22	Blood component extractor											1			1	
23	Tissue processor												1	1		
24	Paraffin dispenser											1				
25	ESR Analyzer	1						1								
26	Blood bag wedling device	1		1				2			1				1	
27	Deep - Refrigerator 333 lit, - 86oC							1								
28	Washer ultrasonic										1					
29	Hematology cell counter							2								
30	Refrigerator							1								
31	Resuscitator ambu bag for adult + children			20		2										
32	Vacuum pump				1										1	
<b>BIOCHEMISTRY LABORATORY</b>																
1	Automatic biochemistry analyzer 400 test/hour without ISE							1		2						
2	Automatic biochemistry analyzer 200 test/hour without ISE									1					1	
3	Semi automatic biochemistry analyzer	3			1			1	1		2				1	
4	Automatic clinical chemistry analyser			3				1	1							
5	Blood gas analyzer							1		1	1				1	
6	Electrolysis apparatus	1	1					1		3		1				
7	Automatic immune assay analyzer										1					
8	Automatic urine analyzer 10 parameters	3	1					1	3	2			1		1	
9	Automatic urine analyzer			2	1											
10	Electrophoresis apparatus									1		1			1	
11	Automatic immune assay analyzer	1														
12	Multi - function centrifuge							1							2	
13	Hematocrit centrifuse								1			7	1		2	
14	Incubator 37oC - 56oC	2													6	
15	Electric oven 250oC, high capacity							1							2	
16	Electric oven 250oC, low capacity														3	
17	Bedside cabinet	184														
18	Biosafety cabinet									1						
19	Binocular microscope							3			1					
20	Water bath					1		1		1						

## Existing equipment list

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No.	Standard Equipment	Number of Existing Equipment														
		Ha Giang Provincial General Hospital	Bac Giang Provincial General Hospital	Son Tay Inter-District General Hospital	Ha Nam Provincial General Hospital	Nam Dinh Provincial Obstetric Hospital	Thai Binh Provincial Pediatric Hospital	Thanh Hoa Provincial Pediatric Hospital	Nghé An Provincial Pediatric Hospital	Binh Dinh Provincial General Hospital	Lam Dong Provincial General Hospital	Ninh Thuan Provincial General Hospital	Tay Ninh Provincial General Hospital	Sa Dec Inter-District General Hospital	Tien Giang Provincial Obstetric Hospital	C Da Nang Central General Hospital
21	Water bath 12L											1				
22	Analytical balance							1								
23	Gene sequencing system									1						
<b>MICROBIOLOGY LABORATORY</b>																
1	Automatic detector of malaria bacteria	0		0		1		2		1	1	1				
2	Magnetic stirrer															1
3	Blood culture									1						
4	Water distilled apparatus							1	1							
5	Autoclave small size system ≥ 30 l use for OT															3
6	Autoclave system 50l - 70l	3		5												
7	Water bath															1
8	Deep - Refrigerator											1				
9	Incubator		1		2			2		2						
10	Electric oven	3	5		12	14			6							5
11	Binocular microscope	2			3		1				3	1				3
12	Electric shaker	1	6	1	1	1										1
13	Centrifuge	1	4	7										3		3
14	Frozen centrifuge									1						
15	Elisa system					1		1								
<b>GENERAL MEDICINE DEPARTMENT</b>																
1	Ventilator	1			1	3				20				5		
2	Electrocardiograph, different types															1
3	Electric syringe pump											21				13
4	Bedside monitor		3	13	1			3		10						
5	Nebulizer				6	1										5
6	Blood dialysis unit	1								10		6				
7	Dialysis machine									10						
8	Lithotripter system									1						
9	Ureteroscope lithotripter	1														
10	Defibrillator, pace maker															1
11	Monitor bedside 5 parameters			5							4					1
12	External Pacemaker											1				
13	Pulse - Oxymeter								4		3					
14	Portable B/W untrasound with 2 probe															4
15	ECG for stress testing										1					
<b>GENERAL MEDICINE DEPARTMENT</b>																
1	Ventilator				3					12						
2	Electrocardiograph	1			2		3						4			7
3	Electrocardiograph 3 channel										2		3			
4	Electrocardiograph 6 channel															1
5	External pacemaker															2
6	Electrocardiograph for stress testing									1						1
7	Advanced ventilation system															3
8	Blood gas analyzer							1		1		1				
9	Electric shock apparatus			1								1	1			2
10	Electric syringe pump				1											1
11	Stress Untrasound System															
12	Monitor bedside 5 parameters										1					
13	Infusion pump			16												
14	Electric suction pump	12	13	19	1			3	5					15		24
15	Bedside monitor													3		3
16	Nebulizer								4							
17	Electric oven 300°C									5						
18	Pulse - Oxymeter													5		
19	Heart-lung bypass							1								
20	Heart surgical instrument set for children							2								
<b>DEPARTMENT OF INFECTIOUS DISEASE</b>																

## Existing equipment list

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No.	Standard Equipment	Number of Existing Equipment															
		Ha Giang Provincial General Hospital	Bac Giang Provincial General Hospital	Son Tay Inter-District General Hospital	Ha Nam Provincial General Hospital	Nam Dinh Provincial Obstetric Hospital	Thai Binh Provincial Pediatric Hospital	Thanh Hoa Provincial Pediatric Hospital	Nghé An Provincial Pediatric Hospital	Binh Dinh Provincial General Hospital	Lam Dong Provincial General Hospital	Ninh Thuan Provincial General Hospital	Tay Ninh Provincial General Hospital	Sa Dec Inter-District General Hospital	Tien Giang Provincial Obstetric Hospital	C Da Nang Central General Hospital	
1	Electrocardiograph 3 channel									12		1					
2	Anesthesia apparatus with ventilator	1															
3	Electrocardiograph															1	
4	Electrocardiograph 6 channel			2													
5	Electrocardiograph 1 channel			1													
6	Defibrillator+pacemaker								2							3	
7	Electric syringe pump							1	51							3	
8	Infusion pump								8		1	2	5			1	
9	Refrigerator				1					5							
10	Tracheotomy surgery instrument set											3					
<b>DEPARTMENT OF TUBERCULOSIS</b>																	
1	Pulmonary functional apparatus																1
2	Electrocardiograph												1				
3	Blood glucose meter												1			4	
4	Nebulizer												2				
5	Infusion pump												1				
6	Refrigerator				1												
7	Electric suction pump				3								1				
8	Spo2 matter				2							10	3			7	
<b>DEPARTMENT OF DERMATOLOGY</b>																	
1	Electric syringe pump				1												
<b>DEPARTMENT OF NEUROLOGY</b>																	
1	Electroencephalograph apparatus (EEG)	1			1					3		1					1
2	Electromyograph									2							
3	Ventilator				1							20					
4	Bedside monitor											20					
<b>DEPARTMENT OF MENTALITY</b>																	
1	Electrocardiograph (ECG)												1				
2	Electroencephalograph (EEG)																
3	Ventilator																
4	Nebulizer																
5	Electric shock apparatus																
6	Electric syringe pump																
7	Infusion pump																
8	Bedside monitor																
9	Electric oven 300°C																
10	Refrigerator																
<b>DEPARTMENT OF TRADITIONAL MEDICINE</b>																	
1	Acupuncture apparatus			11	11									7			29
2	Laser acupuncture apparatus													1			1
3	Photo electric acupuncture													1			1
4	Massage machine				2									1			
5	Electric suction pump													1			1
6	Electric oven 300°C																1
7	Ventilator	1		11	15					5		42	11				34
8	Electro - stimulator																2
9	Phot therapy apparatus																1
<b>GENERAL SURGICAL DEPARTMENT</b>																	
1	Electrocardiograph											1					
2	Electrocardiograph 3 channel											2		1			
3	Ventilator											4		1			
4	Electric continuous suction pump													2			
5	Ventilator			6													
6	Defibrillator +pacemaker																2
7	Monitor bedside 5 parameters											2					

## Existing equipment list

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No.	Standard Equipment	Number of Existing Equipment														
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8	Electric syringe pump											1				
9	Hyperbaric chamber								4							
10	Examining table for adult	1		6												
11	Gynecological examining table	1		1		20										
12	Weighing and heighing scale				1											
13	Microtome				1								1			
<b>ENT DEPARTMENT</b>																
1	Nasopharyngo - Fiberscope											1				
2	Oesophagoscope set with rigid tube			1								1				
3	Oesophagofiberscope	1														
4	Clar lamp				2											2
5	Curing light lamp			1												2
6	ENT treatment table		3	2	2							1				1
7	Audiometer for adult with recorder	1										1				1
8	Nebulizer				1											
9	ENT examining - treatment instrument set (complete)	2			1											
10	Surgical instrument set for amydal removing											3				
11	ENT endoscopy system										1					
12	Endoscopy system				2											
13	Instrument set for intraocular foreign body				1						1					
14	Suction pump				8					2						
15	ENT drill			1												2
<b>DEPARTMENT OF ODONTO STOMATOLOGY-MAXILLO - FACES</b>																
1	Nebulizer									4						
2	Bedside monitor	3														
3	Dental chair unit	1		1	3		1		2							
4	Panorama photography machine				3											1
5	Dental X - ray machine					3										
6	Dental electric drill	2														
7	Endotracheal instrument set	1										32				1
8	Minor surgical instrument set							3								
9	Examination lamp	1		14	21	13										10
10	Tracheotomy instrument set			1												
11	Prothesis teeth instrument set											2				
12	Dental chair unit+ Ultrasonic scaler											2				4
13	Tooth scaler			1												2
14	Ultrasonic scaler				1											
15	Dental chair unit									4		3				
16	Suction pump				2					1						
17	Tooth drill															5
<b>DEPARTMENT OF OPHTHALMOLOGY</b>																
1	Nebulizer			11	2											
2	Electric syringe pump	2														
3	Infusion pump				1											
4	A - B ultrasound scanner	1			1					1						
5	Visual field perimeter															1
6	Automatic refractometer	1														
7	Handheld Refractometer	1														
8	indirect ophthalmology meter	1	1	2	4											2
9	Phacoemulsification system									1						1
10	Slit lamp	1	2	1						1	1					
11	Laser exzimer ophthalmological system		1							1						
12	Operating light, moblie type, 60,000 - 80,000 lux								2							
13	Operating microscope for ophthalmology'											1	1			
14	Slit lamp		1								2					
15	Bedside monitor				3											
16	Humidifier				2				1	1						7
17	Refrigerator									1						



## Existing equipment list

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No.	Standard Equipment	Number of Existing Equipment														
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<b>DEPARTMENT OF PHYSIOTHERAPY AND REHABILITATION</b>																
1	Laser therapy apparatus															1
2	Infrared lamp for therapy			2	17											2
3	UV lamp								4							5
4	Short - wave therapy apparatus															1
5	Therapy ultrasonic apparatus											1				
6	Electro - stimulator											1				3
7	Electrotherapy machine				2											2
8	Hydro therapy apparatus											1				1
9	Electrocardiograph	1			1											
10	Nubulizer				1											
11	Electric syringe pump								2							
12	Refrigerator	1														
13	Electric oven								4							
14	Spine column traction	1	1		1							1				
15	Spine neck traction															2
16	Exerciser bicycle				2											7
17	Electro - stimulator															2
<b>DEPARTMENT OF NEOPLASM</b>																
1	Electrocardiograph															1
2	Ventilator				6											
3	Infusion pump	14	6	32	70	13	0	7	9	2	11		44	1		61
4	Liner accelerator									1						
<b>DEPARTMENT OF FUNCTIONAL DIAGNOSTIC</b>																
1	Spirometer															1
2	Bone densitometer									1						
3	Colour Doppler ultrasonic apparatus			1									1			2
4	Untrasound				3											
5	UV light				1											5
<b>DEPARTMENT OF ENDOSCOPY</b>																
1	Laparoscope with video system												1			
2	Colonofiberscope with light source	1														
3	Gastrofiberscope with light source												1			1
4	Gastrofiberscope with light source, video and monitor		3								2					
5	Colposcope					2										
6	Amnioscope											1				
7	Surigical laparoscope and instrument set for laparoscope, different types									1						
8	ENT fiberoscope	3		1				1		2						
9	Lithotripter system															1
<b>DEPARTMENT OF PATHOLOGY</b>																
1	Binocular microscope	1			1	3		1	3	1						2
2	Binocular microscope	2				4			1							
3	Slit lamp				1					1						1
4	Microscope with camera											1				1
5	Microtome															1
6	Mortuary refrigerator (2 bodies)				1							3				
7	Oven 250°C															3
8	Automatic medical waste dispenser								10							
9	Slide staining machine								9							
10	Hot plate	2			1									1		
11	microtome	1							1			1				
12	Frozen microtome (Cryostate)								1		1					
13	disposal plate for mirotome								1							
14	microtome									1						
<b>DEPARTMENT OF INFECTION CONTROL</b>																

## Existing equipment list

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No.	Standard Equipment	Number of Existing Equipment														
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1	Autoclave system with capacity from 300 - 500 litres with water softner		1							3						
2	Autoclave 300L															3
3	Instrument incubator															1
4	Autoclave				5	1			4			8				1
5	Autoclave system with capacity from 200 - 300 litres with water softner									1	2		5			
6	Electric Oven 250°C	1									11					
7	Incubator			5		1										
8	Clother Washer								1							
9	Cloth washer 50 kg		2							3	1		3			5
10	Clother Washer	1			2				1		4					1
11	Cloth washer 30 kg	2							1			1		2		2
12	Cloth washer 20 kg								2				1			1
13	Dressing dryer, 50 kg									2	1		3	1		1
14	Dressing dryer, 30 kg		1		1											1
15	Iron machine, compressor type															1
16	Washer and sterilizer 200 litres								1							
17	Sterilizer 600 litres with microprocessor												1			
18	Scrub station	2							2	1						3
19	Trolley						4						2			
<b>DEPARTMENT OF PHARMACY</b>																
1	Autoclave, capacity 75 litres				1											
2	Fast Autoclave 50 lit									2						1
3	Autoclave system with capacity from 100 l									1						
4	Water distilled machine, 20L/h			1						1						1
5	Technical balance 0.1 gr			1												
6	Analytical balance 0.1 mg									1						
7	Drug cabinet	2				5										
<b>MEDICAL EQUIPMENT DEPARTMENT</b>																
1	Drill machine (table top)				1					1						
2	Electric drill (handle type)			1												
3	Electric welding machine			1	1					1						
4	Diathemy unit, shortwave				1											
5	Audio broadcast system					9										
6	Computer	3			32					2						
7	Printer	1														
8	Air conditioner					14				7						
9	Photocopier				2	1										
10	Water pump					1										
11	Fan, stand					59										
12	Ceilling fans					132										
13	Desk fan					15										
14	Fan wall					111										
15	Air compressor				1											
<b>OTHER EQUIPMENT</b>																
1	Ambulance										2					
2	Incinerator		1													
3	Wheel chair				21											
4	Power generator	2				2					1					

## Criteria for prioritization of hospital

### 1. Criteria in the first stage

#### (1) General

(1)-1: Target specified in Prime Minister Decision 930/2009/QD-TTg for provincial and central hospitals (Target or Not) (5 points)

For development policies of hospitals by Government of Vietnam

	Yes	No
Point	5	0

(1)-2: Target specified in Prime Minister Decision 47/2008/QD-TTg for district and inter-district hospitals (Target or Not) (5 points)

For development policies of hospitals by Government of Vietnam

	Yes	No
Point	5	0

(1)-3: Compliance with 153/2006/QD-TTg, 30/2008/QD-TTg on Master plan to develop health sector and hospital network (10 points)

For development policies of hospitals by Government of Vietnam

	Yes	No
Point	10	0

(1)-4: Distance to the upper level hospital (km) (10 points)

Higher points for hospital far from central hospital

For development of hospitals

*More than 300km: 10 points, 250 to 300km: 8 points, 200 to 250km: 6 points, 150 to 200km: 4 points, 100 to 150km: 2 points, less than 100km: 1point*

Distance (km)	300+	300-250	250-200	200-150	150-100	-100
Point	10	8	6	4	2	1

(1)-5: Poverty ratio in the Province (Poor household rate) (%) (10 points)

Higher points for higher poverty ratio, in comparison with national average of 13.4% (2008)

For equity and development for bigger needs

More than 30%: 10 points, 27.5 to 30%: 9 points, 25 to 27.5%: 8 points, 22.5 to 25%: 7 points, 20 to 22.5%: 6 points, 17.5 to 20%: 5 points, 15 to 17.5%: 4 points, 13 to 15%: 3 points, 10 to 13%: 2 points, 5 to 10%: 1 point, less than 5%: 0 points

%	30+	30.27.5	27.5-25	25-22.5	22.5-20	20-17.5	17.5-15	15-13	13-10	10-5	-5
point	10	9	8	7	6	5	4	3	2	1	0

(1)-6: GDP per Capita in the Province (USD) (5 points)

Higher points for higher GDP per capita, for better efficiency of project

(National average: USD995 (2008))

For efficiency of investment

More than USD2,000: 5 points, USD1,500 to 2,000: 4 points, USD1,000 to 1,500: 3 points, USD500 to 1,000: 2 points, less than USD500: 1 points

USD	+2,000	2,000-1,500	1,500-1,000	1,000-500	-500
Point	5	4	3	2	1

**(2) Hospital Management**

(2)-1: Mid-and-Long Term Hospital Improvement/Management Plan is available or not (Full point: 10)

For efficiency of investment

	Available	Not yet received
Point	10	1

(2)-2: Authorization status and execution progress of the above Improvement/Management Plan (5 points)

For efficiency of investment

Already have enough capacity. No need of construction for extension: 5 points,

Building construction has not yet been approved, but existing building has enough capacity to install new equipment: 4 points,

Building construction and budget has been approved Construction on-going: 4 points,

Building construction plan and budget has been approved. Construction work not yet started: 3 points

Building construction plan has been approved, but budget is not secured. Construction work not yet started: 2 points,

Building construction plan has been approved, but plan will be revised: 1 points

Already have enough capacity. No need of construction for extension	Building construction has not yet been approved, but existing	Building construction and budget has been approved Construction	Building construction plan and budget has been approved.	Building construction plan has been approved, but budget is not secured.	Building construction plan has been approved, but plan will be revised
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		building has enough capacity to install new equipment	on-going	Construction work not yet started	Construction work not yet started.	
point	5	4	4	3	2	1

(2)-3: Target year for completion of building construction (5 points)

Enough space and/or rooms are needed for new equipment. Suppose this investment will be agreed between Government of Vietnam and JICA, new equipment will be procured and installed in 2013.

For efficiency of investment

*5 points: Building construction will be completed by 2012,*

*or hospitals already have enough space and/or rooms.*

*4 points: Building construction will be completed by 2013.*

*2 points: Building construction will not be completed by 2013.*

	Building construction will be completed by 2012, or hospitals already have enough space and/or rooms	Building construction will be completed by 2013.	Building construction will not be completed by 2013.
point	5	4	2

(2)-4: Bed occupancy rate from 2005 to 2009 (%) (10 points)

Higher points for higher bed occupancy rate considering the need for service improvement

For development of hospitals

*More than 150%: 10 points, 130 to 150%: 8 points, 120 to 130%: 7 points, 110 to 120%: 6 points, 100 to 110%: 5 points, 80 to 100%: 3 points, less than 80%: 1 point*

%	150+	150-130	130-120	120-110	110-100	100-80	-80
Point	10	8	7	6	5	3	1

(2)-5: Average length of stay from 2005 to 2009 (days) (5 points)

With national average of 6 to 7 days as minimum 3 points, longer and shorter days the more points given, considering the need for service improvement

For development of hospitals

*7 to 10 days and 4 to 6 days: 4 points, more than 10 days and less than 4 days: 5 points*

Days	10+	7-10	6-7	4-6	-4
Point	5	4	3	4	5

(2)-6: Number of patient referred to upper level hospital from 2005 to 2009 (10 points)

Higher points for bigger number of referred patients, to reduce overload of central hospital

For development of hospitals

More than 5000 patients: 10 points, 4000 to 5000 patients: 9 points, 3500 to 4000 patients: 8 points, 3000 to 3500 patients: 7 points, 2500 to 3000 patients: 6 points, 2000 to 2500 patients: 5 points, 1500 to 2000 patients: 4 points, 1000 to 1500 patients: 3 points, less than 1000 patients: 2 points

patients	5000+	5000 - 4000	4000 - 3500	3500 - 3000	3000 - 2500	2500 - 2000	2000 - 1500	1500 - 1000	-1000
point	10	9	8	7	6	5	4	3	2

(2)-7 % of patients referred to upper level hospital from 2005 to 2009 (5 points)

Higher points for bigger number of referred patients, to reduce overload of central hospital  
For development of hospitals

More than 3%: 5 points, 2.0 to 3.0%: 4 points, 1.0 to 2.0%: 3 points, 0.5 to 1.0%: 2 points, 0 to 0.5%: 1 point, no data: 0 points

%	3+	3.0-2.0	2.0-1.0	1.0-0.5	0.5-0	no data
Point	5	4	3	2	1	0

(2)-8: Number of patient back referred from upper level hospital from 2005 to 2009 (5 points)

Higher points for smaller number of back-referred patients from upper level hospital, to reduce overload of central hospital

For development of hospitals

0 patients: 5 points, very few: 4 points, 0 to 50 patients: 3 points, 50 to 100 patients: 2 points, more than 100 patients: 1 point

patients	0	very few	0-50	50-100	100+
Point	5	4	3	2	1

(2)-9: Number of patient referred to lower level hospital from 2005 to 2009 (5 points)

Higher points for bigger number of referred patients, to reduce overload of provincial hospital

For development of hospitals

More than 200 patients: 5 points, 100 to 200 patients: 4 points, 100 to 50 patients: 3 points, 1 to 50 patients: 2 points, very few: 1 point, 0 and NA: 0 points

Patients	200+	200-100	100-50	50-1	very few	0/NA
Point	5	4	3	2	1	0

(2)-10: Number of patient referred from lower level hospital from 2005 to 2009 (10 points)

Higher points for bigger number of patients from lower level hospital, to improve the service of provincial hospital and transfer of technology to lower level hospital)

For development of hospitals

More than 20,000 patients: 10 points, 10,000 to 20,000 patients: 9 points, 7,500 to 10,000 patients: 8 points, 5,000 to 7,500 patients: 7 points, 4,000 to 5,000 patients: 6 points, 3,000 to 4,000 patients: 5 points, 3,000 to 2,000 patients: 4 points, 1,000 to 2000 patients: 3 points, 500 to 1,000 patients: 2 points, less than 500 patients: 1 point

Patients	20,000+	20,000 - 10,000	10,000- 7,500	7,500 - 5,000	5,000 - 4,000	4,000 - 3,000	3,000 - 2,000	2,000 - 1,000	1,000 - 500	-500
Point	10	9	8	7	6	5	4	3	2	1

### (3) Hospital Finance

(3)-1: Financial record (Income and Expenditure) in the past 5 years is available or not (10 points)

For development of hospitals

	Available	Not yet received
Point	10	1

(3)-2: Ratio of own financial resource (hospital fee) in total revenue (%) (2009) (5 points)

Higher points for higher ratio of own financial resource in total revenue

For efficiency of investment

More than 30%: 5 points, 20 to 30%: 4 points, 15 to 20%: 3 points, 10 to 15%: 2 points, 5 to 10%: 1 point, less than 5%: 0 points

%	30+	20-30	15-20	10-15	10-5	5-0
point	5	4	3	2	1	0

(3)-3: Ratio of government budget and others in total revenue (%) (2009) (5 points)

Higher points for lower ratio of government budget and others in total revenue

For efficiency of investment

30 to 40%: 5 points, 40 to 50%: 4 points, 50 to 60%: 3 points, 60 to 70%: 2 points, 70 to 80%: 1 point, more than 80%: 0 points

%	30-40	40-50	50-60	60-70	70-80	80+
point	5	4	3	2	1	0

### (4) Human Resource

(4)-1: Human resource strategy and record of enrollment in training by core hospital are available or not (10 points)

For efficiency of investment

	Available	Not yet received
Point	10	1

(4)-2: Plan of human resource development/training is available or not (10 points)

For efficiency of investment

	Available	Not yet received
Point	10	1

(4)-3: Existence of basic training is including in training plan and its efficiency (5 points)

For efficiency of investment

	Yes, efficiency	Yes, need more	Yes, too huge	No or no data
Point	4 or 5	3	3	0

(4)-4: Existence of infection control training is including in training plan and its efficiency (5 points)

For efficiency of investment

	Yes, efficiency	Yes, need more	Yes, too huge	No or no data
Point	4 or 5	3	3	0

(4)-5: Number of planned trainings/number of hospital staffs (%) (5 points)

Higher points for higher ratio of training/education budget in total budget

For efficiency of investment

*More than 10%: 5 points, 7 to 10%: 4 points, 5 to 7%: 3 points, 3 to 5%: 2 points, 1 to 3%: 1 point, 0 to 1% and no data: 0 points*

%	10+	10-7	7-5	5-3	3-1	1-0/no data
point	5	4	3	2	1	0

(4)-6: Ratio of training/education budget in the total budget (%) (10 points)

Higher points for higher ratio of training/education budget in total budget

For efficiency of investment

*More than 3%: 10 points, 2.5 to 3%: 9 points, 2 to 2.5%: 8 points, 1.5 to 2%: 7 points, 1 to 1.5%: 6 points, 0.5 to 1%: 4 points, 0.1 to 0.5%: 3 points, less than 0.1%: 1 point, 0%: 0 points*

%	3+	3-2.5	2.5-2.0	2.0-1.5	1.5-1.0	1.0-0.5	0.5-0.1	0.1-0	0
point	10	9	8	7	6	5	4	0	1



**(5) Equipment**

(5)-1: Condition of existing equipment utilization (10 points)

For development of hospitals

	Most of equip. are old and inadequate. Hospital has new building, but almost all equipment is lacking.	Most of equip. are old and inadequate	Except some new major equip. in imaging, lab depart. Most of equip. are old and inadequate	Still new
Point	10	8	6	2

(5)-2: Purpose and frequency of use, and capacity of operator, for major equipment (10 points)

For efficiency of investment

(5)-3: Maintenance of equipment (5 points)

For efficiency of investment

- 5 points: Maintenance team in the hospital can maintain almost all equipment
- 3 points: Maintenance team in the hospital can maintain some basic equipment and current condition of equipment is good
- 1 point: Maintenance team in the hospital can maintain some basic equipment, but current condition of equipment is not good

	Maintenance team in the hospital can maintain almost all equipment	Maintenance team in the hospital can maintain some basic equipment and current condition of equipment is good	Maintenance team in the hospital can maintain some basic equipment, but current condition of equipment is not good
point	5	3	1

(5)-4: Number and capacity of staff for maintenance, maintenance contract with its content, procurement and stock of consumables and spares (10 points)

For efficiency of investment

- 10 points: Number of maintenance staffs is more than 5 and their level is high. Contract with private company for maintenance of medical equipment.  
*Maintenance staffs and maintenance contract cover all equipment.*
- 8 points: Number of maintenance staffs is more than 5. Contract with private company for maintenance of medical equipment.  
*Maintenance staffs and maintenance contract cover almost all equipment.*
- 6 points: Number of maintenance staffs is more than 5. Contract with private company for maintenance of medical equipment.  
*Maintenance staffs and maintenance contract cover some equipment*

- 5 points: Number of maintenance staffs is less than 5. Contract with private company for maintenance of medical equipment.

*Maintenance staffs and maintenance contract cover some equipment.*

- 4 points: Number of maintenance staffs is less than 5. The hospital doesn't have any contract with private company for maintenance of medical equipment.

	More than 5 maintenance staffs and their level is high. Maintenance contract with private company. Maintenance staffs and private company cover all equipment.	More than 5 maintenance staffs. Maintenance contract with private company. Maintenance staffs and private company cover almost all equipment.	More than 5 maintenance staffs. Maintenance contract with private company.	Less than 5 maintenance staffs. Maintenance contract with private company. Maintenance staffs and private company cover some equipment.	Less than 5 maintenance staffs. The hospital doesn't have any contract with private company for maintenance of medical equipment.
point	10	8	6	5	4

(5)-5: Ratio of equipment maintenance budget in the total budget from 2005 to 2009 (%)

(10 points)

High points for high ratio of equipment maintenance budget in the total budget

For efficiency of investment

*More than 3%: 10 points, 2.5 to 3%: 9 points, 2 to 2.5%: 8 points, 1.5 to 2%: 7 points, 1 to 1.5%: 6 points, 0.5 to 1%: 4 points, 0.1 to 0.5%: 3 points, less than 0 to 0.1%: 1 point, 0%: 0 points)*

%	3+	3-2.5	2.5-2.0	2.0-1.5	1.5-1.0	1.0-0.5	0.5-0.1	0.1-0	0
point	10	9	8	7	6	4	3	1	0

## (6) Environment Management

(6)-1: Current situation of waste water treatment facility, and future plan for waste water treatment system (10 points)

*Current condition of waste water treatment facility is good and future is available: 10 points*

*Current condition of waste water treatment facility is good and future plan is not available: 7 points*

*Current condition of waste water treatment facility is not good, but future plan is available: 6 points*

*Waste water treatment facility is under construction: 6 points*

*No waste water treatment facility at present, but future plan is available: 5 points*

*Current condition of waste water treatment facility is not good and future plan is not available: 3 points*

	Current condition of waste water treatment facility is	Current condition of waste water treatment facility is	Current condition of waste water treatment facility is not	Waste water treatment facility is under construction	No waste water treatment facility at present, but	Current condition of waste water treatment facility is not
--	--	--	--	--	---	--

	good and future is available	good and future plan is not available	good, but future plan is available		future plan is available	good and future plan is not available
Point	10	7	6	6	5	3

(6)-2: Current situation of solid waste treatment facility, and future plan for solid waste treatment system (10 points)

- *Hospital has functioning incinerator and future plan is available: 10 points*
- *Hospital doesn't have own incinerator or existing incinerator is not functioning, but hospital has contract with specialty firm for treatment of solid waste, and future plan is available: 10points*
- *Hospital has functioning incinerator and future plan is not available: 8 points*
- *Hospital doesn't have own incinerator or existing incinerator is not functioning, but hospital has contract with private and/or public firm for treatment of solid waste, but future plan is not available: 8points*
- *Hospital doesn't have functioning incinerator and contract with specialty firm, but future plan is available: 5 points*
- *Hospital doesn't have functioning incinerator and contract with specialty firm, but future plan is not available: 2 points*

	Hospital has functioning incinerator and future plan is available	Hospital doesn't have own incinerator or existing incinerator is not functioning, but hospital has contract with specialty firm for treatment of solid waste, and future plan is available	Hospital has functioning incinerator and future plan is not available	Hospital doesn't have own incinerator or existing incinerator is not functioning, but hospital has contract with private and/or public firm for treatment of solid waste, but future plan is not available	Hospital doesn't have functioning incinerator and contract with specialty firm, but future plan is available	Hospital doesn't have functioning incinerator and contract with specialty firm, but future plan is not available
point	10	10	8	8	5	2

(6)-3: Improvement plan for environment management is available or not (10 points)

- *Improvement plan for environment management is available, and this plan is on progress: 10 points*
- *Improvement plan for environment management is available: 8 points*

- *Improvement plan for environment management is not available, but hospital is preparing now: 6 points*
- *Improvement plan for environment management is not available: 3 points*

	Improvement plan for environment management is available, and this plan is on progress	Improvement plan for environment management is available	Improvement plan for environment management is not available, but hospital is preparing now	Improvement plan for environment management is not available
Point	10	8	6	3

## 2. Criteria in the second stage

### (1) Availability and possibility of investment by Government Bond

	Can receive government bond for both all equipment and facilities	Can receive government bond for all equipment	Can receive government bond for facilities	Can receive government bond for facilities and a part of equipment	Can receive government bond for a part of equipment	Difficult to receive government bond for equipment
Point	-7	-5	3	2	4	5

### (2) Candidate hospital is satellite hospital of central hospital or not

	Yes	No
Point	5	0

### (3) Capacity of candidate hospital about project implementation

	Excellent	Good	Can	So-so	Difficult	Cannot
Point	5	4	3	2	-5	-7

Result of Hospital Evaluation

	STANDARD	Object of Criteria	Distribution of Points	Binh Dinh Provincial General Hospital	Ha Giang Provincial General Hospital	Lam Dong Provincial General Hospital	Nghe An Provincial Pediatric Hospital	Bac Giang Provincial General Hospital	Son Tay Inter-District Hospital	Nam Dinh Provincial Obstetric Hospital	C Danang Central General Hospital	Tay Ninh Provincial General Hospital	Ninh Thuan Provincial General Hospital	Ha Nam Provincial General Hospital	Sa Dec Inter-District General Hospital	Thanh Hoa Provincial Pediatric Hospital	Thai Binh Provincial Pediatric Hospital	Tien Giang Provincial Obstetric Hospital	
<b>1</b>	<b>General</b>																		
1-1	Target specified in Prime Minister Decision 930/2009/QD-TTg for provincial and central hospitals (Target or Not) Points	Development Policies	10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	No 0	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	No 0	Yes 10	Yes 10	Yes 10	
1-2	Target specified in Prime Minister Decision 47/2008/QD-TTg for district and inter-district hospitals (Target or Not) Points	Development Policies	10	No 0	No 0	No 0	No 0	No 0	Yes 10	No 0	No 0	No 0	No 0	No 0	Yes 10	No 0	No 0	No 0	
1-3	Compliance with 153/2006/QD-TTg, 30/2008/QD-TTg on Master plan to develop health sector and hospital network Points	Development Policies	10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	
1-4	Distance to the upper level hospital (km) (Criteria: higher points for hospital far from central hospital) Points	Equity	10	300 (Hue) 10	180 (Thai Nguyen), 320 (Bach Mai) 10	120 (Dak Lak), 220 (Cho Ray) 8	300 (Hanoi) 10	65 (Bach Mai) 4	50 (Viet Duc) 4	90 (Hanoi) 5	100 (Hue) 5	100 (Cho Ray) 5	350 (Cho Ray) 10	50 (Bach Mai) 4	200 (Cho Ray) 7	160 (Hanoi) 6	125 (Hanoi) 5	80 (Tu Du) 5	
1-5	Poverty ratio in the Province (Poor household rate) (%) (Criteria: higher points for higher poverty ratio, for equity and development for bigger needs) Points	Equity	10	12.63 6	35.49 10	15.48 7	19.59 8	21.28 9	2.21 4	10.5 7	4.23 4	9.08 5	14.73 7	10.06 7	8.83 6	27.2 9	13.6 7	16.45 7	
1-6	GDP per Capita in the Province (USD) (Criteria: higher points for higher GDP per capita, for better efficiency of project) Points	Efficiency	10	937 8	240 5	949 8	456 5	432 5	1,151 9	620 6	2,199 10	1,523 10	587 5	816 7	1128 9	645 6	663 6	1,011 9	
<b>2</b>	<b>Hospital Management</b>																		
2-1	Mid-and-Long Term Hospital Improvement/Management Plan is available or not Points	Development	10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Not yet received 1
2-2	Authorization status and execution progress of the above Improvement/Management Plan Points	Efficiency	10	Building construction approved. Construction on-going. 8	Building construction approved. Construction on-going. 8	Building construction approved. Construction on-going. 8	Building construction approved. Construction on-going. 8	Building construction approved for the new hospital 6	Building construction approved. Construction on-going. 8	Additional building construction is not approved. But existing building is enough to install new equipment. 8	Building construction approved. Construction on-going. 8	Building construction approved. (upgrade from 500 to 700 beds) 5	Building construction approved. Construction on-going (new hospital) 8	Building construction approved. Construction on-going. 8	Building construction approved. 5	Building construction approved. 5	Building construction approved. 6	Building construction approved. Construction site being acquired. 6	Building construction approved (the design has to be revised because it is now a provincial Pediatric-Ob-Gy hospital). 4
2-3	Target year for completion of building construction Points	Efficiency	10	2011 10	2013 8	2013 8	2010 10	2013 6	2013 8	2010 10	2015 5	2010 10	2010 10	2010 10	2013 6	2013 6	2012 (phase 1) 7	2014 5	
2-4	Financial record (Income and Expenditure) in the past 5 years is available or not Points	Development	10	Existing 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Available 10	Not yet received 2
2-5	Bed occupancy rate in 2005 to 2009 (%) (Criteria: higher points for higher bed occupancy rate considering the need for service improvement) Points	Development	10	(2005) 100 (2006) 100.03 (2007) 99 (2008) 179% (2009) 160% 10	(2005) 114 (2006) 101.99 (2007) 114.15 (2008) 99 (2009) 113 7	(2005) (2006) (2007) (2008) (2009) 7	(2005) 109.57 (2006) 115.01 (2007) 150.1 (2008) 146.3 (2009) 152.4 10	(2005) 129.45 (2006) 147.43 (2007) 144.7 (2008) 152 (2009) 136 9	(2005) 142.9 (2006) 133.8 (2007) 121.89 (2008) 123.85 (2009) 125.92 9	(2005) 122.6 (2006) 144.89 (2007) 154.2 (2008) 158.5 (2009) 170.12 10	(2005) 100 (2006) 99.99 (2007) 100 (2008) 98.8 (2009) 95.1 6	(2005) 123.9 (2006) 128.1 (2007) 119.1 (2008) 100 (2009) 125.28 8	(2005) 110.4 (2006) 118.7 (2007) 113.2 (2008) 100 (2009) 110 7	(2005) 110 (2006) 124.7 (2007) 129.5 (2008) 151 (2009) 153 10	(2005) 132.5 (2006) 141.7 (2007) 143.2 (2008) 131 (2009) 130.5 9	(2005) (2006) (2007) (2008) (2009) 7	(2005) 175.7 (2006) 164.1 (2007) 175.7 (2008) 175.7 (2009) 164.1 10	(2005) 111.88 (2006) 120.64 (2007) 120.69 (2008) 76 (2009) 71 4	
2-6	Average length of stay in 2005 to 2009 (days) (With national average of 6 to 7 days as minimum 5 points, longer and shorter days the more points given, considering the need for service improvement) Points	Development	10	(2005) 8.87 (2006) 9.29 (2007) 9.82 (2008) 10.6 (2009) 9.5 7	(2005) 8.48 (2006) 7.89 (2007) 8.00 (2008) 8.0 (2009) 8.3 6	(2005) (2006) (2007) (2008) (2009) 5	(2005) 6.62 (2006) 6.92 (2007) 6.97 (2008) 6.65 (2009) 5.73 6	(2005) 9.6 (2006) 10.6 (2007) 9.97 (2008) 9.5 (2009) 9.2 7	(2005) 7.24 (2006) 7.01 (2007) 6.86 (2008) 7.24 (2009) 6.15 5	(2005) 7.15 (2006) 7.03 (2007) 6.8 (2008) 6.74 (2009) 6.87 5	(2005) 13.7 (2006) 13.1 (2007) 12.7 (2008) 12.5 (2009) 12.4 10	(2005) 6.5 (2006) 6.3 (2007) 6.29 (2008) 8.63 (2009) 6.07 5	(2005) 6.2 (2006) 6.2 (2007) 6.0 (2008) 5.8 (2009) 6.2 5	(2005) 7.1 (2006) 6.79 (2007) 6.72 (2008) 7.1 (2009) 6.6 5	(2005) 5.6 (2006) 5.7 (2007) 5.25 (2008) 5.3 (2009) 5.3 6	(2005) (2006) (2007) (2008) (2009) 9	(2005) 7.28 (2006) 7.28 (2007) 7.28 (2008) 8.0 (2009) 11.7 6	(2005) 5.3 (2006) 5.12 (2007) 5.02 (2008) 4.0 (2009) 4.0 7	
2-7	Number of patient referred to upper level hospital in 2005 to 2009 (Criteria: higher points for bigger number of referred patients, to reduce overload of central hospital) Points	Development	10	(2005) 1168 (2006) 2154 (2007) 2803 (2008) 3110 (2009) 2065 7	From 2003-2007: 10,037 patients (2008) 3120 (2009) 2233 7	(2005) (2006) (2007) (2008) (2009) 10	From 2003-2007: 6591 patients (2008) 2620 (2009) 2143 7	(2005) 2803 (2006) 3168 (2007) 4176 (2008) 4977 (2009) 5310 10	From 2003-2007: 22260 patients (2008 - 2009): 7689 9	(2005-2009) 610 4	(2005) 298 (2006) 282 (2007) 276 (2008 + 2009) 264 2	(2005) 2814 (2006) 4143 (2007) 6507 (2008) 475 (2009) 935 4	From 2003-2007: 11246 patients (2008) 3675 (2009) 4249 10	(2007) 250 (2008-2009) 1457 4	From 2003-2007: no data (2008) no data (2009) no data 0	(2005) (2006) (2007) (2008 - 2009) 2640 8	(2005) (2006) (2007) (2008) 1838 (2009) 2740 8	From 2003-2007: 576 patients (2008) 552 (2009) 315 3	
2-8	Number of patient back referred from upper level hospital in 2005 to 2009 (Criteria: higher points for smaller number of back-referred patients from upper level hospital, to reduce overload of central hospital) Points	Development	10	(2005) 0 (2006) 0 (2007) 0 (2008) NA (2009) NA 8	From 2003-2007: 486 patients (2008) very few (2009) very few 8	(2005) (2006) (2007) (2008 - 2009) 46 7	From 2003-2007: 350 patients (2008) 50 (2009) 52 7	From 2003-2007: 5250 patients (2008) very few (2009) very few 8	From 2003-2007: 4200 patients (2008-2009): no data 4	(2005-2009) 0 8	(2005) 13 (2006) 10 (2007) 12 (2008) NA (2009) NA 8	(2005) 20-30 (2006) 20-30 (2007) 20-30 (2008) 202 (2009) 166 6	From 2003-2007: 300 patients (2008) (2009) 4	(2005) (2006) (2007) (2008-2009) very few 8	From 2003-2007: 247 patients (2008 - 2009) 51 7	(2005) (2006) (2007) 0 (2008 - 2009) 5 8	(2005) (2006) (2007) (2008) 15 (2009) 100 7	From 2003-2007: 0 patients (2008) NA (2009) NA 8	
2-9	Number of patient referred to lower level hospital in 2005 to 2009 (Criteria: higher points for bigger number of referred patients, to reduce overload of provincial hospital) Points	Development	10	(2005) very few (2006) very few (2007) very few (2008) (2009) 0	From 2003-2007: 1,000 patients (2008) very few (2009) very few 0	(2005) (2006) (2007) (2008-2009) 21 1	From 2003-2007: 400 patients (2008 - 2009) 205 2	From 2003-2007: 6700 patients (2008) very few (2009) very few 0	From 2003-2007: 6700 patients (2008-2009): 2670 5	(2005-2009) no data 0	(2005) 958 (2006) 951 (2007) 1025 (2008) (2009) 4	(2005) 20-30 (2006) 20-30 (2007) 20-30 (2008-2009) 05 1	From 2003-2007: (2008) (2009) 0	(2005) (2006) (2007) 100 (2008-2009) very few 1	From 2003-2007: very few (2008-2009) very few 1	(2005) (2006) (2007) 5 (2008 - 2009) 2 1	(2005) (2006) (2007) (2008) 0 (2009) 10 1	From 2003-2007: 0 patients (2008) NA (2009) NA 0	
2-10	Number of patient referred from lower level hospital in 2005 to 2009 (Criteria: higher points for bigger number of patients from lower level hospital, to improve the service of provincial hospital and transfer of technology to lower level hospital) Points	Development	10	From 2003 - 2007: 19135 patients. (2008 2009) 2642 8	From 2003-2007: 25,000 patients (2008) 4307 (2009) 5153 10	(2005) (2006) (2007) (2008 - 2009) 4.342 10	From 2003-2007: 9,000 patients (2008-2009) 5060 10	From 2003-2007: 20,000 patients (2008) NA (2009) NA 10	From 2003-2007: 15300 patients (2008-2009): 6100 9	(2005-2009) 450 3	(2005) 3759 (2006) 3887 (2007) 4230 (2008 - 2009) 30611 10	(2005) no statistics (2006) no statistics (2007) no statistics (2008 - 2009) 10	From 2003-2007: 7300 patients (2008) 1939 (2009) 2901 8	(2005) (2006) (2007) (2008 - 2009) 1358 5	From 2003-2007: 4214 patients (2008 - 2009) 3336 9	(2005) (2006) (2007) 1200 (2008 - 2009) 21053 10	(2005) (2006) (2007) (2008) 4015 (2009) 10,000 10	From 2003-2007: 4000 patients (2008) 395 (2009) 311 3	

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<b>3</b>	<b>Hospital Finance</b>																		
3-1	Financial record (Income and Expenditure) in the past 5 years is existing or not Points	Development	10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Not yet received 1
3-2	Ratio of own financial resource (hospital fee) in total revenue (%) (2009) (Criteria: higher points for higher ratio of own financial resource in total revenue) Points	Efficiency	10	14.0 5	5.1 3	32.5 8	6.0 3	14.8 5	28.9 (2007) 7	30.6 8	4.6 3	33.3 8	24.3 6	21.8 6	27.7 7	2.9 3	24.1 6	Not yet received 1	
<b>4</b>	<b>Human resource</b>																		
4-1	Human resource strategy and record of enrollment in training by core hospital are existing or not Points	Efficiency	10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Not yet received 1
4-2	Plan of human resource development/training is existing or not Points	Efficiency	10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Not yet received 1
4-3	Ratio of training/education budget in the total budget (Criteria: higher points for higher ratio of training/education budget in total budget) Points	Efficiency	10	0.15 3	0.35 4	0.07 2	0.33 4	0.15 3	0.35 4	0.11 3	0.04 2	0.03 2	1.20 5	0.14 3	0.38 4	1.17 5	0.13 4	Not yet received 1	
<b>5</b>	<b>Equipment</b>																		
5-1	Condition of existing equipment utilization Points	Development	10	Except some new major equip. in imaging, lab depart. Most of equip. are old 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Still new 2	Most of equip. are old and inadequate 10	Still new 2	Still new 2	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	
5-2	Purpose and frequency of use, and capacity of operator, for major equipment Points	Efficiency	10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10
5-3	Maintenance of equipment Points	Efficiency	10	Maintenance team in the hosp are doing maintenance very well and most of equipment are well-operated 10	Maintenance team can do maintenance on some basic medical equipment but equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment but equip. conditions are good 8	Maintenance team in the hosp can do maintenance some basic equipment but the maintenance condition are good 8	Maintenance team in the hosp are doing maintenance and the maintenance condition are not so good 6	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment but equip. conditions are good 8	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 5	Maintenance team can do maintenance on some basic medical equipment but equip. conditions are good 8	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 5	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 4	Maintenance team in the hosp can do maintenance on some basic medical equipment and hosp also signed the maintenance contract with company so the equip. conditions are very good 10	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 4	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 5	
5-4	Number and capacity of staff for maintenance, maintenance contract with its content, procurement and stock of consumables and spares Points	Efficiency	10	6 engineers 14 technicians Hosp signed the maintenance contract for MRI and CT scanner, for other equipment medical equipment staff doing by themselves, Hosp no stock for spare parts and consumable 10	2 technicians 1 Pharmacist Hosp has no maintenance contract ( budget are limited), when the system broken down, Hosp contact with supplier for the service, Hosp no stock for spare parts and consumable 6	5 technicians graduated from medical college Signed the contract: Imaging, ventilator, Hosp no stock for spare parts and consumable 10	3 technicians 1 engineer Hosp has no maintenance contract ( budget are limited) so medical equipment staff doing the maintenance equipment by themselves, when the system broken down, Hosp contact with supplier for the service, Hosp no stock for spare parts and consumable 6	6 technicians graduated from medical college 2 engineers 4 assistant pharmacist Sign the contract: Imaging, incinerator, Hosp no stock for spare parts and consumable 10	1 technician graduated from medical college Sign contract: lab, Imaging equipment, hitech equip, Hosp no stock for spare parts and consumable 7	2 technicians graduated from medical college Hosp has no maintenance contract ( budget are limited), when the system broken down, Hosp contact with supplier for the service, Hosp no stock for spare parts and consumable 6	5 medical engineers 3 medical technicians Signed contract: Imaging, Lab, Cardiology equip, endoscopy, ophthalmology (phaco system), ENT endoscopy system, Hosp no stock for spare parts and consumable 10	1 engineer 1 pharmacist 2 technicians 1 bachelor of law Signed contract: Imaging ( CT ), medical gas system Hosp no stock for spare parts and consumable 9	4 engineers 3 technicians Signed contract: Imaging ( CT ), medical gas system Hosp no stock for spare parts and consumable 10	1 engineer 6 technicians graduated from medical college 1 pharmacist 1 assistant pharmacist Signed contract: imaging equip only, Hosp no stock for spare parts and consumable 10	2 medical technician 1 technician graduated from medical college 1 pharmacist 1 assistant pharmacist Hosp has no maintenance contract because most of the equipment are new Hosp no stock for spare parts and consumable (Many equipment in this hospital is share holder with private company. This private company has responsibility to maintenance of equipment) 5	3 engineers Signed contract: imaging equip OT, ICU, Lab, Hosp no stock for spare parts and consumable 7	1 engineer 4 technicians graduated from medical college Most of equipment are brandnew ( 2008 and 2009) and most of them are working well. Hosp has no maintenance contract and no stock for spare parts and consumable 6	1 technician Signed contract: imaging equip ( X Rays system, Ultrasound ), Hosp no stock for spare parts and consumable 7	

	STANDARD	Object of Criteria	Distribution of Points	Binh Dinh Provincial General Hospital	Ha Giang Provincial General Hospital	Lam Dong Provincial General Hospital	Nghe An Provincial Pediatric Hospital	Bac Giang Provincial General Hospital	Son Tay Inter-District Hospital	Nam Dinh Provincial Obstetric Hospital	C Danang Central General Hospital	Tay Ninh Provincial General Hospital	Ninh Thuan Provincial General Hospital	Ha Nam Provincial General Hospital	Sa Dec Inter-District General Hospital	Thanh Hoa Provincial Pediatric Hospital	Thai Binh Provincial Pediatric Hospital	Tien Giang Provincial Obstetric Hospital
5-5	Ratio of equipment maintenance budget in the total budget in 2005 to 2009 (%) (Criteria: high points for high ratio of equipment maintenance budget in the total budget)		10	(2005) 0.42 (2006) 0.23 (2007) 0.14 (2008) 0.4 (2009) 0.6	(2005) 0.35 (2006) 0.035 (2007) 0.051 (2008) 0.8 (2009) 1.5	(2005) (2006) (2007) (2008) (2009) 0.9	(2005) 0.47 (2006) 0.32 (2007) 0.33 (2008) 0.68 (2009) 0.51	(2005) 0.42 (2006) 0.17 (2007) 0.27 (2008) 1.6 (2009) 0.9	(2005) 1.35 (2006) 1.29 (2007) 0.78 (2008) 0.43 (2009) 0.47	(2005) 1.55 (2006) 0.21 (2007) 0.17 (2008) 0.04 (2009) 0.62	(2005) 0.77 (2006) 0.67 (2007) 0.36 (2008) 2.7 (2009) 1.5	(2005) 0.32 (2006) 0.53 (2007) 0.80 (2008) 1.34 (2009) 1.18	(2005) 0.19 (2006) 0.06 (2007) 0.34 (2008) 3.4 (2009) 2.0	(2005) 0.4 (2006) 0.28 (2007) 0.35 (2008) 1.9 (2009) 1.1	(2005) 0.56 (2006) 0.32 (2007) 0.26 (2008) 0.24 (2009) 0.35	(2005) (2006) (2007) (2008) 0.2 (2009) 0.6	(2005) (2006) (2007) (2008) 3.3 (2009) 1.3	(2005) (2006) (2007) (2008) 0.8 (2009) 1.2
	Points			3	6	4	3	4	3	4	6	5	7	5	2	3	5	5
<b>6</b>	<b>Environment management</b>																	
6-1	Current situation of waste water treatment facility, and future plan for waste water treatment system	Development	10	Good Improvement plan is not available	Not good current situation Improvement plan is available	Waste water treatment system is under construction	Good Improvement plan is not available	Good Improvement plan is not available	Not good Improvement plan is not available	No waste water treatment station Improvement plan is available	Good Improvement plan is not available	Not good Improvement plan is not available	Not good (waste water not meet standard) Improvement plan is available	Good Improvement plan is not available	Not good (waste water not meet standard) Improvement plan is not available	Good Improvement plan is not available	Not good Improvement plan is not available	Not good Improvement plan is not available
	Points			7	6	6	7	7	3	6	7	3	6	7	4	7	3	3
6-2	Current situation of solid waste treatment facility, and future plan for solid waste treatment system	Development	10	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Exixting incinerator is not functioning now Hospital has contract with the private firm for treat solid waste Improvement	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is available	Solid waste is been treating by existing incinerator Improvement plan is not available	Solid waste is been treating by existing incinerator Improvement plan is not available	Exixting incinerator is not functioning now Hospital has contract with the private firm for treat solid waste Improvement	Solid waste is been treating by existing incinerator Improvement plan is not available	Solid waste is been treating by existing incinerator Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available
	Points			8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
6-3	Improvement plan for environment management is available or not	Development	10	Available	Available	Available	Under preparing	Available	Available	Available	Available	Available	Available Under construction	Available	Available	Available	Available	Available
	Points			8	8	8	6	8	8	8	8	8	9	8	8	8	8	8
	<b>Total Points</b>		<b>290</b>	<b>226</b>	<b>216</b>	<b>223</b>	<b>218</b>	<b>215</b>	<b>210</b>	<b>205</b>	<b>219</b>	<b>202</b>	<b>215</b>	<b>211</b>	<b>189</b>	<b>208</b>	<b>207</b>	<b>139</b>
	<b>Point Ranking</b>			<b>2</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>6</b>	<b>11</b>	<b>13</b>	<b>1</b>	<b>12</b>	<b>4</b>	<b>9</b>	<b>14</b>	<b>8</b>	<b>9</b>	<b>15</b>





	STANDARD	Object of Criteria	Distribution of Points	Binh Dinh Provincial General Hospital	Lam Dong Provincial General Hospital	C Danang Central General Hospital	Nghe An Provincial Pediatric Hospital	Ha Giang Provincial General Hospital	Bac Giang Provincial General Hospital	Ninh Thuan Provincial General Hospital	Nam Dinh Provincial Obstetric Hospital	Son Tay Inter-District Hospital	Tay Ninh Provincial General Hospital	Thai Binh Provincial Pediatric Hospital	Thanh Hoa Provincial Pediatric Hospital	Ha Nam Provincial General Hospital	Sa Dec Inter-District General Hospital	Tien Giang Provincial Obstetric Hospital		
3-1	Financial record (Income and Expenditure) in the past 5 years is existing or not Points	Development	10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Not yet received 1	
3-2	Ratio of own financial resource (hospital fee) in total revenue (%) (2009) (Criteria: higher points for higher ratio of own financial resource in total revenue) Points	Efficiency	10	14.0 5	32.5 8	4.6 3	6.0 3	5.1 3	14.8 5	24.3 5	30.6 9	28.9 (2007) 7	33.3 9	24.1 5	2.9 3	21.8 5	27.7 6	1 1	Not yet received data	
4	<b>Human resource</b>																			
4-1	Human resource strategy and record of enrollment in training by core hospital are existing or not Points	Efficiency	10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Not yet received 1
4-2	Plan of human resource development/training is existing or not Points	Efficiency	10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Yes 10	Not yet received 1
4-3	Ratio of training/education budget in the total budget (Criteria: higher points for higher ratio of training/education budget in total budget) Points	Efficiency	10	0.15 3	0.07 2	0.04 2	0.33 4	0.35 4	0.15 3	1.20 5	0.11 4	0.35 4	0.03 2	0.13 4	1.17 5	0.14 3	0.38 4	1 1	Not yet received data	
5	<b>Equipment</b>																			
5-1	Condition of existing equipment utilization Points	Development	10	Except some new major equip. in imaging, lab depart. Most of equip. are old 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Still new 2	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	Still new 2	Most of equip. are old and inadequate 10	Still new 2	Most of equip. are old and inadequate 10	Most of equip. are old and inadequate 10	
5-2	Purpose and frequency of use, and capacity of operator, for major equipment Points	Efficiency	10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10	Overload 10
5-3	Maintenance of equipment Points	Efficiency	10	Maintenance team in the hosp are doing maintenance very well and most of equipment are well-operated 10	Maintenance team can do maintenance on some basic medical equipment but equip. conditions are good 8	Maintenance team can do maintenance on some basic medical equipment but equip. conditions are good 8	Maintenance team in the hosp can do maintenance some basic medical equipment but the maintenance condition are good 8	Maintenance team can do maintenance on some basic medical equipment but equip. conditions are not good 6	Maintenance team in the hosp are doing maintenance and the maintenance condition are not so good 6	Maintenance team can do maintenance on some basic medical equipment but equip. conditions are good 8	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team in the hosp can do maintenance on some basic medical equipment and hosp also signed the maintenance contract with company so the equip. conditions are very good 10	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	Maintenance team can do maintenance on some basic medical equipment and equip. conditions are not good 6	
5-4	Number and capacity of staff for maintenance, maintenance contract with its content, procurement and stock of consumables and spares Points	Efficiency	10	6 engineers 14 technicians Hosp signed the maintenance contract for MRI and CT scanner, for other equipment medical equipment staff doing by themselves, Hosp no stock for spare parts and consumable 10	5 technicians graduated from medical college Signed the contract: Imaging, ventilator, Hosp no stock for spare parts and consumable 10	5 medical engineers 3 medical technicians Signed contract: Imaging, Lab, Cardiology equip, endoscopy, ophthalmology (phaco system), ENT endoscopy system, Hosp no stock for spare parts and consumable 10	3 technicians 1 engineer Hosp has no maintenance contract ( budget are limited) so medical equipment staff doing the maintenance equipment by themselves, when the system broken down, Hosp contact with supplier for the service, Hosp no stock for spare parts and consumable 6	2 technicians 1 Pharmacist Hosp has no maintenance contract ( budget are limited), when the system broken down, Hosp contact with supplier for the service, Hosp no stock for spare parts and consumable 6	6 technicians graduated from medical college 2 engineers 4 assistant pharmacist Sign the contract: Imaging, incinerator, Hosp no stock for spare parts and consumable 10	4 engineers 3 technicians Signed contract: Imaging ( CT, X Ray, ECG, Ultrasound.), ICU ( monitor, Ventilator, infant incubator), OT( Anesthesia system.), O&G equipment, CSSD, Hosp no stock for spare parts and consumable 10	2 technicians graduated from medical college Hosp has no maintenance contract ( budget are limited), when the system broken down, Hosp contact with supplier for the service, Hosp no stock for spare parts and consumable 6	1 technician graduated from medical college Sign contract: lab, Imaging equipment, hitech equip, Hosp no stock for spare parts and consumable 7	1 engineer 1 pharmacist 2 technicians 1 bachelor of law Signed contract: Imaging ( CT), medical gas system Hosp no stock for spare parts and consumable 9	1 engineer 4 technicians graduated from medical college Most of equipment are brandnew ( 2008 and 2009) and most of them are working well. Hosp has no maintenance contract and no stock for spare parts and consumable 6	3 engineers Signed contract: imaging equipu OT, ICU, Lab, Hosp no stock for spare parts and consumable 7	1 engineer 6 technicians graduated from medical college 1 pharmacist 1 assistant pharmacist Signed contract: imaging equip only, Hosp no stock for spare parts and consumable 10	2 medical technician 1 technician graduated from medical college 1 pharmacist 1 assistant pharmacist Hosp has no maintenance contract because most of the equipment are new Hosp no stock for spare parts and consumable (Many equipment in this hospitalis share holder with private company. This private company has responsibility to maintenance of equipment) 5	1 technician Signed contract: imaging equipu ( X Rays system, Ultrasound), Hosp no stock for spare parts and consumable 7		
5-5	Ratio of equipment maintenance budget in the total budget in 2005 to 2009 (%) (Criteria: high points for high ratio of equipment maintenance budget in the total budget) Points		10	(2005) 0.42 (2006) 0.23 (2007) 0.14 (2008) 0.4 (2009) 0.6 3	(2005) (2006) (2007) (2008) 0.8 (2009) 0.9 4	(2005) 0.77 (2006) 0.67 (2007) 0.36 (2008) 2.7 (2009) 1.5 6	(2005) 0.47 (2006) 0.32 (2007) 0.33 (2008) 0.68 (2009) 0.51 3	(2005) 0.35 (2006) 0.035 (2007) 0.051 (2008) 0.8 (2009) 1.5 6	(2005) 0.42 (2006) 0.17 (2007) 0.27 (2008) 1.6 (2009) 0.9 4	(2005) 0.19 (2006) 0.06 (2007) 0.34 (2008) 3.4 (2009) 2.0 7	(2005) 1.55 (2006) 0.21 (2007) 0.17 (2008) 0.04 (2009) 0.62 4	(2005) 1.35 (2006) 1.29 (2007) 0.78 (2008) 0.43 (2009) 0.47 3	(2005) 0.32 (2006) 0.53 (2007) 0.80 (2008) 1.34 (2009) 1.18 5	(2005) (2006) (2007) (2008) 3.3 (2009) 1.3 5	(2005) (2006) 0.28 (2007) 0.35 (2008) 1.9 (2009) 1.1 5	(2005) 0.56 (2006) 0.32 (2007) 0.26 (2008) 0.24 (2009) 0.35 2	(2005) (2006) (2007) (2008) 0.8 (2009) 1.2 5			
6	<b>Environment management</b>																			

	STANDARD	Object of Criteria	Distribution of Points	Binh Dinh Provincial General Hospital	Lam Dong Provincial General Hospital	C Danang Central General Hospital	Nghe An Provincial Pediatric Hospital	Ha Giang Provincial General Hospital	Bac Giang Provincial General Hospital	Ninh Thuan Provincial General Hospital	Nam Dinh Provincial Obstetric Hospital	Son Tay Inter-District Hospital	Tay Ninh Provincial General Hospital	Thai Binh Provincial Pediatric Hospital	Thanh Hoa Provincial Pediatric Hospital	Ha Nam Provincial General Hospital	Sa Dec Inter-District General Hospital	Tien Giang Provincial Obstetric Hospital	
6-1	Current situation of waste water treatment facility, and future plan for waste water treatment system	Development	10	Good Improvement plan is not available	Waste water treatment system is under construction	Good Improvement plan is not available	Good Improvement plan is not available	Not good current situation Improvement plan is available	Good Improvement plan is not available	Not good (waste water not meet standard) Improvement plan is available	No waste water treatment station Improvement plan is available	Not good Improvement plan is not available	Not good Improvement plan is not available	Not good Improvement plan is not available	Good Improvement plan is not available	Good Improvement plan is not available	Not good (waste water not meet standard) Improvement plan is not available	Not good Improvement plan is not available	
	Points			7	6	7	7	6	7	6	6	3	3	3	7	7	4	3	
6-2	Current situation of solid waste treatment facility, and future plan for solid waste treatment system	Development	10	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Existing incinerator is not functioning now Hospital has contract with the private firm for treat solid waste Improvement plan is available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Solid waste is been treating by existing incinerator Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Solid waste is been treating by existing incinerator Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	Solid waste is been treating by existing incinerator Improvement plan is not available	Existing incinerator is not functioning now Hospital has contract with the private firm for treat solid waste Improvement plan is available	Solid waste is been treating by existing incinerator Improvement plan is not available	Hospital doesn't have incinerator Hospital has contract with the private firm for treat solid waste Improvement plan is not available	
	Points			8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
6-3	Improvement plan for environment management is available or not	Development	10	Available	Available	Available	Under preparing	Available	Available	Available Under construction	Available	Available	Available	Available	Available	Available	Available	Available	
	Points			8	8	8	6	8	8	9	8	8	8	8	8	8	8	8	
<b>Total Points</b>				<b>290</b>	<b>226</b>	<b>223</b>	<b>220</b>	<b>218</b>	<b>216</b>	<b>215</b>	<b>215</b>	<b>212</b>	<b>210</b>	<b>209</b>	<b>209</b>	<b>208</b>	<b>207</b>	<b>190</b>	<b>140</b>
<b>Point Ranking</b>				<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>6</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	

Equipment Evaluation Criteria

NAME OF EQUIPMENT	REQUESTED QUANTITY	PURPOSE OF USE/NEEDS	FREQUENCY OF USE	AVAILABLE STAFF/ EXPERIENCE	TRAINING PLAN	OPERATION & MAINTENANCE	COST EFFICIENCY	TOTAL POINT	CONCLUSION
<b>Advanced Equipment</b>									
Positron Emission Tomography(PET)	1	8	3	2	5	2	2	22	×
Angiography	1	10	6	4	5	4	5	34	△ (Need confirmation on training plan)
MRI	1	10	8	8	8	5	8	39	○
-	-	-	-	-	-	-	-	-	-
<b>General equipment</b>									
X-ray Unit	1	10	10	10	8	8	10	56	○
Ultrasonography	2	10	10	10	8	8	10	56	○
Endoscope	2	10	10	10	8	10	10	58	○
-	-	-	-	-	-	-	-	-	-
<b>Basic Equipment</b>									
Respirator	15	10	6	10	10	10	10	56	○ (To be reduced to 10 sets)
Patient monitor	30	10	8	10	10	10	10	58	○ (To be reduced to 20 sets)
Syringe pump	30	10	10	10	10	10	10	60	○
-	-	-	-	-	-	-	-	-	-

## Packaged Equipment List

Exchange rate

US\$ = JPY 85.5

VND = JPY 0.00461

No.	Packaging	Amount (US\$)	Amount (JPY)
1	ICB-1	10,000,000	855,000,000
2	ICB-2	8,100,000	692,550,000
3	ICB-3	9,030,000	772,065,000
4	ICB-4	4,735,000	404,842,500
5	ICB-5	1,676,000	143,298,000
	<b>LCB</b>		
	<b>Bac Giang</b>		
6	LCB-1	1,818,000	155,439,000
7	LCB-2	1,088,000	93,024,000
8	LCB-3	1,526,000	130,473,000
	<b>Son Tay</b>		
9	LCB-1	985,000	84,217,500
10	LCB-2	1,198,000	102,429,000
11	LCB-3	835,000	71,392,500
	<b>Thai Binh</b>		
12	LCB-1	1,085,000	92,767,500
13	LCB-2	752,000	64,296,000
	<b>Nam Dinh</b>		
14	LCB-1	1,033,000	88,321,500
15	LCB-2	1,534,000	131,157,000
	<b>Nghe An</b>		
16	LCB-1	1,532,000	130,986,000
17	LCB-2	1,176,000	100,548,000
18	LCB-3	1,225,000	104,737,500
19	LCB-4	905,000	77,377,500
	<b>Da Nang</b>		
20	LCB-1	2,039,000	174,334,500
21	LCB-2	1,252,000	107,046,000
22	LCB-3	1,790,500	153,087,750

No.	Packaging	Amount (US\$)	Amount (JPY)
	<b>Binh Dinh</b>		
23	LCB-1	2,587,000	221,188,500
24	LCB-2	1,520,000	129,960,000
25	LCB-3	1,092,000	93,366,000
26	LCB-4	1,365,000	116,707,500
	<b>Lam Dong</b>		
27	LCB-1	1,366,000	116,793,000
28	LCB-2	822,000	70,281,000
29	LCB-3	1,354,000	115,767,000
30	LCB-4	1,236,000	105,678,000
	<b>Tay Ninh</b>		
31	LCB-1	1,415,000	120,982,500
32	LCB-2	1,231,000	105,250,500
33	LCB-3	1,168,000	99,864,000
	<b>Ninh Thuan</b>		
34	LCB-1	1,934,000	165,357,000
35	LCB-2	1,257,000	107,473,500
36	LCB-3	1,435,000	122,692,500
37	LCB-4	2,025,000	173,137,500

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
<b>1</b>	<b>ICB-1</b>				<b>0</b>	<b>855,000,000</b>
	Pet-CT + Cyclotron (Binh Dinh)	Pet-CT + Cyclotron (Binh Dinh)	1	10,000,000		855,000,000
<b>2</b>	<b>ICB-2</b>				<b>8,100,000</b>	<b>692,550,000</b>
	Pet CT (Da Nang)	Pet CT (Da Nang)	1	2,500,000	2,500,000	213,750,000
	Cyber Knife (Da Nang)	Cyber Knife (Da Nang)	1	4,000,000	4,000,000	342,000,000
	Cobalt Machine (Lam Dong)	Máy Cobalt (Lâm Đồng)	1	1,600,000	1,600,000	136,800,000
<b>3</b>	<b>ICB-3</b>				<b>9,030,000</b>	<b>772,065,000</b>
	DSA (Binh Dinh)	Máy chụp mạch (Binh Định)	1	1,100,000	1,100,000	94,050,000
	Hight Dose rate machine (Binh Dinh)	Máy xạ trị trong suất liều cao (HDR)	1	400,000	400,000	34,200,000
	Laser Diod (Binh Dinh)	Laser Diod (Binh Dinh)	1	200,000	200,000	17,100,000
	Navigation system (Binh Dinh)	Hệ thống Navigation	1	400,000	400,000	34,200,000
	Dual Spect Scanning camera (Binh Dinh)	Spect Scan ( xạ hình )	1	520,000	520,000	44,460,000
	Stereostatic system in neurosurgery with SPS (Binh Dinh)	Hệ thống Stereostatic trong phẫu thuật thần kinh có SPS	1	320,000	320,000	27,360,000
	Endoscopic extruded disc surgery system (Binh Dinh)	Hệ thống phẫu thuật nội soi thoát vị đĩa đệm	1	270,000	270,000	23,085,000
	CT Scanner, 16 slices (Lam Dong)	CT Scanner, 16 lát cắt (Lam D	1	500,000	500,000	42,750,000
	CT Scanner, 16 slices (Nghe An)	CT Scanner, 16 lát cắt (Nghe	1	500,000	500,000	42,750,000
	MRI, 3 tesla (Da Nang)	Cộng hưởng từ, 3 tesla (Da N	1	2,200,000	2,200,000	188,100,000
	Navigation system (Da Nang)	Hệ thống Navigation (Da Nar	1	400,000	400,000	34,200,000
	Laser excimer (Da Nang)	Laser excimer (Da Nang)	1	420,000	420,000	35,910,000
	MRI, 1.5 tesla (Tay Ninh)	MRI, 1.5 tesla (Tay Ninh)	1	1,300,000	1,300,000	111,150,000
	CT Scanner (Thai Binh)	CT Scanner (Thai Binh)	1	500,000	500,000	42,750,000
<b>4</b>	<b>ICB-4</b>				<b>4,735,000</b>	<b>404,842,500</b>
	Ventilator	Máy thở	25	25,000	625,000	53,437,500
	Ventilator for neonatal with HFO function	Máy thở có chức năng HFO	10	48,000	480,000	41,040,000
	Non-invasive ventilator Bipap vision	Máy thở không xâm nhập Bipap vision	2	25,000	50,000	4,275,000
	NCPAP Ventilator	Máy thở áp lực dương liên tục NCPAP	2	25,000	50,000	4,275,000
	Multifunctional ventilator	Máy giúp thở đa năng	3	30,000	90,000	7,695,000
	Ventilator	Máy giúp thở	2	25,000	50,000	4,275,000
	Ventilator	Máy thở	3	25,000	75,000	6,412,500
	Ventilator	Máy thở	30	28,000	840,000	71,820,000
	Ventilator for neonatal	Máy thở sơ sinh	5	30,000	150,000	12,825,000
	BIBAP Ventilator	Hệ thống BIBAP	3	25,000	75,000	6,412,500
	Multifunctional ventilator	Máy thở đa chức năng	3	25,000	75,000	6,412,500
	High frequency oscillator	Máy thở cao tần	1	45,000	45,000	3,847,500
	Multifunctional ventilator	Máy thở đa chức năng dùng cho sơ sinh	3	25,000	75,000	6,412,500
	High frequency oscillator	Máy thở cao tần	1	45,000	45,000	3,847,500

	Ventilator for children and new-borns	Máy thở trẻ em và trẻ sơ sinh	2	35,000	70,000	5,985,000
	Multif-functional ventilator	Máy thở đa chức năng	2	40,000	80,000	6,840,000
	Ventilator	Máy thở	8	25,000	200,000	17,100,000
	Ventilator	Máy thở	3	25,000	75,000	6,412,500
	Non invasive ventilator	Máy thở không xâm nhập	3	25,000	75,000	6,412,500
	Ventilator	Máy thở	2	30,000	60,000	5,130,000
	Ventilator	Máy thở	5	30,000	150,000	12,825,000
	Ventilator for neonatale	Máy thở sơ sinh	4	30,000	120,000	10,260,000
	Ventilator	Máy thở	2	25,000	50,000	4,275,000
	Ventilator	Máy thở	2	30,000	60,000	5,130,000
	Ventilator for neonatal	Máy thở trẻ sơ sinh	2	30,000	60,000	5,130,000
	Ventilator	Máy thở	3	25,000	75,000	6,412,500
	Non-invasive ventilator	Máy thở không xâm nhập	2	25,000	50,000	4,275,000
	Ventilator for new-borns	Máy thở sơ sinh	5	30,000	150,000	12,825,000
	Anesthesia apparatus with ventilator	Máy gây mê kèm thở	6	35,000	210,000	17,955,000
	Ventilator	Máy thở	15	25,000	375,000	32,062,500
	Highly functional ventilator	Máy thở chức năng cao	5	30,000	150,000	12,825,000
<b>5</b>	<b>ICB-5</b>				<b>1,676,000</b>	<b>143,298,000</b>
	Automatic immune assay analyzer - with Prica software (for prepartum testing)	Máy miễn dịch tự động – Phần mềm prica (xét nghiệm tiền sản)	1	100,000	100,000	8,550,000
	Automatic electrophoresis	Máy điện di tự động	1	45,000	45,000	3,847,500
	Automatic biochemistry analyzer	Máy xét nghiệm sinh hóa tự động	1	60,000	60,000	5,130,000
	Automatic blood cell counter	Máy xét nghiệm huyết học	1	30,000	30,000	2,565,000
	Automatic immuno assay machine	Miễn dịch tự động	1	100,000	100,000	8,550,000
	Automatic blood cell counter >=22 parameters	Máy phân tích huyết học >= 22 thông số	1	28,000	28,000	2,394,000
	Autonmatic biochemistry analyzer 400 test/h	Máy phân tích sinh hóa tự động 400 test/h	1	70,000	70,000	5,985,000
	Blood gas analyzer	Máy phân tích khí máu	2	12,000	24,000	2,052,000
	Blood Cell Counter, 34 parameters	Máy phân tích huyết học tự động, 34 thông số	1	40,000	40,000	3,420,000
	Automatic immune assay analyzer	Máy phân tích miễn dịch tự động	1	100,000	100,000	8,550,000
	Automatic biochemistry analyzer, at least 34 parameters	Máy phân tích sinh hóa tự động, ít nhất 34 thông số	1	35,000	35,000	2,992,500
	Automatic biochemical analyzer, 28 parameter	Máy sinh hóa tự động 28 thông số	1	70,000	70,000	5,985,000
	Blood cell counter, 22 parameter	Máy phân tích huyết học 22 thông số	1	30,000	30,000	2,565,000
	Immune assay analyzer	Máy phân tích miễn dịch	1	100,000	100,000	8,550,000
	Automatic blood cell counter using laser technology	Máy huyết học tự động công nghệ laser	1	30,000	30,000	2,565,000
	Blood gas analyzer	Máy xét nghiệm khí máu	1	12,000	12,000	1,026,000
	Automatic immune assay analyzer	Máy miễn dịch tự động	1	100,000	100,000	8,550,000
	Automatic biochemical analyzer	Máy xét nghiệm sinh hóa tự động điện quang phát quang	1	60,000	60,000	5,130,000
	Automatic immune assay analyzer	Máy xét nghiệm miễn dịch tự động	1	100,000	100,000	8,550,000

Automatic biochemistry analyzer	Máy xét nghiệm sinh hóa tự động	1	80,000	80,000	6,840,000
Laser blood cell counter 28 parameters	Máy phân tích huyết học laze 28 thông số	1	35,000	35,000	2,992,500
Automatic biochemistry analyzer	Máy xét nghiệm sinh hóa tự động	1	80,000	80,000	6,840,000
Laser blood cell counter 28 parameters	Máy phân tích huyết học Laze 28 thông số	1	35,000	35,000	2,992,500
Automatic biochemistry analyzer 400 tests/h	Máy sinh hóa tự động 400 test/h	1	80,000	80,000	6,840,000
Automatic blood cell counter 22 parameters	Máy huyết học tự động 22 thông số	1	30,000	30,000	2,565,000
Automatic urine analyzer	Máy xét nghiệm nước tiểu tự động	2	11,000	22,000	1,881,000
Automatic immune assay analyzer	Máy xét nghiệm miễn dịch	1	100,000	100,000	8,550,000
Blood cell counter 22 parameters	Máy phân tích huyết học 22 thông số	1	30,000	30,000	2,565,000
Biochemistry analyzer	Máy phân tích sinh hóa tự động	1	38,000	38,000	3,249,000
Blood gas analyzer	Máy phân tích khí máu	1	12,000	12,000	1,026,000



**NAME OF HOSPITAL: Bac Giang Provincial General Hospital**

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
	<b>LCB-1</b>	<b>LCB-1</b>			<b>1,818,000</b>	<b>155,439,000</b>
	<b>Department of Operating and Anesthesia</b>	<b>Khoa Phẫu thuật - GMHS</b>				
1	Operating table	Bàn mổ	5	28,000	140,000	11,970,000
2	Laparoscope	Máy phẫu thuật nội soi	1	100,000	100,000	8,550,000
3	Electro-surgical unit	Dao mổ điện	3	15,000	45,000	3,847,500
4	Anesthesia apparatus with ventilator	Máy gây mê kèm thở	5	35,000	175,000	14,962,500
5	Ceiling operation light with 2-3 reflectors	Đèn mổ treo trần 2-3 chóa	5	28,000	140,000	11,970,000
6	Incubator	Tủ ấm	2	13,000	26,000	2,223,000
7	Abdominal surgical laparoscopic instrument set	Bộ dụng cụ phẫu thuật nội soi ổ bụng	1	100,000	100,000	8,550,000
8	Urology surgical laparoscopic instrument set	Bộ dụng cụ phẫu thuật nội soi tiết niệu	1	90,000	90,000	7,695,000
9	Ophthalmic, ENT operating microscope	Máy sinh hiển vi phẫu thuật mắt, TMH	1	60,000	60,000	5,130,000
10	Bone drill (limb, MFS)	Máy khoan xương (chi, RHM)	2	30,000	60,000	5,130,000
11	Instrument set for Neuro surgery with bone drill operated by air compressor.	Bộ dụng cụ phẫu thuật sọ não có khoan xương chạy khí nén	1	24,000	24,000	2,052,000
12	Instrument set for femoral bone jointing	Bộ dụng cụ kết hợp xương đùi	1	15,000	15,000	1,282,500
13	Instrument set for carpus jointing	Bộ dụng cụ kết hợp xương cẳng tay	1	14,000	14,000	1,197,000
14	Urology major surgical instrument set	Bộ dụng cụ đại phẫu tiết niệu ngoài	1	15,000	15,000	1,282,500
15	Thoracic operating instrument set	Bộ dụng cụ phẫu thuật lồng ngực	2	14,000	28,000	2,394,000
16	Spine operating instrument set	Bộ dụng cụ phẫu thuật xương cột sống	2	23,000	46,000	3,933,000
17	Instrument set for marrow opening	Bộ dụng cụ mở tủy	1	12,000	12,000	1,026,000
18	Instrument set for shin bone jointing	Bộ dụng cụ kết hợp xương chày	2	13,000	26,000	2,223,000
19	Midili laparoscopic instrument set	Bộ Milidi nội soi	1	17,000	17,000	1,453,500
20	Ureteroscope lithotripter for stone of biliary tract.	Bộ dụng cụ tán sỏi mật nội soi	1	35,000	35,000	2,992,500
21	C-arm X-ray apparatus	Máy X-quang C-arm	1	70,000	70,000	5,985,000
22	Ultrasonic surgical unit	Dao mổ điện siêu âm	1	50,000	50,000	4,275,000
23	Blood gas analyzer	Máy phân tích khí máu	1	12,000	12,000	1,026,000
24	Hepato-Biliary major surgical instrument set	Bộ dụng cụ đại phẫu gan mật	2	14,000	28,000	2,394,000
25	Phacoemulsification System	Hệ thống Phaco	1	70,000	70,000	5,985,000
26	Operating endoscopic instrument set for nasal cavity (sinus)	Bộ dụng cụ phẫu thuật nội soi mũi xoang	1	80,000	80,000	6,840,000
27	Washing basin for 2 surgeons with filter.	Bồn rửa tay phẫu thuật viên 2 người có màng lọc	2	15,000	30,000	2,565,000

	<b>X-Ray</b>	<b>X-quang</b>			0	0
28	General X-ray system	Máy chụp X-quang tổng hợp	1	40,000	40,000	3,420,000
29	X-ray mammographic apparatus	X-quang nhũ ảnh	1	90,000	90,000	7,695,000
30	Digital Radiographic and fluoroscopic (R/F) X-ray TV apparatus	Máy X-quang tăng sáng truyền hình kỹ thuật số	1	120,000	120,000	10,260,000
31	Dental X-ray apparatus, Paranova	Máy chụp X-quang răng Paranova	1	60,000	60,000	5,130,000
	<b>LCB-2</b>	<b>LCB-2</b>			<b>1,088,000</b>	<b>93,024,000</b>
	<b>Department of Intensive Care Unit</b>	<b>Hồi sức cấp cứu</b>				
1	White-black ultrasound apparatus	Máy siêu âm đen trắng	1	25,000	25,000	2,137,500
2	Blood gas analyzer	Máy phân tích khí máu	1	12,000	12,000	1,026,000
3	Bronchofiberscope	Máy nội soi phế quản	1	70,000	70,000	5,985,000
	<b>Department of General Emergency</b>	<b>Cấp cứu tổng hợp</b>				
4	White-black ultrasound apparatus	Máy siêu âm đen trắng	1	25,000	25,000	2,137,500
5	Blood gas analyzer	Máy phân tích khí máu	1	12,000	12,000	1,026,000
	<b>Department of Pediatrics</b>	<b>Khoa Nhi</b>				
6	Infant incubator	Lồng ấp trẻ sơ sinh	5	15,000	75,000	6,412,500
	<b>Department of Physiology Diagnostic</b>	<b>Thăm dò chức năng</b>				
7	Black-white ultrasound apparatus	Máy siêu âm đen trắng	2	25,000	50,000	4,275,000
8	Color ultrasound apparatus	Máy siêu âm màu	1	50,000	50,000	4,275,000
9	Digestive endoscope with video system (gastro, colon)	Hệ thống nội soi tiêu hóa VIDEO (dạ dày, đại tràng)	1	120,000	120,000	10,260,000
10	Bronchofiberscope	Máy nội soi phế quản	1	70,000	70,000	5,985,000
11	Cardiac holter	Holter điện tâm đồ	2	38,000	76,000	6,498,000
12	Pediatrics Digestive endoscope (gastro, colon) with video system	Máy nội soi tiêu hóa nhi khoa (dạ dày, đại tràng)	1	170,000	170,000	14,535,000
13	Proctor Fiberscope	Máy nội soi trực tràng ống cứng	1	15,000	15,000	1,282,500
14	Endoscopic ultrasound apparatus	Máy siêu âm nội soi	1	50,000	50,000	4,275,000
15	Electroencephalograph	Máy điện não	1	30,000	30,000	2,565,000
16	ECG for stress testing	Máy điện tim gắng sức	1	55,000	55,000	4,702,500
	<b>Department of Physiotherapy and Rehabilitation</b>	<b>Vật lý trị liệu - PHCN</b>				
17	Electric traction	Máy kéo giãn cột sống cổ	2	15,000	30,000	2,565,000
18	Laser therapy apparatus	Máy laze trị liệu	1	12,000	12,000	1,026,000
19	Electromagnetic therapy apparatus	Máy điều trị bằng điện trường cao áp	1	12,000	12,000	1,026,000
20	Microwave therapy apparatus	Máy điều trị vi sóng	1	12,000	12,000	1,026,000
21	Thermal therapy apparatus	Máy điều trị nhiệt + dung từ trị liệu	1	12,000	12,000	1,026,000
22	Arthrotomy therapy apparatus for leg	Thiết bị tập khớp chi dưới	1	20,000	20,000	1,710,000

23	Arthrotomy therapy apparatus for arm	Thiết bị tập khớp chi trên	1	15,000	15,000	1,282,500
24	Dynamometer bicycle	Xe đạp lực kế	2	13,000	26,000	2,223,000
25	Electrolysis, electrotherapy apparatus	Máy điều trị điện xung, điện phân	2	15,000	30,000	2,565,000
26	Stimulator using aerosol	Máy kích thích bằng khí dung	1	14,000	14,000	1,197,000
	<b>LCB-3</b>	<b>LCB-3</b>			<b>1,526,000</b>	<b>130,473,000</b>
	<b>Department of Laboratory and Pathology</b>	<b>Xét nghiệm, CLS- GPB</b>				
1	Binocular microscope with camera	Kính hiển vi 2 mắt có camera	1	12,000	12,000	1,026,000
2	Refrigerator for blood keeping (2-6°C), 400 to 500 liters	Tủ lạnh trữ máu (2-6 oC), 400 đến 500 lit	1	18,000	18,000	1,539,000
3	Freezer -34°C	Tủ lạnh sâu -34 oC	2	15,000	30,000	2,565,000
4	Automatic culture apparatus	Máy nuôi cấy tự động	1	30,000	30,000	2,565,000
5	Anaerobic bacterium culture apparatus	Máy nuôi cấy kỵ khí	1	65,000	65,000	5,557,500
6	Thermocycler PCR	Máy luân nhiệt PCR	1	16,000	16,000	1,368,000
7	Blood culture system	Máy cấy máu	1	30,000	30,000	2,565,000
8	Hemoglobin electrophoresis	Máy điện di thành phần huyết sắc tố	1	28,000	28,000	2,394,000
9	Elisa system	Hệ thống Eliza	1	35,000	35,000	2,992,500
10	Table for specimen dissecting	Bàn phẫu tích bệnh phẩm	1	45,000	45,000	3,847,500
11	Frozen microtome	Máy cắt lạnh	1	35,000	35,000	2,992,500
12	Automatic blood coagulator analyzer	Máy phân tích đông máu tự động	1	30,000	30,000	2,565,000
	<b>Department of Infection Control</b>	<b>Chống nhiễm khuẩn</b>			0	0
13	Dressing dryer, 75kg	Máy sấy đồ vải, 75kg	3	25,000	75,000	6,412,500
14	Washing machine, squeeze 70kg	Máy giặt, vắt 70kg	3	40,000	120,000	10,260,000
15	Autoclave system 300l, with steam generator and dryer	Nồi hấp tiệt trùng 300l, kèm máy tạo hơi nước và sấy	2	45,000	90,000	7,695,000
16	Autoclave system 100l, with steam generator and dryer	Nồi hấp tiệt trùng 100l, kèm máy tạo hơi nước và sấy	2	25,000	50,000	4,275,000
17	Roller iron	Máy là Rulo	1	20,000	20,000	1,710,000
18	Anesthetic washer	Hệ thống rửa dụng cụ siêu âm	1	30,000	30,000	2,565,000
	<b>Department of Infectious Diseases</b>	<b>Truyền nhiễm</b>			0	0
1	Defibrillator	Máy sốc điện	1	15,000	15,000	1,282,500
2	Cardiac holter	Holter điện tâm đồ	1	38,000	38,000	3,249,000
	<b>Specialized departments and Pharmacy</b>	<b>Các chuyên khoa và Dược</b>			0	0
3	ENT treatment chair and table	Ghế khám TMH + bàn khám TMH	1	35,000	35,000	2,992,500
4	Dental examination chair	Ghế máy nha khoa	1	20,000	20,000	1,710,000
5	Autoclave, with the capacity of less than 250L	Nồi hấp tiệt trùng =< 250l	1	30,000	30,000	2,565,000

6	Ophthalmic operating microscope	Sinh hiển vi khám mắt	1	45,000	45,000	3,847,500
7	ENT endoscope	Máy khám nội soi TMH	1	80,000	80,000	6,840,000
8	Electro surgery unit	Máy đốt điện	1	15,000	15,000	1,282,500
9	Fluorescent retinal scanner	Máy chụp võng mạc huỳnh quang	1	12,000	12,000	1,026,000
10	Laser apparatus CO2	Máy Laze CO2	1	15,000	15,000	1,282,500
11	Laser angiography	Máy Laze nội mạch	1	18,000	18,000	1,539,000
12	Drug decantation apparatus	Máy sắc thuốc đóng túi	1	14,000	14,000	1,197,000
	<b>Examination Department</b>	<b>Khoa khám bệnh</b>			0	0
13	Auto refractometer	Máy đo khúc xạ tự động	1	30,000	30,000	2,565,000
14	Black-white ultrasonic apparatus	Máy siêu âm đen trắng	1	25,000	25,000	2,137,500
15	Color ultrasound apparatus	Siêu âm màu	1	60,000	60,000	5,130,000
	<b>Lithotripter and other Services</b>	<b>Tán sỏi ngoài cơ thể và các dịch vụ khác</b>			0	0
16	Lithotripter system	Máy tán sỏi ngoài cơ thể	1	180,000	180,000	15,390,000
17	Orthopedic table	Bàn chỉnh hình kéo nắn bó bột	1	45,000	45,000	3,847,500
18	Colposcope instruments set	Bộ dụng cụ soi cổ tử cung	1	90,000	90,000	7,695,000

**NAME OF HOSPITAL: Son Tay Inter-District General Hospital**

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
<b>LCB-1</b>		<b>LCB-1</b>			<b>985,000</b>	<b>84,217,500</b>
<b>Department of Operating an</b>		<b>Khoa Phẫu thuật - GMHS</b>				
1	Operating table	Bàn mổ	2	28,000	56,000	4,788,000
2	Operating table for neuro surgery	Bàn phẫu thuật thần kinh	1	50,000	50,000	4,275,000
3	Laparoscope machine	Hệ thống phẫu thuật nội soi	1	100,000	100,000	8,550,000
4	Electro surgical unit	Dao mổ điện	2	15,000	30,000	2,565,000
5	Anesthesia machine with built-in ventilator	Máy gây mê kèm thở	2	35,000	70,000	5,985,000
6	Ceiling operation light with 2-3 reflectors	Đèn mổ treo trần 2-3 chóa	2	28,000	56,000	4,788,000
7	Urology surgical laparoscopic system	Bộ phẫu thuật nội soi tiết niệu	1	90,000	90,000	7,695,000
8	Ophthalmological microscope	Sinh hiển vi phẫu thuật mắt	1	60,000	60,000	5,130,000
9	Mutli-functional driller	Máy khoan đa năng	1	30,000	30,000	2,565,000
10	Skull surgical instrument set	Bộ dụng cụ phẫu thuật sọ não	1	14,000	14,000	1,197,000
11	Urology major surgical instrument set	Bộ dụng cụ đại phẫu tiết niệu ngoại	1	12,000	12,000	1,026,000
12	Thoracic operating instrument set	Bộ dụng cụ phẫu thuật lồng ngực	1	15,000	15,000	1,282,500
13	Spine operating instrument set	Bộ dụng cụ phẫu thuật xương cột sống	1	24,000	24,000	2,052,000
14	Ureteroscope lithotripter instrument set for stone of biliary tract.	Bộ dụng cụ tán sỏi mật nội soi	1	50,000	50,000	4,275,000
15	Ultrasonic surgical unit	Dao mổ điện siêu âm	1	50,000	50,000	4,275,000
16	Phacoemulsification system	Máy mổ mắt Phaco	1	90,000	90,000	7,695,000
17	Endoscopic sinus surgery instrument set	Dụng cụ phẫu thuật nội soi mũi xoang	1	20,000	20,000	1,710,000
18	Operating instrument set for ear	Dụng cụ phẫu thuật tai	1	14,000	14,000	1,197,000
19	Pterygium surgical instrument set	Bộ phẫu thuật mổ màng ghép	2	12,000	24,000	2,052,000
<b>X-ray Scanning</b>		<b>X-quang</b>			0	0
20	General X-ray system	Máy X-quang tổng hợp	1	40,000	40,000	3,420,000
21	X-ray mammographic apparatus	Máy chụp nhũ ảnh	1	90,000	90,000	7,695,000
<b>LCB-2</b>		<b>LCB-2</b>			<b>1,198,000</b>	<b>102,429,000</b>
<b>Intesive Care Unit</b>		<b>Hội sức cấp cứu</b>				
1	Hemodialysis machine with water purification system for 10 (including reprocessing water)	Máy chạy thận nhân tạo (bao gồm hệ thống xử lý nước)	5	20,000	100,000	8,550,000
<b>General Emergency</b>		<b>Cấp cứu tổng hợp</b>				
2	White-black ultrasound apparatus	Máy siêu âm đen trắng	1	25,000	25,000	2,137,500
3	Ventilator	Máy thở	2	25,000	50,000	4,275,000
4	Blood gas analyzer	Máy xét nghiệm khí máu	1	12,000	12,000	1,026,000
<b>Functional Diagnostic</b>		<b>Thăm dò chức năng</b>			0	0
5	4D color ultrasound	Máy siêu âm màu 4D	1	80,000	80,000	6,840,000

6	Digestive endoscope with video system (for colon)	Hệ thống nội soi tiêu hóa VIDEO ( đại tràng)	1	70,000	70,000	5,985,000
7	Digestive endoscope with video system (for gastro)	Hệ thống nội soi tiêu hóa VIDEO ( dạ dày)	1	80,000	80,000	6,840,000
8	Bronchofiberscope	Máy nội soi phế quản	1	80,000	80,000	6,840,000
9	Cardiac holter	Holter tim mạch	1	38,000	38,000	3,249,000
10	Cystoscope	Máy nội soi bàng quang	1	80,000	80,000	6,840,000
11	Proctor Fiberscope	Máy nội soi trực tràng ống cứng	1	50,000	50,000	4,275,000
12	Electroencephalograph	Máy điện não	1	30,000	30,000	2,565,000
13	ECG for stress testing	Máy điện tim gắng sức	1	55,000	55,000	4,702,500
14	Endoscope disinfection cabinet	Tủ bảo quản ống nội soi	1	20,000	20,000	1,710,000
	<b>Internal Medicine and Infectious Disease</b>	<b>Nội khoa và truyền nhiễm</b>				
15	Defibrillator	Máy sốc điện	1	15,000	15,000	1,282,500
	<b>Examination</b>	<b>Khoa khám bệnh</b>				
16	Colour ultrasound apparatus, 2D	Siêu âm màu 2D	1	45,000	45,000	3,847,500
	<b>Department of Laboratory and Diagnostic Imaging</b>	<b>Xét nghiệm, CLS- GPB</b>				
17	Centrifuge 2 x 24 holes, 2 x 32 holes, min. 4000rpm	Máy li tâm	2	12,000	24,000	2,052,000
18	Binocular microscope with camera	Kính hiển vi 2 mắt có camera	1	12,000	12,000	1,026,000
19	Freezer -34°C, 160 liters	Tủ lạnh sâu (âm 34 độ), 160L	2	15,000	30,000	2,565,000
20	Thermocycler PCR	Máy luân nhiệt PCR	1	16,000	16,000	1,368,000
21	Blood culture system	Máy cấy máu	1	30,000	30,000	2,565,000
22	Antibiogram reading apparatus	Máy đọc kháng sinh đồ	1	18,000	18,000	1,539,000
23	Hemoglobin electrophoresis	Máy điện di thành phần huyết sắc tố	1	28,000	28,000	2,394,000
24	Elisa system	Dàn Eliza	1	35,000	35,000	2,992,500
25	Toxic gas and vapor flow hood	Tủ hút khí giải phẫu bệnh	1	15,000	15,000	1,282,500
26	Frozen microtome	Máy cắt lát vi thể đông lạnh	1	35,000	35,000	2,992,500
	<b>Infection Control Department</b>	<b>Chống nhiễm khuẩn</b>				
27	Washing machine, 45kg	Máy giặt 45kg	1	35,000	35,000	2,992,500
28	Autoclave, 300liters, 2 doors	Nồi hấp tiệt trùng 300L, 2 cửa	1	65,000	65,000	5,557,500
29	Roller press for sheets	Máy là ga giường	1	25,000	25,000	2,137,500
	<b>LCB-3</b>	<b>LCB-3</b>			<b>835,000</b>	<b>71,392,500</b>
	<b>Pediatrics</b>	<b>Khoa Nhi</b>				
1	Infant incubator	Lồng ấp trẻ sơ sinh	3	15,000	45,000	3,847,500
	<b>Physiotherapy - Rehabilitation</b>	<b>Vật lý trị liệu - PHCN</b>				
2	Electric traction	Máy kéo dẫn cột sống cổ	1	15,000	15,000	1,282,500
3	Therapy apparatus for injury rehabilitation	Máy điều trị phục hồi chấn thương	1	15,000	15,000	1,282,500
4	Electro magnetic therapy apparatus	Máy điều trị bằng điện trường cao áp	1	15,000	15,000	1,282,500
5	Psoriasis therapy apparatus	Máy điều trị vẩy nến	1	12,000	12,000	1,026,000
6	Microwave therapy apparatus	Máy điều trị vi sóng	1	18,000	18,000	1,539,000
7	6 channel acupuncture machine with blood probe	Máy châm cứu 6 kênh có đầu dò huyết	1	14,000	14,000	1,197,000
8	Continuous and non-continuous compressor	Máy nén liên tục và ngắt quãng	1	18,000	18,000	1,539,000

9	Thermal therapy apparatus	Máy điều trị nhiệt và dung từ trị liệu	1	22,000	22,000	1,881,000
10	Arthrotomy therapy apparatus for leg	Thiết bị tập khớp chi dưới	1	20,000	20,000	1,710,000
11	Arthrotomy therapy apparatus for arm	Thiết bị tập khớp chi trên	1	15,000	15,000	1,282,500
12	Electrolysis, electrotherapy apparatus	Máy điều trị điện xung, điện phân	1	15,000	15,000	1,282,500
	<b>Specialized Departments and</b>	<b>Các chuyên khoa và Dược</b>				
13	ENT examination chair and table	Ghế khám TMH + Bàn khám TMH	1	25,000	25,000	2,137,500
14	Dental examination chair	Ghế máy nha khoa	1	20,000	20,000	1,710,000
15	Ophthalmic examining microscope	Sinh hiển vi khám mắt	1	65,000	65,000	5,557,500
16	ENT endoscope	Máy khám nội soi TMH	1	50,000	50,000	4,275,000
17	Electrosurgery unit	Máy đốt điện	1	15,000	15,000	1,282,500
18	Synoptophore	Máy đo độ lác	1	12,000	12,000	1,026,000
19	Fluorescent retinal scanner	Máy chụp võng mạc huỳnh quang	1	18,000	18,000	1,539,000
20	Autorefractometer	Máy đo khúc xạ tự động	1	30,000	30,000	2,565,000
	<b>Lithotripter and Other Serv</b>	<b>Tán sỏi ngoài cơ thể và các dịch vụ khác</b>				
21	Knife for gypsum bundle cleaned by vacuum	Dao cắt bột làm sạch bằng chân không	1	24,000	24,000	2,052,000
22	Lithotripter system	Máy tán sỏi ngoài cơ thể	1	180,000	180,000	15,390,000
23	Dilator of different type	Bộ nong niệu đạo các cỡ	1			
24	Orthopedic table	Bàn chỉnh hình kéo nắn bó bột	1	45,000	45,000	3,847,500
25	Colposcope instrument set	Bộ dụng soi cổ tử cung	1	25,000	25,000	2,137,500
26	Tool cabinet for medical equipment repairing	Hộp dụng cụ sửa chữa thiết bị y tế	1	12,000	12,000	1,026,000
	<b>Obstetric Department</b>	<b>Khoa sản</b>				
27	Uterine resectoscope	Máy soi, cắt đốt cổ tử cung	1	90,000	90,000	7,695,000

**NAME OF HOSPITAL: Thai Binh Provincial Pediatric Hospital**

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
	<b>LCB-1</b>	<b>LCB-1</b>			<b>1,085,000</b>	<b>92,767,500</b>
	<b>DEPARTMENT OF IMAGE DIAGNOSTIC</b>	<b>CHẨN ĐOÁN HÌNH ẢNH</b>				
1	Color doppler, cardiology	Siêu âm màu số hóa, doppler	1	70,000	70,000	5,985,000
	<b>OPERATION AND ANESTHESIOLOGY</b>	<b>PHẪU THUẬT-GÂY MÊ HỒI SỨC</b>				
2	Anesthesia apparatus with ventilator	Máy gây mê kèm thở	5	35,000	175,000	14,962,500
3	Electrosurgical unit	Dao mổ điện	5	15,000	75,000	6,412,500
4	Lazer surgical unit (different types)	Dao mổ lazer các loại	2	25,000	50,000	4,275,000
5	Orthopedics operation table	Bàn mổ chấn thương chỉnh hình	2	45,000	90,000	7,695,000
6	Major universal operating table	Bàn mổ vạn năng thủy lực	5	30,000	150,000	12,825,000
7	Major operating instrument set	Bộ đại phẫu	5	12,000	60,000	5,130,000
8	Ophthalmology surgical instrument set	Bộ dụng cụ phẫu thuật mắt	2	15,000	30,000	2,565,000
9	Cardiovascular surgical instrument set	Bộ dụng cụ phẫu thuật tim mạch	2	30,000	60,000	5,130,000
10	Urinary surgical instrument set	Bộ dụng cụ phẫu thuật tiết niệu	2	12,000	24,000	2,052,000
11	Orthopedics surgical instrument set	Bộ dụng cụ phẫu thuật chấn thương chỉnh hình	2	20,000	40,000	3,420,000
12	Thoracic surgical instrument set	Bộ dụng cụ phẫu thuật lồng ngực	2	18,000	36,000	3,078,000
13	Nervous-brain surgical instrument set	Bộ dụng cụ phẫu thuật thần kinh sọ não	2	30,000	60,000	5,130,000
	<b>DEPARTMENT OF HEMATOLOGY, BIO CHEMISTRY, MICROBIOLOGY AND PATHOLOGY</b>	<b>HUYẾT HỌC, HÓA SINH, VI SINH, GIẢI PHẪU BỆNH</b>				
14	Elisa system	Hệ thống Eliza	1	35,000	35,000	2,992,500
15	Antibiogram and identification of bacteria	Máy định danh vi khuẩn và làm kháng sinh đồ	1	90,000	90,000	7,695,000
16	Tissue microscope	Kính hiển vi mô tự động	1	12,000	12,000	1,026,000
17	Frozen microtome	Máy cắt lát vi thể đông lạnh	1	28,000	28,000	2,394,000
	<b>LCB-2</b>	<b>LCB-2</b>			<b>752,000</b>	<b>64,296,000</b>
	<b>DEPT OF FUNCTIONAL INVESTIGATION AND ENDOSCOPY</b>	<b>THĂM DÒ CHỨC NĂNG VÀ NỘI SOI</b>				
1	Rheography	Máy đo lưu huyết não	1	34,000	34,000	2,907,000
2	Colonofiberscope and gastrofiberscope	Bộ nội soi tiêu hóa	1	120,000	120,000	10,260,000
3	Cystoscope	Nội soi bàng quang	1	80,000	80,000	6,840,000
	<b>ICU AND NEONATOLOGY</b>	<b>HỒI SỨC CẤP CỨU VÀ SƠ SINH</b>				
4	Bilirubin analyzer	Máy đo bilirubin qua da	2	10,000	20,000	1,710,000
5	Infant incubator	Lồng ấp trẻ sơ sinh	6	15,000	90,000	7,695,000
6	Multi-functional bed for neonatology	Giường sơ sinh đa năng	3	10,000	30,000	2,565,000



	<b>SPECIALIZED DEPARTMENTS</b>	<b>CÁC CHUYÊN KHOA</b>				
7	AB echo scanner	Máy siêu âm mắt	1	25,000	25,000	2,137,500
8	Autorefractometer	Máy đo khúc xạ tự động	1	18,000	18,000	1,539,000
9	ENT endoscope	Máy nội soi TMH	1	100,000	100,000	8,550,000
10	Dental chair unit	Ghế máy răng	2	16,000	32,000	2,736,000
11	Dental X-ray	Máy X-quang răng	1	25,000	25,000	2,137,500
	<b>INFECTION CONTROL DEPT</b>	<b>CHỐNG NHIỄM KHUẨN</b>				
12	Autoclave 300-500 liter	Nồi hấp tiệt trùng 300-500L	2	40,000	80,000	6,840,000
13	Washing machine 50 kg	Máy giặt 50 kg	2	35,000	70,000	5,985,000
14	Cloth dryer 50 kg	Máy sấy đồ vải 50kg	1	28,000	28,000	2,394,000

NAME OF HOSPITAL: Nam Dinh Provincial OB/Gy Hospital

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
<b>LCB-1</b>			<b>LCB-1</b>		<b>1,033,000</b>	<b>88,321,500</b>
<b>Department of Obstetric assistance</b>		<b>Khoa hỗ trợ sinh sản</b>				
1	Ultrasonic apparatus with vagina probe	Máy siêu âm có đầu dò âm đạo	2	32,000	64,000	5,472,000
2	Deep freezer, -80 degree-C, 160 liters	Tủ lạnh âm sâu, -80 độ, 160L	2	20,000	40,000	3,420,000
3	Embryo freezing Planner system	Hệ thống Planner đông phôi	2	30,000	60,000	5,130,000
4	Sperm testing system	Hệ thống xét nghiệm tinh dịch	1	20,000	20,000	1,710,000
5	Inverted microscope	Kính hiển vi soi ngược	2	20,000	40,000	3,420,000
6	Autoclave, 100 liters	Nồi hấp tiệt trùng, 100L	2	12,000	24,000	2,052,000
<b>Department of Obstetrics</b>		<b>Khoa sản</b>				
7	Obstetrics monitor	Monitor theo dõi sản khoa	5	10,000	50,000	4,275,000
<b>Department of surgery and intensive care unit</b>		<b>Khoa mổ + Hồi sức cấp cứu</b>				
8	Anesthesia apparatus with ventilator	Máy gây mê kèm thở	5	35,000	175,000	14,962,500
9	Ceiling operating lamp	Đèn mổ treo trần	5	22,000	110,000	9,405,000
10	Automatic sterilization hand washing system (for 2 persons)	Hệ thống rửa tay tiệt trùng tự động (2 người)	3	15,000	45,000	3,847,500
11	Operating table	Bàn mổ	5	25,000	125,000	10,687,500
12	Uterine cutting instrument set through vagina	Bộ cắt tử cung theo âm đạo	3	20,000	60,000	5,130,000
13	Laparoscope	Máy mổ nội soi	1	100,000	100,000	8,550,000
14	Bipolar electrosurgical unit	Dao mổ điện loại lưỡng cực	5	15,000	75,000	6,412,500
15	Uterine cutting instrument set through abdominal	Bộ cắt tử cung theo đường bụng	3	15,000	45,000	3,847,500
<b>LCB-2</b>			<b>LCB-2</b>		<b>1,534,000</b>	<b>131,157,000</b>
<b>Examination and Gynecology department</b>		<b>Khoa khám bệnh + Phụ khoa</b>				
1	Lazer CO2 (30w)	Máy Laze CO2 (30w)	2	15,000	30,000	2,565,000
2	Colposcope with printer	Máy soi cổ tử cung (có in ra kết quả)	1	25,000	25,000	2,137,500
3	Resectoscope	Máy đốt cổ tử cung bằng điện	1	80,000	80,000	6,840,000
4	Cold Nitrogen machine	Máy Nitơ lạnh	1	30,000	30,000	2,565,000
<b>Department of Neonatology</b>		<b>Khoa sơ sinh</b>				
5	Infant incubator	Lồng ấp trẻ sơ sinh	10	15,000	150,000	12,825,000
<b>Department of Delivery</b>		<b>Khoa đẻ</b>				
6	Delivery table	Bàn đẻ	10	15,000	150,000	12,825,000
7	Automatic sterilized hand-washing system for 2 people	Hệ thống rửa tay tiệt trùng tự động (2 người)	2	10,000	20,000	1,710,000
<b>Department of Imaging Diagnostics</b>		<b>Khoa Chẩn đoán hình ảnh</b>				
8	X-ray mammography apparatus 110mA	M á y X-quang chụp vú 110mA	1	90,000	90,000	7,695,000
9	Radiographic and Fluoroscopic TV X-ray system	M á y X-quang t ả ng s á ng truyền hình	1	90,000	90,000	7,695,000

10	Black-white ultrasonic apparatus with trolley	Máy siêu âm đen trắng có xe đẩy	2	25,000	50,000	4,275,000
11	4D ultrasonic apparatus	Siêu âm màu 4D	1	80,000	80,000	6,840,000
	<b>Department of Pathology and Laboratory</b>	<b>Khoa xét nghiệm và giải phẫu bệnh</b>				
12	Microtome	Máy cắt lát vi thể	1	14,000	14,000	1,197,000
13	Eliza system	Dàn Eliza	1	35,000	35,000	2,992,500
14	Aggregameter	Máy đo độ tập trung tiểu cầu (máy kết dính tiểu cầu)	1	15,000	15,000	1,282,500
15	$\beta$ HCG apparatus	Máy định lượng $\beta$ HCG	1	12,000	12,000	1,026,000
16	Automatic instrument washer	Máy rửa dụng cụ tự động	1	15,000	15,000	1,282,500
17	Safety cabinet, Class IIB	Tủ an toàn sinh học, 2B	1	12,000	12,000	1,026,000
18	Blood gas analyzer	Máy phân tích khí máu	1	12,000	12,000	1,026,000
19	Frozen microtome	Máy cắt lạnh	1	28,000	28,000	2,394,000
20	Automatic blood coagulation apparatus	Máy đo độ đông máu tự động	1	30,000	30,000	2,565,000
21	Electrolyte analyzer	Máy đo điện giải đồ dùng điện cực chọn lọc	1	12,000	12,000	1,026,000
22	Anti-biogram and identification apparatus	Máy định danh vi khuẩn và làm kháng sinh đồ	1	90,000	90,000	7,695,000
	<b>Department of Infection Control</b>	<b>Khoa chống nhiễm khuẩn</b>				
23	Autoclave with high pressure 300l	Nồi hấp tiệt trùng áp lực cao 300L	1	75,000	75,000	6,412,500
24	Autoclave, 100l	Nồi hấp tiệt trùng loại 100L	2	12,000	24,000	2,052,000
25	Washing, dressing squeeze machine, 55kg	Máy giặt, vắt đồ vải loại 55kg	2	40,000	80,000	6,840,000
26	Washing, dressing squeeze machine, 23kg	Máy giặt, vắt đồ vải loại 23kg	1	25,000	25,000	2,137,500
27	Roller press for bed cover	Máy là ga giường	1	25,000	25,000	2,137,500
28	Iron machine, compressing type	Máy là ép quần áo bệnh nhân	1	20,000	20,000	1,710,000
29	Dressing dryer, 23kg	Máy sấy đồ vải loại 23kg	2	15,000	30,000	2,565,000
30	Dressing dryer, >50kg	Máy sấy đồ vải loại > 50kg	1	25,000	25,000	2,137,500
31	Low temperature sterilizer by plasma 1001	Thiết bị tiệt trùng nhiệt độ thấp bằng Plasma 1001	1	100,000	100,000	8,550,000
	<b>General equipment for the hospital</b>	<b>Thiết bị chung cho bệnh viện</b>				
32	Automatic instrument washing machine	Máy rửa dụng cụ tự động	2	30,000	60,000	5,130,000

**NAME OF HOSPITAL: Nghe An Provincial Pediatric Hospital**

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
	<b>LCB-1</b>	<b>LCB-1</b>			<b>1,532,000</b>	<b>130,986,000</b>
	<b>DEPT OF OPERATION AND ANESTHESIA</b>	<b>KHOA PHẪU THUẬT GÂY MÊ HỒI SỨC</b>				
	<b>GENERAL EQUIPMENT FOR ANESTHESIA AND RESUSCITATION</b>	<b>DỤNG CỤ GÂY MÊ-HỒI SỨC</b>				
1	Anesthesia apparatus with ventilator for children and new-borns	Máy Gây mê cộng thở cho trẻ em và trẻ sơ sinh (có module đo tất cả các loại khí mê)	5	45,000	225,000	19,237,500
2	Artificial heart-lung machine	Máy tim phổi nhân tạo	1	160,000	160,000	13,680,000
3	Proctor fiberscope	Máy nội soi trực tràng	1	29,000	29,000	2,479,500
4	Multifunctional ventilator	Máy thở đa chức năng	3	28,000	84,000	7,182,000
5	Ceiling operating lamp with satellite	Đèn mổ treo trần	4	23,000	92,000	7,866,000
6	Ceiling operating lamp with camere	Đèn mổ treo trần với camera	1	28,000	28,000	2,394,000
7	Multifunctional resuscitative bed	Giường hồi sức đa năng	2	18,000	36,000	3,078,000
8	Hydraulic multifunctional operating table	Bàn mổ đa năng thủy lực	5	30,000	150,000	12,825,000
	<b>SURGICAL EQUIPMENT</b>	<b>THIẾT BỊ PHẪU THUẬT</b>				
9	Operating instrument set for orthopedic	Bộ Dụng cụ phẫu thuật chấn thương chỉnh hình	2	12,000	24,000	2,052,000
10	Brain surgical instrument set includes skull drill and saw	Bộ dụng cụ phẫu thuật sọ não gồm khoan, cưa xương sọ	2	18,000	36,000	3,078,000
11	Operating instrument set for gastrectomy	Bộ dụng cụ phẫu thuật hệ tiêu hóa	2	13,000	26,000	2,223,000
12	Thoracic operating instrument set	Bộ dụng cụ phẫu thuật lồng ngực	2	12,000	24,000	2,052,000
13	Endoscopic/laparoscopic surgical system	Hệ thống mổ nội soi	1	100,000	100,000	8,550,000
14	Cardiology surgery instrument set	Bộ dụng cụ phẫu thuật tim	2	24,000	48,000	4,104,000
15	Cardio-vascular operating instrument set	Bộ dụng cụ phẫu thuật tim mạch	2	25,000	50,000	4,275,000
16	Endoscopic/laparoscopic surgery instrument set (for urology, digestion, ENT)	Bộ dụng cụ mổ nội soi theo chuyên khoa (Tiết niệu, Tiêu hóa, Tai mũi họng)	1	100,000	100,000	8,550,000
17	Cardio-vascular operating instrument set	Bộ dụng cụ phẫu thuật tim mạch	2	25,000	50,000	4,275,000
18	Ultrasonic scalpel	Dao mổ siêu âm	1	50,000	50,000	4,275,000
19	Ultrasonic lithotripter	Máy tán sỏi siêu âm	1	50,000	50,000	4,275,000
20	Endoscopic system for intervening bladder and ureter for children	Bộ nội soi can thiệp bàng quang, niệu quản ống mềm trẻ em	1	140,000	140,000	11,970,000
21	Electric high-frequency surgical unit	Dao mổ điện cao tần	2	15,000	30,000	2,565,000
	<b>LCB-2</b>	<b>LCB-2</b>			<b>1,176,000</b>	<b>100,548,000</b>
	<b>INSTRUMENT SET FOR ENT, OPHTHALMOLOGY,</b>	<b>DỤNG CỤ PHẪU THUẬT 3CK (MẮT - RHM - TMH)</b>				

1	Phacoemulsification with vitrectomy function	Bộ PT mắt PHACO Kèm đầu cắt dịch kính	1	80,000	80,000	6,840,000
2	Ophthalmologic operating microscope	Sinh hiển vi phẫu thuật mắt	1	65,000	65,000	5,557,500
3	Bronchoscope	Bộ nội soi mềm thanh khí phế quản (gồm máy, ống soi mềm)	1	80,000	80,000	6,840,000
4	Larynx microsurgery instrument set	Bộ vi phẫu thanh quản	1	14,000	14,000	1,197,000
5	Orthodontics operating instrument set	Bộ phẫu thuật tạo hình hàm mặt	2	15,000	30,000	2,565,000
6	Amydal removing instrument set	Bộ dụng cụ phẫu thuật cắt Amidal	2	13,000	26,000	2,223,000
7	Bronchial endoscopic instrument set	Bộ dụng cụ nội soi khí/phế quản	2	15,000	30,000	2,565,000
8	Ear drilling machine	Máy khoan tai xương chũm	1	30,000	30,000	2,565,000
9	Microsurgical microscope for ear	Kính vi phẫu tai	1	65,000	65,000	5,557,500
	<b>DEPT OF NEUROLOGY AND REHABILITATION</b>	<b>KHOA THẦN KINH VÀ PHỤC HỒI CHỨC NĂNG</b>				
10	Electro magnetic therapy apparatus	Máy điện từ điều trị	1	15,000	15,000	1,282,500
11	General rehabilitation therapy system for limbs	Hệ điều trị phục hồi tổng quát chi	1	12,000	12,000	1,026,000
12	General rehabilitation therapy system for paralytics	Hệ điều trị phục hồi tổng quát liệt	1	15,000	15,000	1,282,500
13	Multifunctional rehabilitation exercise system for brain, hemiplegic patients	Hệ thống dàn tập đa năng, phục hồi liệt nửa người, não	1	25,000	25,000	2,137,500
14	Short-wave therapy apparatus	Máy sóng ngắn điều trị	1	18,000	18,000	1,539,000
15	Spinal traction	Máy kéo nắn cột sống	1	15,000	15,000	1,282,500
16	Exercise system and toys for treatment for children	Hệ thống tập và đồ chơi phục vụ chữa bệnh cho TE	1	15,000	15,000	1,282,500
17	Electromyograph	Máy điện cơ đồ	1	35,000	35,000	2,992,500
18	EEG	Máy điện não đồ vi tính	1	30,000	30,000	2,565,000
	<b>DEPT OF DIGESTION</b>	<b>KHOA TIÊU HÓA</b>				
20	Proctor fiberscope	Máy nội soi trực tràng	1	40,000	40,000	3,420,000
	<b>DEPT OF ENT, OPHAMOLGY, MAXILLO-FACIAL</b>	<b>KHOA 3CK (MẮT - TMH - RHM)</b>				
21	Impedance audiometer	Máy đo nhĩ lượng	1	14,000	14,000	1,197,000
22	ENT multifunctional examining table	Bàn khám đa năng Tai mũi họng	2	16,000	32,000	2,736,000
23	Refractometer	Máy đo khúc xạ mắt (refractometer)	1	30,000	30,000	2,565,000
24	Chart Projector	Máy chiếu thử thị lực (Chart Projector)	1	25,000	25,000	2,137,500
25	Synoptophore	Máy tập nhược thị (Synoptophore)	1	12,000	12,000	1,026,000
26	Composite sticks for shape-making	Bộ que tạo hình Composite	1	14,000	14,000	1,197,000
27	Dental chair unit	Ghế nha khoa	2	20,000	40,000	3,420,000
	<b>ICU</b>	<b>ICU</b>				
28	Emergency warming bed for infants	Giường cấp cứu sưởi ấm	3	12,000	36,000	3,078,000
29	CRRT	Máy siêu lọc máu liên tục	1	50,000	50,000	4,275,000
30	Portable color ultrasonic apparatus	Siêu âm màu xách tay để khám S.A tại giường bệnh	1	24,000	24,000	2,052,000

31	Blood gas analyzer	Máy đo khí máu	1	12,000	12,000	1,026,000
32	Mobile X-ray apparatus at bed	Máy chụp X quang tại giường	1	25,000	25,000	2,137,500
	<b>DEPT OF NEONATAL INTENSIVE CARE - DISEASE</b>	<b>KHOA HỒI SỨC SỐ SINH - BỆNH LÝ SỐ SINH</b>				
33	Infant incubator	Lồng ấp	10	15,000	150,000	12,825,000
34	Both side phototherapy lamp	Đèn điều trị vàng da 2 mặt	5	12,000	60,000	5,130,000
35	Blood gas analyzer	Máy đo khí máu	1	12,000	12,000	1,026,000
	<b>LCB-3</b>	<b>LCB-3</b>			<b>1,225,000</b>	<b>104,737,500</b>
	<b>DEPT OF CARDIOLOGY</b>	<b>KHOA TIM MẠCH - ĐƠN VỊ TIM BẨM SINH</b>				
1	C-arm X-ray with DSA function	Máy X quang C-arm chụp mạch	1	120,000	120,000	10,260,000
2	Color ultrasonic apparatus for cardiology	Máy siêu âm màu chuyên tim	1	80,000	80,000	6,840,000
3	Blood gas analyzer	Máy phân tích khí máu	1	12,000	12,000	1,026,000
4	Infant incubator	Lồng ấp trẻ sơ sinh	3	15,000	45,000	3,847,500
5	Defibrillator	Máy sốc điện	1	15,000	15,000	1,282,500
	<b>DEPT OF IMAGING DIAGNOSTIC</b>	<b>KHOA CHẨN ĐOÁN HÌNH ẢNH</b>				
6	CT scanner, 16 slices	Máy chụp cắt lớp vi tính 16 dãy	1	500,000	500,000	42,750,000
7	General radiographic, high frequency digital X-ray machine	Máy Xquang thường quy, cao tần số hóa	1	45,000	45,000	3,847,500
8	Gastro and duodo video endoscope for children	Hệ thống nội soi tiêu hóa trẻ em	1	120,000	120,000	10,260,000
9	Digital X-ray CR 4 terminals	Hệ thống X Quang số hóa CR 4 cổng	1	130,000	130,000	11,115,000
10	Cardio-vascular color ultrasonic apparatus with 4 probes (with oesophagus probe)	Máy siêu âm tim màu 4 đầu dò (có đầu dò thực quản)	1	140,000	140,000	11,970,000
	<b>DEPT OF ORTHOPEDICS SURGERY</b>	<b>KHOA NGOẠI CHẨN THƯƠNG</b>				
11	Multifunctional table for orthopedics	Bàn mổ chấn thương chỉnh hình đa năng	1	18,000	18,000	1,539,000
	<b>LCB-4</b>				<b>905,000</b>	<b>77,377,500</b>
	<b>DEPT OF HEMATOLOGY AND BLOOD TRANSFUSION</b>	<b>KHOA HUYẾT HỌC VÀ TRUYỀN MÁU</b>				
1	Automatic blood coagulator apparatus	Máy xét nghiệm đông máu tự động	1	30,000	30,000	2,565,000
2	PCR system and real time PCR	Hệ thống PCR và PCR định lượng	1	65,000	65,000	5,557,500
3	Cold centrifuge	Máy li tâm lạnh	1	14,000	14,000	1,197,000
4	Hemolytic apparatus (for separating blood tissue)	Máy hemolytic (Tách tế bào máu)	1	14,000	14,000	1,197,000
5	Flourescent microscope	Kính hiển vi huỳnh quang	1	15,000	15,000	1,282,500
6	Automatic blood grouping analyzer	Máy định danh nhóm máu	1	28,000	28,000	2,394,000
	<b>DEPT OF BIOCHEMISTRY AND</b>	<b>KHOA SINH HÓA VÀ VI SINH</b>				
7	Automatic Eliza system with autmatic plate washer	Máy Eliza	1	35,000	35,000	2,992,500

8	Electrophoresis apparatus for HBA1C	Máy điện di phân tích HBA1C	1	10,000	10,000	855,000
9	Electrophoresis apparatus for protein	Máy điện di protein	1	12,000	12,000	1,026,000
10	Antibiogram and identification of bacteria machine	Máy định danh vi khuẩn (và 1 àm kháng sinh đồ)	1	90,000	90,000	7,695,000
11	Machine for identification of virus	Máy định dạng virus	1	26,000	26,000	2,223,000
12	Automated blood culture machine	Máy cấy máu tự động	1	30,000	30,000	2,565,000
13	Biology safety cabinet	Tủ hoot	1	12,000	12,000	1,026,000
	<b>DEPT OF PATHOLOGY</b>	<b>KHOA GIẢI PHẪU VI</b>				
14	Frozen microtome	Máy cắt lạnh	1	35,000	35,000	2,992,500
15	Fume hood	Hệ thống hút khí độc	1	12,000	12,000	1,026,000
16	Binocular microscope with camera	Kính hiển vi hai mắt gắn với chụp ảnh	2	12,000	24,000	2,052,000
	<b>DEPT OF INFECTION CONTROL</b>	<b>KHOA CHỐNG NHIỄM KHUẨN</b>				
17	Washing machine 30kg	Máy giặt 30kg	2	30,000	60,000	5,130,000
18	Drying machine 30kg	Máy sấy 30kg	2	24,000	48,000	4,104,000
19	Iron machine for sheets, 2m	Máy là đồ vải dài 2m	1	30,000	30,000	2,565,000
20	Autoclave 300L (clothes, metal, glass)	Máy hấp sấy tiệt trùng 300L (đồ vải, kim loại, thủy tinh)	2	54,000	108,000	9,234,000
21	Ultrasonic instrument washer, 80 liters	Máy rửa dụng cụ bằng sóng siêu âm, 80L	1	12,000	12,000	1,026,000
22	Low-temperature instrument dryer, 100 liters	Máy sấy dụng cụ tiệt trùng kém chịu nhiệt	1	100,000	100,000	8,550,000
23	General instrument washer	Máy rửa dụng cụ thông dụng	1	30,000	30,000	2,565,000
24	Endoscopy washer	Máy rửa ống nội soi	1	45,000	45,000	3,847,500
25	Endoscopy cabinet with UV light	Tủ bảo quản ống nội soi	1	20,000	20,000	1,710,000

NAME OF HOSPITAL: C Da Nang Central General Hospital

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
	<b>LCB-1</b>	<b>LCB-1</b>			<b>2,039,000</b>	<b>174,334,500</b>
	<b>Operating and Anesthesia</b>	<b>Phẫu thuật - GMHS</b>				
1	Anesthesia apparatus with ventilator	Máy gây mê kèm thở	5	35,000	175,000	14,962,500
2	Laryngoscope holder and chest support, micro-operating instrument	Bộ soi treo và vi phẫu thanh quản	1	30,000	30,000	2,565,000
3	<b>Surgery Dept</b>	<b>Khoa ngoại</b>				
4	Neurogy surgical microscope	Sinh hiển vi phẫu thuật thần kinh	1	100,000	100,000	8,550,000
5	OT table for ophopedics	Bàn mổ chân thương chỉnh hình	1	45,000	45,000	3,847,500
6	OT table for neurology	Bàn mổ thần kinh	1	40,000	40,000	3,420,000
7	OT table for C-arm	Bàn mổ C-arm	1	30,000	30,000	2,565,000
8	General OT table	Bàn mổ thông thường	5	25,000	125,000	10,687,500
9	Urology endoscopic lithotripter	Tán sỏi nội soi tiết niệu	1	150,000	150,000	12,825,000
10	Lithotripter, X-ray system, ultrasound, ECG monitor	Tán sỏi, dùng sóng X-quang, siêu âm và ECG monitor	1	150,000	150,000	12,825,000
	<b>Intensive care and Operatin</b>	<b>ICU</b>				
11	Central Monitor (one main monitor and 20 supplementary ones)	Hệ thống monitor (1 máy chính và 20 máy phụ)	1	120,000	120,000	10,260,000
	<b>Otorhinolaryngology (ENT)</b>	<b>TMH</b>				
12	ENT endoscope system	Hệ thống nội soi chẩn đoán TMH	1	100,000	100,000	8,550,000
	<b>Ophthalmology</b>	<b>Mắt</b>				
13	Fundus camera	Hệ thống chụp đáy mắt	1	60,000	60,000	5,130,000
14	System of postserius segment	Hệ thống chụp bán phần sau	1	60,000	60,000	5,130,000
15	Ophthalmic operation microscope	Sinh hiển vi phẫu thuật mắt	2	35,000	70,000	5,985,000
16	OCT (Optical Coherence tomography machine	Máy chụp cắt lớp võng mạc	2	70,000	140,000	11,970,000
17	Phaco	Hệ thống phẫu thuật Phaco	1	60,000	60,000	5,130,000
	<b>Infection Control</b>	<b>Chống nhiễm khuẩn</b>				
18	Low temparature sterilizer > 130 litres	Máy tiệt khuẩn nhiệt độ thấp	1	100,000	100,000	8,550,000
19	Steam sterilizer >=250 liters	Máy hấp ướt 2 cửa >= 250 lít	2	65,000	130,000	11,115,000
20	Ultrasonic cleaner > 40 liters	Máy rửa dụng cụ kim loại bằng sóng siêu âm > 42 lít	2	30,000	60,000	5,130,000
21	Washing machine for endoscopic/laparoscopic instrument	Máy rửa dụng cụ nội soi	2	45,000	90,000	7,695,000
22	Industrial washing machine >= 60kg	Máy giặt công nghiệp >=60kg	2	50,000	100,000	8,550,000
23	Clothing ironing-compressing machine	Máy là ép đồ vải	2	20,000	40,000	3,420,000
24	Clothing dryer, 35kg	Máy sấy đồ vải, 35kg	2	20,000	40,000	3,420,000
25	Sterile drier	Máy sấy dụng cụ và ống thở	2	12,000	24,000	2,052,000
	<b>LCB-2</b>	<b>LCB-2</b>			<b>1,252,000</b>	<b>107,046,000</b>
	<b>Pathology</b>	<b>Giải phẫu bệnh</b>				
1	Embedding center	Máy đúc bệnh phẩm	1	20,000	20,000	1,710,000
2	Telepathology microscope with camera, 3-head type	Kính hiển vi telepathology	1	30,000	30,000	2,565,000
3	Frozen microtome	Máy cắt lát vi thể đông lạnh	1	28,000	28,000	2,394,000



4	Tissue processor	Máy xử lý mô	1	28,000	28,000	2,394,000
5	Microtome	Máy cắt lát vi thể	1	12,000	12,000	1,026,000
6	Auto immuno histo	Hóa mô miễn dịch	1	80,000	80,000	6,840,000
7	Staining machine	Máy nhuộm bệnh phẩm	1	28,000	28,000	2,394,000
	<b>Biochemistry</b>	<b>Hóa sinh</b>				
8	Automatic immune assay analyzer	Máy phân tích miễn dịch tự động	1	100,000	100,000	8,550,000
9	Automatic biochemistry analyzer, at least 34 parameters	Máy phân tích sinh hóa tự động, ít nhất 34 thông số	1	35,000	35,000	2,992,500
	<b>Microbiology</b>	<b>Vi sinh</b>				
10	Elisa system	Hệ thống Eliza	3	35,000	105,000	8,977,500
11	Automatic blood culture machine	Máy cấy máu tự động	1	30,000	30,000	2,565,000
12	Automatic identification of bacteria....	Máy định danh vi khuẩn và làm kháng sinh đồ	1	90,000	90,000	7,695,000
	<b>Hematology</b>	<b>Huyết học</b>				
13	PCR system	Hệ thống PCR	1	60,000	60,000	5,130,000
14	Automatic blood grouping ana	Máy định nhóm máu	1	38,000	38,000	3,249,000
15	Cytometer	Máy định lượng tế bào ung thư	1	180,000	180,000	15,390,000
16	<b>Surgery</b>	<b>Khoa Phẫu thuật</b>				
17	Arthroscopy machine	Máy bào cắt đốt nội soi khớp	1	20,000	20,000	1,710,000
18	Hamornic (ultrasonic) scalpel	Dao cắt đốt siêu âm	1	50,000	50,000	4,275,000
19	High speed drill system	Hệ thống khoan cao tốc	1	30,000	30,000	2,565,000
	<b>Maxillo-Facial</b>	<b>RHM</b>				
20	Dental treatment chair	Ghế máy nha khoa	3	16,000	48,000	4,104,000
21	Digital Dental X-ray	X-quang răng kỹ thuật số	1	50,000	50,000	4,275,000
22	Panorex machine	Máy chụp toàn cảnh	1	70,000	70,000	5,985,000
23	Panorex machine (dental)	Máy chụp răng toàn cảnh	1	120,000	120,000	10,260,000
	<b>LCB-3</b>	<b>LCB-3</b>			<b>1,790,500</b>	<b>153,087,750</b>
	<b>Oncology</b>	<b>Ung bướu</b>				
1	Mammography X-ray	X-quang chụp vú	1	90,000	90,000	7,695,000
	<b>Imaging Diagnostic</b>	<b>Chẩn đoán hình ảnh</b>				
2	C- arm X-ray system	C-arm	1	70,000	70,000	5,985,000
3	Digital X-ray system	X-quang kỹ thuật số	1	250,000	250,000	21,375,000
	<b>Internal Cardiovascular</b>	<b>Nội tim mạch</b>				
4	Artificial heart-lung machine (Extracorporeal circulation system)	Hệ thống tim phổi máy	1	160,000	160,000	13,680,000
5	Surgical instruments sets for open heart operation	Bộ dụng cụ mổ tim hở	2	40,000	80,000	6,840,000
6	4D, stress testing Ultrasonic Doppler for cardiology, vascular	Máy siêu âm tim mạch 4 chiều	2	120,000	240,000	20,520,000
7	Thread mill	Thảm lăn gắng sức	1	55,000	55,000	4,702,500
	<b>Functional Investigation</b>	<b>Thăm dò chức năng</b>				
8	ERCP (Endoscopic Retrograde Cholangio Pancreatography) System	Hệ thống nội soi chụp mật tụy ngược dòng	1	150,000	150,000	12,825,000
9	EEG (Electroencephalograph) 64	Máy đo điện não đồ 64 kênh	1	35,000	35,000	2,992,500
10	Electromyography (EMG), 32 channels	Máy đo điện cơ, 32 kênh	1	30,000	30,000	2,565,000
11	Rheography	Máy đo lưu huyết não	1	16,500	16,500	1,410,750
	<b>Intensive care and Operatin</b>	<b>ICU</b>				

12	CRRT	CRRT	2	50,000	100,000	8,550,000
13	Dialysis machine with water processing apparatus	Máy chạy thận nhân tạo, hệ thống xử lý nước	10	20,000	200,000	17,100,000
	<b>Urology</b>	<b>Tiết niệu</b>				
14	Urethro-cystoscope	Hệ thống nội soi chẩn đoán tiết niệu	1	150,000	150,000	12,825,000
	<b>Rehabilitation</b>	<b>Phục hồi chức năng</b>				
15	Short-wave therapy apparatus	Máy điều trị sóng ngắn	1	15,000	15,000	1,282,500
16	Therapy ultrasonic apparatus	Máy siêu âm điều trị	1	12,000	12,000	1,026,000
17	Hydro collator	Hệ thống túi âm	1	25,000	25,000	2,137,500
	<b>Stroke Center</b>	<b>Trung tâm đột quỵ</b>				
18	Trans-crado doppler ultrasou	Máy siêu âm xuyên sọ	1	27,000	27,000	2,308,500
19	High pressure oxygen booth	Buồng Oxy cao áp	1	35,000	35,000	2,992,500
20	Evoke potential system (EPS)	Máy điện cơ kích thích tiềm tàng	1	50,000	50,000	4,275,000

**NAME OF HOSPITAL: Binh Dinh Provincial General Hospital**

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
	<b>LCB-1</b>	<b>LCB-1</b>			<b>2,587,000</b>	<b>221,188,500</b>
	<b>Surgery - Burn and Orthopedic</b>	<b>Ngoại bông - chấn thương chỉnh hình</b>				
1	Operating microscope for Trauma - Burn, maxillo-facial-stomatology, ENT	Kính hiển vi phẫu thuật Chấn thương – Bỏng, Răng hàm mặt, Tai mũi họng	1	60,000	60,000	5,130,000
2	Laparoscopic system for joint surgery	Hệ thống phẫu thuật nội soi khớp	1	120,000	120,000	10,260,000
3	C-arm X-ray apparatus	Máy C arm	1	70,000	70,000	5,985,000
4	Multifunctional drilling machine	Máy khoan đa năng	1	60,000	60,000	5,130,000
5	Vibration saw, drill using battery	Cưa rung, khoan chạy pin	1	20,000	20,000	1,710,000
6	Garro (upper limb, lower	Garro ( chi trên, chi dưới)	2	12,000	24,000	2,052,000
7	Major otoosystem	Bộ kết hợp xương đại phẫu	2	16,000	32,000	2,736,000
8	Medium otoosystem	Bộ kết hợp xương trung phẫu	2	16,000	32,000	2,736,000
9	Electromyograph apparatus	Máy điện cơ	1	35,000	35,000	2,992,500
10	Complete supporting instrument set for micro surgery	Bộ trợ cụ vi phẫu thuật (đầy đủ)	1	14,000	14,000	1,197,000
11	Artroscope large pump	Máy bơm hút nội soi khớp vai	1	18,000	18,000	1,539,000
12	Machine for skin extraction and transplantation	Máy lấy da ghép	1	19,000	19,000	1,624,500
13	Treatment system for wound healing (VAC)	Hệ thống điều trị làm lành vết thương	1	16,000	16,000	1,368,000
14	Arthroscopy machine	Máy đốt điện trong nội soi khớp (Arthrocare )	1	20,000	20,000	1,710,000
	<b>Neuro - spinal surgery</b>	<b>Ngoại thần kinh - cột sống</b>			0	0
15	Brain electrophysiological analyzer	Máy điện sinh lý não	1	150,000	150,000	12,825,000
16	Machine for extracting brain tumor by ultrasound	Máy lấy u não qua siêu âm	1	100,000	100,000	8,550,000
17	Operating microscope for neuro surgery	Kính hiển vi phẫu thuật thần kinh	1	100,000	100,000	8,550,000
18	Holter EEG	Holter EEG	1	30,000	30,000	2,565,000
19	<b>Urology surgery</b>	<b>Ngoại tiết niệu</b>				
20	PCNL - percutaneous nephrostolithotomy machine	Máy tán sỏi thận qua da	1	85,000	85,000	7,267,500
21	Cold urethral surgery system (Urethrotomes for adults )	Máy cắt trong niệu đạo	1	32,000	32,000	2,736,000
22	Hydraulic endoscopy lithotriper	Máy tán sỏi nội soi thủy lực	1	45,000	45,000	3,847,500
23	Urology laparoscopy system	Hệ thống phẫu thuật nội soi tiết niệu	1	100,000	100,000	8,550,000
24	Uro dynamic machine	Máy đo các chỉ số niệu học	1	25,000	25,000	2,137,500
	<b>General surgery</b>	<b>Ngoại tổng hợp</b>				
25	Endoscopic/laparoscopic surgery system - scalpel - Lithotripter by ultrasound	Hệ thống phẫu thuật nội soi – Dao cắt siêu âm – Máy tán sỏi mật bằng siêu âm	1	190,000	190,000	16,245,000
	<b>Imaging diagnostic</b>	<b>Chẩn đoán hình ảnh</b>				
26	4D cardiac ultrasonic apparatus	Siêu âm tim 4 chiều	1	120,000	120,000	10,260,000

27	Radiographic and fluoroscopic X-ray TV system	X-quang tăng sáng truyền hình	1	90,000	90,000	7,695,000
<b>Obstetrics (IVF)</b>		<b>Khoa sản - IVF</b>				
28	Ultrasonic apparatus with vagina probe	Máy siêu âm có đầu dò âm đạo	1	30,000	30,000	2,565,000
<b>Hemodialysis</b>		<b>Thận nhân tạo</b>				
29	Hemodialysis machine with water processing unit (for 30 dialysis machine)	Máy thận nhân tạo	20	20,000	400,000	34,200,000
<b>Neonatology</b>		<b>Sơ sinh</b>				
30	Mobile X-ray	Máy x-quang tại giường	1	25,000	25,000	2,137,500
31	Color ultrasonic apparatus	Máy siêu âm màu	1	35,000	35,000	2,992,500
32	Warmer with transluminator	Warmer có trang bị transluminator	5	30,000	150,000	12,825,000
33	Infant incubator	Lồng ấp	10	15,000	150,000	12,825,000
<b>Pediatrics</b>		<b>Nhi Khoa</b>				
34	Portable ultrasound apparatus	Siêu âm xách tay	1	25,000	25,000	2,137,500
35	Continous blood purification apparatus (CRRT)	CRRT- máy lọc máu liên tục	1	65,000	65,000	5,557,500
<b>ICU</b>		<b>ICU</b>				
36	Mobile X-ray	Máy X quang tại giường	1	25,000	25,000	2,137,500
37	Portable ultrasound apparatus	Máy siêu âm tại giường	1	25,000	25,000	2,137,500
38	Continous blood purification apparatus (CRRT)	Máy lọc máu liên tục - CRRT	1	50,000	50,000	4,275,000
<b>LCB-2</b>		<b>LCB-2</b>			<b>1,520,000</b>	<b>129,960,000</b>
<b>Pathology</b>		<b>Giải phẫu bệnh</b>				
1	4- eyepiece microscope	Kính hiển vi 4 mắt	1	12,000	12,000	1,026,000
2	Frozen microtome	Máy cắt lạnh	1	28,000	28,000	2,394,000
3	Automatic tissue processing machine	Máy xử lý mô	1	28,000	28,000	2,394,000
4	Embedding center	Máy đúc bệnh phẩm	1	20,000	20,000	1,710,000
5	Automatic slide staining machine	Máy nhuộm tự động	1	28,000	28,000	2,394,000
6	Microtome	Máy cắt lát vi thể	1	12,000	12,000	1,026,000
7	Auto immuno histo	Hóa mô miễn dịch	1	80,000	80,000	6,840,000
<b>Microbiology</b>		<b>Vi sinh</b>				
8	Machine for identification of bacteria and antibiogram apparatus	Máy định danh vi khuẩn và làm kháng sinh đồ	1	90,000	90,000	7,695,000
9	Karyotype analyzer	Máy phân tích nhiễm sắc thể đồ	1	70,000	70,000	5,985,000
10	Eliza system with plate washer and incubator	Dàn máy Elisa	1	35,000	35,000	2,992,500
11	Safety cabinet, Class IIB	Tủ an toàn sinh học cấp 2 B	2	12,000	24,000	2,052,000
12	Automatic blood culture apparatus	Máy cấy máu tự động	1	30,000	30,000	2,565,000
13	Fluorescence microscope	Kính hiển vi huỳnh quang	1	15,000	15,000	1,282,500
<b>Hematology</b>		<b>Huyết học - truyền máu</b>				
14	Inverted microscope	Kính hiển vi soi ngược	1	15,000	15,000	1,282,500
15	Automatic blood component separation machine	Máy tách thành phần máu tự động	1	23,000	23,000	1,966,500
16	- Cooling program system		1	50,000	50,000	4,275,000
17	- Liquid Nitrogen tank, 200 to 300 liters		1	14,000	14,000	1,197,000

18	- Preservation tank by liquid nitrogen, 200 to 300 liters		1	38,000	38,000	3,249,000
19	Eliza System	Hệ thống Eliza	1	35,000	35,000	2,992,500
20	Automatic blood cell counter, 22 parameters or more	Máy phân tích huyết học tự động, >=22 thông số	1	30,000	30,000	2,565,000
21	Automated blood grouping analyzer	Máy định danh nhóm máu	1	38,000	38,000	3,249,000
	<b>Traditional Medicine</b>	<b>Y học cổ truyền</b>				
22	Automatic drug decantation apparatus	Máy sắc thuốc tự động	1	12,000	12,000	1,026,000
	<b>Functional investigation</b>	<b>Thăm dò chức năng</b>				
23	Electromyograph apparatus (4 channel)	Máy điện cơ (4 kênh)	1	35,000	35,000	2,992,500
24	Metabolic apparatus	Máy đo chuyển hóa cơ bản	1	22,000	22,000	1,881,000
25	Weak bone evaluation apparatus (Bone densitometer)	Máy đo độ loãng xương	1	90,000	90,000	7,695,000
26	ERCP (Endoscopic Retrograde Cholangio Pancreatography)	Máy nội soi chẩn đoán và điều trị tụy mật ngược dòng	1	110,000	110,000	9,405,000
27	Gastrofiberscope	Máy nội soi dạ dày	1	45,000	45,000	3,847,500
28	Colonfiberscope	Máy nội soi đại tràng	1	40,000	40,000	3,420,000
29	Oncology	Ung bướu				
30	Bronchoscope	Máy nội soi phế quản	1	50,000	50,000	4,275,000
	<b>Rehabilitation</b>	<b>Phục hồi chức năng</b>				
31	Short wave therapy apparatus	Máy điều trị sóng ngắn	1	15,000	15,000	1,282,500
	<b>Maxillo - Facial - Stomatology</b>	<b>Răng Hàm Mặt</b>				
32	Dental chair unit	Bộ ghế máy nha khoa	1	16,000	16,000	1,368,000
33	Implant surgical instrument set	Bộ dụng cụ phẫu thuật cấy ghép IMPLANT	1	30,000	30,000	2,565,000
34	Laser CO2	Laser CO2	1	12,000	12,000	1,026,000
35	Liposuction of Abdomen	Hút mỡ bụng	1	24,000	24,000	2,052,000
	<b>Obstetrics (IVF)</b>	<b>Khoa sản - IVF</b>				
36	Inverted microscope	Kính hiển vi đảo ngược	2	15,000	30,000	2,565,000
37	Embryo-sperm cryopreservation machine	Máy trữ lạnh phôi – tinh trùng	1	55,000	55,000	4,702,500
38	Embryo-sperm thawing system	Hệ thống rã đông phôi, tinh trùng	1	50,000	50,000	4,275,000
39	IVF chamber, 1000 x 500 x 800Hmm	IVF chamber	1	62,000	62,000	5,301,000
40	Intra cytoplasmic sperm injection (ICSI) machine	Máy bơm tinh trùng vào bào trứng (ICSI)	1	40,000	40,000	3,420,000
41	IVF Laminar hook	IVF Laminar hook – Tủ thao tác	1	12,000	12,000	1,026,000
42	Assisted hatching	Hỗ trợ phôi thoát màng	1	55,000	55,000	4,702,500
	<b>LCB-3</b>	<b>LCB-3</b>			<b>1,092,000</b>	<b>93,366,000</b>
	<b>ICU</b>	<b>ICU</b>				
1	Patient monitor , 6 parameters + blood gas monitor + cardiology monitor	Monitor theo dõi bệnh nhân	10	30,000	300,000	25,650,000
	<b>Surgery - Burn and Orthopedics</b>	<b>Ngoại bồng - chấn thương chỉnh hình</b>				
2	Operating table for orthopedics	Bàn mổ chuyên dụng Chấn thương chỉnh hình	1	45,000	45,000	3,847,500

	<b>Infection Control</b>	<b>Chống nhiễm khuẩn</b>				
3	Washing machine, 50kg	Máy giặt đồ vải 50Kg	2	26,000	52,000	4,446,000
4	Steam sterilizer 760L, Double doors	Máy hấp ướn 760 lít, 2 cửa	1	120,000	120,000	10,260,000
5	Steam sterilizer 250 L, Double doors	Máy hấp ướn 570 lít, 2 cửa,	1	80,000	80,000	6,840,000
6	Low temperature Sterilizer 130 L	Máy hấp tiệt trùng nhiệt độ thấp 130 L	1	100,000	100,000	8,550,000
7	Endoscopy fiberscope washer	Máy rửa ống nội soi	1	40,000	40,000	3,420,000
8	Ultrasonic washer, 57 liters	Máy rửa dụng cụ bằng sóng siêu âm, 57L	1	50,000	50,000	4,275,000
9	Washer and disinfectant for instruments and tubings, 2 doors > 240 liters	Máy rửa dụng cụ, ống dây, 2 cửa, > 240 lít	1	50,000	50,000	4,275,000
10	Cloth dryer, 50kg	Máy sấy đồ vải, 50 kg	1	20,000	20,000	1,710,000
11	Cloth iron machine	Máy là đồ vải	1	20,000	20,000	1,710,000
12	Roller press	Máy là rulo	1	25,000	25,000	2,137,500
	<b>Operation theater</b>	<b>Khoa Phẫu thuật</b>				
13	Extracorporeal circulation system (artificial heart lung machine)	Máy tim phổi nhân tạo	1	160,000	160,000	13,680,000
14	Surgical instrument set for open heart surgery	Bộ dụng cụ mổ tim hở	2	15,000	30,000	2,565,000
	<b>LCB-4</b>	<b>LCB-4</b>			<b>1,365,000</b>	<b>116,707,500</b>
	<b>Ophthalmology</b>	<b>Khoa mắt</b>				
1	A-B echo scan	Máy siêu âm A-B scan	1	25,000	25,000	2,137,500
2	Automatic Visual field perimeter	Máy đo thị trường tự động	1	35,000	35,000	2,992,500
3	Digital Mydriatic Fundus Camera	Máy chụp mạch huỳnh quang đáy mắt	1	60,000	60,000	5,130,000
4	Lazer photocoagulation system with slit lamp	Máy lazer quang động nội nh ãn có đèn khe	1	70,000	70,000	5,985,000
5	Optical coherence tomography (OCT) apparatus	Máy chụp cắt lớp võng mạc (OCT)	1	70,000	70,000	5,985,000
6	IOL(Intra Ocular Lens)- master apparatus	IOL- kính nội nhãn	1	50,000	50,000	4,275,000
7	Phacoemulsification system	Hệ thống phẫu thuật phaco	1	90,000	90,000	7,695,000
8	Indirect ophthalmoscope	Đèn soi đáy mắt gián tiếp	1	15,000	15,000	1,282,500
9	Auto refractometer	Máy đo khúc xạ tự động	1	18,000	18,000	1,539,000
10	Ophthalmology microscope	Sinh hiển vi mắt	1	35,000	35,000	2,992,500
11	Laser photocoagulation system for infant	Máy lazer quang động nội nh ãn dành cho trẻ sơ sinh	1	60,000	60,000	5,130,000
	<b>ENT</b>	<b>TMH</b>				
12	ENT examination chair +table with endoscope	Ghế - Bàn khám TMH có nội soi	1	35,000	35,000	2,992,500
13	Complete surgical endoscopic instrument set	Dụng cụ mổ nội soi mũi xoang trọn bộ	1	80,000	80,000	6,840,000
14	Surgical instrument set for ear, microscope	Bộ phẫu thuật tai, Kính hiển vi	1	40,000	40,000	3,420,000
15	Ear drilling machine	Máy khoan tai chuyên dụng	1	30,000	30,000	2,565,000
16	Oesphagoscope set wid rigid tube	Soi gấp dị vật thực quản - Á nh sáng lạnh	1	30,000	30,000	2,565,000
17	Isolated audiometry booth for children	Phòng đo thính lực kích âm trẻ em	1	20,000	20,000	1,710,000
18	Isolated audiometry booth for adult	Phòng đo thính lực kích âm người lớn	1	20,000	20,000	1,710,000

	<b>Operation theater</b>	<b>Khoa Phẫu thuật</b>				
19	Operating table	Bàn mổ	6	25,000	150,000	12,825,000
20	Operating lamp	Đèn mổ	6	22,000	132,000	11,286,000
21	Anesthesia apparatus with ventilator	Máy gây mê kèm giúp thở	6	35,000	210,000	17,955,000
22	Electro surgical unit	Máy đốt điện	6	15,000	90,000	7,695,000

**NAME OF HOSPITAL: Lam Dong Provincial General Hospital**

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
	<b>LCB-1</b>	<b>LCB-1</b>			<b>1,366,000</b>	<b>116,793,000</b>
	<b>Dept of Operation and Anesthesia</b>	<b>Khoa Phẫu thuật - GMHS</b>				
1	Ceiling operating lamp (cold light) with camera	Đèn mổ treo trần ánh sáng lạnh có camera thu hình ảnh phẫu thuật	1	36,000	36,000	3,078,000
2	Ceiling operating lamp (cold light) without camera	Đèn mổ treo trần ánh sáng lạnh không có camera thu hình ảnh phẫu thuật	4	22,000	88,000	7,524,000
3	Mobile operating lamp	Đèn mổ di động	2	13,000	26,000	2,223,000
4	Multifunctional operating table	Bàn mổ đa năng thủy lực	4	30,000	120,000	10,260,000
5	Orthopedics operating table	Bàn mổ chấn thương chỉnh hình	1	45,000	45,000	3,847,500
6	Anesthesia apparatus with ventilator with gas monitor and EMG and EEG	Máy gây mê kèm thở có chức năng kiểm soát khí, EMG và EEG	4	70,000	280,000	23,940,000
7	Endotracheal instrument set	Bộ đặt nội khí quản	2	40,000	80,000	6,840,000
8	Patient monitor with IBP function, 7 parameter	Monitor theo dõi bệnh nhân 7 thông số	2	15,000	30,000	2,565,000
9	Neuro Detector	Máy dò thần kinh	1	60,000	60,000	5,130,000
10	Video Laryngoscope	Đèn nội khí quản	1	30,000	30,000	2,565,000
11	Major operating instrument set for Obstetrics and Gynecology	Bộ đại phẫu sản phụ khoa	2	18,000	36,000	3,078,000
12	Neuro operating instrument set	Bộ phẫu thuật thần kinh	2	18,000	36,000	3,078,000
13	Spinal operating instrument set	Bộ phẫu thuật cột sống	1	25,000	25,000	2,137,500
14	Major operating instrument set for urology surgery	Bộ đại phẫu tiết niệu, sinh dục	2	15,000	30,000	2,565,000
15	Arthroscopy system with instrument, 2 shaver, and electro-surgical unit	Máy bào cắt đốt nội soi khớp	1	100,000	100,000	8,550,000
16	Orthopedics operating instrument set	Bộ phẫu thuật chấn thương chỉnh hình	2	15,000	30,000	2,565,000
17	Thoracic operating instrument set	Bộ phẫu thuật lồng ngực	2	13,000	26,000	2,223,000
18	Microsurgical instrument set	Bộ vi phẫu	2	12,000	24,000	2,052,000
19	Electrosurgical unit	Dao mổ điện	4	15,000	60,000	5,130,000
20	Multifunctional drill machine	Khoan đa năng	1	40,000	40,000	3,420,000
21	Operating microscope	Sinh hiển vi phẫu thuật	1	120,000	120,000	10,260,000
22	Scrub station	Hệ thống rửa tay phòng mổ	2	15,000	30,000	2,565,000
23	Skull drilling machine	Khoan sọ	1	14,000	14,000	1,197,000
	<b>LCB-2</b>	<b>LCB-2</b>			<b>822,000</b>	<b>70,281,000</b>
	<b>Dept of ICU and Poison Control</b>	<b>Khoa Hồi sức tích cực - Chống độc</b>				
1	Holter ECG system	Hệ thống holter điện tim	2	38,000	76,000	6,498,000
	<b>Dept of Operation and Anesthesia</b>	<b>Khoa Phẫu thuật - GMHS</b>				
2	Ventilator	Máy thở	3	25,000	75,000	6,412,500
	<b>Dept of Examination, Emergency</b>	<b>Khoa Khám bệnh, cấp cứu</b>				



3	ECG for stress testing	Hệ thống điện tim gắng sức	1	55,000	55,000	4,702,500
	<b>Dept of Pediatrics</b>	<b>Khoa nhi</b>				
4	Ventilator for children	Máy giúp thở trẻ em	3	30,000	90,000	7,695,000
5	Incubator	Lồng ấp	5	12,000	60,000	5,130,000
6	Warmer (multifunction)	Warmer (nhiều chức năng)	5	12,000	60,000	5,130,000
	<b>Dept of Ob/Gy</b>	<b>Khoa phụ sản</b>				
7	Video Digital Colposcope (with result printer)	Soi cổ tử cung video kỹ thuật số (Có in ra kết quả)	1	25,000	25,000	2,137,500
	<b>Dept of Infection Control</b>	<b>Khoa chống nhiễm khuẩn</b>				
8	Industrial Washing machine - Extractor (>50kg)	Máy giặt công nghiệp (>50kg) ]	1	26,000	26,000	2,223,000
9	Instrument washing machine with disinfection function	Máy rửa dụng cụ	1	30,000	30,000	2,565,000
10	Low Temperature Sterilizer (100 L)	Máy tiệt trùng nhiệt độ thấp (100 lít)]	1	100,000	100,000	8,550,000
11	Steam Sterilizer (>500L)	Máy hấp ướt(>500L)]	1	60,000	60,000	5,130,000
12	Washing machine for endoscopic/laparoscopic instruments	Máy rửa dụng cụ nội soi	1	30,000	30,000	2,565,000
13	Washing machine for fiberscope	Máy rửa ống nội soi	1	40,000	40,000	3,420,000
14	Iron machine for bed cover	Máy là ga giường	1	25,000	25,000	2,137,500
15	Iron machine for clothes	Máy là quần áo	1	20,000	20,000	1,710,000
16	Cabinet for fiberscope with sterilizing lamp	Tủ bảo quản ống nội soi	1	20,000	20,000	1,710,000
17	Washing machine for general instrument	Máy rửa dụng cụ thông thường	1	30,000	30,000	2,565,000
	<b>LCB-3</b>	<b>LCB-3</b>			<b>1,354,000</b>	<b>115,767,000</b>
	<b>Dept of Imaging Diagnostic</b>	<b>Khoa Chẩn Đoán Hình Ảnh</b>				
1	C-Arm X-ray	Máy X Quang có màn tăng sáng di động (C-Arm)	1	70,000	70,000	5,985,000
2	High frequency genneral X-ray apparatus 500mA	Máy X Quang thường quy cao tần 500mA	1	40,000	40,000	3,420,000
3	3-4D ultrasonic apparatus	Máy siêu âm màu 3-4 chiều	1	80,000	80,000	6,840,000
4	High frequency Mammography	Máy X Quang chụp nhũ cao tần	1	90,000	90,000	7,695,000
5	Dept of Ob/Gy	Khoa phụ sản				
6	Ultrasonic apparatus vagina probe	Siêu âm có đầu dò âm đạo	1	50,000	50,000	4,275,000
	<b>Dept of General Surgery, Endoscopy, Operation and Anesthesia</b>	<b>Khoa Ngoại tổng hợp, nội soi, phẫu thuật - GMHS</b>				
7	Abdominal Laparoscopic system	Hệ thống phẫu thuật nội soi ổ bụng	1	100,000	100,000	8,550,000
8	ERCP : Endoscopic Retrograde Cholangio - pancreatography)	Hệ thống nội soi mật - tụy ngược dòng	1	100,000	100,000	8,550,000
9	Diagnostic cystoscope	Máy nội soi bàng quang chẩn đoán	1	80,000	80,000	6,840,000
10	Ultrasonic lithotripter	Máy tán sỏi niệu quản - bể thận bằng siêu âm	1	40,000	40,000	3,420,000
11	Lithotripter instrument used for crushing bladder stone with cytoscope	Dụng cụ tán sỏi bàng quang được sử dụng cùng với máy nội soi bàng quang	1	50,000	50,000	4,275,000
	<b>Dept of ICU and Poison Control</b>	<b>Khoa Hồi sức tích cực - Chống độc</b>				
12	Bronchoscope	Máy nội soi phế quản	1	60,000	60,000	5,130,000
13	CRRT	Máy lọc máu liên tục CRRT	1	50,000	50,000	4,275,000

14	Hemodialysis	Thận nhân tạo	5	19,000	95,000	8,122,500
15	Washing machine for dialyser	Máy rửa quả lọc thận	1	12,000	12,000	1,026,000
	<b>Dept of Operation and Anesthesia</b>	<b>Khoa Phẫu thuật - GMHS</b>				
16	Portable ultrasonic apparatus	Máy siêu âm xách tay	1	50,000	50,000	4,275,000
17	Harmonic (ultrasonic) scalpel	Dao mổ siêu âm	1	50,000	50,000	4,275,000
	<b>Dept of Pathology</b>	<b>Giải phẫu bệnh</b>				
18	Tissue processing machine	Máy xử lý mô	1	28,000	28,000	2,394,000
	<b>Laboratory</b>	<b>Khoa xét nghiệm</b>				
19	Safety cabinet, Class IIB	Tủ an toàn sinh học, 2B	1	12,000	12,000	1,026,000
20	Blood culture system	Cây máu	1	30,000	30,000	2,565,000
21	PCR system	Dàn PCR	1	35,000	35,000	2,992,500
22	Automated blood component separation machine	Máy tách thành phần máu	1	23,000	23,000	1,966,500
23	Electrolyte analyzer 5 parameter (Na <sup>+</sup> , K <sup>+</sup> , Ca <sup>++</sup> , Cl <sup>-</sup> , Mg <sup>++</sup> )	Máy điện giải đồ 5 thông số (Na <sup>+</sup> , K <sup>+</sup> , Ca <sup>++</sup> , Cl <sup>-</sup> , Mg <sup>++</sup> )	1	15,000	15,000	1,282,500
24	Automatic blood coagulator apparatus	Máy đông máu tự động	1	25,000	25,000	2,137,500
25	Machine for identification of bacteria and anti biogram	Máy định danh vi khuẩn và làm kháng sinh đồ	1	90,000	90,000	7,695,000
	<b>Dept of Rehabilitation</b>	<b>Phục hồi chức năng</b>				
26	Electric traction for neck	Máy kéo dẫn cột sống cổ	1	15,000	15,000	1,282,500
27	Electric traction for spine	Máy kéo dẫn cột sống lưng	1	15,000	15,000	1,282,500
28	Hydraulic therapy water bath	Bồn thủy trị liệu	1	25,000	25,000	2,137,500
	<b>Dept of Nuclear Medicine</b>	<b>Y học hạt nhân</b>				
29	Callibrator Dose	Máy đo hoạt độ phóng xạ (Callibrator Dose)	1	12,000	12,000	1,026,000
30	Concentration measurement machine Iod 131, 2 channel	Máy đo độ tập trung Iod 131I - 2 kênh	1	12,000	12,000	1,026,000
	<b>LCB-4</b>	<b>LCB-4</b>			<b>1,236,000</b>	<b>105,678,000</b>
	<b>Dept of ENT</b>	<b>TMH</b>				
1	Navigation system for ENT	Máy định vị trong mổ nội soi mũi xoang	1	300,000	300,000	25,650,000
2	ENT examination table-chair with endoscope	Ghế - bàn khám tai mũi họng có nội soi	1	30,000	30,000	2,565,000
3	Complete endoscopic surgical instrument set	Dụng cụ mổ nội soi Caltstorz trọn bộ	1	100,000	100,000	8,550,000
4	Ear surgical instrument set, microscope	Bộ Phẫu thuật tai, Kính hiển vi	1	32,000	32,000	2,736,000
5	Ear drilling machine	Máy khoan tai chuyên dụng	1	15,000	15,000	1,282,500
6	Oesphagoscope set wid rigid tube	Soi gấp dị vật thực quản - ánh sáng lạnh	1	30,000	30,000	2,565,000
7	Audiometric booth for children	Buồng đo thính lực cách âm trẻ em	1	20,000	20,000	1,710,000
8	Audiometric booth for adult	Buồng đo thính lực cách âm người lớn	1	30,000	30,000	2,565,000
9	Tissue planning machine	Máy bào mô	1	10,000	10,000	855,000
10	Drill machine for ENT, Maxillo-Facial-Stomatology	Máy khoan TMH, RHM	1	30,000	30,000	2,565,000
	<b>Dept of Ophthalmology</b>	<b>Khoa mắt</b>				
11	AB echo scanner	Siêu âm mắt	1	25,000	25,000	2,137,500
12	ERG - Electroretinography	Đo điện võng mạc	1	20,000	20,000	1,710,000
13	Phacoemulsification system	Hệ thống PHACO mổ mắt	1	90,000	90,000	7,695,000
14	Slit Lamp	Đèn khe	1	15,000	15,000	1,282,500

15	Auto chartprojector	Auto chartprojector	1	30,000	30,000	2,565,000
16	Fundus Camera	Máy chụp mạch huỳnh quang đáy mắt	1	60,000	60,000	5,130,000
17	Operating Ophthalmological microscope	Sinh hiển vi phẫu thuật mắt	1	80,000	80,000	6,840,000
18	No-contact Tonometer	Máy đo nhãn áp không tiếp xúc	1	15,000	15,000	1,282,500
19	Strabismus Set	Strabismus Set (dụng cụ mổ lác mắt)	1	12,000	12,000	1,026,000
20	Lacrimal surgery Set	Bộ dụng cụ mổ lệ đạo	1	12,000	12,000	1,026,000
21	Lazer zagg apparatus for posterior cristallin capsule opaque	Máy Laser zagg cắt mỏng chu biên và điều trị đục bao sau	1	80,000	80,000	6,840,000
22	Refractor	Máy đo khúc xạ tự động	1	15,000	15,000	1,282,500
23	Javal keratometer	Máy đo khúc xạ giác mạc	1	20,000	20,000	1,710,000
	<b>Dept of Maxillo-Facial-Stomatology</b>	<b>RHM</b>				
24	Dental Chair unit	Bộ ghế máy răng	2	20,000	40,000	3,420,000
25	Digital Deltal X-ray machine	X-quang răng kỹ thuật số	1	50,000	50,000	4,275,000
26	Dental implant machine (drilling machine)	Máy đặt Implant (máy khoan)	1	20,000	20,000	1,710,000
27	Dental implant instrument set	Bộ dụng cụ đặt Implant	1	15,000	15,000	1,282,500
28	Maxillo Facial Panorama	Máy chụp răng toàn cảnh Panorama	1	40,000	40,000	3,420,000

**NAME OF HOSPITAL: Tay Ninh Provincial General Hospital**

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
<b>LCB-1</b>		<b>LCB-1</b>			<b>1,415,000</b>	<b>120,982,500</b>
1	X-ray apparatus 500 mA	Máy X-quang 500mA	1	40,000	40,000	3,420,000
2	Digital X-ray Radiography	Máy X-quang kỹ thuật số	1	250,000	250,000	21,375,000
3	X-ray apparatus at bed (mobile)	Máy X-quang chụp tại giường (di động)	1	25,000	25,000	2,137,500
4	Dental X-ray machine	Máy X-quang nha khoa	1	24,000	24,000	2,052,000
5	4D color Ultrasonic apparatus	Máy siêu âm màu 4D	1	80,000	80,000	6,840,000
6	2D color Ultrasonic apparatus	Máy siêu âm màu 2D	2	60,000	120,000	10,260,000
7	Gastofiberscope	Bộ nội soi dạ dày	1	80,000	80,000	6,840,000
8	Infant incubator	Lồng ấp trẻ sơ sinh	8	15,000	120,000	10,260,000
9	Orthopedics surgical instruments set for upper and lower limb	Bộ dụng cụ phẫu thuật chỉnh hình cho chi trên và chi dưới	2	14,000	28,000	2,394,000
10	Vibration saw for gypsum	Cưa rung cắt bột	2	12,000	24,000	2,052,000
11	Colonofiberscope	Bộ nội soi đại tràng	1	70,000	70,000	5,985,000
<b>Dept of Otorhinolaryngology</b>		<b>Khoa tai mũi họng</b>				
12	ENT endoscope	Máy nội soi TMH	2	45,000	90,000	7,695,000
13	Laryngo, Tracheo-Broncho fiberscope	Bộ nội soi thanh quản	1	80,000	80,000	6,840,000
14	Laparoscopic surgical system (1 for general and 1 for obstetric)	Hệ thống mổ nội soi (1 cho mổ thông thường và 1 cho sản khoa)	2	18,000	36,000	3,078,000
15	HbA1C analyzer	Máy phân tích HbA1C	1	10,000	10,000	855,000
16	X-ray mammography	Máy X-quang nhũ ảnh	1	80,000	80,000	6,840,000
17	Bone densitometer	Máy đo độ loãng xương	1	80,000	80,000	6,840,000
18	Blood gas analyzer	Máy đo khí máu	1	12,000	12,000	1,026,000
<b>Dept of Maxillo-Facial-Stom</b>		<b>Khoa RHM</b>				
19	Dental chair unit, dental autoclave	Bộ máy ghế, hấp tiệt trùng nha khoa	3	18,000	54,000	4,617,000
20	Lumacool teeth whitening light	Đèn tẩy trắng Lumacool	1	12,000	12,000	1,026,000
21	Rigid cystoscope machine	Máy nội soi bàng quang cứng	1	100,000	100,000	8,550,000
<b>LCB-2</b>		<b>LCB-2</b>			<b>1,231,000</b>	<b>105,250,500</b>
1	Steam sterilizer, 570 liters.	Máy hấp tiệt trùng, 570 L.	2	80,000	160,000	13,680,000
2	Low temperature sterilizer, 130 liters or more	Máy tiệt trùng nhiệt độ thấp, 130	1	100,000	100,000	8,550,000
3	Washing machine, 55kg	Máy giặt, 55kg	2	40,000	80,000	6,840,000
4	Drying machine	Máy sấy	2	28,000	56,000	4,788,000
5	Ultrasonic cleaner, 57 liters	Máy rửa dụng cụ bằng sóng siêu âm	2	15,000	30,000	2,565,000
6	Anesthesia apparatus with ventilator	Máy gây mê kèm thở	6	35,000	210,000	17,955,000
7	High frequency electrosurgical unit	Dao mổ điện cao tần	5	15,000	75,000	6,412,500
8	Ventilator	Máy thở	15	25,000	375,000	32,062,500
9	Neuro and spiral operating table	Bàn mổ thần kinh, cột sống	2	50,000	100,000	8,550,000
10	Sterilized hand washing sink (Scrub station)	Bồn rửa tay tiệt trùng	3	15,000	45,000	3,847,500
<b>LCB-3</b>		<b>LCB-3</b>			<b>1,168,000</b>	<b>99,864,000</b>

	<b>Dept of Otorhinolaryngolog</b>	<b>Khoa tai mũi họng</b>				
1	Electric skull drilling machine	Máy khoan xương sọ	2	40,000	80,000	6,840,000
2	Shaver	Máy cắt hút (shaver)	1	18,000	18,000	1,539,000
3	Operating microscope	Kính hiển vi phẫu thuật	1	65,000	65,000	5,557,500
4	Electric bone drilling machine with vibration blade	Máy khoan xương điện có lưỡi rung	2	22,000	44,000	3,762,000
5	Isolated audiometric booth with audiometer	Buồng cách âm đo thính lực đồ	1	30,000	30,000	2,565,000
	<b>Dept of Ophthalmology</b>	<b>Khoa mắt</b>				
6	Phacoemulsification system (new generation)	Máy Phaco phẫu thuật mắt (thế hệ mới)	1	80,000	80,000	6,840,000
7	A-B echo scanner (new generation)	Máy siêu âm AB thế hệ mới	1	25,000	25,000	2,137,500
8	Slit lamp	Đèn khe	2	25,000	50,000	4,275,000
9	Gastro, hepato, Biliary surgical instrument set	Bộ dụng cụ phẫu thuật dạ dày, gan mật	5	26,000	130,000	11,115,000
10	Nervous surgical instrument set	Bộ dụng cụ phẫu thuật thần kinh	1	18,000	18,000	1,539,000
11	Urology surgical instrument set	Bộ dụng cụ phẫu thuật tiết niệu	2	14,000	28,000	2,394,000
12	Urology laparoscopic surgical instrument set	Bộ dụng cụ phẫu thuật nội soi tiết niệu	2	80,000	160,000	13,680,000
13	Ceiling operating lamp with 3 light heads	Đèn mổ treo trần 3 nhánh	3	35,000	105,000	8,977,500
14	Ceiling operating lamp with 2-light heads	Đèn mổ treo trần 2 nhánh	4	28,000	112,000	9,576,000
15	Hydraulic Multifunctional operating table	Bàn mổ đa năng thủy lực	6	28,000	168,000	14,364,000
16	ECG for stress testing	Máy điện tim gắng sức	1	55,000	55,000	4,702,500

NAME OF HOSPITAL: Ninh Thuan Provincial General Hospital

No.	Name of Equipment	Tên trang thiết bị	Q'ty	Unit Price (US\$)	Amount (US\$)	Amount (JPY)
	<b>LCB-1</b>	<b>LCB-1</b>			<b>1,934,000</b>	<b>165,357,000</b>
	<b>Dept of Examination – Outpatient treatment</b>	<b>Khoa khám bệnh - Điều trị ngoại trú</b>				
1	Infant warmer	Máy làm ấm trẻ sơ sinh	6	25,000	150,000	12,825,000
	<b>Intensive Care (40 beds including Dialysis)</b>	<b>Hồi sức cấp cứu (40 giường bao gồm chạy thận nhân)</b>				
2	Patient monitor system (including 1 central monitor, 24 bedside monitor with 5 basic parameters)	Hệ thống theo dõi bệnh nhân (1 máy trung tâm, 32 máy đầu giường 5 thông số cơ bản)	1	140,000	140,000	11,970,000
	<b>Dept of Internal Cardiovascular + Gerontology (50 beds)</b>	<b>Khoa nội tim mạch + Lão khoa</b>				
3	Cardiac holter	Holter theo dõi tim mạch	2	38,000	76,000	6,498,000
4	Exercise Stress ECG System with Threadmill	ECG với thảm lăn gắng sức	1	55,000	55,000	4,702,500
	<b>Dept of Gynecology and Obstetrics</b>	<b>Khoa phụ sản</b>				
5	Infant warmer	Máy làm ấm trẻ sơ sinh	5	25,000	125,000	10,687,500
6	Video colposcope	Máy soi cổ tử cung có video	1	25,000	25,000	2,137,500
	<b>Dept of Operating and Anesthesia (9 operating rooms, 9 recovery beds at new building)</b>					
7	Anesthesia apparatus with ventilator	Máy gây mê kèm thở	5	35,000	175,000	14,962,500
8	High frequency electrosurgical unit 300W	Dao mổ điện cao tần 300W	5	15,000	75,000	6,412,500
9	Laser electrosurgical unit	Dao mổ laze	1	20,000	20,000	1,710,000
10	Monitor for operating room (with function of investigating EtCO2)	Monitor phòng mổ (có theo dõi EtCO2)	5	12,000	60,000	5,130,000
11	Hydraulic operating table	Bàn mổ đa năng thủy lực	5	30,000	150,000	12,825,000
12	Trauma orthopedic operating table	Bàn mổ chấn thương chỉnh hình	1	30,000	30,000	2,565,000
13	Skull operating table	Bàn mổ sọ não	1	30,000	30,000	2,565,000
14	Ceiling operating lamp >= 160.000 Lux	Đèn mổ treo trần >= 160.000 Lux	5	28,000	140,000	11,970,000
15	Mobile operating lamp >= 60.000 Lux	Đèn mổ treo trần >= 60.000 Lux	1	15,000	15,000	1,282,500
16	Electric bone drilling machine including saw	Cưa cắt bột chạy điện	1	30,000	30,000	2,565,000
17	ENT surgical instrument set	Bộ dụng cụ phẫu thuật TMH	3	12,000	36,000	3,078,000
18	Urology surgical instrument set	Bộ dụng cụ phẫu thuật tiết niệu	1	15,000	15,000	1,282,500
19	Trauma orthopedic surgical instrument set	Bộ dụng cụ phẫu thuật chấn thương chỉnh hình	3	12,000	36,000	3,078,000
20	Laparoscopic surgical instrument set	Bộ dụng cụ phẫu thuật nội soi	3	14,000	42,000	3,591,000
21	Thoracic operating instrument set	Bộ dụng cụ phẫu thuật lồng ngực	3	13,000	39,000	3,334,500
22	Nervous-Brain surgical instrument set	Bộ dụng cụ phẫu thuật thần kinh sọ não	5	17,000	85,000	7,267,500

23	Micro operating instrument set for ear	Bộ dụng cụ vi phẫu tai	4	15,000	60,000	5,130,000
24	Nervous micro operating instrument set	Bộ dụng cụ vi phẫu thần kinh	3	14,000	42,000	3,591,000
25	Vascular micro operating instrument set	Bộ dụng cụ vi phẫu mạch máu	3	14,000	42,000	3,591,000
26	Aesthetic and beauty surgery instrument set	Bộ dụng cụ thẩm mỹ	3	10,000	30,000	2,565,000
27	Hemorrhoid ligature set	Bộ dụng cụ cắt búi trĩ	3	12,000	36,000	3,078,000
28	Scrub station	Hệ thống rửa tay phẫu thuật viên	5	15,000	75,000	6,412,500
29	ESWL (Extracorporeal shockwave lithotripsy)	Tán sỏi ngoài cơ thể	1	100,000	100,000	8,550,000
	<b>LCB-2</b>	<b>LCB-2</b>			<b>1,257,000</b>	<b>107,473,500</b>
	<b>Dept of</b>	<b>Khoa Tai - Mũi - Họng</b>				
1	Impedance Audiometer (children, adult)	Máy đo nhĩ lượng đồ (trẻ em, người lớn)	1	12,000	12,000	1,026,000
2	Oesophagoscope set with rigid tube	Máy soi thực quản ống cứng	1	40,000	40,000	3,420,000
3	Endoscopic otolaryngologic surgery system	Hệ thống mổ nội soi mũi họng	1	50,000	50,000	4,275,000
4	Minor surgical instrument set	Bộ tiểu phẫu	7	12,000	84,000	7,182,000
5	Ear drilling machine	Máy khoan tai	1	30,000	30,000	2,565,000
6	Sinus Shaver System, ENT System (micro-debrider for Sinus, Laryngeal, Ear & VA surgery).	Máy khoan hút mũi xoang	1	35,000	35,000	2,992,500
7	Ear surgical instrument set	Bộ dụng cụ phẫu thuật tai	2	12,000	24,000	2,052,000
8	Microlaryngeal instrument set	Bộ dụng cụ vi phẫu thanh quản	2	11,000	22,000	1,881,000
9	V.A surgical instrument set	Bộ dụng cụ nạo V.A	2	10,000	20,000	1,710,000
10	Operating Microscope for ENT	Sinh hiển vi phẫu thuật TMH	1	40,000	40,000	3,420,000
11	ENT examining-treatment set + chair	Bộ khám điều trị TMH + Ghế	1	25,000	25,000	2,137,500
	<b>Ophthalmology Department</b>	<b>Khoa mắt</b>				
12	Phaco and Vitrectomy System	Hệ thống phẫu thuật phaco và cắt dịch kính	1	90,000	90,000	7,695,000
13	Operating Microscope for ophthalmology	Sinh hiển vi phẫu thuật mắt	1	65,000	65,000	5,557,500
14	Ultrasound machine/ A/B scan with high frequency	Máy siêu âm mắt tần số cao	1	25,000	25,000	2,137,500
15	Auto refractometer and keratometer	Máy đo khúc xạ kèm độ cong giác mạc	1	30,000	30,000	2,565,000
16	Goldmann tonometer (Direct tonometer)	Bộ đo nhãn áp tiếp xúc Goldman gắn trên máy sinh hiển vi khám mắt	1	30,000	30,000	2,565,000
17	Slit lamp	Đèn khe	1	25,000	25,000	2,137,500
18	Portable indirect ophthalmoscope	Đèn soi đáy mắt gián tiếp cầm tay	1	12,000	12,000	1,026,000
19	Portable Retinoscope	Đèn soi bóng đồng tử cầm tay	1	15,000	15,000	1,282,500
20	Auto Chart Projector = optometer	Máy chiếu thử thị lực bệnh nhân	1	25,000	25,000	2,137,500
21	Conjunctivodacryocystorhinostomy instrument sets	Bộ dụng cụ nối thông lệ mũi	2	14,000	28,000	2,394,000

22	Chalazion surgery instrument set	Bộ dụng cụ chích chắp	2	18,000	36,000	3,078,000
23	Lazer zagg apparatus for posterior crsitallin capsule opaque	Máy Laze zagg cắt móng chu biên và điều trị đục bao sau	1	39,000	39,000	3,334,500
	<b>Dept of Infection Control</b>	<b>Khoa chống nhiễm khuẩn</b>				
24	Electric steam sterilizer >= 570l	Máy hấp tiệt trùng chạy điện >=570L	2	80,000	160,000	13,680,000
25	Washing machine + dressing squeeze >= 50 kg	Máy giặt + vắt >=50 kg	2	35,000	70,000	5,985,000
26	Washing machine + dressing squeeze >= 25 kg	Máy giặt + vắt >=25 kg	1	30,000	30,000	2,565,000
27	Dressing dryer >=30 kg	Máy sấy đồ vải >=30 kg	2	22,000	44,000	3,762,000
28	Washer/Disinfector 250 L	Máy rửa khử khuẩn dụng cụ 250L	1	70,000	70,000	5,985,000
29	Washing and drying machine for tube	Máy rửa ống có chức năng sấy khô	1	24,000	24,000	2,052,000
30	Flatwork Ironer (2m)	Máy là ga công nghiệp	1	25,000	25,000	2,137,500
31	Pressing machine	Máy là ép	1	20,000	20,000	1,710,000
32	Steam Iron with boiler	Máy ủi hơi nước	1	12,000	12,000	1,026,000
	<b>LCB-3</b>	<b>LCB-3</b>			<b>1,435,000</b>	<b>122,692,500</b>
	<b>Intensive Care (40 beds including Dialysis)</b>	<b>Hội sức cấp cứu (40 giường bao gồm chạy thận nhân tạo)</b>				
1	Hemodialysis machine	Máy chạy thận nhân tạo	10	19,000	190,000	16,245,000
2	Dialyser washing machine	Máy rửa quả lọc chạy thận	2	12,000	24,000	2,052,000
3	Dialysis water treatment system	Hệ thống xử lý nước chạy thận nhân tạo	1	32,000	32,000	2,736,000
4	Continuous Blood Purification Machine CRRT	Máy lọc máu liên tục	1	39,000	39,000	3,334,500
5	Blood gas analyzer	Máy đo khí máu	1	12,000	12,000	1,026,000
	<b>Dept of Hematology and Blood transfusion</b>	<b>Khoa huyết học truyền máu</b>				
6	Automatic blood coagulator apparatus	Máy đo độ đông máu tự động	1	30,000	30,000	2,565,000
7	Automatic immune assay analyzer	Máy phân tích miễn dịch tự động	1	100,000	100,000	8,550,000
8	Deep refrigerator- 60oC, 250 liters	Tủ lạnh sâu -60 độ, 250L	1	12,000	12,000	1,026,000
9	Apparatus for blood component separation	Máy tách thành phần máu tự động	1	23,000	23,000	1,966,500
10	Automatic blood grouping analyzer	Máy định danh nhóm máu	1	38,000	38,000	3,249,000
11	Cold Centrifuge, 2000 to 2500rpm, 250mL bag x 16	Ly tâm lạnh	1	18,000	18,000	1,539,000
	<b>Dept of Biochemistry</b>	<b>Khoa hóa sinh</b>				
12	Electrophoresis apparatus, Protein	Máy điện di protein	1	20,000	20,000	1,710,000
	<b>Microbiology Dept</b>	<b>Khoa vi sinh</b>				
13	Biological safety box	Tủ an toàn sinh học	1	12,000	12,000	1,026,000
14	Machine for identification of bacteria and automatic antibiogram apparatus	Máy định danh vi khuẩn và kháng sinh đồ tự động	1	100,000	100,000	8,550,000
15	Fluorescence microscope with camera	Kính hiển vi huỳnh quang có camera	1	20,000	20,000	1,710,000
	<b>Dept of Pathology</b>	<b>Khoa giải phẫu bệnh</b>				
16	Microscope with camera	Kính hiển vi có máy ảnh	1	12,000	12,000	1,026,000
17	Microtome	Máy cắt lát vi thể	1	14,000	14,000	1,197,000



18	Frozen microtome (Cryostat)	Máy cắt lát vi thể đông lạnh	1	35,000	35,000	2,992,500
19	Autopsy table	Bàn khám nghiệm tử thi	3	28,000	84,000	7,182,000
20	Mortuary refrigerator for 1 person	Tủ bảo quản tử thi	1	18,000	18,000	1,539,000
	<b>Dept of Physiotherapy and Rehabilitation (5 beds)</b>	<b>Khoa Vật lý trị liệu và Phục hồi chức năng</b>				
21	Short-wave therapy apparatus	Máy sóng ngắn điều trị	2	15,000	30,000	2,565,000
22	Electro magnetic therapy apparatus	Máy điện từ trường điều trị	2	15,000	30,000	2,565,000
23	Neuromuscular stimulator	Máy kích thích thần kinh cơ	2	12,000	24,000	2,052,000
	<b>Dept of Physiology Diagnostic</b>	<b>Khoa thăm dò chức năng</b>				
24	Digital EEG	Máy điện não vi tính	1	30,000	30,000	2,565,000
25	Rheography	Máy đo lưu huyết não	1	32,000	32,000	2,736,000
26	EMG	Máy đo điện cơ	1	35,000	35,000	2,992,500
	<b>Dept of Gynecology and Obstetrics</b>	<b>Khoa phụ sản</b>				
27	CO2 Laser unit for Gynecology	Máy đốt Laze phụ khoa	1	15,000	15,000	1,282,500
28	Bilirubin analyser	Máy phân tích bilirubin	1	15,000	15,000	1,282,500
	<b>Dept of Examination – Outpatient treatment</b>	<b>Khoa khám bệnh - Điều trị ngoại trú</b>				
29	Infant incubator	Lồng ấp trẻ sơ sinh	6	15,000	90,000	7,695,000
30	Colposcope with Monitor	Máy soi cổ tử cung có Monitor	1	25,000	25,000	2,137,500
31	High frequency uterine electro-surgical unit	Máy đốt cổ tử cung cao tần	1	15,000	15,000	1,282,500
	<b>Dept of Maxillo-Facial-Smatology (10 beds)</b>	<b>Khoa RHM</b>				
32	Dental chair unit	Ghế máy răng	2	18,000	36,000	3,078,000
	<b>Dept of Examination – Outpatient treatment</b>	<b>Khoa khám bệnh - Điều trị ngoại trú</b>				
33	Maxillo-facial examining and treatment instrument set + chair + ultrasonic scaler	Bộ khám điều trị RHM + Ghế + Lấy cao răng bằng siêu âm	1	35,000	35,000	2,992,500
34	Dental prosthesis laboratory	Labo răng giả	1	110,000	110,000	9,405,000
35	Dental X-ray machine	X-quang răng	1	80,000	80,000	6,840,000
	<b>LCB-4</b>	<b>LCB-4</b>			<b>2,025,000</b>	<b>173,137,500</b>
	<b>Dept of Imaging Diagnostic</b>	<b>Khoa chẩn đoán hình ảnh</b>				
1	CT scanner 2 slices	CT scanner 2 lát cắt	1	200,000	200,000	17,100,000
2	Radiographic and fluoroscopic X-ray TV	Hệ thống X-quang tăng sáng truyền hình	1	90,000	90,000	7,695,000
3	High frequency X-ray system >= 500mA	X-quang cao tần >=500mA	1	40,000	40,000	3,420,000
4	Digital X-ray system (DR)	Hệ thống X-quang kỹ thuật số	1	250,000	250,000	21,375,000
5	X-ray mammographic apparatus	X-quang chụp vú	1	90,000	90,000	7,695,000
6	4D color ultrasonic apparatus with 3 probes + color, black-white printer, carriage	Máy siêu âm màu 4D 3 đầu dò kèm máy in màu, máy in đen trắng, xe đẩy	1	80,000	80,000	6,840,000
7	Mobile X-ray	X-quang di động	1	25,000	25,000	2,137,500
8	Bone densitometer (X-ray)	Máy đo độ loãng xương (bằng sóng X-quang)	1	80,000	80,000	6,840,000

9	C-arm X-ray apparatus with TV	Máy X-quang C-arm có TV	1	60,000	60,000	5,130,000
	<b>Dept of Examination – Outpatient treatment</b>	<b>Khoa khám bệnh - Điều trị ngoại trú</b>				
10	Black-white Ultrasonic apparatus with 2 probes + printer + carriage	Siêu âm đen trắng 2 đầu dò + máy in + xe đẩy	1	28,000	28,000	2,394,000
11	Operated Hysteroscopy system		1	140,000	140,000	11,970,000
12	Portable black-white ultrasonic apparatus with 2 probes + printer.	Siêu âm đen trắng 2 đầu dò + máy in + xe đẩy	1	25,000	25,000	2,137,500
13	<b>General Internal Dept (50 beds)</b>	<b>Khoa Nội Tổng Hợp</b>				
14	Black-white ultrasonic apparatus with 2 probes	Siêu âm đen trắng 2 đầu dò	1	25,000	25,000	2,137,500
	<b>Dept of Internal Cardiovascular + Gerontology (50 beds)</b>	<b>Khoa nội tim mạch + Lão khoa</b>				
15	Portable color ultrasonic apparatus with 2 probes + printer.	Siêu âm màu 2 đầu dò + máy in	1	32,000	32,000	2,736,000
	<b>Intensive Care (40 beds including Dialysis)</b>	<b>Hội sức cấp cứu (40 giường bao gồm chạy thận nhân)</b>				
16	Color ultrasonic apparatus with 2 probes, 4D	Máy siêu âm màu 2 đầu dò, 4D	1	65,000	65,000	5,557,500
	<b>Dept of Gynecology and Obstetrics</b>	<b>Khoa phụ sản</b>				
17	Black-white ultrasonic apparatus with 2 probes for Obstetrics + printer.	Siêu âm đen trắng 2 đầu dò chuyên sản khoa + máy in	1	40,000	40,000	3,420,000
	<b>Dept of Endoscopy</b>	<b>Khoa nội soi</b>				
18	Synchronized abdominal laparoscopic surgery system	Hệ thống mổ nội soi ổ bụng đồng bộ	1	140,000	140,000	11,970,000
19	Colonovideoscope, Gastrovideoscope with video - monitor Colono (1), Gastro (1), Gastrofiber (1), Duolo ERCP(1)	Bộ nội soi dạ dày, tá tràng + đại tràng ống mềm video - monitor	1	240,000	240,000	20,520,000
20	Rigid endoscope for ENT	Bộ nội soi ống cứng TMH (ống nội soi mũi xoang, ống nội soi tai, ống nội soi thanh quản)	1	80,000	80,000	6,840,000
21	Laryngoscope with video-monitor	Bộ nội soi phế quản ống mềm Video - monitor	1	40,000	40,000	3,420,000
22	Urethro-cystoscope	Bộ nội soi niệu quản, bàng quang	1	100,000	100,000	8,550,000
23	Ultrasonic washer for endoscope	Máy rửa nội soi bằng sóng siêu âm	1	45,000	45,000	3,847,500
24	Bronchoscope	Nội soi khí phế quản	1	90,000	90,000	7,695,000
25	Cabinet for endoscope	Tủ bảo quản ống nội soi	1	20,000	20,000	1,710,000

## Training Plan (Training in Japan)

hospital	target and duration		infection control	hospital management	digestive	radio therapy	pathology
Bac Giang	taget	doctor	1	1		1	1
		nurse	1	1			
		technician				1	
	duration		6w	6w		6w	4m
Lam Dong	taget	doctor	1	1			1
		nurse	1	1			
		technician					
	duration		6w	6w			4m
Tay Ninh	taget	doctor	1	1			1
		nurse	1	1			
		technician					
	duration		6w	6w			4m
Nih Thuan	taget	doctor	1	1			1
		nurse	1	1			1
		technician					
	duration		6w	6w			4m
Son Tay	taget	doctor	1	1			1
		nurse	1	1			
		technician					
	duration		6w	6w			
C Danan	taget	doctor	1	1	1	1	1
		nurse	1	1			
		technician				1	
	duration		6w	6w	6w	6w	4m
Binh Dinh	taget	doctor	1	1		1	1
		nurse	1	1			
		technician				1	
	duration		6w	6w		6w	4m
Thai Binh	taget	doctor	1	1			
		nurse	1	1			
		technician					
	duration		6w	6w			
Nghe An	taget	doctor	1	1			
		nurse	1	1			
		technician					
	duration		6w	6w			
Nam Dinh	taget	doctor	1	1			
		nurse	1	1			
		technician					
	duration		6w	6w			

Training Plan (Training in Vietnam)

No	Training courses	Training Institute	duration	Bac Giang	Son Tay	Thai Binh	Nam Dinh	Nghe An	Du Nang	Binh Dinh	Lam Dong	Tay Ninh	Ninh Thuan
1	ICU	Bach Mai		4	4		8		8	4			
		Cho Ray	2months								4	4x2	4
		Pediatrics			9x2			9x2					
2	NICU	Local (on-site)			12x3				30x2	30x2	12x3	12x2	12x2
		Pediatrics I (HCMC)	2months								2	3	2
		Pediatrics		1x3	9x3			9x3					
3	Cancer surgery	Ob/Gy	3months				8x3						
		Viet Duc	3months	3x2				5x2					
4	Cancer diagnosis & treatment	Cho Ray	3months									6x3	6x3
		Bach Mai	3months	4x3				5x3					
5	Radio therapy	Cho Ray	2months	4					6	6			
		Bach Mai	2weeks								4		4
6	Image diagnosis	Cho Ray	3months										
		Local (on-site)		12x3				4	9x3	9x3			
7	Pathology	Bach Mai							4x3				
		Cho Ray	2months	2x2	1x3	1x3	1x3	2x3	2x3	2x2	1	4	6x3
8	Laparoscopy & surgery	HN Medical U	4months	3									
		HCM M U	1months x 2	7									
9	Hematology diseases	Viet Duc	4months		6					3			
		Cho Ray	4months								2		
10	New diagnosis	Pediatrics	2months								4		
		Ob/Gy	4months			4							
11	Infertility	Ob/Gy	3months										
		Hematology H.	3months	5x3			5	3x2					1x2
12	Cardio- Vascular diagnosis, treat	Cho Ray	4months										
		H Medical U	3months	2						5x2			
13	ENT	Ob/Gy	3months		7		7			7			
		Car/Vas	4months		4					4			
14	Otoro-stomatology	Cho Ray	3months									2x2	
		ENT	3months		3x2								
		Cho Ray	3months								4x2	4x2	2x2
		Odo/Sto	3months		2				2x2				

No	Training courses	Training Institute	duration	Bac Giang	Son Tay	Thai Binh	Nam Dinh	Nghe An	Da Nang	Binh Dinh	Lam Dong	Tay Ninh	Ninh Thuan
15	Plastic surgery	Viet Duc	3months						2x2	3x2			
16	Micro-biology	HN Medical U	3months	2	2	2	2		2	2			
		HCM M U	3months		3				2x2		2	2	2
17	Hemodialysis	Bach Mai	3months									2	5
18	Endoscopy	Cho Ray	3months		2x3								
		Bach Mai	3months										
19	Ventilation	Cho Ray	1week	3x2	3x2		2x2		3x2	3x2	3x2	3x2	3x2
		Local (on-site)	3months			2		2					
20	Nutrition	Pediatric Hos	1week			8x2		8x2					
		Local (on-site)	3months										
21	Neuro-surgery	Viet Duc	3months						5x2				
22	PET, Ginfé, Nucler	Bach Mai	4months						3x2	5x2			
		Tropical infectious	1month	5	5	2	2	2	5	5			
23	Infection control	HCM Tropical	1month								5	5	5
		Local (on-site)	2weeks	20	20	15	15	15	20	20	20	20	20
24	Infectious diseases treat	Tropical infectious	2weeks	3	3	2	2	2	3	3			
		HCM Tropical	3weeks								3	3	3
25	Hospital management	Bach Mai	3weeks	2	2	1	1	1	2	2			
		Cho Ray	2months								2	2	2
26	IT, LAN using	Local (on-site)	1month	4	4	3	3	3	4	4	4	4	4
		Hanoi medical U.	1month	8	8	5	5	5	8	8			
27	Medical mainian & functional	HCM medical U.	2weeks	30	30	30	30	30	30	30	30	30	30
		Local (on-site)	1month	15	15	15	15	15	15	15			
28	Hormone analysis	Bach Mai	1month	30	30	30	30	30	30	30	15	15	15
		Cho Ray	1month										
29	Pregnancies monitoring	Local (on-site)	1month										
		H M University	1month				2						
30	Vaginal uerign surgery	Ob/Gy hospital	2month										
		Local (on-site)	3months				2						
31	Cancer diagnosis & treat.	Pediatrics	3months					2					
		Ob/Gy hoospital	3months										
32	Cardio-vascular	Cardio-vascular	3months			2		2					
		Pediatrics	2months			2		2					
33	Respiratory diseases treat.	Pediatrics	2weeks			4							
		Local (on-site)	1month			4							

## Appendix 12

### Cost Estimation for Consulting Service

The following cost estimate was prepared, with the unit price of remuneration of consultants which is applied for the JICA ODA loan funded project, and the estimated cost of direct cost items as of the time of this Report. The number of consultants MM was calculated based on the overall project implementation schedule.

#### A. International consultants

	Monthly Unit (JPY)	M/M	Foreign Currency Total
(1) Team leader/Medical equipment specialist①	2,630,000	30.0	78,900,000
(2) Medical equipment specialist②	2,630,000	10.0	26,300,000
(3) Deputy team leader/Health education expert	2,630,000	12.0	31,560,000
(4) Medical service expert	2,630,000	5.0	13,150,000
(5) Hospital management specialist	2,630,000	4.0	10,520,000
(6) Financial specialist	2,630,000	4.0	10,520,000
Total		65.0	¥170,950,000

#### B. Local consultants

	Monthly Unit (VND) (‘000)	M/M	Local Currency Total (‘000)
(1) Assistant medical equipment specialist①	40,000	30.0	1,200,000
(2) Assistant medical equipment specialist②	40,000	12.0	480,000
(3) Assistant health education expert	40,000	24.0	960,000
(4) Assistant medical service expert	40,000	8.0	320,000
(5) Assistant hospital management specialist	40,000	6.0	240,000
(6) Assistant financial specialist	40,000	6.0	240,000
(7) Procurement specialist (LCB)	40,000	7.0	280,000
Total		93.0	VND3,720,000

#### C. Supporting staffs

	Monthly Unit (VND) (‘000)	M/M	Local Currency Total (‘000)
(1) Office manager/Interpreter	12,000	47.0	564,000
(2) Sub office manager/Interpreter	12,000	47.0	564,000
(3) Accountant/Interpreter	12,000	47.0	564,000
Total		141.0	VND1,692,000

D. Direct costs

	Items	Q'ty	Foreign Currency (Yen)		Local Currency (VND) (‘000)	
			Unit Price	Amount	Unit Price	Amount
1	International flight	50	350,000	17,500,000		
2	Domestic Airfare	90			6,000	540,000
3	Domestic Travel	24			7,000	168,000
4	Accommodation Allowance	65 M	240,000	15,6000		
5	Accommodation Allowance	93 M			22,500	2,092,500
6	Per diem	65 M	77,000	5,005,000		
7	Per diem	93 M			4,500	418,500
8	Inland Transport(Japan)	40x2	8,000	320,000		
9	Inland Transport(Viet Nam)	40x2			1,000	40,000
10	Vehicle Rental	47 M			40,000	1,880,000
11	Office Rental	47 M			40,000	1,880,000
12	Communication Fees	47 M			2,000	94,000
13	Office Supply	1			282,000	282,000
14	Office Furniture and Equipment	1			270,000	270,000
15	Report Preparation (Including translation)	1			200,000	200,000
16	Miscellaneous Expenses	1			50,000	50,000
	Total			¥38,425,000		VND7,915,000

## Minutes of Meetings

Date of Meeting	Other Party of Meeting
April 19, 2010	Department of Science and Education, MOH
April 20, 2010	Viet Duc Hospital
April 20, 2010	Bac Mai Hospital
April 21, 2010	Haiduong Medical and Technology University
April 28, 2010	Candidate 15 hospitals, MOH (Inception WS)
May 12, 2010	World Bank
May 12, 2010	KfW
May 13, 2010	ADB
May 24, 2010	WHO
Dec. 1, 2010	Workshop for Draft Final Report



打合せメモ	
日時	2010年4月19日 14:00~16:00
場所	保健省会議室
出席者	保健省 CPMU: Mr. Ha, Mr. Thao Department of Science and Education: Mr. Kham (次長)、Mr. Dat 調査団 野口、森、岡田、Ms. Ha、Dr. Phan
議事	<p>1. Phase I Project の反省 (Department of Science and Training)</p> <p>Pilot 事業では各病院からの要望を基にそのまま CPMU との協議を通じて研修計画が作られている。結果の評価は現在進行中であるが、Phase 2 においては、研修の要望を聞いたうえで当局が参加して CPMU と協議をし、研修計画の内容を検討したい。個別の病院からの要望をそのまま研修計画として作成する方法には無理があることは認識している。Phase 2 での計画策定はボトムアップ方式（病院の要望基本型）であり、今回はトップダウン方式（病院の要望を基にしつつも、保健省で十分検討を加えた内容とする方式）また、現在進行中の多くの他の研修計画との重複をさけるように検討を行う必要もある。実際の Pilot 事業ではこのようなことが生じていた。</p> <p>2. 現在進行中の研修制度</p> <p>医師の卒後研修について、その改善を図るのが、現在のこの局にとっての最も大きな課題である。卒後まず Resident として研修を行うか、Specialty を持つために (Grade 1 or 2) 研修をはじめることが分かれ、その後 Master を目指し、Post Doctor としてさらに上位を目的とする。このようなシステムの構築を目指して改善しつつある。</p> <p>3. 短期研修について</p> <p>病院から研修の要望が出されたら CPMU と協議を行い、必要とあれば外部から有識者を招いて計画を検討する。研修施設としては、国内では国立病院で行われる。通常、援助プロジェクトに係る研修計画については、援助額・規模によって、各病院からの要望をまとめて国内・外研修を検討している。短期研修は、①チーム Training、②新しい機材導入による新しい技術研修、③機材維持研修、④病院経営など、責任に応じた研修（国外を含む）に分けられており、各々その成果についての Evaluation が行われる。</p> <p>4. Phase II Project の人材育成について</p> <p>上記 1 の反省から、Phase II Project においては下記の手順で研修計画を検討し</p>

たい。

- ①各病院からの機材要求リストの入手
- ②各病院からの研修希望計画の入手
- ③研修先の Activity の検討
- ④機材以外の経営研修の必要性

以上の手順で必要な研修の計画を検討するが、その際には各病院の要望を最大限に配慮する。

#### 5. SAPROF でのプロセス

(調査団)

今回の SAPROF に関しては、新しい機材の使用・維持管理および、それを利用して行う医療サービス技術の習得に関する研修、病院管理研修が主であり、それらに関する各病院からの研修の要望をまとめ、それが各病院にとって妥当であるかの検討を行って、必要予算と共に CPMU および JICA に提出して合意を得るプロセスを踏む。

(印象)

研修計画の策定にあたり、各病院の優先順位や各研修施設の Capacity に基づく役割分担など、研修計画決定の基礎となる人材育成に係る基本方針・政策などについての回答が得られなかった。研修計画の決定に関しては、多くの改善点があるように感じた。

打合せメモ	
日時	2010年4月20日 09:00~11:00
場所	Viet Duc University Hospital 会議室
出席者	保健省 CPMU: Mr. Thao ベトドク大学病院: Ass. Prof. Tran Binh Giang MD, PhD, Vice Director 調査団: 野口、森、岡田、Ms. Ha、Dr. Phan
議事	<p>1. 病院概要 (ベトドク病院)</p> <p>1902年創立のベトドク医科大学付属病院の外科系が中心の病院である。860ベッド、14科、医師150名で構成されている。中央に6階と7階建の新しいビルがあり、CTやPETが置かれているが、その他の建物はかなり旧く、広い敷地に分散型に配置されている。患者の移送やデータの移送には家族の援助が必要で、院内の通りが通常の病院の廊下のように使われている。医療資材の運搬も同様である。</p> <p>大学付属病院として年間500人の学生の教育と、200人の卒後研修を行っている。その他、看護師、レジデントも受け入れ研修を行っている。新しい試みとして6つのSatellite病院が組織されており(この中にはSon TayやBac Giangが含まれる)、これらの病院のレベル向上を目的とした5年間のProjectが行われており今年が最終年度である。問題症例のテレビカンファレンスや短期の研修の積み重ねにより、かなり成果が上がっている。</p> <p>また短期の研修も多く行っており、年間60人の医師と、1,000人のParamedical staffを受け入れている。</p> <p>2. Phase I Project の評価 (ベトドク病院)</p> <p>この病院では基礎研修として、3病院からの19人の医師と12人の看護師の研修を4週間行った。専門分野研修としては、Thai Nguyenから14人を24週から6週までの期間6テーマに分けて行った。Ha Tinhからは43人を8テーマに16週から3週間隔で行い、Lang Sonからは28人を4週から12週7テーマで行った。</p> <p>例えば、Tran Binh Giang 副院長の専門である腹腔鏡外科に関しては3ヶ月の間に、講義による必要な知識の導入から開始し、動物モデルによる実習、臨床例の見学、臨床例の実地まで行い、各段階に於いて試験を行い、成果が見えない研修生には研修期間を延長する(但し研修費は各病院持ちになる)。最終的に腹腔鏡外科の初歩的な段階の免状を交付する。看護師に関しては同様に研修証明書を交付している。これらの研修に関してはテキストブック・カリキュラム</p>

も設定している。腹腔鏡外科ではこのような研修の定型化をしているが、他の部門に関しても可及的実質的な研修を行っている。また、研修生が自分の病院に帰ったあとも、さらに上級の手術を必要とした時は、当病院から Trainer を派遣して実地で手術指導を行っている。

現在の研修に係る問題は、いくつかあるが主なものは以下の通り。

- (1) 教師の時間が臨床の忙しさのために、研修に十分な時間がとりにくいこと
- (2) 研修の要請があつて、決定されるまでの間に、その研修が必須であるか否かについて、当病院と保健省科学教育局や CPMU とを含めた検討が十分なされていないこと
- (3) 他の Training course との重複があること

(印象)

研修センターやその他の研修のための機材や設備について、時間がなく見学できなかったが、研修生に対する研修証明書、または免状の交付は重要なことである。

打合せメモ	
日時	2010年4月20日 13:30~15:30
場所	Bach Mai Hospital 会議室
出席者	保健省 CPMU: Mr. Thao バックマイ病院: Ass. Prof. Do Doan Loi MD, PhD, Vice Director of Hospital Director of Training Center, Hospital 調査団: 野口、森、岡田、Ms. Ha、Dr. Pham
議事	<p>1. 病院概要 (バックマイ病院)</p> <p>2,000 ベッド (但しベッド占有率は 2007 年では 217%)。600 人の医師が在籍し、うち約半数は研修の任に当たる。大学付属病院として、年間 6,000 人以上の研修生を引き受けている。短期研修については 10 年間に 45,000 人行っており、昨年は 6,750 人 (うち 405 人が外国人) を、45 の省から引き受けた。医師と看護師の Training コースはあるが、検査技師と放射線技師のコースはない。研修中または研修後の評価に関しては、講義への 90%以上の出席、実地研修の中途と最後に既定のチェックポイントについて 5 回のチェックを行い可否を判定している。研修目的が最初にはっきり設定されていれば、多くの場合に研修は成功している。</p> <p>2. Phase I Project の評価 (バックマイ病院)</p> <p>3 病院から 309 人の研修の依頼を受け、20 の科と 5 部門の 51 のコースについて 3 週の基礎研修と 8 週または 12 週の専門別研修を行った。内容は 30%の講義と 70%の実地研修である。結果として 90%の研修生は研修終了書の取得に成功し、アンケートによると 85%の研修生は研修内容に満足していた。問題点としては、以下の通りである。</p> <p>(1) 各病院に於ける研修の必要性や実施体制についての協議が長期になってしまった。</p> <p>(2) 各研修生のレベルがあまりにも多岐にわたっており、Bach Mai 病院の構成に合っていないことが多かった。</p> <p>(3) Bach Mai 病院の Capacity に関しては毎年 1,000 人の医師と 6,000 人の Paramedical に関して研修を行っており、余り問題はない。しかし上記 (1) と (2) に関して、事前に各病院と Bach Mai 病院の間で周知な Discussion を行うことが必要で、可能であれば CPMU の参加が望ましい。研修計画そのものについては、院内の院長を長とする委員会で決定している。</p> <p>(4) 今回の研修は昨年 10 月に開始してから 5 カ月経っているが、まだ何ら支払</p>

いがされていない。また研修生の滞在中の金銭的な問題もある（不足している）。

### 3. DOHA について

Bach Mai 病院での DOHA 事業は、現在では地方への教師の人材派遣を中心に行っており、院内研修は研修担当部門が行っている。上記の研修終了者についても必ず Follow up を行い、該当病院に於いて実地指導や、その病院からの診療依頼例などについて教師が実際に病院へ赴いて指導を行っている。その結果、やや高度の臨床手技に関しては、現在では 60%が省病院などで、40%が Bach Mai 病院で行うようになってきた。

#### (印象)

研修センターはすでに完成しており、講義室や Simulator による実習室があったが、数や内容はやや貧弱な印象を受けた。多くの研修は Bedside で行われているものと思われるが、果たしてこのような多忙な病院に於いてどのような形で Bedside teaching（研修生が実際に自分の手で処置を行う）が可能かについては検証の必要性があるように感じた。

打合せメモ	
日時	2010年4月21日 09:00~12:00
場所	Hai Duong Medical and Technical University 会議室
出席者	保健省 CPMU: Mr. Thao、Ms. Tuoi Hai Duong Medical and Technical University : 調査団：野口、森、岡田、Ms. Ha、Dr. Pham
議事	<p>1. 大学の概要</p> <p>1960年に看護学科が、1975年に医療技術学科が創設された、国立大学である。7階建ての新しいビルとドミトリイのある新しい区域と、旧来からの実験実習や検査棟のある区域が道路をはさんで存在する。敷地は広く、新しい区域には実習棟と図書館体育館などを来年から建築をはじめの予定で、予算措置（保健省予算および大学予算）は確保されている。古い地域には200ベッドの付属病院と外来棟を建築する予定である。現在各学年1,000人合計4,000人の学生が在籍する。教師は常勤が195人で、非常勤を含めると400人以上である。半数以上が医師であるが、今後看護と技術の教師陣を強化したい。看護学研修のノウハウは2008年10月のJICAの本邦研修に於いて獲得された。看護学は3年または4年のコースで研修が行われ、医療技術は2年から4年のコースがある。医療技術は、放射線と臨床検査、リハビリテーションの3コースがあるが、近い将来に全8部門に拡大する。臨床実習は、隣接している Hai Duong Provincial General Hospital (Grade 1) で行っている。</p> <p>2. Phase I Project について (ハイズン大学)</p> <p>臨床検査系の医療技術研修はこの大学では行われなかった。看護は3病院から55人の看護師の研修が依頼され、4クラスに編成して実施した。患者への基本看護部門が2週間の他は、ICU、Ob/GY、麻酔の各部門について4週間の研修を行った。多くの研修生はDormitoryに居住した。研修は30%の講義と70%のPreclinical (Simulatorによる実習)と臨床実習から成り立っている。指導者は上記の各部門の長であり、専任として教育を行った。</p> <p>Phase I Projectの反省としては以下の通りである。</p> <p>(1) 研修生の中に高齢の人がかなり混じっており、当該病院に帰還後の継続性やActivityについて疑問が残った。人選の際には若手中心にすべきであろう。</p> <p>(2) 研修生の基本的な知識と経験に大きなばらつきがあり、クラス編成に苦慮する。事前にチェックを行ったところ、ある程度の情報を持っている者もいるが、全く知識がないように思える研修生もかなり見られた。この点に</p>

については研修依頼病院と MoH の間で事前に詳細な検討を行って欲しい。

(3) 研修予算が足りない。

(4) 研修期間の 2~4 週間というのは絶対的に不足している。最低でも 2/3 ヶ月以上は必須と考える。

### 3. 研修の Capacity について

(ハイズン大学)

短期研修の依頼については、大学の研修管理委員会が討議して決定するが、ベトナム全国で、南部のホーチミンと中部のダナンに看護大学があるだけであり、北部はこの大学が一手に引き受けなければならない。物理的に 1 クラス 30 人の 8 クラス、合計 240 人までが予算さえあれば、一時に研修可能ではあるが、分野の重複などで研修依頼を受けられないこともある。2008 年からすでに 4 つのドナー (JICA を含む) の研修を行ってきており、現在もオランダの Donation による研修が進行中である。これらの交通整理や重複の除去のためにも、上位機関 (MOH など) との緊密な事前討議が必要である。

なお、2008 年に Nursing Training Capacity Improvement の Technical Assistance の要請を JICA へ提出した。この JICA による支援を期待している。

(印象)

新しい区域の本館は完全に整備が終わっておらず、会議室や講義室としてのみ使用されている。旧区域には多くの教育及び研究用建物があり、目的に沿って使用されている。食物有害物質研究室や、食中毒研究室、細菌研究室などには多くの最新機器があり、一部は Donation によるものの多くは大学の予算で購入されている。生化学、血液検査などの実習室には、最新オートアナライザーが導入されており、医療技術系の研修には最適な環境であると思われた。看護学の実習室は 7 階建ての建物の中に集約されており、各階毎に、基礎解剖、公衆衛生、手術室及び外科手術、産科、ICU、基礎看護技術などの Simulator が数多く装備されている。総合病院のような印象を与え、他の Bach Mai 病院などの研修室より研修実績が上がるものと思われた。実際の臨床研修病院である Hai Duong PGH がどのような機材を有し、どのような医療レベルであるかについては不明であり、一概には結論づけられないが、この大学の固有の 200 ベッドの臨床研修病院が完成した暁には、運営方法によっては有力な研修施設になることが期待される。



## MINUTES OF MEETING

### **Inception Workshop of Special Assistance for project Formation (SAPROF) Under the Provincial and Regional Hospital Improvement Project (Phase 11) Ministry of Health**

Venue: Meeting Hall E2 , La Thanh Hotel , 218 Doi Can Street , Ba Dinh District , Hanoi , Vietnam  
Date: April 28<sup>th</sup>, 2010

#### **I. Attendance:**

1. .Dr. Nguyen Quang An ,Vice Director ,Department of Planning and Finance (MOH), Director of CPMU
2. Mr. Hoang Kim Ha , Vice Director, C PMU
3. Mr. Shingo Tatematsu, Ms. Chie Shimodaira, JICA Tokyo
4. Mr. Shuji Noguchi, Team leader
5. Members from SAPROF
6. Representatives from Provincial Health Bureau, 15 candidate hospitals

#### **II. Content:**

##### **1. Dr. Nguyen Quang An - CPMU Director**

- Deliver the opening remarks welcoming all the delegates to this inception workshop
- Express sincere Thanks to JICA and international experts for great support and collaboration since the project implementation
- Summarize up-to-dale project phase I implementation progress and implementation plan for the second phase of the project

##### **2. Mr. Shingo Tatematsu -JICA Tokyo representative**

- Emphasize that support in the health sector for Vietnam is the one of the biggest focus of JICA. JICA has given great support to central hospitals in Vietnam through grant fund and technical assistance such as Bach Mai Hospital, Thua Thien Hue and Cho Ray Hospital. JICA will continue to support the health sector to improve the hospital quality. This has been piloted in Ha Tinh, Lang Son and Thai Nguyen.
- JICA and MOH have agreed to implement the SAPROF, which is to support MOH to formulate the project for the coming stage. SAPROF team will conduct the studies on MOH policies and updated situation of candidate hospitals, and prioritize the candidate hospitals for detailed study on project component, based on the prioritization. The result of SAPROF will be the basis for the appraisal by Japanese Government/JICA
- Call upon provinces to closely collaborate and support the SAPROF team for the project formation

##### **3. Mr. Shuji Noguchi - Team leader**

- Make an detail explanation of Inception Report, namely:  
+ SAPROF Basic Strategy

- + SAPROF Methodology
- + SAPROF Implementation Schedule

**4. Mr. Hoang Kim Ha. Vice Director CPMU**

- Present the following steps for preparation for phase II of the project
- Suggest provinces to collaborate with SAPROF team for more discussion on the strategy, methodology as well as the implementation schedule.
- Hospitals have to review the Hospital Strategic Development Plans (regarding the health technique, human resource capacity, hospital infrastructure, equipment need...)
- Ask the provinces (Provincial Health Bureau as well as the hospitals) to support and collaborate with SAPROF team
- Mention the importance of project management by hospitals
- Hospitals have to proof their own equipment, make a reasonable analysis
- MOH is asking JICA for more support to the SAPROF team and hospitals
- Hospitals have to consider again the equipment list; it may be revised for better project investment efficiency.

**5. Question and answer sections by hospitals, the consultants and CPMU**

The section gets enthusiastic and constructive ideas from all the representatives.

+ Mr. Hai -Director of Thanh Hoa Pediatric Hospital:

- There are a lot of changes since the time of bilateral first discussion on the hospital's data (e.g increase in the hospital scale, total number of beds, expanded coverage area social-economy condition is improved, increasing demands for healthcare services, hospital equipment has been old, backward, international technology of medical equipment has improved.....). So the equipment supply and training should be revised according to meet current situation in province and the country.
- Hospital expects to be included into the ODA program otherwise they do not know whether to register for other ODA program
- The team should pay field trip to hospitals for updated information on hospitals data, needs

+ Dr. Giang, Vice Director, Thai Binh Provincial Health Bureau:

- Thai Binh has 12 district general hospitals with about 20 beds/each. Thai Binh has established a 200 bed Pediatric Hospital which is all the time overloaded. The hospital is facing the shortage of equipment, infrastructure for the pediatric hospital. A lot of pediatric patient are referred to Hanoi.
- We have made proposal to the PPC to upgrade the Pediatric Hospital to a 300 bed hospital.
- We have planned to get JICA fund for 6 project components similar to the one recommended by the team. Thai Binh hopes to have more support from JICA for capital construction to get a more effective and synchronous investment to hospitals.

-

+ Mr. Shuji Noguchi:

- Welcoming the comments, he emphasize that one Of the responsibility and task Of SAPROF team is to visit hospitals again for updating information, need assessment.
- SAPROF team is aware that after 1.5 years there would be a lot of changes occurred in the provinces. Therefore the hospitals are requested to study and fill in the questionnaires for updated information.

+ Mr. Hai -Director of Thanh Hoa Pediatric Hospital:

- For Thanh Hoa is selected by the project, which will be criteria / conditions for healthcare workers to be trained in Japan?

+ Mr. Shuji Noguchi:

- Actually the training program was organized in both Japan and Vietnam in Pilot Project. Training in Japan will be much more expensive. The province should carefully think what to learn first then where to learn.
- For better, provinces should have studied about the training plan and SAPROF team will try to advise good training programs.

+ Mr. Okada:

- SAPROF team will together with hospitals discuss more about project components including the training, after the hospitals are selected.

+ Mr. Hoang Kim Ha:

- Introduce about working visit and training courses in Japan for the first phase of the project.
- The project may think about another option for training aboard (may be Singapore instead of Japan) for cost saving.

+ Dr. Duong Cong Hoat -Nghe An Pediatric Hospita:

- Are there 2 visits by SAPROF team for (1) Finish the questionnaires and (2) Need assessment

+ Mr. Shuji Noguchi:

The SAPROF will have 2 stages

- The first stage is to collect data as mentioned in the questionnaire; Survey and assess existing conditions in the hospitals for equipment list, infrastructure for equipment receiving, hospital's environment....
- SAPROF team will study policies of MOH and JICA, discuss hospital prioritization criteria, and prioritize the hospitals for the discussion between MOH and JICA on hospital selection.
- The second stage is to recommend the components for the selected hospitals for the second Phase

+ The questionnaire is prepared in English. Is there any Vietnamese version of the hospital has to work with the English version).What is deadline for submission?

+ Mr. Okada:

- SAPROF will provide the Vietnamese version.
- SAPROF team will visit every hospitals, SAPROF will consider the deadline for submission.

### III. CONSLUSION:

Dr. Nguyen Quang An, CPMU makes a wrap-up speech to close the workshop.

He once again mentioned the reason for holding this inception workshop.

The CPMU ask hospitals to finalize the improvement plan and closely collaborate, support the SAPROF team for the best working result.

MOH and international consultant for the first phase carefully considered for two years to select 15 hospitals among 25 hospitals. MOH requests JICA and SAPROF to have more support and expects all 15 hospitals in the second phase by JICA/ODA loan.

#### Attendant List of Workshop

No.	Name	Name of Organization	Position
1	Nguyen Huu Quoc Nguyen	C Da Nang CGH	Director
2	Le Tat Hai	Thanh Hoa PPH	Director
3	Nguyen Viet Hai	Ditto	Head of Planning Department
4	Duong Cong Hoat	Nghean PPH	Director
5	Dao Thi Khanh	JICA Vietnam	Project Officer
6	Tatemasu	JICA Headquarter	Head of Project Division
	Chie Shimodaira	Ditto	
8	Huynh van Hue	Sa Dec Inter district hospital	Vice Director
9	Do Chan Quoc	Ditto	Head of Imaging Diagnosis Dept
10	Luong Duc Son	Thai Binh PPH	Vice Director
11	Do Thanh Giang	Thai Binh DOH	
12	Nguyen Huu Thien	Thai Binh PPH	
13	Pham Van Thanh	Nghe An DOH	Director
14	Nguyen Sy Can	Nghe An PPH	Vice Director
15	Nguyen Lam Huy	Nghe An DOH	Vice Director
16	Truong Minh Sang	Tay Ninh PGH	Director
17	Nguyen Thanh Tung	Tay Ninh DOH	Head of Planning Division
18	Le Hong Phuc	Tay Ninh PGH	Head of Planning Division
19	Truong Quang Vinh	Bac Giang DOH	Vice Director
20	Tran Thi Bich Hang	Ha Giang DOH	Vice Director
21	Vo Thi Chinh	Tien Giang DOH	Director
22	Pham Minh Chinh	Binh Dinh PGH	Head of Equipment and consumables division
23	Nguyen Duc Hanh	Ha Nam PGH	Vice Director
24	Nguyen Thi Hong Hai	Ditto	

25	Nguyen Ba Hy	Lam Dong PGH	Director
26	Tran Nhiem Vu	Nam Dinh POH	Vice Director
27	Tran Manh Ha	Nam Dinh DOH	Vice Director
28	Nguyen Xuan Quy	Ha Nam DOH	Director
29	Vu Van Son	Ditto	
30	Vu Hung Vuong	Ha Giang PGH	Vice Director
31	Phung Xuan Truong	Son Tay Inter-district General Hospital	Director
32	Nguyen van Quang	Ditto	Head of Planning division
33	Vu Ha Thu	MOH, Department of International Affairs	Executive
34	Nguyen Danh Song	Bac Giang PGH	
35	Bui Ngoc Dinh	Ditto	
36	Truong Tien Lap	Nam Dinh DOH	
37	Nguyen Thi Van Anh	Ha Noi DOH	
38	Le Thang Duc	MOH, Department of Science and Training	Executive
39	Duong Phu Hoai	Ninh Thuan PGH	Head of equipment departmet
40	Tran Phuong Phien	Ditto	Vice Director
41	Vo Nhu Nguyen	Ninh Thuan DOH	
42	Nguyen Thu Van	MOF	Executive
43	NGUYEN Hoang Linh	MPI	Executive

議事録	
日時	2010年5月12日 09:30~11:30
場所	World Bank 会議室
出席者	World Bank: Mr. Toomas Palu, Lead Health Specialist Ms. Loraine Hawkins, Health Policy Consultant 調査団：野口、Ms. Ha
議事	<ol style="list-style-type: none"> <li>1. 調査団より SAPROF 内容を説明し、世銀との情報交換を通じて、同一州内での世銀対象施設と 2 期目に選定される施設の間でのプロジェクト活動（リフェラル、研修等）の協調可能性の検討について提案した。</li> <li>2. 世銀は、いくつかの地域施設支援プロジェクト、Hospital Waste Management Project、Hospital Management Project を進めている。</li> <li>3. Hospital Waste Management Project は、ベトナムで関心が高くなっている病院の排水および固形廃棄物の処理について、Demand Driven 方式でハードも含めて支援するもので、対象施設は省病院も含めて 200~220 程度。</li> <li>4. Hospital Management Project は、Decree 43 により Autonomy を求められている病院の運営についてのポリシーを提言するもの。</li> <li>5. ADB（最近では病院への支援を控えている様子）、KfW（ベトナム中部を中心に支援）も病院への支援をしており、同じ州で他ドナーが活動していることもある。ドナー間の調整がされていない。これは、保健省が主導して調整をせず、個別ドナーとの協議をもとに各プロジェクトを進めていることによる。また Autonomy を求められている地方省は、単独でドナーと交渉することもあり、このような動きも援助対象施設の間での協調がとれていないことに繋がっている。やはり、ドナー間での協調が必要である。</li> <li>4. また、Autonomy を求めた結果として、病院が直接機材を調達するようになり、マネジメント能力がないために市場の業者との関係がうまくとれず、仕様書作成段階から問題が発生している。</li> <li>5. 保健セクターでは、Decree 43 を含めて政策レベルで解決すべき問題もあり、プロジェクトのなかで改善できる問題と並行して支援すべきと考える。</li> <li>6. 世銀は JICA と各セクターについての情報交換を行って、協調可能性を検討している。他セクターについては 4 月に行われたが、保健セクターについては 5 月に実施される予定であり、政策レベルと個別プロジェクトレベルでの意見交換を期待している。</li> <li>7. Approved Project のデータについてはサイトで公表しており、そのアドレスを追って提供する。</li> </ol> <p style="text-align: right;">以上</p>

議事録	
日時	2010年5月12日 14:00～15:00
場所	KfW 会議室
出席者	KfW German Development Corporation:Ms. Tran Huong Giang, Coordinator for the Priority Area of Health 調査団：野口、Ms. Ha
議事	<p>1. 調査団より SAPROF 内容を説明し、KfW との情報交換を通じて、同一州内での KfW 対象施設と 2 期目に選定される施設の間でのプロジェクト活動（リフェラル、研修等）の協調可能性の検討について提案した。</p> <p>2. KfW は、”Joint German Cooperation Project TC (GTZ DED-CIM-In Went)+FC (KfW)”を 5 省を対象に実施中（2008－2013）。5 省には、Nghe An、Thai Binh、Thanh Hoa が含まれる（SAPROF では、小児病院と、産婦人科病院）。このプロジェクトでは、対象省の省レベル病院から始め、同省のいくつかの District Hospital および Commune Health Center を対象に支援している。また、行政レベルのマネジメントも含む。投入は、機材、研修、環境対策、IT 導入など。機材調達は、州保健局を実施機関としており、計画段階から州保健局および PPC を C/P として実施した。Decree 43 発令以降、地方医療システムを直接支援することにより効果を挙げることを目的としている。同プロジェクトの内容は追って Project Document を電子ファイルで送付する。</p> <p>3. JICA の SAPROF において対象病院と他ドナー支援の施設との連携を構築する計画は、地方医療システムをより効果的にするものであり、KfW のみならず GTZ も含めて協議したい。</p> <p style="text-align: right;">以上</p>

議事録	
日時	2010年5月13日 09:00~10:30
場所	ADB 会議室
出席者	ADB: Mr. Vincent de Wit, Principal Health Specialist 調査団：野口、Ms. Ha
議事	<p>1. 調査団より SAPROF 内容を説明し、ADB との情報交換を通じて、同一州内での世銀対象施設と 2 期目に選定される施設の間でのプロジェクト活動（リフェラル、研修等）の協調可能性の検討について提案した。</p> <p>2. ADB は、看護師研修制度再構築などの政策レベルの支援もしているが、従来の医療分野への支援から、地域単位の <b>Primary Health、Poverty Reduction</b> に重点を移して支援している。これは保健省との協議のなかで決まったもの。世銀、ADB は、現在のベトナム医療セクターの支援において地域戦略を打ち出しており、お互いに地域を分けて支援することにしている。更に、病院全体、或いは地域システム全体という、複合施設・システムへのアプローチを避け、結果の出しやすいスコープに対するアプローチを計画している。ベトナムの政策レベルでの混乱に巻き込まれないアプローチをとるという趣旨である。政策レベルの混乱を改善する必要があるが、それには時間がかかる。</p> <p>3. SAPROF 対象病院の活動との連携は良い考えであり、ADB も協力したい。具体的には、<b>Health Care in South Central Coast Region</b> において 1 省約 U.S.\$10,000Million（合計 8 省で、U.S.\$80,000Million）を投じて、<b>District Hospital</b> から <b>CHC</b> までを対象に支援している（～2013）。機材、研修、病院経営、環境等全てを含む。ただし、これも支援のし易い省を対象としており、そのなかでは、<b>Da Nang</b>（総合病院）、<b>Binh Dinh</b>、<b>Ninh Thuan</b> が含まれる。ただし、対象施設によって支援内容は異なり、例えば <b>Da Nang</b> に対しては、既に体制がほぼ整っていること、財政状況が良いことを考慮して、わずかな機材調達だけに絞っている。</p> <p>4. SAPROF において対象病院が確定した後に再度話し合う。</p> <p style="text-align: right;">以上</p>



## Meeting minutes

**Venue:** Vietnam WHO office – 63 Tran Hung Dao, Hoan Kiem, Ha Noi, Vietnam

**Time:** 10:00 – 11:30 am, May 24 2010

### **Participants:**

Mr. Jean-Marc Olive – country office representative

Dr. Graham – Technical officer - Health system development

Mr. Noguchi – SAPROF team leader

Ms. Le Hoa – Local Consultant for SAPROF

### **Ideas have been shared & discussed:**

1. Introduction on SAPROF rational and activities.
2. WHO office in Vietnam has been participated in a quarterly partnership meeting since 2008. It is coordinated by MOH- department of international cooperation.
3. WHO in Vietnam is working on policy at national level, not specific at any province, and there is no infrastructure capacity building. EU, UNICEF, UNFPA, GTZ, the banks (WB, ADB),...are the other donors/partners.
  - WHO has management training specifically for health system, and better management at district and communal levels. It prefers on the job training with wide range aspects. It has no capacity to develop a ToT center by WHO.
  - GAVI has provided short course, Italian has provided hospital related courses, too.
  - Vietnam government through MOH would like to invest to infrastructure development from ODA, loan resources. Korean funding has worked directly to Vietnam hospitals with MPI coordination and ignore MOH.
  - Non-government organizations in VN are diversified.
  - Provinces in Vietnam are very autonomous/decentralized
  - Funding sources to Vietnam for health is going to HIV/AIDS activities with high ratio (80%)
  - In the near future, WHO-WB will facilitate a seminar on hospital autonomous.
  - There is a conflict of health policy in Vietnam (market oriented or subsidized public service)

- How other donors design a sustainable project? From user site or from institutional site (flexible, capacity, use of money effectively)
- How the lessons learned from pilot phase are going to transfer/share to the second phase participants, CPMU?

**Memo**  
**On**  
**Draft Final Report Workshop**

SAPROF

For provincial and Regional Hospital Development Project (Phase II)

Date: December 1, 2010, 14:00 ~

Venue: Meeting Room of La Thanh Hotel

Attendants: MOH

Directors of 10 target hospitals, and member of PPC and DOH of some provinces

MPI, MOF

Consultants

Agenda:

1. Introduction of the representatives and schedule by Dr. Long, Deputy Director of Department of Planning and Finance/MOH
2. Opening speech by Dr. Xuyen, Vice Minister of Health
3. Explanation of the survey result of SAPROF by Mr. Okada, System Science Consultant Inc. (SSC)
4. Explanation of relating contents to the scope, finance, project management and incoming steps for the Phase II Project
5. Question and answer
6. Wrap-up and closing Speech by Dr. Xuyen, Vice Minister of Health

Proceedings:

1. Introduction of participants and explanation of workshop agenda was done by Dr. Long, who was assigned as a Director of CPMU for the Phase II Project.
2. Explanation on the history and progress of Provincial and Regional Hospital Development Project was done by Vice Minister of Health, Dr. Xuyen.
3. Consultants, represented by Mr. Okada, explained the SAPROF result, based on the field survey of 2 times to 15 candidate hospitals, and prioritization standard and result. The following common issues among the 15 candidate hospitals were addressed to the attention of MOH and the hospitals.
  - ① Need for improvement of hospital management by the management board of each

hospital

- ② Need for strengthening the awareness and control of nosocomial infectious disease
- ③ Need for strengthening the operation and maintenance systems and budgeting for the equipment at the hospital

4. Dr. Long, Director of CPMU for the Phase II Project explained as follows, for the Phase II Project.

- ① We are not sure the availability of funding.  
When waiting for final decision from Japan national assembly, all provinces and hospitals have to fulfill all requirements of Vietnamese government.
- ② MOH/CPMU will be empowered for stronger control of the Project.
- ③ Equipment procurement package through ICB will be bigger than in Phase I Project, and CPMU will control the ICB procurement package.
- ④ HPIU as well as CPMU will have to be reinforced.
- ⑤ Overall estimated schedule was explained to the participants.

Questions and Answers:

- ① Question was raised on the difference of prioritization of 15 candidate hospitals; the one prepared by Consultants and the other final one. It was answered that the one of Consultants used the prioritization criteria developed by Consultants, and the final one was made through the discussion between MOH and JICA based on the Consultants prepared priority, in accordance with the policies of MOH and JICA.
- ② **Vice chairwoman of Binh Dinh People's Committee** stated the importance of project investment to Binh Dinh and its region. As SAPROF report has provided a huge and comprehensive picture of Vietnam health situation and targeted hospitals.
- ③ **Thai Binh Department of Health** representative raised the idea of a document from MOH. This document needs to have detail information that helps province/hospital to submit to direct authority either people's committee or MOH to allocate counterpart fund for 2011.  
Three other departments of health and hospitals agreed on Thai Binh DOH suggestion.
- ④ **Dr. Nguyen Hoang Long** said during the first year of the phase II project: no equipment to be received, so the counterpart fund is very small. All provinces need to have an approval on the project's approach.
- ⑤ **Ministry of Finance representative** reminded MOH to follow Ministry of Planning and Investment guidelines for project approval. The proposal/report needs to highlight more strongly the rationale to invest to targeted hospitals.
- ⑥ **All provinces/hospital agreed:** to the comments and remarks explained by Dr. Long, Director of CPMU.

We need MOH's document before submitting any paper or feasibility study to the Provincial People's Committee.

Closing remarks:

Vice Minister, Dr. Xuyen, closed the workshop with the closing remarks by briefly explaining again the past achievement of Provincial and Regional Hospital Development Project and the significance of Phase II Project.

Provincial and Regional Hospital Improvement Project (Phase I) had very good results.

We are waiting for the final decision of Japan national assembly toward loan agreement of Provincial and Regional Hospital Improvement Project (Phase II) .

Funding from Japan will not influence the quantity of targeted hospitals, currently 10 hospitals.

On behalf of MOH, Dr. Nguyen Thi Xuyen highly appreciates Provincial and Regional Hospital Improvement Project (JICA Phase I) supports and efforts of all provinces, hospitals, consultants to participate to SAPROF.

**Attendant List for Workshop for DF/R**

No.	Full name	Position
1.	Nguyen Thi Xuyen	Vice Minister of MOH
2.	Nguyen Hoang Long	Deputy Director of Planning and Finance Dept. (PFD), MOH
3.	Nguyen Quang An	Deputy Director of PFD and Director of CPMU of the Phase I
4.	Hoang Kim Ha	Deputy Director of CPMU of the Phase I
5.	Nguyen Van Quang	Planning and Finance Dept.
6.	Ninh Thi Hoai Thu	Chief Accountant of CPMU
7.	Le Thanh Cong	Planning and Finance Dept.
8.	Dinh Thi Thuy Nga	CPMU
9.	Nguyen Thi Tuoi	CPMU
10.	Duong Van Thao	CPMU
11.	Cao Manh Cuong	CPMU
12.	Vu Ho Ly	International cooperation Dept.
13.	Nguyen Cong Sinh	Planning and Finance Dept.
14.	Luong Thanh Nga	Cabinet office of MOH
15.	Pham Thi Ha	Ministry of Planning and Investment
16.	Nguyen Xuan Thao	Ministry of Finance
17.	Phung Van Vinh	Son Tay Inter-District General Hospital
18.	Nguyen Thi Thanh Binh	Binh Dinh PPC
19.	Ho Viet My	Deputy Director of Binh Dinh DOH
20.	Vo Thi Thanh Mai	Binh Dinh DOH
21.	Nguyen Danh Song	Bac Giang Provincial General Hospital
22.	Nguyen Van Hung	Bac Giang Provincial General Hospital
23.	Bui Ngoc Dinh	Bac Giang Provincial General Hospital

24.	Pham Thanh Nhan	Da Nang DOH
25.	Nguyen Thi Van Anh	Ha Noi DOH
26.	Nguyen Van Dung	Cabinet office of MOH
27.	Tran Dang Khoa	Secretary of Vice Minister
28.	Vo Nhu Nguyen	Ninh Thuan DOH
29.	Vu Van Thuong	Thai Binh DOH
30.	Vuong Quoc Hoai	Ninh Thuan Provincial General Hospital
31.	Tran Phuc	Director, Ninh Thuan Provincial General Hospital
32.	Nguyen Huu Quoc Nguyen	Director, C Dang Nang Central General Hospital
33.	Pham Ty	Director, Binh Dinh Provincial General Hospital
34.	Chu Thi Du	Ha Noi Thanh Nhan Hospital
35.	Tran Thi Anh Trinh	C Dang Nang Central General Hospital
36.	Phan Nguyen Doan Hanh	C Dang Nang Central General Hospital
37.	Nguyen Duc Tuong	Nam Dinh DOH
38.	Duong Van Bang	Thai Binh Provincial Pediatric Hospital
39.	Do Van Lanh	Bac Giang DOH
40.	Tran Q. Nhat	Nghe An Provincial Pediatric Hospital
41.	Nguyen Hai Duong	Nghe An DOH
42.	Nguyen Viet Long	Bac Giang Provincial General Hospital
43.	Duong Cong Hoat	Director, Nghe An Provincial Pediatric Hospital
44.	Nguyen Ba Hy	Director, Lam Dong Provincial General Hospital
45.	Dang Thi Minh	Nam Dinh DOH
46.	Pham Van Thanh	Nghe An DOH
47.	Ong The Viet	Bac Giang DOH
48.	Truong Minh Sang	Director, Tay Ninh Provincial General Hospital
49.	Nguyen Van Cuong	Tay Ninh DOH
50.	Hoang Duc Gian	Bac Giang Provincial General Hospital
51.	Phung Xuan Truong	Director, Son Tay Inter-District General Hospital
52.	Nguyen Van Thinh	Lam Dong DOH
53.	Tran Nhiem Vu	Nam Dinh Provincial Obstetric Hospital
54.	Nguyen Trong Binh	Thai Binh DOH
55.	Luong Duc Son	Thai Binh Provincial Pediatric Hospital