


5. 実施協議議事録 (Minutes of Meeting : M / M)

MINUTES OF MEETINGS
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE AUTHORITIES CONCERNED OF
THE ROYAL GOVERNMENT OF THE KINGDOM OF CAMBODIA
ON JAPANESE TECHNICAL COOPERATION PROJECT
FOR HUMAN RESOURCE DEVELOPMENT OF CO-MEDICALS

Japan International Cooperation Agency (hereinafter referred to as "JICA") exchanged views and had a series of discussions with the authorities concerned of the Kingdom of Cambodia with respect to desirable measures to be taken by both Governments for the successful implementation of the Project.

As a result of the discussions, the JICA and the Cambodian authorities concerned agreed upon the matters referred to in the document attached hereto. This Document is related to the Record of Discussions on the Project for Human Resource Development of co-medicals, signed on the same date. 

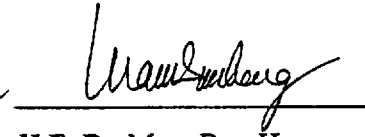
Phnom Penh, 12th September 2003


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Resident Representative

Japan International Cooperation Agency

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H.E. Dr. Mam Bun Heng

Secretary of State for Health

Ministry of Health

Kingdom of Cambodia

THE ATTACHED DOCUMENT

I. PROJECT DESIGN MATRIX


The Project Design Matrix (hereinafter referred to as "PDM") was elaborated through discussion by the JICA and the Cambodian authorities concerned. Both sides agreed to recognize PDM as the important tool for project management, and the basis of monitoring and evaluation of the Project. The PDM will be utilized by both sides throughout the implementation of the project. The PDM is shown in Annex I.

The PDM will be subject to change within the framework of the Record of Discussions when necessity arises in the course of implementation of the Project by mutual consent.

II. TENTATIVE SCHEDULE OF IMPLEMENTATION

The Tentative Schedule of Implementation (hereinafter referred to as "TSI") has been formulated according to the Record of Discussions, on condition that the necessary budget will be allocated for the implementation of the Project by both sides. The schedule is subject to change within the scope of the Record of Discussions when necessity arises in the course of implementation of the Project. The TSI is shown in Annex II.

III. PROJECT DOCUMENT

Both sides jointly have prepared the Project Document for the rationalization of the plan and justification of the project implementation. The Project Document is subject to change within the scope of the Record of Discussions when necessity arises in the course of implementation of the Project. The Project Document is attached in Annex III. 

ANNEX I PDM
ANNEX II TSI
ANNEX III PROJECT DOCUMENT



Project Design Matrix

Project Name: Human Resource Development of Co-medicals
 Project Area: Cambodia

Date: May, 2003

Duration: 2003/9-2008/9

Direct target group: Students at the TSMC and 4 Regional Training Center (RT)

Version: PDM0

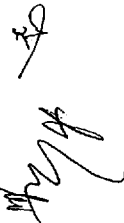
Indirect target group: Clients of public health institutions (facilities)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal</p> <p>Sufficient number of capable co-medicals are allocated at public health institutions.</p>	<p>Number of public health institutions which comply with Minimum Package Activities and Comprehensive Package Activities (CPA/MPA) standards on co-medicals is increased.</p>	<p>The hospital information database, which will be established by the project.</p>	<p>Number and training quality of continuing education courses (conducted by Provincial Health Department and other donors) are improved.</p>
	<p>Number of vacant posts for co-medicals at each public health institution is reduced.</p>	<p>The hospital information database, which will be established by the project</p>	<p>The MOH takes necessary measures to ensure private schools conducting basic training for co-medicals follow national standards and guidelines set by the project.</p>
	<p>Number of TSMC and 4 RTC graduates who work at public health institutions is appropriately increased.</p>	<p>A follow-up study by the Technical Research Office of the TSMC and 4 RTCs</p>	<p>Working conditions at public health institutions are improved.</p>
<p>Project Purpose</p> <p>Capable co-medicals are produced for public health institutions.</p>	<p>The average score on the final exam of TSMC and 4 RTCs students is increased.</p>	<p>Students' performance records on various examinations</p>	<p>The central government does not freeze or drastically reduce the number of civil servants in health sector.</p>
	<p>The average score of project monitoring test for 3rd year TSMC and 4 RTC students is increased.</p>	<p>Project survey</p>	<p>In accordance with regulations, the government takes measures for the TSMC and 4RTC students to be assigned at public health institutions.</p>
	<p>The performance of students at practical training hospitals is improved.</p>	<p>Survey at hospitals which accept TSMC and 4 RTC students for their practical training</p>	<p>Working conditions at public health institutions are not worsened.</p>
	<p>The performance of graduates at public hospitals is improved.</p>	<p>Survey at public hospitals which employ TSMC and 4 RTC graduates</p>	
<p>Outputs</p>	<p>Necessary national standards and guidelines for institutions which conduct basic training for co-medical are issued.</p>	<p>Results of various training seminars on school management</p>	<p>Places which provide practical training to TSMC and 4 RTC students continue existing.</p>

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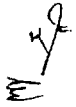
1. National standards and guidelines for basic training of co-medicals are produced.	Public hospital's staffing and facility information is updated annually on the hospital information database.	Monitoring survey on school management	
2. Information on public health institution staff is fed back into the training plan.	Average scores at training seminars for managers and administration staff are improved.	Results of various training seminars on teaching ability	
3. School management of the TSMC is improved.	Performance level of monitoring checklists on school management is improved.	Monitoring survey on teaching ability	
4. Teaching ability of instructors is improved.	Average score at training seminars for teachers and instructors is improved	Annual report of TSMC and 4 RTCs	
5. Teaching materials are upgraded	Performance level of monitoring checklists on teaching ability is improved.	Ministry of Health Annual Report	
6. Periodic monitoring and evaluation are conducted on above 5 "Outputs".	Teaching materials of all departments are produced and can be revised biannually without the help of Japanese experts.	The hospital information database, which will be established by the project	
	In-house evaluation meeting is conducted regularly.	Monitoring and evaluation sheets	
Activities	Inputs		
1-1. Establish a steering committee.	Japanese side	Cambodian side	Cambodian counterparts shall be retained.
1-2. Improve the coordination among medical institutions.	Personnel	Personnel	
1-3. Set guidelines for schools which provide basic training of co-medicals.	<u>Long-term/short term experts:</u>	Staff	
1-4. Standardize teacher's qualification.	Chief Adviser	<u>Counterpart Committee</u>	
1-5. Standardize training contents/modules and level of final examination.	Project coordinator Others	Human Resource Development, Personnel Department, Hospital Service Department, and Planning Department of Ministry of Health TSMC and 4 RTCs	
2-1. Upgrade the existing periodic reporting scheme for reporting the current condition and training needs of co-medicals at public health institutions.			Preconditions

ANNEX I

<p>2-2. Improve the hospital-information database system to be able to update vacant positions and the condition of facilities at public health institutions (map creation). 2-3. Regularly update the list of new co-medicals who complete basic training. 2-4. Conduct a follow-up study of the graduates' employment status.</p> <p>2-5. Advise Human Resource Development to use the information for human resource development plan.</p>	<p>Counterpart Training</p> <p>Equipment</p> <p>Equipment for practical training</p>	<p>Others</p> <p><u>Project Coordinator</u></p> <p>Project Office</p>	<p>Sufficient and appropriate staff members shall be assigned at the TSMC and 4 RTCs by the government.</p> <p>Provincial Health Departments agree to collaborate with the project.</p>
<p>3-1. Conduct training needs assessment and set criteria for evaluation. 3-2. Conduct training on school management (budget management, staff management, equipment maintenance, procurement, student's care etc.) and evaluate impact of the seminars. 3-3. Create school management checklists and regularly monitor actual performance.</p>		<p>Project office at TSMC Project office at Ministry of Health</p>	
<p>4-1. Assess the training needs of teachers/instructors and set evaluation criteria. 4-2. Define appropriate training methods and create training manuals. 4-3. Conduct staff training seminars. 4-4. Regularly evaluate teaching ability.</p>		<p>Local cost</p> <p>Operation and maintenance cost of the project offices</p>	
<p>5-1. Conduct a survey on the current utilization of x-ray facilities at public health institutions. 5-2. Establish a steering committee to open the new x-ray department. 5-3. Revise the study guidelines for all departments. 5-4. Revise/establish appropriate curricula, focusing on practical training.</p>			

ANNEX 1

<p>5-5. Revise syllabi and introduce tests to evaluate training impact on students.</p> <p>5-6. Increase the availability of Khmer textbooks for each course.</p>			
<p>6-1. Conduct a survey to obtain baseline data for evaluation.</p> <p>6-2. Regularly monitor each activity.</p> <p>6-3. Hold project team meetings periodically to evaluate the progress of each activity.</p>			



TENTATIVE SCHEDULE OF IMPLEMENTATION

Input/year	2003.9 - 2004.8	2004.9 - 2005.8	2005.9 - 2006.8	2006.9 - 2007.8	2007.9 - 2008.8
year	First	Second	Third	Fourth	Fifth (final year)
1 Dispatch of Japanese Experts					
1) Long term experts					
① Chief Advisor					
② Coordinator					
③ co-medical education					
2) Short term experts					
① School regulation	—	—	—	—	—
② Human resource development planning		—	—	—	—
③ IEC					
④ Health education		—	—	—	—
⑤ Human relation training		—	—	—	—
⑥ Data base management		—	—	—	—
⑦ School management	—	—	—	—	—
⑧ Maintenance of school facility		—	—	—	—
⑨ Library management	—	—	—	—	—
⑩ Maintenance of Medical equipment	—	—	—	—	—
⑪ Nursing education	—	—	—	—	—
⑫ Physiotherapy education	—	—	—	—	—
⑬ Education material		—	—	—	—
⑭ X-Ray technology education	—	—	—	—	—
⑮ Laboratory technology education	—	—	—	—	—
3 Counterpart training					
① School regulation	—	—	—	—	—
② School management	—	—	—	—	—
③ Co-medical education	—	—	—	—	—
4 Equipment supply					
5 Dispatch of Japanese study team			—		
			Mid-term Evaluation		Project Evaluation
6 Joint Committee	◇	◇	◇	◇	◇

Note: This schedule is formulated tentatively on the assumption that necessary budget will be acquired by both side.

This schedule is subject to change within the scope of the "Record of Discussions" if the necessity arises during the course of the Project implementation

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Project Document
Cambodia
JICA Project for
Human Resource Development of
Co-medicals

Abbreviation list

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
CPA	Comprehensive Package of Activities
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
HRD	Human Resource Development
HSD	Hospital Service Departments
HSSP	Health Sector Strategic Plan
INPRD	Implementing the National Program to Rehabilitate and Develop Cambodia
JICA	Japan International Cooperation Agency
MOH	Ministry of Health, Cambodia
MOPA	Ministry of Personnel Affairs
MPA	Minimum Package of Activities
MSF	Medecins Sans Frontieres
NPRD	National Program to Rehabilitate and Develop Cambodia
NIPH	National Institute of Public Health
ODHO	Operational District Health Office
PD	Personnel Department
PHD	Provincial Health Department
PRSP	Poverty Reduction Strategy Paper
RH	Referral Hospital
RTC	Regional Training Center
4RTCs	Regional Training Center at Battambang, Kampot, Kompon Cham, Stung Treng
SEDP I	First Social and Economic Development Plan
SEDP II	Second Social and Economic Development
TBA	Traditional Birth Attendants
TSMC	Technical School of Medical Care
UHS	The University of Health Science

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1. Introduction

Due to prolonged domestic warfare, Cambodia has lost a lot of capable people in the intelligentsia. Moreover, due to the destruction of the educational system, in many fields, staff training was slow to commence. The public health sector was not exempt. At the end of the domestic warfare, only 40 doctors remained. From 1980, as emergency measures, the fulfillment of quantity before quality was aimed at. Also, without the reconstruction of the educational system, rapid completion of capable people in the public health sector was given priority. In the '90s, there was support for educational institutions from bi and multilateral donors and NGOs. However, since the circumstance of basic education was not in place, the improvement of the educational level as a whole was not attained. As a result, the support did not meet the demands of society. Even today, education and staff training in the public health sector are still essential factors for Cambodia's continuous development.

The Cambodian Government decided that human resource development for co-medicals was an important task for the public health sector. Consequently, in August 2001, the Government made a request to the Japanese Government for its cooperation. Upon this request, short term experts, a Fact Finding Team, and the first and the second Preparatory Study Team were sent to conduct an investigation concerned with staff training in human resource development for co-medicals. As the results, the study concluded that it was more important to support the establishment of educational system for co-medicals of the public health sector hereafter in Cambodia rather than the usual technological guidance for co-medicals.

The concept of this project is to produce co-medicals through improvement of basic educational system, to produce co-medicals with high quality for community and to provide local residents with a good quality public health services.

Tasks that should be tackled are to draw up regulations related to the establishment of training institution for co-medicals, to define teachers' qualifications, to standardize curriculum and medical equipment and materials, evaluate teachers, to prepare the guidance of school management for Technical School of Medical Care (TSMC) and four Regional Training Centers (4RTCs) that enforce those tasks, to reeducate existing teachers, and to reinforce clinical training. This project, is focusing on human resource development of co-medicals, and it can be expected that this project will have a helpful effect across on the whole area of the public health service.

The objective of the project is to produce capable co-medicals of suitable ability to

public health institutions. To execute this project, the Department of Human Resources Development (HRD) in the Ministry of Health (MOH) and TSMC were appointed project enforcement bodies. The project term will be for 5 years.

Along with request of the technical cooperation project, the Cambodian Government also proposed a request of Japanese Grant Aids program for renovation of TSMC schoolhouses and training materials. It is hoped that under the collaboration with technical cooperation and Grant Aids scheme, the capacity building of organizations and people will be achieved, and quality of Cambodian public health services will be improved.

2. Background

2.1 General Information

2.1.1 Society & Economy

1) Geographical Features

Cambodia is a country with an area of 181,035 square kilometers, which is located on the Indochinese Peninsula and bordered by Thailand, Laos, and Vietnam. From May to October, there is a tropical monsoon due to a strong southwest seasonal wind with heavy rain and high humidity. Further, from November to April, there is another tropical monsoon due to a northeasterly wind with little rain and low temperatures.

The average temperature in the capital city, Phnom Pen, is 27 degrees Celsius. The month with the highest temperature is April, when it sometimes goes over 40 degrees.

The most conspicuous geographical feature is, from the Tonle Sap basin to the Mekong River lowland area (100 meters below sea level), the emergence of a plain that is formed by the flooding of a lake that covers an area of 3,000 square meters in the dry season and of 10,000 square meters in the rainy season. The plain is used to cultivate rice.

2) Population

According to the national census taken in March 1998, the population of Cambodia is 1,1437,656 (5511,408 men and 5926,248 women). It's age structure is composed of 42.8% aged from 0 to 14, 53.7% of the economically active and reproductive population aged from 15 to 64, and 3.5 % of the old age, 65 and above, so the main population of the country is very young.

Therefore, the structure is the regular form of the early stage of the population turning point in developing countries. In the Pol Pot period, due to the purges and starvation, the population growth rate had decreased. However, the yearly rate from 1996 to 1998 was 2.49%, that is the highest rate after Laos(2.9%) among the ASEAN countries. In addition to general factors that cause population growth, such as the high infant mortality, the low literacy rate, the low school attendance rate of women and the low diffusion of family planning, the other fact that population group that has increased rapidly since the beginning of 1980s is now entering the reproductive age, shows there is expectation of high population growth rate, even if the number of babies delivered per woman decreases.

The population density of whole Cambodia is 64 people per square kilometer and

compared with neighboring countries, it seems sparsely populated. However, most people are living in the lowlands of the Mekong River, its tributaries and the Tonle Sap lake, which amounts to one third of the country, about 60,000 square kilometers. Taking that into account, the population density of the living areas becomes 155.1 per square kilometer and judging from its geographical feature, there is not enough land for agricultural development to offer employment opportunities to the people.

3) Political System

Cambodia gained independence from France in 1953, and people were enjoying their country's prosperity. However, 20 years of domestic warfare as well as political confusion that occurred after the coup d'état in 1970 destroyed the country and made it impoverished. In the 90s, the efforts toward peace in Cambodia by the international community gained momentum and in 1991, Cambodia reached a peace agreement with France. In 1993, The Kingdom of Cambodia was formed by the coalition government of two parties that fought against each other in the past warfare; the Funcinpec Party (Ranariddh first Prime Minister) and Cambodian People's Party (Hun Sen second Prime Minister). After the formation, peaceful reformation was expected but discord between the two parties continued. In July 1997, a large armed revolt was broke out again. At this incident, the international community took the situation seriously and demanded the establishment of a democratic government. Consequently, a general election was called in 1998, and Cambodian People's Party obtained an absolute majority. They formed a coalition government with Funcinpec again and a stable period was established within the country. Hun Sen Prime Minister has caught this as a favorable opportunity, and named his new government "The Economy Government". He has been trying to maintain peace, stability and public order in the country, to participate in the international community and to develop a social economy. Owing to these efforts, Cambodia became a member of ASEAN in 1999, though the continuance of peace and stability in the country is still a task.

Even though political stability and economic recovery have led the

Cambodian society towards steady development, the shortage of staff and the devastation of a social economical basis, caused by purges carried out concentrating against the intelligentsia under the reign of Pol Pot and the prolonged domestic warfare, remain as major issues to be tackled. Consequently, most of people are forced to live with limited access to fundamental social services such as education, health and medical treatment etc.

4) Economy

Table 1 Economic basic data

	1997	1998	1999	2000	2001
Population (Million)	10.7	11.4	11.7	12.2	-
GDP - Real growth rate (%)	4.3	2.1	6.9	7.7	6.3
GDP (Million\$)	3,269	3,011	3,300	3,351	3,404
GDP - per capita (\$)	281	247	264	259	
Budget (Million US\$)	424.6	412.9	480.3	546.7	
GDP - composition by sector (%)					
<i>agriculture</i>	46.0	45.8	42.8	38.2	36.9
<i>industry</i>	15.2	16.1	17.1	20.8	21.9
<i>services</i>	34.6	34.0	34.5	35.5	35.3
Inflation rate (%)	5.5	13.8	3.7	-4.6	-2.8
Exchange rates (riel / \$)	2,946	3,744	3,808	3,845	3,922
Exports (Million\$)	862	900	884	1261	1375
	(327)	(296)	(172)	(170)	(176)
Imports (Million\$)	1,092	1,073	1,159	1,524	1,600
Trade Balance (Million\$)	-230	-173	-275	-263	-226
(note) The data were converted by the exchange rate each year. The growth rate is local currency (Riel) standard. (The source: The Ministry of Planning)					
<i>Source: Ministry of Planning, Cambodia</i>					

Since the start of the transition into market economy, a relatively high level of economic growth has begun. 5.7% in 1994, 7.6% in 1995 and 7.0% in 1996 economic growth rate in real terms were attained. The primary factors for the growth are as follow; □in 1995, a large increase in the amount of rice produced, which was the staple agricultural product of Cambodia, □particularly since 1994, the direct investment of foreign capital in labor-intensive industries such as the textile sewing industry, has increased so industrialization has begun, □ aid activities of many international donors contributed directly and indirectly. However, judging from GDP per capita, it is less

than 300 dollars, and so it is ranked as one of the poorest countries. Therefore the disparities between Cambodia and preceding ASEAN countries are great. According to the present economic state in Cambodia (Table 1), its economic growth pace slowed in 1997, growth rate became 2.1% in 1998. The main factors for this slow down are as follows; □The insecurity of the political situation in the country, □The stagnation of aid from international donors, □The influence of the monetary crises in Asia. The rate of economic growth recovered in 1999, attaining 6.9% and in 2001, the growth was 6.3%. The Cambodian economy used to focus on agriculture, timber and handcraft industries etc., but due to aid from many foreign countries and the impact of direct investment etc., Cambodia has come to possess a unique economic structure. Its distinctive features are as follow.

- Double structure with traditional industries and modern industries; the double structure of traditional industries by Cambodians and modern industries by mainly Chinese capital
- The predominant areas are agriculture and Angkor tourism: industries by Cambodians
- Export type labor-intensive textile sewing industry; industry by Chinese capital
- Dependence on international aid organization etc.; international aid and living cost of their staff and family become Cambodian income
- Fast advancement of liberalization, deregulation and internationalization; the transition of a market economy

There is a clear disparity between cities and rural area in the situation of the social economy, residents in rural area villages are suffer adverse conditions from various aspects in life. (Table 2)

Table 2 The disparity between cities and farm villages
(1US\$= Approximately 4000riel)

	Urban area	Rural area
Income (riel) /Month	1,139,553	314,247
Adult literacy rate (%)	79.1	64.9
Access rate for safe drinking water (%)	60.3	23.7
Access electricity rate (%)	53.6	8.6
Access lavatory rate (%)	49.0	8.6
Primary school graduated rate (%)	31.4	12.8

Source: ODA Country Policy Report toward Cambodia

5) Trade

Cambodian main export articles were primary products such as timber, rubber and rice. However, in recent years, with the increase of foreign investment in export processing typed industries such as the textile sewing industry, the export of target articles of general preferential duties for export to Western countries is increasing rapidly. (general preferential duties: a system that imposes lower duties on cargoes for specified countries than other countries, mainly implemented to developing countries.)

According to the imported amounts by article in 1998, the total amount was 976 million dollars in value, 162million dollars worth of cigarettes, followed by 108million dollars worth of oil products, 30million dollars worth of gold, 22million dollars worth of vehicles and 16million dollars worth of motorcycles.

Recently in urban areas like Phnom Pen, traditional vehicles “cyclos”, are disappearing and in place of them, motorcycles are spreading quickly and they have become the general means of transportation. Also, the use of the car is extending, so the demand for gasoline is also increasing rapidly. As a result, the imports related to motorization are on the increase. Regarding cigarettes and gold, most of them are imported to re-export, though there is some demand within the country.

6) Work Structure

According to the component ratios by industry in 1997, the primary industries accounted for 77.1%, the secondary industries for 4.7%, and the tertiary industries for 18.2% of work force. As of 1997, Cambodian total population was estimated as 10.37 million. Among the total population, the population of the areas from where the data were collected was 9.35 million.

Based on the assumption that the population of 10 years and above in the areas was 6.93 million, 4.56million people (65.8%) were regarded as the working population. Within this working population, 3.52 million people, equivalent to 77.1%, were engaged in primary industries. In the secondary industries, 0.21 million people (4.7%) were employed and among those, 0.15 million people (3.2%) were employed in the manufacturing industry. According to information from the Ministry of Industry, Mines and Energy, 0.12 million people were employed in enterprises with 10 employees or more. And among these people, 0.9 million people, equivalent to 78%, were engaged in the textile sewing industry. By area, in Phnom Pen and Kandar alone, 0.1million people (85% of the working population of enterprises with 10 employees or more) were employed. In the tertiary industries, 0.83 million (18.2%) people were employed, and among those people, 0.35 million (7.7%) people were employed in commercial related

industries. Moreover, the government employed 0.21 million (4.7%). (Cambodian report)

7) Education

After the reign of Pol Pot, the quantitative expansion of education has been promoted. However, with the conversion of market economy structure, staffs who can meet the new social demands have become important. Especially, it became important to make the people gain the basic knowledge and the skills for national reconstruction, and to nurture capable people with expert knowledge and skills that was lost during in the reign of Pol Pot. Besides, need to speed up the preparation of a system toward the transition of the market economy became important tasks.

In 1995, the Ministry of Education produced a report“Education Investment Framework 1995-2000”, and put highest priority on the formation of universality in elementary education, and the reinforcement of secondary education. At elementary level education, □ to institutionalize elementary education as a 6-year-system and to introduce a 6-3-3-year-educational system, □ to raise the net school attendance rate in elementary education to 90%, □ to abolish educational disparities between the genders, □ to keep the rate of repeating the same year to approximately 10%, and □to make at least 85% of children complete the 6 years of education, were set as main objections. At secondary level education, □ to raise the pure school attendance rate in the first term to 85%, □ to raise female’s school attendance rate to 45%, and □ to raise successful examinees of the completion of school examination among 3rd year students of junior high school were set as main aims.

In order to achieve these objectives, a working plan that aimed at the following were formed; □ to enrich the quality of basic education, □ to secure equal opportunity of basic education and □ to reinforce educational planning capacity and management. In 1990, when“Education for all”(EFA) was proposed, the objectives for educational development until 2000 were concreted in Cambodia. In 2000, EFA follow-up report, “Education for all: Country Report 2000”, was officially announced. According to the report, the rate that the education budget accounted for in GDP is 3% at the general international standard (about 15% per person). In Cambodia, the rates were lower than international standard, 2.5% and 10% respectively. Furthermore, the expenditure rate of elementary education in the education budget was 85% in Cambodia, which well exceeded the international standard of around 50%. This shows that a large part of the whole education budget was invested in elementary education and very little assigned to secondary and higher education (15% for both). (Table 3)

Table 3 The education related indexes and goals to be achieved

Source: [Education For All: Country Report 2000]

Indicator/item	Performance			Target
	1990/91	1996/97	1998/99	2000
Pre-school education*				
Gross enrollment rate**		5.4	5.8	7.0
Percentage of new entrants		8.4	9.2	10.0
Elementary School				
Gross intake rate		113.0	103.3	106.0
Net intake rate		69.4	62.4	70.0
Gross enrollment rate		94.5	89.7	95.0
Net enrollment rate		84.7	78.3	86.0
Current educational expenditures as a percentage of GDP	1.1	0.8	0.9	2.5
Current educational expenditures as a percentage of GDP per capital	8.2	4.9	5.2	10.0
Current expenditures on primary education as a percentage of total education expenditure		70.8	89.9	85.0
Percentage of primary education teachers who graduated from teacher training school			90.7	91.0
Percentage of primary education teachers certified to teach			95.2	96.0
Pupil-teachers rate		44	48.0	40.0
Repeating rate of same school year		27.7	24.9	10.0
Graduation rate(of Grade 1 entrance)		50.7	45.2	55.0
Learning achievements and outcomes				
Percentage of the 4 th graders who attained basic learning competencies		70	71.9	75.0
Literacy rate for the 15-25 age bracket	60.0	71.5	75.0	76.0
Adult literacy rate				
Literacy rate of the population aged 15 years or order		65.9	68.0	85.0
Ratio of the female literacy rate to male literacy rate				
15-24 years age		0.7	0.8	0.9
15years of age or older		0.7	0.7	1.0

* Preschool education: education which is received before elementary education and given at public preschools, kindergartens and other private institutions.
** gross school attendance rate: (total number of elementary school children registered at a new school term/ population of 7 to 12 years old) X 100
*** net school attendance rate (total number of elementary school children aged from 7 to 12 who have registered at a new school term/ population of 7 to 12 years old) X 100

2.1.2 Health sector

1) Health indexes

According to basic health indexes, infant mortality rate in Cambodia is 97 out of 1000 births, the mortality rate of children under the age of five is 138 and the mortality rate of maternal is 440 out of 0.1 million births, All of these numbers are very poor, with the average life span also being low, at 56 years. Even when the rates are compared to those

of its neighboring countries, the rates are still high and its extent of development in the public health service is remarkably outstripped by that of surrounding countries, Thailand and Vietnam. (Table 4)

Indicators	Cambodia	Viet Nam	Lao PDR	Thailand	Japan
Life expectancy at birth	56	69	54	70	81
Infant mortality rate(per 1000 live births)	97	30	87	24	3
Under-five mortality rate	138	38	100	28	5
Maternal mortality rate(per 100,000 live birth)	440	95	650	28	5
Total Fertility Rate	4.9	2.3	5	2.0	1.4
Population Growth Rate	3.0	1.6	2.4	1.4	0.3
Crude Birth Rate	36	20	36	18	9
Crude Death Rate	11	7	13	6	8

Source: The State of the World's children 2003 UNICEF

In the meantime, Cambodian annual population growth rate is high as 3.0%, but gross birthrate population is 36 out of 1000 and its gross mortality rate is 11 out of 1000. Thus, the tendency to have a great deal of deliveries with a high death rate remains unchanged. The population structure indicates that of a typical developing country, with the half of its population consisting of people under 15 years of age. Also, with regards to the rates of urban population and rural area, which are 15% and 85% respectively, it is suggested that the rural population is large. Therefore, there hasn't been any problems concerning the overcrowding of urban areas.

Looking at main illnesses, and in terms of mortality, malaria accounts for 23% of deaths, showing a high infection rate. Malaria is most prevalent, when studying by province, in the northern part and border areas, where there are many infected people. The type of infection is tropical malaria (Pf: *Plasmodium falciparum*). Since the obtaining of malaria-resistant medicine is commonplace, tolerance levels to treatment could be in doubt.

In terms of outpatients, major illnesses include acute respiratory infection 18%, diarrhea 11% and malaria 4%, followed by diseases with a fever 23% and others 39%. The illness situations of inpatients show similar tendencies, with high rates of malaria 13%, acute respiratory infection 9.3% and tuberculosis 8.4%, followed by obstetric and gynecological diseases 4.5%, traffic accidents 3.9%, and others 51.2% etc. Besides the above, depending on areas, dysentery, cholera, meningitis and typhus are also problems, so infectious diseases pose more important public health problems than lifestyle diseases (Table 5).

Table 5 Cambodian Disease Situations

Outpatient	(%)	Inpatient	(%)	Cause of Mortality in hospital	%
Disease with fever	23.34	Malaria	13.71	Malaria	23.06
Acute Respiratory Infections	18.40	Acute Respiratory Infections	9.31	Acute Respiratory Infections	10.02
Diarrhea	11.43	Tuberculosis	8.43	Dengue fever	6.97
Malaria	4.59	obstetric and gynecological diseases	4.48	Meningitis	3.38
Cough (Within 21 days)	1.13	Traffic accident	3.95	Diarrhea	1.04
Others	39.92	Invasive amebas	1.38	Traffic accident	0.39
		Mine	0.57		
		Others	51.29		

Source :National Health Statistics Report 1998 Ministry of Health

Moreover, according to the report from WHO, its Health System Performance Index is 0.322, this is a 174th out of 191 countries. Whereas, its Overall Health System Attainment is assessed at 166th out of 191 countries. These indexes suggest that the improvements of health and medical treatment is of great importance for Cambodia.

HIV/AIDS, first found in Cambodia in 1991, is expanding rapidly. According to the recent UNAIDS report, more than 0.2 million people are infected with HIV/AIDS. Due to the high rates of HIV/AIDS, poverty grows more serious, causing the expansion of the infection within the country. According to the report from WHO West Pacific Regional Office, the HIV infection rates are, 32.2% among prostitutes (Direct Sex Workers), 18.7% for semi-prostitutes (Indirect Sex Workers: those who have regular business to earn a living but sometimes derive income from prostitution), 4.7% for police officers and 2.6% for expectant and nursing mothers. HIV infection at the National Blood Transfusion Center was 0.1% in 1991, however, the number rose to 3.6% in 1997. Though the number had dropped to 3.1% in 1999, HIV/AIDS is recognized as a problem given the highest priority.

Furthermore, Cambodia is a country infected with viral hepatitis type B and the infection rate of its carriers was (HbsAg+) 8.2% at the National Blood Transfusion Center in 1999.

In Cambodia, the disease rate of tuberculosis per population is the worst level in the

world. Consequently, more than 10 thousand people are dying of tuberculosis every year. Also, it is reported that approximately 3% of tuberculosis patients and nearly 11.5% of people in Phnom Pen, are infected with AIDS. Therefore, the increase of tuberculosis patients accompanied by the spreading of HIV/AIDS infection and the overlapping infections of HIV and tuberculosis are feared.

As for parasites disease, positive reaction to roundworm egg was 65% (Kiiti Satou, 1999). Since the statistics of intestinal parasites were not collected, its details are unknown.

2) Health Policy

The Cambodian Government created the “1997-1999 Public Investment Program” as the main public health policy, which outlined the worst situations of hygiene conditions in Asian countries with concrete numerical values. It also pointed out that there were various problems such as infant mortality, malnutrition, malaria, tuberculosis, HIV, amputation resulted from mine explosions and PTSD (post-traumatic stress disorder) of warfare etc. It held up two principles of health sector rebirth. One principle was, since the information of and measures for infectious diseases contribute to the public interest, expenses from the public sector is desirable. The other was that the poor should not be charged for health services to improve poverty through quality health services.

In addition to the above, present circumstances which pose more problems in comparison to the capacity of the health sector, are the limits to foreign aid in the aspects of finance and human resources. Through Health Sector Reform, the Cambodian Government aims to conduct appropriate arrangement of human resource development and construct a service providing support to the poor classes.

Furthermore, the insufficiency of human resources which is the largest Cambodian problem, could be solved through the reeducation of co-medicals, and also through effective human resource development plan. Human resource development is recognized as tasks to be dealt with over the long term with the help of foreign aid. Viewed from the present situations of shortage of funds for staff training, utilization of foreign aid is reasonable. Though fulfillment of quantity is still important, it seems that importance is converted to quality gradually. Considering the policies of the MOH from 1999 to 2003, the following four fields are to be focused.

① Strengthening health system through:

- Strengthening health management and planning
- Strengthening basic health services

- Human resource development
- Infectious control
- Reform of pharmaceutical

② Integration of existing health programs of ODHO and Health Centers

- Tuberculosis control
- Control of Malaria, Dengue Hemorrhagic Fever and Schistosomiasis
- Control of AIDS/STDS
- Immunization program
- Women and child health programs
- Elimination of Leprosy

③ Preparedness and response to emerging priorities

- Strengthening medical specialty for Ear, Nose, Throat, Oral, and mental health
- Development of health education
- Cancer prevention
- Blindness prevention
- Strengthening National Institute of Public Laboratory for food and drug control

□ Rehabilitation and upgrading capacity of technology at national hospitals and RH, and expansion of blood transfusion service at RH over the country.

In August 2002, “HSSP: Health Sector Strategic Plan 2003-2007” was published by MOH.

The objective of the HSSP is to develop the public health sector for the purpose of health improvement of people, especially of mothers and children, which in turn contributes to the reduction of poverty and the growth of the social economy. Outcomes for the goal are:

- Reduced infant mortality rate
- Reduced child mortality rate
- Reduced maternal mortality rate
- Improved nutritional status among children and women
- Reduced total fertility rate
- Reduced household health expenditure, especially among the poor
- More effective and efficient health system

Eight indispensable strategies to attain this objective are given as follows.

1. Further improve coverage and access to health services especially for the poor and other vulnerable groups through planning the effective location of health facilities.
2. Strengthen the delivery of quality basic health services through Health Centers based upon Minimum Package of Activities (MPA).
3. Strengthen the delivery of quality care, especially for obstetric and pediatric care, in all hospital through measures such as the Complementary Package of Activities (CPA).
4. Improve the attitudes of health providers to effectively communicate with consumers especially regarding needs of poor through sensitization and building interpersonal communication skills.
5. Introduce and develop quality assurance in public health, service delivery and their management through the use of MOH quality standard.
6. Increase the number of midwives through basic training and strengthen the capacity and skills of them through continuing education.
7. Ensure regular and adequate flow of funds to health sector especially for service delivery through advocacy to increase resources and strengthening financial management.
8. Implement organizational and management reform of structures, systems and procedures in MOH to respond effectively to change.

3) Public health service system

In 1994, MOH held “Improving primary health care and making it wide spread through the practice of the public health service system that takes a consultation district as a unit” up as its major objective and thus MOH embarked on the Cambodian public health service reform. Its basic plans are “Health Coverage Plan 1996” and “Guide for Strengthening of the District Health System 1996”.

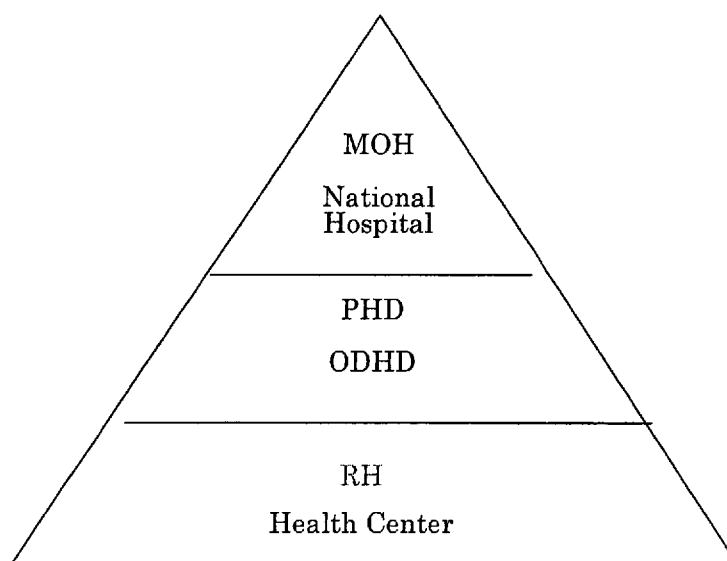
In these plans, a district-based health system was altered, thus one Health Center was placed in a population of about 10 thousand. Moreover, ODHO controlling between 10 to 15 Health Centers were established. The core hospitals of these district were placed as Referral Hospitals (RH, former district hospital rank, a hospital for the population of 0.1 million). In the plan of 1996, 71 ODHOs, 67 RHs, 935 Health Centers and 8 national hospitals were required. According to “Health Coverage Plan 1999”, which difired 292 Health Centers were required, MPA and CPA showed that respectively activities and human resources, medical equipment and materials were required at RHs

and Health Centers.

Additionally, except for these public health institutions, small-scale private medical institutions are currently expanding rapidly and disorderly. Clinics and clinical laboratories that were registered in 1998 are approximately 330 in number, but their sickbeds totaling only 385. Most of the staff employed at such facilities also work in public health institutions. Importantly, some pharmacies are practicing without permission from MOH, an acknowledged approximate figure of un-authorized shops is 2000. On the other hands, at a village level, there are various old wives' tales remedies including traditional birth assistants (TBA), spiritual treatments and herbal treatments being given as medical treatment.

A concept figure of new public health service system is shown in Figure 1. Explanations about the functions and roles of each level are outlined below.

Figure 1 New Health System



① Central level

Ministry of Health (MOH);

The role of MOH is to support the district health system, to develop policies and strategies, planning evaluation.

The main function of MOH is the following;

- Definition of the health policy and strategies.
- National planning and support to provincial planning.
- Monitoring and evaluation of the policy and the plan
- Training of senior staff.
- Allocation of resources.
- Support to provinces and districts for their health services implementation.
- Inter-sectoral collaboration

Educational facilities:

Health Science University (UHS; school of medicine , pharmaceutical, and dentistry) and Technical School of Medical Care(TSMC; nursing, clinical laboratory, and physiotherapy courses) provide basic education and prepare education curriculum, while closely cooperating with HRD in MOH.

National Institute of Public Health (NIPH):

NIPH provides support with present state evaluations of public health, evaluates effectiveness of various programs and scientific investigations for the construction of a new public health service system (Operation's Research).

National hospitals etc:

They train medicals and co-medicals, conduct investigative activities and offer services especially for those patients referred from another hospitals. The fields of medical examinations given at each hospital are as follows.

General Hospitals : Calmette , Shianuk

Pediatric Hospitals : National pediatric, Kantha Both

Surgical Hospital : Kossamak

Obstetrics and gynecology Hospital : Seventh day, MCH

TB : TB center

Otolaryngology Hospital : Ang Doung

Others : Pasteur institute, National Blood Transfusion Center

② Internal Level(PHD)

The intermediary level is composed of Provincial Health Department (PHD). The role of PHD is to link between MOH and OPHD. Provincial hospital acts as RH for the district in which they are situated.

□ Peripheral level(ODHD)

Operational Districts are made under ODHD, as peripheral medical institution, and as first contact with population. Each OD contains Health Centers and RHs

Reformation of the public health service system mentioned above received support from UNICEF, UNDP, WHO, ADB, and WB since 1994, its first undertaking was the construction and providing of equipment for Health Centers as the forefront in community health services. WB and ADB divided their responsibilities and support by province, WB taking charge of 11 provinces, leaving ADB with 5, each applied for a loan of 0.3 million dollars and 0.2 million dollars respectively. They have been carrying out this reformation of Health Centers as a 5-year plan since 1997. Nevertheless, even though the Health Centers are currently being constructed, Health Centers reformation has not been proceeded with the plan because of the shortage of medical staff and administrative expense for medical matters etc.

4) The present situation of supplying public health services

As a result of the reformation of the public health system, functions of Health Centers and RHs are now regarded as important. Therefore, the service packages (CPA, MPA) are set up at each level of institutions in order to achieve the provision of efficient services in the form of corporation with various activities within local areas.

□ MPA(Minimum Package of Activities) at Health Centers

Health Centers conduct the following activities based on the MPA.

• Primary Health Care Services

Taking care of all of the most common health problems (including Malaria, Sexually transmitted diseases, and diarrhea disease), Emergency care and simple surgery, Chronic diseases (TB/leprosy), Consultations of health infants aged under 5 (including vaccinations, management of severe malnutrition, prevention of vitamin A deficiency), Care for pregnant women (including ante natal and postnatal care, anti tetanus vaccination, prevention of anemia), Deliveries and referral of complicated cases to second level, Birth spacing, Referral of patients who cannot be treated at the first level to the second level for diagnostic, complex management reasons, lack of response to treatment, Health education.

• Health data collection of the catchments area.

• Management of medical supplies and consumable items.

• Support to community health workers.

- Meeting with the district health staffs.
- Maintenance of health infrastructure and equipment.
- Participation in management committee meetings.

□ CPA (Complementary Package of activities) at RHs

RHs complement Health Centers and have two purposes, to offer health and medical treatment services that are not provided by the Health Centers (acts of consultation and observation and treatment of complex health problems), and to support Health Centers in the same operational districts through clinical training and supervision.

RHs conduct the following activities based on the CPA and offering of public health services to residents

- Health Care Services
 - Referred cases, Medical and surgical emergencies (Amputation, Strangulated hernia, Appendicitis, Extra-uterine pregnancy, Cesarean, Transfusion, Cardiovascular resuscitation), Complicated deliveries (Obstructed labor, Hemorrhage, Retained Placenta), Simple surgery cases (Hernia, Cataract), Hospitalization, Laboratory diagnosis, Radiological and Ultrasound diagnosis, Rehabilitation, 24 hours ward duty staffed by skilled personal, Dentistry, Ophthalmology
- Supervision of staffs in Health Centers
- Management of health information
- Yearly planning and evaluation of health activities in district
- Participation in monthly provincial meetings
- Management of equipment and infrastructure
- Financial management
- Train Health Center staffs and upgrade TBAs and village health volunteers

5) The structure of MOH

From the structural reform within the Ministry in 1998, it is now divided into the posts of Minister, Secretary of States, Under-secretary of State and three Director General (For inspection, for administration and finance and for health) (Attachment 1)

2.2 Overview of Human Resource Development Situation

Mortality rates of infants and maternal are still high in Cambodia. In the background of society, it is considered that this is due to some economical problems as well as the large influence of the poor diagnosis by medicals and co-medical. The education for

co-medicals restarted in 1980, in ruined conditions without institutional preparation. Furthermore, without acquiring enough specialist knowledge and skills, staffs who are only able to carry out emergency measures were sent to public health institutions. Such conditions have remained for a long period and no longer meet the demands of society. Therefore, MOH is planning to reinforce a staff training policy and also to improve the educational quality of medicals and co-medicals.

2.2.1 Circumstances of staff training in the past

Like other sections, staff training in the field of medicals and co-medicals has been conducted with support from international organizations, bi-lateral donors and NGOs. Most of these supports has been implemented with little cooperation between donors and adjustment across fields, thus a worm-eaten like cooperation has been implemented. As a result, in most fields, standardization throughout the whole Cambodia has not been achieved and various systems transferred by donors are coexisting.

When considering human resource development for co-medicals, the past 10 years of history should be looked into. Take nursing education as an example, there have been three transitions until now; the first period 1979-1988 Emergency Training, the second period 1980-1993 Old Curriculum, the third period 1994-2000 New Curriculum. Consequently, among nurses currently employed, different methods of education were used and some discrepancy even within qualifications are existing. Therefore, nursing educational system should be decided by the country, and this new system should be adapted to educate new nurses, as well as re-educating those educated under the old systems.

Further, the lack of basic education of people within public health staffs is also a big obstruction for their education. The insufficient elementary education causes a lack of ability to use knowledge as practice in specialized fields, which greatly hinders the training at clinical training or higher education. Hence, for the time being, educational systems and curriculum should be created with considering the lack of the basic education.

Moreover, in the public health sector, enrichment at the level of primary health care as well as the improvement of the community-based health system is to be given the highest priority. Therefore, when the undertakings of staff training within the public health sector are considered, educational systems and curriculum etc. should be promoted with practical viewpoint.

2.2.2. Human resources in health sector

Recent the total number of staff at MOH was 18,233 in 1996, 18,876 in 1998, and 17,960 in 2000, with a peak in 1998. This is because the government stopped hiring new graduates in 1999. However, in occupational category, the number of doctors and dentists are still increasing.

The changes in the number of staff in MOH and the number of staff employed as professionals in the health service (e.g. as doctors) are shown in Table 6 and Table 7 respectively.

Year	Medical	General	Total
1996	15594	2639	18233
1998	16593	2283	18876
2000	15996	1964	17960
2005 (Plan)	19200	4173	23373

*Source : The health workforce development plan 1996-2005,
Second Biennial review, August 2001*

	1996	1988	2000	2005 (Plan)
Doctor	1247	1711	1878	1786
Pharmacist	327	415	362	730
Dentist	64	68	85	466
Medical Assistant	1458	1699	1608	1330
Nurse	8409	8377	8156	9802
Midwife	3221	3312	3028	4050
Clinical laboratory technologist	501	587	495	749
X-Ray	20	22	22	119
Physiotherapy	53	58	49	106

*Source: The health workforce development plan 1996-2005,
Second Biennial review, August 2001*

If we compare the number of people employed in the public health sector with that recommended by WHO (excluding nurses and radiographers), we see that it is already sufficient. (Table 8)

/Popuration	Clinical laboratory technologist /100000	X-Ray /33333	Nurse /1000	Midwife /10000	Doctor /10000
WHO recommendation (Person)	1	1	1	1	1
Cambodia (Person)	4.4	0	0.73	2.7	1.7

Source: JICA Malawi PHC study : final report Vol 5

The number of capable health staffs by province and by institution are shown in Attachment 2. Furthermore, although not shown in this table, many medical specialists are assigned to generalist position. (The number of medical technology experts in each province is indicated by the total number of staff at RHs and Health Centers.) Also, at present, the staff placement is not appropriate, for example, some pharmacists are assigned as clinical laboratory technologist and some nurses are assigned as pharmacist. Moreover, there is no training system for X-ray technologists, so the original occupational categories for technical experts refer to X-ray technologists as either nurses or medical assistant.

2.2.3. Staff training policies

MOH drew up “Health Workforce Development Plan 1996-2005” in order to correspond to “Health Coverage Plan 1996” and “Guide for Strengthening of the District Health System 1996”. Further, following “National Policies and Strategies for Human Resources for Health 1999-2003” and “Health Sector Strategic Plan 2003-2007”, MOH is to improve the quality of basic and continuing education and promoting the employment of those talented employees.

1) “Health Workforce Development Plan 1996-2005”

Human resource development is one of the three main constituent factors in the reorganization of the public health service system. In 1997, as a guideline to human resource development, “Health Workforce Development Plan 1996-2005” was approved.

In the plan, offers of comprehensive information related to the disposition of capable health employees throughout the country, including clear information on the supply and demand for medical and co-medicals, and implementation of the training structure reform were mentioned. The structural reform intends medical and co-medicals to be able to carry out the reforms and to offer new services.

2) “National Policies and Strategies for Human Resources for Health 1999-2003”

In this plan, training, basic education, continuing education and technical education of capable people in public health sector, and their quality, administration, evaluations and policies are specified.

3) “Health Sector Strategic Plan 2003-2007”

In the 6th indispensable strategy, concerning staff training, it is stated that “an increase in the number of midwives through basic education, and improvement of the abilities and skills of existing midwives through continuing education” is a priority. Also it is mentioned the re-arrangement of staffs and confirmation of their duties is important, in order to improve unbalanced distribution of occupational categories and the number of staffs. Besides, it is said that securing the abilities in techniques and administration of all staffs in the MOH would be achieved through comprehensive training and education.

The purpose of increase in the number of midwives is to “improve the quality in the obstetrical care”.

The following four activities are planned.

- Continue providing four months training course of maternal and child health for Health Center staffs
- Continue continuing education by National Maternal and Child Health Center and other training providers for RHs and Health Center staffs
- Improvement one year post graduate training course of midwifery training in 2003
- Develop a primary training program for midwifery staffs in remote area

Five activities to reform unbalanced distribution of staffs are as follows.

- Reallocate midwives back to midwifery from other areas of work
- Set standards to improve training quality
- Finalize the functional analysis and identify posts at each level of health system according to revised health coverage plan and health strategy
- Consult with the Public Function Secretariat and seek approval for numbers of staffs according to identified posts or new establishment needs

- Identify training needs linked to posts and implement training

Eight activities for the strengthening of administrative capacity of all staffs in the MOH as follows.

- Improve quality of trainers and educators
- Evaluate and change(where necessary) training methods and contents to ensure high quality of all type of training/education
- Strengthen pre service training through 4RTCs and continuing educational system
- Increase clinical practice of medical students
- Strengthen human resource development role of the MOH in the coordination and integration of training at the provincial level
- Strengthen management skills of staffs at all levels of the health services
- Start process to develop a cadre of staff with management/administrative skills
- Review the allocation of health workers who work in other ministries, and plan continuing education to maintain professional standards for them

2.3 National Development Plans

In Cambodia, after the formation of the new country, a development plan toward full-scale and synthetic development was drawn up for the first time. In 1994, “The National Program to Rehabilitate and Develop Cambodia (NPRD)” was published and in 1996. Based on the NPRD, the first national 5-year plan, “The First Social and Economic Development Plan (SEDP)” was formed. The target term of the first SEDP was from 1996 to 2000, and at that time, it was the newest and most important development plan in Cambodia. At present, “The Second Social and Economic Development 5- Year Plan (SEDP □: 2001-2005)” is in the process of being worked out. Further, based on the SEDP □, “Poverty Reduction Strategy Plan (PRSP)”, aimed at poverty reduction is to be formed, its provisional plan (□- PRSP) was made in early 2001.

2.3.1 Outline of the NPRD

Two principles and six objectives of action are indicated in the NPRD. The first principle stipulates that the Government itself responsible for planning and carrying out national development. The second principle states that the Government is a partner of the internal private sector. Moreover, in 1995, the “Implementing the National Program to Rehabilitate and Develop Cambodia (INPRD)” was laid as a concrete measure for 18 to 24 months in order to execute the NPRD. Based on the two principles of NPRD, the

six action plans are shown in the INPRD. Also, the awareness reformation of the Government staffs and their participation in the private sector is listed as required conditions for the realization of INPRD. Six action plans of IMPRD are as follows.

- ① To establish Cambodia as a State of Law in which the rule of law prevails,
- ② To achieve economic stability and structural adjustment with the goal of doubling GDP by 2004,
- ③ To improve education and health care in order to build up human resources and to improve people's living standard,
- ④ To rehabilitate and develop infrastructure and public facilities,
- ⑤ To reintegrate the Cambodian economy into regional and international economies,
- ⑥ To give priority to rural development and to manage the environmental and natural resources in a sustainable manner.

Training for human resources is written about under the section on "education" and the section on "health and medical treatment" in the fifth chapter of the NPRD. Regarding education, improvement of the quality and access to basic education as well as the strengthening of educational administration is explained. Concerning health and medical treatment, maternal and child health and the importance of control of tuberculosis, and infectious diseases, such as malaria, HIV/sexual infectious diseases are explained.

2.3.2 "The First Social and Economic Development 5-Year Plan (SEDP I: 1996-2000)"

90% of the poor live in farm villages in Cambodia despite the Cambodian government aims at market economy. The urgent objective in SEDP I, which the government recognized, was to eliminate poverty which has resulted from the development of farm villages. Therefore, the net GDP growth rate was set at 7.5% per year as the prime objective of macro economy in the succeeding 5 years, and the target of investment value during the period was set at 22 million US dollars, and that investment allotment between cities and farm villages was set at 35% and 65%.

However, due to the unstable political situation in 1997, the economic crisis in Asia and the low growth of agriculture, the actual GDP was 4% per year (the average in South-east Asia was 3%), the actual investment value was 26% of the target, and the actual investment to farm villages was 35%. Though we observed some improvement upon the prime indexes of other social development, they did not reach the targets.

2.3.3 “The Second Social and Economic Development 5-Year Plan (SEDP□-: 1996-2000)”

In SEDP□ which is currently being established, the main objective of the nation is continuing elimination of poverty. The strategy to eliminate poverty which occupies the primary part of SEDP□ is currently being established based on the content of the provisional edition of “the Poverty Reduction Strategy Plan”. Presently, the following three objectives are established; □ To achieve prompt and sustainable economic growth and to expand economic opportunities for the poor, □ To improve the educational level, health condition and the access to natural sources and financial resource for the poor, and to improve the quality of human resources, and □ To provide a safety net for vulnerable people who cannot receive the benefit of economic growth.

Also, the target of the net GDP growth rate, which is the prime target of macro economy, is set at 6-7% per year, supposing that various reformations will certainly be implemented and the improvement of governance ensures steady growth in the future.

2.4 Related activities by other organizations

Officially supports from foreign aid organizations for the recovery and development of Cambodia started in 1992, in the following year after Cambodia reached a peace agreement with France. Though some NGOs have been carrying out support activities in Cambodia since the early 1980’s, the number of organizations and the financial scale significantly increased after 1993/1994.

The total value of foreign aid provided in Cambodia from 1992 to 1998 (from multilateral and bilateral organizations and NGOs) exceeded 2.75 billion US dollars. Within this figure, support towards the health sector occupies 8.32%. Table 9 shows the rate of support in the health sector to the total value of support in each year.

Attachment 3 shows the investment situation in international institutions. This is an extract from a part of the health sector in the “ODA/Public Investment Resource Mobilization Program, 1999-2001”, which is attached to the “Social and Economic Development in 1999 – Requests and Suggestions–“. The figures shown there are only the expected figures. However, these programs are highly expected to be carried out as scheduled in the future, considering that all the projects announced in the health sector are currently being conducted, the projects commenced at the same time or soon after the start of the reformation of the health system, and they meet the target in the health sector of “The First Social and Economic Development Plan (SEDP□) 1996-2000”, etc.

Table 9 Actual support provided in the health sector (1992-1998)							
Unit: 1,000 US dollars							
	1992	1993	1994	1995	1996	1997	1998
Total	250,18	321,891	358,04	513,62	518,082	375,40	417,54
Health Sector	315,4	28,86	520,70	24,8	43,69	532,4	563,4
(Amount of the implementation)	83	7	88	77	6	24	24
%of the health sector amount of the total	6.19	8.07	5.81	4.84	8.43	15.19	15.19
<i>Source: ODA Evaluation report year 2000</i>							

From Attachment 3, we can see the positive involvement of all the international institutions with health sector related programs. Though the definition of “external (fund from other countries)” and “UN-funded” is unclear in this table, when considering the program figure provided by UN as the “funds from international institutions”, international institutions provide 49.5% of the capital investment programs and 36.7% of the technical support programs within the total value of the investments planned for 3 years from 1999 to 2001.

The base of the positive involvement with the health sector is the awareness “to consider educational and health services as important at social development, in order to improve the living standard of the Cambodians and ensure that they become motivated social constitution members” (referred to in the “Economic Co-operation Evaluation Report in 2000”). The primary objective of “The First Country Cooperation Framework 1997-2000”, which the UNDP prepared with consideration to the content of “The First Social and Economic Development Plan (SEDP□) 1996-2000” prepared by the Cambodians, is to reduce the number of people in poverty. In this document, the creation of the health system and the improvement of the national health standard is considered as an active part of the activities to reduce the number of people in poverty.

Also, one of the characteristics of Cambodia is that NGOs play an important role broadly in the recovery/development activities. Particularly, this tendency is strong in the health sector. Table 10 shows the details of support by NGOs per field in the past 2 years, based on the support in value (indicating available data only).

The support from NGOs was more than 13% of the total value of support from other countries. Amongst the support from other countries in the health sector, 60% in 1997 and more than 30% in 1998 was the support from NGOs. Based on the annual activity report by MOH in 1998, there were 79 international NGOs and 33 local NGOs, a total

of 112 NGOs carried out the activities with MOH as a counterpart. This means that a lot of NGOs contribute to the improvement of health and medical standard for Cambodians.

Table 10 Actual support by NGOs in the health sector (1992-1998)
Unit: 1,000 US dollars

	1997	1998
Total of Disbursement	375,404	417,545
Disbursement by NGO (% of the NGO's amount of the total)	49,876 (13.29%)	56,097 (13.43%)
Disbursement for health sector from the total (% of Health Sector amount of the total)	32,027 (8.53%)	63,424 (15.19%)
Disbursement for health sector from NGO (% of Health Sector amount of NGO's)	19,516 (39.13%)	21,250 (37.88%)
% of disbursement for health sector by NGO	60.93%	33.50%

Source: ODA Evaluation report year 2000

The first support to TSMC was the preparation of a curriculum and the provision of technical guidance which IOM (International Organization for Migrants; Belgium NGO) carried out for a year, by providing a budget for a physiotherapy course. In 1991, Red Banner (an Australian NGO) provided teachers in the nursing course with technical support, and MSF (French NGO) provided an examination course with equipment and budget. In 1992, IOM started providing physiotherapy course with support again, which continued until 2000. After the support from NGOs ended, World Bank and EU provided them with a yearly budget, however the support has now ended. In 2001, UNFPA and volunteers from WHO provided technical support in order to start the midwifery technical course.

The Japanese government provided educational equipment such as microscopes and books as Grant Aid, in 1993.

3. Target development tasks (training for Co-medicals focusing on basic education)

3.1 Institutional outline

3.1.1 Higher educational system

The educational system in Cambodia is composed of 9 years of basic education which includes 6 years of elementary school education (start from the age of 6 years old), followed by 3 years of secondary school education, and after that, there are 3 year high schools and technical schools. The Cambodian educational system is shown in Attachment 4. In order to enter high school, one has to pass a graduation examination. Further, there are 9 universities in higher education. To enter the university, one has to pass not only a graduation examination at high school but also an entrance examination at university. Of total academic period at university varies depending on departments, 6 years at the school of medicine, dentistry, pharmacy, and art colleges, 5 years at the Institute of Technology of Cambodia, the Faculty of Law and Economic Sciences, and the others are 4 years. Also, other than those, there is a postgraduate course that is under the control of the Ministry of Education Youth & Sport (MEY&S) (Table 11). According to estimation in 2001, approximately 25,000 students are receiving higher education at public and private facilities.

Table 11 A table of university education facilities in the Kingdom of Cambodia

No	Name of Institutions	The authorities concerned
1	Royal University of Agriculture	Ministry of Agriculture
2	Royal University of Fine Arts	Cambodian Ministry of Culture and Fine Arts
3	University of Health Sciences (UHS)	Ministry of Health
4	Faculty of Law and Economic Sciences	Ministry of Education
5	National Institute of Management	Ministry of Education
6	Royal University of Phnom Penh	Ministry of Education
7	Institute of Technology of Cambodia	Ministry of Education
8	Faculty of Pedagogy	Ministry of Education
9	Moyarishi Vedic University	Private
10	Royal Cambodian Academy	Cambodian Cabinet

Source: JICA ODA Study report for Cambodia

Reformation of higher education is being carried out under the national higher education task force, which was established in 1996. In order to meet the social demands, which follow the shift of market economy, suggestions about the reformation of the university system, the content of education, teaching language, language

education, and financial and management system were made. Based on those suggestions, a national action plan was arranged and planning of the liberalization of universities is being promoted. Since higher education has been free, there has been no operational earnings, besides, a quota from the national budget has been limited. Therefore, it has been financial limitation in higher education sector. As a result, the teachers have been forced to endure low wages and there has not been enough budget for the maintenance and preparation of research institutions, which is said to lead to lowering of the content of education.

3.1.2 Educational systems for co-medicals

In Cambodia, there are educational systems for basic education and post graduate/specialty for higher level such as medical doctor, dentist, and pharmacist, offered by the University of Health Sciences (UHS). Basic and post basic education for secondary level such as midwifery, nurse, clinical laboratory technologist, physiotherapist offered by TSMC and RTCs. These titles and their duties do not suggest consistency with those of Japan. Regarding the scope of work that people employed in health sector in Cambodia, historically, there are 14 occupational categories, and if some special courses are included, the number becomes around 20.

As for specialized courses for co-medicals, midwifery, anesthetic nursing and psychiatric nursing are implemented at TSMC. Only TSMC and 3RTCs where midwifery post basic training program is implemented.

Continuing education is dealt with by HRD, TSMC/RTCs, and PHD. A plan for continuing education is developed by PHD, supervise by TSMC/RTCs, and manage by HRD to confirm the content of the plan, e.g. whether the content is in line with the policy etc.

For all people in medical occupational categories, they receive qualifications when they graduate from school or university. They have to register at the Qualification Register Office in HRD. Nevertheless, most of the new graduates only receive a diploma from school or university and don't register their detailed information. In the future, establishment of private training schools can be expected, so it is necessary to reinforce the registration system.

Furthermore, UHS became a semi-autonomy organization in May 2002, and a part of its system has been changed (Attachment 9). That is, through a council at UHS, a budget application is submitted to the Ministry of Economy and Finance. Other plans are also

applied to the council at first, and after approval is received, they are submitted to MOH for further approval. The relationship with MOH is different from the one before, and HRD is now responsible for supporting technical aspects (entrance examinations, curriculum, creation of graduation examinations for nursing and midwifery).

1) The educational system for nursing

There are 5 training institutions where offer nursing education: TSMC and 4 RTCs. Each of institutions exercise jurisdiction over certain provinces; TSMC cover Phnom Penh Municipality, Kandal, Svay Rieng, and Kampong Speu, Kampot RTC cover Kampot, Sihanuok Ville, Kep, Takeo, and Koh Kong, Kampong Cham RTC cover Kampong Cham, Kratie, Kampong Thom, and Prey Veng, Battambang RTC cover Battambang, Pailin, Pursat, Banteay Meanchey, Oddar Meanchey and Siemreap, Stung Treng RTC cover Stung Treng, Preah Vihear, Rattanan Kiri, and Mondul Kiri.

Its educational duration is 3 years and when students complete their study, they are qualified as registered nurses and able to obtain a diploma. Moreover, there are several post basic education for nurse graduates such as anesthetic nurses (18-month course), psychiatric nurses (12-month course), dental nurse, and midwife (12-month course).

The number of scholarship students defined by MOH is 300 (TSMC and 4 RTCs) for the nursing course and 160 (TSMC and 3 RTCs) for midwifery (This number is referred to the staff projection and depend on production capacity of the 5 training institutions). For TSMC, in addition to the scholarship students, the number of paying students (650 USD per year) is **120 ???** . There are 10 full-time teachers at the TSMC to cover both scholarship and paying students. Therefore to fulfill the current work, TSMC needs to ask more part-time teachers when the number of full time teachers remain the same.

Clinical training at hospitals is planned within annual schedule by each school. The duration is varied from one month to one and a half months). Different from RTCs (clinical training sites are RHs and HCs), clinical training sites for students at TSMC are National hospitals, National Centers, at NGO hospital. Those are National Children's Hospital, Kuntheak Bopha Children's Hospital, Calmette Hospital, Preah Sihanouk (Russia) Hospital, Municipality Phnom Penh Hospital, Hope Center Hospital, Maternal and Child Health Center, and community sites.

2) The educational system for clinical laboratory technologist

Since TSMC is located at central level, and RTCs have not enough resources, TSMC is responsible to provide clinical laboratory technologist for the country. Its duration of education is 2 years (though shift to 3year-program is being applied), and when students

complete their study, they are qualified as clinical laboratory technologist and able to obtain a diploma. The quota of scholarship students requested by MOH is 20 (depend on TSMC production capacity), and the quota for paying students originally recruited by TSMC is 33, that is, total of 53 students on the register roll. There are 10 teachers and assistants, among these most of them are employed as pharmacists and the rest are employed as clinical laboratory technologist (assistants for the practice). In the same way as nursing course, there is no increase in the number of teachers, and to meet the increase of students, more part-time teachers are hired. School fees for scholarship students are totally exempted, whereas, for those without scholarship, it is US650 dollars per year. The curriculum that was developed since 1963 has been used until today. The hospitals where conduct clinical training, are as follows; Pasteur Research Laboratory, Hope Hospital, Tuberculosis Centers, Malaria Center, National Blood Transfusion Center, National Children's Hospital, Calmette Hospital, Maternal and Child Health Centers, Preah Sihanouk (Russia) Hospital

3) The educational system for physiotherapist

As same as clinical laboratory technologist, this training system is also implemented only by TSMC. The educational duration is 3 years and when students complete their study, they are qualified as a physiotherapist and able to obtain a diploma. The quota of scholarship students requested by MOH is 20, and the number of students without scholarship is 2. School fees for scholarship students are totally exempted, whereas, for those without scholarship, it is 550 US dollars per year. There are 4 teachers, either doctors or physical therapists. Clinical training is given at most of the training centers in other Ministries and Tuberculosis Centers of MoH.

4) An educational system for X-ray technologist

There is no regular school educational system for X-ray technologist. The hospitals which can guide training courses (NGO Hope Hospital has confirmed its implementation. Regarding the other institutions, confirmation has not been obtained.) are directing on the job training. Hope Hospitals established hospital-staffs- course (3-year program) and other course for other hospitals' staffs (6-month program) in 1997. The teachers of these courses are roentgen logical doctors. Every 6 months, 2 trainees are accepted to course for other hospitals. Tuition for these courses is free, but living expenses have to be paid by each trainee. Reference materials possessed by doctors in charge or reference materials that are in the hospital libraries are used as teaching materials. Through all the lectures are given in English, sometimes it is explained in

Khmer when it is difficult to understand in English. Equipment that is used is roentgen graphical equipment which has been in use for 25 years. All the equipment is manually operated. As a result, when taking an X-ray photograph, one has to think about the amount of X-ray all the time. There is no room for the courses, so rooms for echogram or conference rooms are used as classrooms.

Further, please refer to Attachment 6 “The Current Situation of X-ray technologist in Cambodia February 2003” for the situations of X-ray technologist in Cambodia.

5) Entrance examinations, dropouts and graduation examinations

At TSMC and 4 RTCs, there is an entrance examination for the students who have graduated from high school without grade system/scoring. A screening based on student high school grade (level A, B, C, and D – F is the worst and last grade) is for the ones with the new grade scoring system of the MEY&S. Those applicant screening and written examinations are for scholarship students and they are carried out by MOH. For all courses, there are a few applicants of new graduates due to limitation of application opportunity (new high school diploma graduates have right to apply only for two faculties) and there are more of mid-careers (upgrading from primary to secondary level).

The upgrading training of primary staff stops in 2002. The reason is most of the remaining primary staff are from political parties that most of them trained at the borders or at the camp which is not recognized by the MEY&S to give equivalency as the staff trained in the formal system.

The paying students’ applicants are screened by a council at UHS. They are the ones who could not be accepted through the screening scoring process. The number of applicants and successful applicants of students who entered in November 2002 is given in Table 12. Under the present circumstances, there is very few dropout rate.

Graduation examinations for all courses are carried out by HRD/MOH. Since TSMC is under UHS and with their autonomous structure, courses run at TSMC are by TSMC themselves. Until now all students passed graduation examinations.

Table12 Number of Applicant and Successful applicant of TSMC basic training course year 2002

	New graduate		Mid-careers/upgrading	
	Applicant	Successful Applicant	Applicant	Successful Applicant
Nursing	45	40	529	60
Clinical laboratory technologist	21	8	188	12
Physiotherapy	8	8	60	12

Source: MOH, Cambodia

3.1.3 Teacher's training system for co-medicals

There is no training system for teachers in Health Cambodian training institutions. There is a system which is implemented regularly in Japanese Lecture Class Teachers of Nurses. There is the Health Personnel Education course for teachers managed by 'Save the Children' and funded by firstly WHO and second and third batches by AUSAID. Participants are staffs in MOH, NIPH, National hospitals, National Centers, TSMC and 4RTCs received 18-month training as 'master trainers'. These 'master trainers' were trained in order to implement the so called "teaching methodology" for trainers who conduct basic or continuing education.

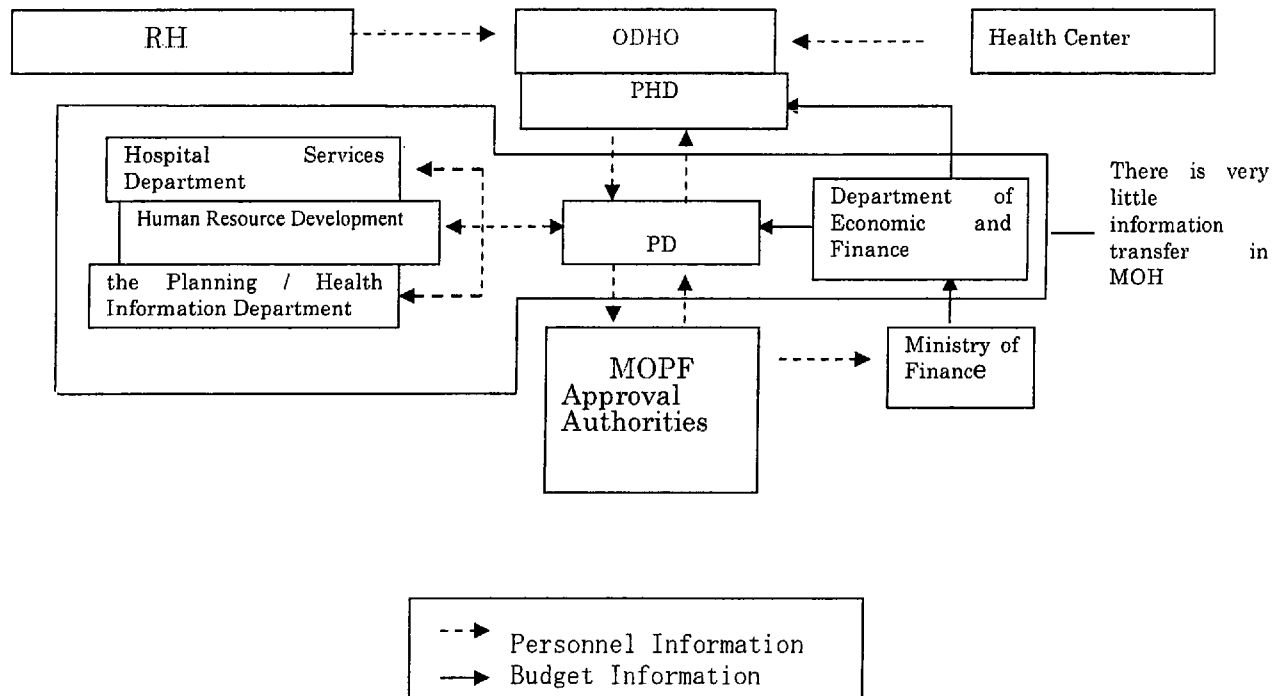
To become a teacher at TSMC and 4RTCs, there was a systematic process, which one went through a teacher's assistant, received guidance from the master trainers and then was able to teach at school. However, the system has not been in use in recent years, since there are no capable people who wish to become teachers or for budgetary reasons.

3.1.4 Employment system

Flow of information on employment from each site is shown in Figure 2. Information on staff recruitment is first identified by RHs and Health Centers through ODHO, and then submits to PHD. At PHD, the requested numbers of employees in the province by occupational category are arranged, and sent to the Personnel Department (PD) in MOH. At PD, the requested numbers of employees in the entire country by occupational category are calculated and submitted to the Ministry of Public Functions (MOPF), where the numbers are reduced after careful consideration. The Ministry of Economic and Finance is responsible to allocate the budget according to the decision of MOPF. The MoH/PD is responsible to organize the employment examination. The numbers of appointments by occupational category is directly sent to PHD. Nevertheless, the information collected from Health Centers, RHs, ODHO, and PHD do not reflect the

actual situations well enough.

Figure 2 Flow of information on the employment of capable people



3.2 Present situation of target development tasks

3.2.1 Preparation of educational institutions

The education for co-medicals which was resumed in 1980 without institutional preparation does not meet the demand of society, after 20 years of its resumption. Reconsideration of curriculum has been conducted, but there has been no sign of improvement in health services. Even though improvement of quality is mentioned in the health policy, without the improvement at the educational site, especially the improvement of circumstance which surrounds education, it is impossible to achieve the task. It is difficult to guarantee the skills of co-medicals or the results coming from their treatment (the contents of services), as there are no standards or regulations to evaluate the skills and services.

As long as there are ideas that schools or training institutions can be established anywhere, that anyone can be a teacher, or that anything can be used as teaching materials, it is impossible to correct the disparities with other countries. Consequently, it is necessary to create standards for establishment of schools, qualifications for teachers,

and standardization of teaching material etc. They are closely related with each other, so even though one part of the plan works, the improvement will be constrained if the other functions does not.

3.2.2 Human resource development

1) Disposition plan for co-medicals and current situation

The number of capable people in CPA and MPA plans which are mentioned in “Guide for Strengthening of the District Health System 1996” is shown in Table 13.

	Nurse	Midwife	Clinical laboratory technologist	Physiotherapist	X-ray technician
CPA Plan	20	4	2	1	1
MPA Plan	2	2	0	0	0

Along with this, the numbers HRD worked out are given below as reference. As for these numbers, calculation method which is not yet have clear norm compare to other countries, is firstly based on the needs of the service delivery at provincial level (MPA, CPA service packages).

□ Clinical laboratory technologists

342 technologists are placed in the clinical laboratory in the whole of the country today (185 in the central, 161 in the provincial). By 2005, at least 2 technologists are to be placed at 67 clinical laboratories in RHs, it is necessary to train 74 technologists newly in 3 years.

□ Physiotherapists

45 physiotherapists are currently working (28 in the center, 17 in the provinces). By 2005, at least 2 physiotherapists are to be arranged at 67 RHs, it is necessary to train 89 new physiotherapists in 3 years.

□ X-ray technologists

Although there aren't any official educational courses for X-ray technologist, it is necessary to train 134 X-ray technologist in 3 years based on the plan (from 2003 to 2005) to provide at least 2 X-ray technologist in 67 RHs.

Considering the actual situation regarding the provision of staffs, the number of technicians apart from nurses and X-ray technologist are sufficient for the population in each area as shown in Table 8. When calculating an increase in the number of various types of staffs in each facility as planned in CPA and MPA, an increase of 1,340 nurses was planned for RHs, however the actual increase was 1,720 nurses. Increase of 268 midwives was planned for RHs, however the actual increase was 943 midwives. Thus more nurses and midwives exist in RHs than plan. At the Health Center level, an increase of 1,858 nurses was planned, and the actual increase was 3,099 nurses. An increase of 1,858 midwives was planned, and the actual increase was 1,605 midwives. Thus, the number of midwives is still short in Health Centers (Attachment 2).

The number of clinical laboratory technologists is sufficient in comparison with the population and CPA plan. When providing 2 clinical laboratory technologists in each of RHs based on CPA plan, the total of 134 clinical laboratory technologists are required. However, at present 161 clinical laboratory technologists have been provided as shown in Table 9.

Therefore, although there may be imbalanced provisions of staff, the objective of CPA plan has been already achieved. Considering that MOH expects job quit rate to be 3.5% in the future, there is no need to develop human resources for public health institutions for some time. However, as there are some staff who refuse to transfer to rural area in order to correct imbalanced allocation of staffs, it is necessary to nurture technicians who will be positioned at an institution where there are not any technicians.

According to the second Biennial Review of the Health Workforce Development Plan 1996-2005(HRD,MOH August 2001), Roll-over the Health Workforce Plan in 2003 to cover the period 2004-2013 with emphasis on:

Equitable distribution of the workforce, including both the government and non-government components:

Between the central and provincial levels

Between the provinces, within provinces; and

Defining size, composition and role of the workforce within the non-government sector of the health care delivery system.

2) Revision of the number of students

MOH has been training co-medicals by providing them with scholarship. However, it was found that the purpose of scholarship was not for the provision of human resources to public health institutions but for the development of human resources to supplement staffs shortage and the retention of fair enrollment (the exemption of tuition fee in order to prevent unfair enrollment and corruption). It is also an obligation for students with scholarship to pass the examination for public servants before the employment. In addition, considering that students who pay tuition fees have now been accepted, the number of staffs required in the CPA and MPA and actual number of students on educational sites do not meet up. Therefore, it is necessary to revise the training plan for co-medicals and scholarship.

It is preferable to clarify the purpose of scholarship as ensuring human resources for public institutions, and to limit the number of students with scholarship, considering that many students in rural areas who can not afford to pay tuition fees, there are only a few students who seek a job in public institutions, and it is necessary to strengthen the functions of Health Centers, etc.

Also, the creation of scholarship employment system in which students can automatically work in a public health linked institution after graduation should be considered.

3) Re-education for teachers

Education for master trainers commenced in 1996 and ceased in 2000. Although there was a system which people who received training from these trainers could become lecturers and teachers (TOT: Training of Trainers) this TOT system is currently available for continuing education. Thus, no additional teachers have been generated. It is necessary to educate new teachers within the framework of required qualification, it is also necessary to provide separate training for existing teachers.

4) Update of human resources database

The database within MOH contains detailed information regarding personnel affairs of each facility. However, this database has not been updated on time since it was originally prepared, and thus the present data situation is not so accurate. The update of basic information must be fulfilled in order to effectively utilize the current information (management of the facility and its equipment, supervision of personnel job histories, control of registration numbers and additional certificates for the participation in continuing education).

3.2.3 School management

As TSMC has many problems and therefore has not functioned sufficiently, there is a strong request for improvement from donor agencies. Problems regarding school management have also been pointed out.

Even though the regulations have been established as explained in the previous section 3.2.1, if the administration and management of implementing organization is insufficient, the functions of regulations will not work properly. To establish an administration system which supports the maintenance and improvement of knowledge and techniques of qualified teachers will result in producing students with a high quality standard for public health institutions.

It is necessary to fundamentally revise the present implementation system of human resource development, and to create a new administration system to ensure qualified human resources to address public needs. It's also necessary to re-examine the arrangement of the budget and the number of students.

At present, the lecturing fee for students without scholarship is set at 4 US dollars per hour (1.5 US dollars for students with scholarship). It is expected that some superior teachers at 4RTCs may use their political power to obtain a position at TSMC, with the purpose of increasing their salaries. Although this has not yet happened, it should be consider to prepare measures for such a case.

3.2.4 Employment

In Cambodia, MOH also offers a large number of employment opportunities. Several hundred people are trained in the school of health sector each year, however there is a fixed recognition that "the role of schools is the provision of education and not employment" to schools, which is the same for HRD of MOH and PD. The staff employment in PD is carried out according to request from PHD and ODHD, and PD cannot make decisions without their request. On the other side, HSD understands which types of jobs are necessary in which hospital, but does not request employment to PD. As there is no collaboration between schools, PD, HRD and HSD, they cannot achieve effective arrangement of the employment for students.

With regard to midwives, the employment opportunities after the training course are not guarantee. The HRD is questioning how they can achieve the policy target without knowing where midwives are going to be employed, which is the highest priority amongst health policies. The employment situation in MOH in 2002 and 2003 is shown in Table 14.

Table 14 Employment situation in 2002 and 2003				
State of employment in 2002				Plan of employment in 2003
Occupational category	No of Approve	Employ	Applicant	Plan
Nurse	173	221	22	400
Midwife	72	28	29	50
Doctor	10	33	79	20
Pharmacist	20	4	5	30
Dentist		12	12	25
Clinical laboratory technologist	18	4	4	0
Physiotherapist	4	5	5	30
Plumber				30
Electrical engineer				30
Driver				20
Medical equipment technician				5
Accountant				20
Administrator				40
Royer				5
				Total 675

3.3 Japanese support strategy

3.3.1 Basic information

The needs for development in Cambodia are broad and immense. Therefore, it is necessary to clarify the areas to focus on and the priorities, and to carry out support activities effectively and efficiently by respecting Cambodian tradition and sense of values.

Based on the policy discussions with Cambodian Government, Japanese government has been carrying out support activities, mainly through, Grant Aid Scheme, and Technical Cooperation in the following four areas; □ improvement of social and economic infrastructure, □ basic human needs such as health services, □ promotion of agriculture and farm villages, and □ human resources development.

From 2002 to 2006, Japanese government is going to carry out the support activities based on the following four issues (the information from the Ministry of Foreign Affairs, "ODA Country Policy Report toward Cambodia").

- ① Achievement of sustainable economic growth and stable society
- ② Support for vulnerable people in society
- ③ Coping with global issues

④ Support for adjustment of differences within ASEAN countries

At the implementation, it is necessary to develop support activities with the main theme “sustainable economic growth and elimination of poverty”, providing sufficient consideration for the measures to vulnerable people in society. It is also necessary to consider the improvement of basic infrastructure which was destroyed during the civil war, and the reconstruction of various old-fashioned systems, as well as education for people in order to recover from the serious shortage of human resources. In other words, it’s necessary to provide well-balanced support from both hard and soft aspects.

3.3.2 Health welfare field (support for vulnerable people)

The important foundation which supports sustainable economic growth is the fulfillment of basic human needs. As these fields directly affect people’s life, Japanese government has been carrying out cooperation activities, mainly for this BHN field, such as education, health services, and improvement of waterworks and sewage system, etc. This area is extremely important from the viewpoint of eliminating poverty, and the demand for support is still high. As the number of vulnerable people is expected to increase as Cambodian economy grows, it is necessary to continue support activity in this area.

In health sector, it is concluded that Japanese government will continuously and positively carry out cooperation activities for the improvement of maternal and child health, improvement of medical technology, measures for infectious diseases (in particular, HIV/AIDS policy, tuberculosis control, TB/HIV control, and measures for malaria/parasites), by collaborating with US government, in “Country Specific Project Implementation Plan of JICA”. Moreover, it is important to focus on the implementation of technical cooperation, as the total number of medical employees is insufficient including the city areas. It is also necessary to carry technical cooperation out collaborating with NGOs, in order to improve primary health care services in local areas.

4. Project strategy

4.1 Project strategy

4.1.1 Macro-Strategy

The activities of the project have wide range, which aims at human resources development in relation to co-medicals in Cambodia, in particular the improvement of situation for basic education. The project sites are MOH, HRD, TSMC and 4RTCs.

The activities include the establishment of criteria / standards carried out by the administration (the establishment of regulation with regard to the provision of institutions where students are trained to become co-medicals, the establishment of the requirements to become teachers, the standardization of curriculum / equipment, the assessment for teachers, etc.), and guidance for school management and the reeducation of existing teachers carried out by TSMC as implementing organization of education. In addition, as information collection sources for the development of teaching materials and curriculum, social needs will be surveyed through training in the local area and at hospitals, and the results will reflect in basic education. Also, the educational environment for the training of X-ray technologist, which has not yet been trained in Cambodia, will be improved.

The Cambodian government requested technical cooperation project and Grant Aid program for buildings and equipment at TSMC at the same time. It's anticipated to improve quality of health services through close collaboration of these two aids scheme.

4.1.2 Micro-strategy

1) MOH

① Strengthening of collaboration within the organization

In order to achieve the objective of the project, it is essential to create a cross-sectional relationship with other departments within MOH, mainly based on HRD. In particular, in order to strengthen the collaboration with HSD, PD, Planning / Health Information Department and PHD, a Counterpart Committee (Attachment 7) is set up for the regular exchange of information.

② Improvement of basic educational situation

With regard to the establishment of criteria / standards (the establishment of regulations with regard to the provision of institutions where students are trained to become co-medicals, the establishment of requirements to become teachers, the standardization of curriculum / equipment, the assessment for teachers), MOH will establishes ones that comply to Cambodian situation, with reference to the regulations established for Japanese schools and regulations in the neighboring countries. For establishment, the "Standardization Committee" (Attachment 7) is to be established. It is necessary for the established criteria etc. to receive approval from the Ministry of Education, as one of the international requirements.

At present, a privately funded university (name: International University) is established and provides a nursing course without clarifying the contents of

education and standard for teachers. However, as qualification at graduation will be an arguing issue in the future, it is necessary to standardize the quality of human resources by introducing some type of public regulations (national examination) as well as improving medical services from the basic education level.

③ Establishment of human resources development plan

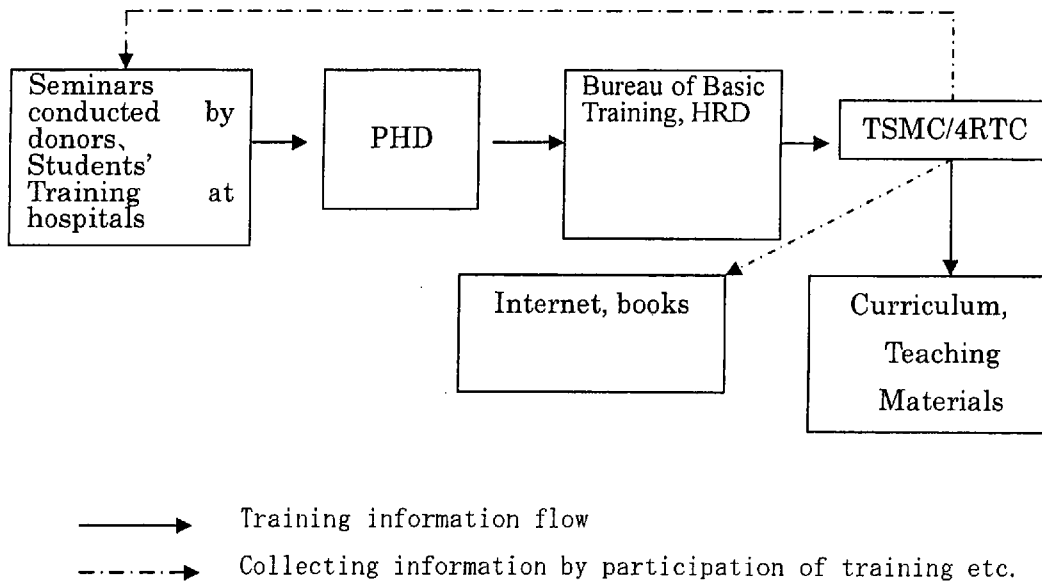
An appropriate plan is to be established through the CPA / MPA policy, the revision of status of scholarship students and the update of the human resources database, etc.

④ Collection of information with regard to social needs (as feedback for basic education)

The training contents of continuing education are often based on the feedback from social needs. Therefore, these contents may meet the needs of beneficiaries. Bureau of Basic Training is to collect the information about training carried out in local area through PHD, and to reflect them in the curriculum and teaching materials used in TSMC and 4RTCs. It is also necessary for teachers of TSMC and 4RTCs to participate in training sessions and to collect necessary information.

During the preparation of curriculum and teaching materials, access to the knowledge in other countries is also important. Therefore, it is necessary to improve the environment which the internet and academic journals etc. are effectively available, and to improve the language ability (in particular, English) in order to understand the obtained information (Figure 3).

Figure 3 Information collection for needs assessment



⑤ **Improvement of human resources database**

Although the database must be updated by strengthening the relationship with PD and PHD, the problem is information collection ability of the PHD. It is necessary to improve their collection ability through training with regard to the necessity of database and the method of data collection.

Also, collaborating with HSD, the database for these facilities will be prepared additionally in order to understand the changes to comply with social needs, and to reflect details upon basic education in the future.

⑥ **Start-up of X-ray technologist training course**

With regard to the education for X-ray technologist, present situation of existing technicians is already being investigated. It's planned to establish new course which certifies a qualification, considering present situation of existing technicians. However, in order to comply with equipment provided by CPA plan and by the support of ADB/WB, it is necessary to provide prompt training to existing technicians, so that they can deal with simple operation of equipment.

2) **TSMC**

① **Improvement of school management**

The biggest problem is administration and management of the school. Even

though above-mentioned criteria are established, if administration of the school which is conducting education based on these criteria is incapable, they cannot utilize excellent teachers or equipment effectively or cannot expect to produce students with high quality. Therefore, it is considered necessary to instruct all staffs including director regarding “what is an organization” and “what is school administration”, and to train them with personnel affairs, accounting and facility management, in order to improve the present situation. Also, as it is necessary for teachers to seize the details of new criteria etc., it is important for the Technical Research Office of TSMC to participate in the preparation meeting of education guideline and criteria in MOH. It is also considered as a measure to carry out an organization analysis with staff members and to understand problems in the present situation, if necessary.

② Improvement of staff morality

As this is greatly affected by their low salary, it is not considered to let them discontinue their present additional jobs, and it is important to improve the present salary structure, in order to maintain the cooperation system in the future. It is considered to commence by asking all teachers to submit information regarding the site and hours of their additional jobs, to calculate the possible days and time for their additional jobs based on their working hours, lessons and preparation time, and allow them to work on that possible days of additional jobs. Also, how to improve full-time teachers' income will be examined, by reducing the number of lessons carried out by part-time teachers thus enabling full-time staffs have as many lessons as possible at school.

③ Improvement of abilities of teachers

The above-mentioned criteria 1) □ is for the newly employed staffs, and will not apply to existing teachers. Therefore, it is necessary to strengthen the Technical Research Office, and to improve the quality of their technical skills through clinical training, short-term training program (teachers training program) in Cambodia and training in the third country. In the case of training in Cambodia, the collaboration with other JICA projects is necessary.

With regard to clinical laboratory, there is no point in carrying out clinical test if teaching doctors cannot assess the results. Therefore, the collaboration with UHS is necessary in clinical laboratory and X-ray technologist course.

④ **Strengthening of practical training at hospital for students**

Practical training on an actual clinical site is very important in basic education. Therefore, it is necessary to select staffs at hospital who are in charge of practical training, and to standardize their training methods. Also, these hospital staffs are encouraged to participate in the above-mentioned 2)□ teaching training program, considering possibility to be teachers at schools in future.

⑤ **Strengthening of the roles of TSMC**

As TSMC is the training institution who offers many fields of co-medicals courses than RTCs and different autonomous structure, collaboration for co-medicals education with other RTCs need to be strengthened in several activities such as education for teachers, curriculum development, strategy to quality enhancement...etc organized by HRD/MoH. Further more, with the current structure of autonomous; TSMC has to define clearly standards on training for paying students in order to maintain quality of training same as other RTCs.

Also, insufficient elementary education results in insufficient application ability in technical fields, which cause a significant problem in training and education on clinical site. TSMC needs also to strengthen the clinical sites of provinces under their coverage rather than, in current situation, use big centers as clinical sites.

There is also to introduce a pre requisite training program before going to the first year of training course to include basic sciences and mathematics for approximately 6 months.

4.2 Implementation structure

The Joint Coordinating Committee, the Counterpart Committee and the Standardization Committee will be established in the project. The management/administration system will be established as Attachment 7, which monitors the project activities.

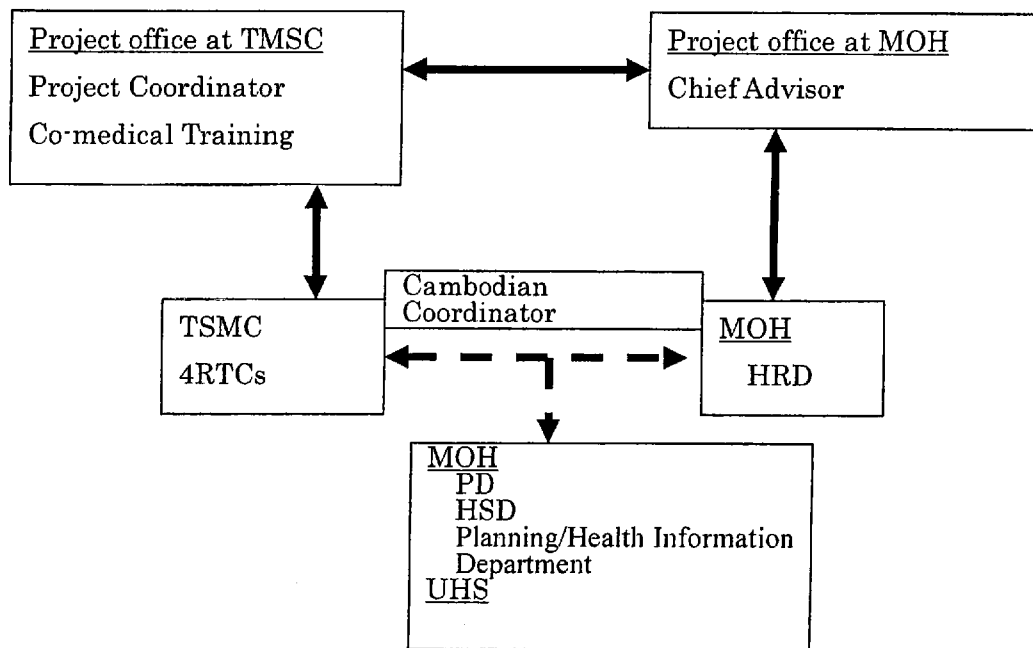
Two offices are also provided as shown in Figure 4, based on the activities in the project.

It is considered necessary to unify the flow of information. In particular, it is large element in solving problems in human resources to strengthen the cross-sectional relationship between each related department in Cambodia. It is preferable that Cambodian coordinators, mainly from HRD, carry out the transmission of information.

In the project, the Secretary of State for Health is the project director, the Director General for Health is the project manager, the Director of HRD is chief counterpart, and

some staffs from HRD becomes Cambodian coordinators. The Director of HRD is responsible for policy, criteria/standardization, preparation of a human resources development plan, and start-up of X-ray technologist training course. Cambodian coordinators are responsible for strengthening the collaboration with other departments of MOH, schools, UHS, etc. The director of TSMC is responsible for improvement of school management, improvement of abilities of teachers, materials and equipment.

Figure 4 Basic communication system



With regard to JICA experts, the chief adviser supports the director of HRD, and project coordinator and experts in nursing education support the TSMC director.

The Standardization Committee is an institution which carries out the establishment of foundation criteria for new medical technology school, standardization of materials, standardization of curriculum, and examination and establishment of future policies in relation to qualification for teachers.

The Counterpart Committee consists of members from TSMC, 4RTCs, HRD of MOH, PD, HSD, the Department of Planning and Health Information, and PHD. This committee carries out the information collection in relation to personnel allocation, implementation of a human resources development plan based on the collected information and health policies, the improvement of school administration/management,

and the improvement of the present problems for re-education of teachers. Another objective of this committee is to strengthen the horizontal collaboration, by reporting activities which each department has carried out individually and discuss the relating points.

4.3 Ability of counterpart organization

The function of HRD is better controlled than those of other departments, and although they may have a shortage of human resources, activities in this department are very strong.

The period, when the country had to urgently supplement human resources in health sector which was lost during the Pol Pot government, has now gone, and health services of quality appear to be much needed at present. Therefore, HRD planned the improvement of quality in co-medicals from the basic education process, in order to meet the social needs, and included the improvement of TSMC and the quality of education and teachers within the “HSSP (Health Sector Strategic Plan)”. Although it is necessary to collaborate with other departments of MOH, and UHS including TSMC in order to carry out the plan, the cooperation system is still unclear after the submission of the detailed implementation plan.

TSMC changed into a semi-self-governing organization in May 2002. It still accepts students as requested from MOH after the organization change; it also has started accepting students who pay tuition fees. These tuition fees are to be spent for supplement of salaries for staff, the purchase of equipment and the repair of facilities. However, the school still has a lot of problems with regard to the administration and management, such as the unclear number of students who pay tuition fees in the future, classrooms and teacher’s shortage, shortage of equipment for practical training, etc.

4.3.1 Past achievement

The health sector is still in the recovery stage and relies on donors’ supports; however MOH steadily provides the basic education, continuing education and technical education in national institutions, provides scholarship for students, established the Human Resources Development Plan in 1996 (referred to P224), provides a human resources database in order to ensure human resources.

TSMC reopened in 1980, and has steadily increased the number of courses. Also, with the support from NGOs, it has prepared a curriculum and has also educated teachers.

4.3.2 Measures for budget

1) MOH

The budget for the health sector in 2002 was 171,700.00 million Riel (US\$43.47 million). This was 9.2% of the national budget, 1.2% of the GDP. The budget per person in the country was US\$3.48, which was as low as that of the other developing countries.

The budget is not allocated to each department of MOH, and the budget necessary for its activities is controlled by the Ministry of Economic and Finance. Therefore, the purchase of equipment and expendables etc. in each department is restricted. The budget for MOH increased by 20.9% compared to the previous year. The contents were personnel expenses (10.3%), administration expenses (26.4%), expenses for medicine/medical equipment (32%), and program activity expenses (30.3%). Facility expenses and material expenses were paid by the Ministry of Economic and Finance. Administration expenses and expenses for medicine/medical equipment increased, however the increase in salaries was only 8.0%, which was smaller than the increase in other expenses. Low salary caused low motivation of staffs, and this affects the delivery of health services (Table 15).

Table 15 Budget of MOH

:Million Riel
(Compared with the previous year)

Budget code	Subject	2000	2001	2002
10	Personnel	15,608	16,280(4%)	17,630(8.3%)
11	Administration expenses	53,234.5	34,053(-36.0%)	45,398 (33.3%)
11	Medicine and Medical equipment	44,483.5	47,577 (6.9%)	55,007 (15.6%)
13	Program activities expenses	6,000	42,500(608.0%)	52,000 (22.4%)
31	welfare	1,574	1,550(-1.5%)	1,640 (5.8%)
32	Movement fee to International Organizations	100	300(200%)	25(-91.7%)
Total		121,000	141,990(17.3%)	171,700 (20.9%)
Figures within () are the ratio of the data in 2002 to those of the previous year.				

Table 16 The Budget of TSMC : Million Riel
(Compare the previous)

Budget code	Subject	2000	2002	2003
10	Personnel		273.5	311.2 (13.8%)
11	Administration expenses		491.9	1,043.1(112%)
13	Program activities expenses		332.8	412.0 (23.8%)
31	Welfare		27.5	18.0(-34.5%)
Total		927.7	1,125.7(21.3%)	1,793.8(59.3%)

2) TSMC

The budget for TSMC (unit: Riel) was 927,742,820 in 2000 (231,935.7 US dollars), 1,125,700,00 (281,425 US dollars) in 2002 (21.3% increase compared to the previous year), and 1,793,825,400 (448,456.4 US dollars) in 2003 (59.4% increase compared to the previous year), increasing each year. The expenses which showed the highest increase were for equipment etc., and the increase was 112%. Compared to the equipment expenses, the increase of personnel expenses was only 13.8% (Table 16).

The details of the budget in 2003 were personnel expenses (17% of the total budget), stationary goods and repair expenses (58%), examination equipment expenses (0.6%), water/electricity charges (1.3% and 3.3%), and scholarship paid from the government 1% (Attachment 8).

We can see that the low increase rate in personnel expenses (salaries) is one of the reasons why morality and the quality of staff/teachers have not yet improved.

Another budget source (the title is unknown) is the income from students with scholarship. This is generated from student fees to school 5 US dollars per person per year (exempted for poor students). This budget allows the expenses for three security guards, equipment for lectures, and leisure items for students. It is controlled by the Accounting Section using a simple accounting book, and it is necessary to obtain approval from the school director.

There is also an income from tuition fees (650 US dollars per year for the nursing

course/clinical laboratory course, 450 US dollars per year for the physiotherapy course). The total tuition fees of this year were 8,4100 US dollars . According to the national regulation, 50% of this is to be paid for equipment and materials, and 49% for salaries. Also, 1% of the total figure is to be paid to the national treasury, however the actual situation is unknown.

4.3.3 System in general

The relationship between MOH and UHS/ TSMC after the organization change to a semi-autonomous status is shown in Attachment 9. TSMC used to be positioned under HRD, and it has now been positioned under UHS council since last year, apart from its technical aspect. As the members of the council come from MOH, it is considered that the head of MOH deals with the school in the same way as before, however the communication between HRD and TSMC has not been successful in the present situation.

It is very important to improve the relationship between two counterpart organizations (HRD and TSMC).The improvement of the environment for basic education, the updating of human resources database, and the improvement of management ability of TSMC with the purpose of improving the quality of co-medicals.

1) MOH

The relationship between each department within MOH is weak and information is not passed to each other. Therefore, information regarding the update of human resources database is slow, and is not utilized for employment, personnel positioning and continuing education, etc.

HRD (Attachment 10) is an institution which provides basic education for medical staffs, plans and guides for continuing education. This department consists of 3 Bureaus and 9 sections, total number of staffs of 26 people. However, as 4 of them are on leave and 9 people are part-time employees, they always have the problem of staff shortage and the work is not sufficiently carried out.

The role of HRD is mainly the management of basic education in relation to training for health staffs, and the provision of technical guidance at continuing education. Since UHS have changed their system to semi-autonomous status, the relationship between HRD and UHS has become indirect. However, it still has the responsibility of guidance and supervision for UHS, TSMC and 4RTCs, as mentioned in the current roles and responsibility of HRD/Basic education bureau.

Though HRD is responsible for the preparation of training plan for X-ray technologist, there has been no progress on this. They aware that there are no official technicians and that quality of existing technicians is very poor, nothing have done yet to rectify the situation. The summary of present situation is shown in Attachment 6. This indicates the background information, and is useful as basic data when considering how to train X-ray technologist in the future.

With regard to continuing education (CE), Bureau of Continue Education monitors CE training courses. The plans conducted by local donor organizations in each program are not reported as information; therefore it is not necessarily monitoring all the training courses. They do not receive reports from PHD or ODHO, either.

Bureau of Registration/Qualification carries out the registration and issuance of qualifications. This bureau also prepares and controls the human resources database, however as the relationship with other departments is weak, the flow of information is also slow.

2) TSMC

TSMC is an organization which consists of 2 offices and 6 divisions positioned under the school director (Attachment 11). The number of staffs is 65 as of March 2003. TSMC is the only national training institution for co-medicals, and provides basic education for people working as nurses, midwives, clinical laboratory technologists, physiotherapists, psychiatric nurses and anesthetic nurses. This function contributes to the health services by providing human resources for medical facilities.

4.3.4 Administrative ability of organization

It seems that HRD has no major problems in its administration and management. It is highly evaluated by other donors, too.

However, TSMC, an implementing organization of co-medical education, does not have a proper control system as it has already reported. The problems at the organization administration and management of TSMC are as follows.

- The positioning and functions of the school are not understood by staffs.
- The element of organization lacks, as well as awareness and understanding of “common purposes”, “motivation for work together” and “communication”.
- There is no concrete plan for number of students to be enrolled in the future, even though the school started accepting paying students.
- The work attendance rate of staffs is very low.
- The opening rate of the library is low.

- There is no future plan for the school.
- The control for accounting is unclear.
- The morality of staff is low.
- Teachers do not have teaching awareness and have no desire to improve themselves. The quality of teaching therefore is low.

4.4 Cooperation system

The cooperation with WHO, UNFPA, UHS and Kuala Lumpur nursing school, whose the third country training is planned for the near future, is necessary.

WHO is also interested in the standardization of curriculum and materials in training institutions for co-medicals, it will be established jointly with WHO in the future. In order to do this, it is also necessary to arrange cooperation system with UHS and UNFPA (midwifery field). There is a movement to set a common standard within ASEAN, and there is also a plan to establish a private training school for co-medicals. Thus, the necessity to improve the standard in Cambodia has been rapidly increasing.

With regard to the involvement of WHO and the establishment of standard, WHO has shown an intention to establish criteria, in particular for clinical doctors, with approved qualification. Therefore, it is considered that WHO will be in charge of 3 faculties of UHS, and JICA will be in charge of courses of TSMC and 4 RTCs in the future. However, as it is necessary to understand the characteristics of Cambodia in relation to nursing and midwifery, the collaboration with WHO advisers who have already carried out the activities is required at the establishment of criteria.

Training for teachers, particularly the cooperation system in relation to teachers for nursing, is to be coordinated with HRD, considering two points, the improvement of the present situation, and the future vision. With regard to the improvement of present situation, we have nursing training in third country for Cambodian teachers, in which the existing teachers have training at Kuala Lumpur nursing school as JICA Malaysia office plans. With regard to the future plan, HRD has a plan to enroll some people, who have a qualification as a master trainer in the health field, into a master degree course of nursing education in neighboring countries, by utilizing loan from ADB. People who completed the course will become teaching leaders and work on training for teachers in the future. However, as both plans are to be carried out in other countries, they may introduce the nursing system in those training countries into Cambodia. In the project, we will examine such people and the details necessary for the future of Cambodia, in order to utilize them at the establishment of criteria.

Basic education with high quality greatly relies on facilities and equipment. However,

in the present situation at TSMC and 4RTCs, equipment and facilities to learn basic knowledge and technology are insufficient. In addition, as it is needed to build a new facility (or an extension) for the training of X-ray technologist which will commence in the future, it is necessary to seek the possibility of Grant Aid Scheme.

4.5 Sustainability

4.5.1 Institutionalization

In order to ensure that the project achievements will be sustained after completion, it is necessary to create a system to develop national standards for curriculum, teachers' qualifications, and facilities/equipment for co-medicals training institutions. These should occasionally be revised, based on the needs of hospitals, clinics and laboratories. Revised standards should be applied at training at the TSMC and 4RTCs.

Currently, ODHO and PHD report on staff deployment and training needs at Health Centers and RHs. They report to PD. then PD reports on job vacancies to MOPA. The Ministry of Economic and Finance then allocates budget expenditures for staff based on MOPA's information (Figure2). Two problems, however, restrict the suitable allocation of funds for staffs and proper fulfillment of the real needs of public health institutions in the human resource development plan. First, many ODHOs and PHDs cannot obtain and report accurate information, and secondly, communication among the Personnel, HRD and HSD in MOH is not sufficient. Moreover, the TSMC does not have the capacity to develop curriculum and teaching materials, and upgrade teachers' teaching ability. Nor can HRD supervise the TSMC's training quality due to the autonomous structure. As a result, the TSMC depends totally on support from donor agencies for improving training quality. Therefore, it is crucial to strengthen the relationship among (1) MOH, PHD and public health institutions, and (2) HRD, the TSMC and 4RTCs to ensure the smooth flow of staffing information at public health institutions and institutionalize the technical transfer of the project.

The PD, HRD, HSD, TSMC and 4RTCs will form a Counterpart Committee and project offices will be placed at both MOH and TSMC. Output 1 establishes the national standards for basic training of co-medicals (all healthcare workers, except doctors, pharmacists and dentists). Output 2 assists MOH in accurately recognizing the situation of staff allocation conditions and needs at each hospital. Then, national standards will be utilized in activities under Output 3, 4 and 5. The project does not conduct the various activities separately, but rather implements them comprehensively, by emphasizing the relationship among them. Steering Committees will be set up for each Output and their representatives will regularly hold meetings, as defined under Output 6. They will

recognize the progress of other activities and arrange their implementation plan accordingly.

By doing so, the project aims to promote collaboration among the related agencies and ensure sustainability of the project achievements.

4.5.2 Factors for the sustainability after the project

1) Policy framework and priority of Cambodia

Human resource development in health sector is one of the priorities of Health Sector Reform. MOH issued its “Health Sector Strategic Plan (HSSP) 2003-2007” and its 5-year implementation plan “The 5-Year Implementation Framework.” There are 20 strategies in the Framework and main activities under Strategy 12 and 13 (Strategy 12: Strengthen human resource planning to reduce misdistribution of numbers and type of workforce through identification of posts and the reallocation of staff. Strategy 13: Enhance the management and technical skills of the entire MOH workforce through quality, comprehensive training and education and retention and support measures) are closely related to the project. In addition, establishment of national standards and guidelines for basic training of co-medicals (on curriculum, teachers’ qualifications and facilities) is the one of the priorities of HRD. There has been no donor assistance in this area, so assistance has long been wanting. Recently, the need for such national standards has increased due to ASEAN desire to create common standards in many areas. New private training schools for co-medicals are going to be set up in the very near future.

The TSMC is the training institution for offering co-medicals courses in many fields. The 4RTCs trains nurses and midwives and some post basic educations. Thus, most co-medicals in Cambodia graduate from either the TSMC or 4RTCs. Hospitals and Health Centers in Cambodia have a chronic shortage of co-medicals both in numbers and skills. Therefore, the project is important, for it matches Cambodia’s policy framework and priorities.

2) Organization, leadership, and communities’ participation

Though one of the main counterpart organizations, HRD, has considerable power in MOH, it faces a never-ending backlog of work due to the shortage of staff members. Out of 26 staff members, 4 of them have taken leave and 9 of them are only part-time workers (as of March 26, 2003). However, since the project is consistent with HRD’s work and tasks, it is an acceptable burden for HRD to allocate some staffs for the project. Therefore, the project’s effects are expected to be sustained after project completion, as long as HRD exists in MOH. A preparatory study team confirmed that

one of the project offices will be placed in the Bureau of Basic Education of HRD. As mentioned, communication among departments under MOH is not sufficient and the collaboration among MOH, PHD and other related health institutions is not good. Japanese experts who will be assigned to MOH project office will work for its improvement.

Another key counterpart is the TSMC. It has serious problems in its school management, such as its accounting procedures, equipment procurement and maintenance, staff management and student affairs. One of the reasons is that in the 1990s, the TSMC depended totally on NGOs for help in various areas of its operation. Since external assistance stop (funding and technical assistance) Japanese experts will support the TSMC in strengthening its school management to ensure self-reliance. This will also ensure project sustainability. The TSMC confirmed that the Deputy Director will be the office chief during the preparatory study. (Please refer to Chart 4 for the TSMC's organizational structure). The TSMC belongs to UHS. The UHS managers (Prof. Vu Kim Por (Principal), Prof. Youk Sophanna (Dean, faculty of Medicine) confirmed that the UHS will support project implementation.

Regarding 4RTCs, a preparatory study team noticed that some RTCs have better school management than the TSMC. If the project discovers that 4RTCs' school management would possibly hamper project sustainability, necessary measures will have to be taken.

3) Financial and economic aspects: possibility of budget allocation

Departments under MOH do not have their own budgets. They request money from the Department of Budget and Finance, as needed. MOH suffers from chronic financial difficulties. Donor agencies have supported not only projects and programs, but also MOH's daily operating costs. Therefore, there is no guarantee that MOH will continuously secure and disperse project funding (including operating costs of the counterpart organizations) after project completion. However, it is not necessary to greatly increase HRD's budget for the project, because little equipment will be provided to HRD (and maintenance costs will be negligible) and the project is consistent with HRD's current activities. Thus, if the same amount of money continues to be provided to HRD, no financial problems should be expected in the continuation of activities under Outputs 1 and 2, after project completion.

The TSMC became a semi-autonomous organization last year. After the TSMC receives budget plan approval from the UHS council (consisting with the members from the UHS, TSMC, MOH, Ministry of Education and Sports, and the Ministry of Economic and Finance), it requests that the Ministry of Economic and Finance disperse

the budget (please refer to the Attachment 12 for the TSMC's budget). All the TSMC's activity plans should also be approved, firstly, by the council and then by MOH. Entrance fees and tuition of students without scholarship are its major independent source of revenue, but student enrollment has not been consistent. Also, no projection has been done for the optimal number of students who pay tuition fees (please refer to the Attachment 8 for student numbers in each department). Therefore, at this moment, the financial sustainability of the TSMC's project activities is not promising. However, the project does its best to improve the situation by advising the TSMC on school management, including budget management.

Each RTC is given 25,000 US dollars annually. In the past, the budget was managed by PHD, but since December 2002, 4RTCs can directly apply its budget plan to MOH. The change enabled 4RTCs to effectively make budget plans and receive them smoothly.

In addition, the JICA Grant Aid Scheme considers the possibility of providing equipment and renovating/constructing school buildings at the TSMC. Thus, the project inputs (under technical cooperation scheme) will be concise.

4) Technical factors: appropriateness of technology

Major equipments needed for activities at MOH are GIS, software and computers to improve the human resource database (HR Database)(Activity 2-2). Since GTZ has already donated them, the staffs of HRD and PD already know how to use them. Since staffs at PD joined WHO's Functional Analysis Research conducted in two provinces, they know how to cooperate with the PHD members and survey conditions at health institutions. HRD needs technical assistance to maintain the software.

The concern is how to carry them out continuously across the country and have the results reflected in the human resource development plan. GTZ began, but has suspended support for updating the database. It is crucial to determine the reasons and take necessary measures to avoid repeating the same failure.

At this moment, HRD does not have appropriate skills and knowledge to establish national standards and guidelines for basic education of co-medicals. If Japanese experts teach staffs and improve HRD's ability, then technical sustainability will be secured. As mentioned in the Project Design Matrix (PDM), it is important to train as many as counterparts as possible and increase the number of staffs who can work for the project, in order to cope with the brain drain.

The TSMC uses obsolete equipments for its practical training and many equipment are broken and/or stored in warehouses. There is no maintenance staff at the TSMC, so it always sends budget estimates for repairs to MOH. Once the estimate is approved, the

TSMC orders companies to fix the problems. The project does not plan to provide equipment whose supplies are not available in Cambodia and will incur expensive maintenance costs. Yet, it is still essential to allocate operational maintenance staff within the TSMC. Activities for Output 3 deal with this issue. If their positive effects are maintained, then technical sustainability of the project would be promising.

The TSMC's teachers started working there right after their graduation—without proper training. There is no re-training plan for teachers at the TSMC. Teachers use inconsistent and old curriculum, syllabus, and teaching materials, which were prepared by various donor agencies. Before supporting each professional department, the project should help the Technical Research Office to revise them, by integrating social needs, creating teaching/studying guidelines and training teachers. It is vital to develop internal systems (1) securing access to new information, (2) sharing information, skills and knowledge among staffs, and (3) training new staff members at the TSMC. The project will focus on, and take action on these issues.

5) Social and cultural factors

Basically, none of the activities run counter to Cambodian culture, tradition, value systems and common sense. However, it is essential to enhance the counterparts' sense of ownership of the project. By introducing participatory planning, monitoring and evaluation, project sustainability will be assured after completion. There is currently a gap between the TSMC's school management ability and the self-reliant school management the project hopes to accomplish.

6) Environmental factors

Due to its location, the TSMC is inundated in the rainy season. If a proper medical waste treatment system is not established, they run the risk of producing a negative environmental impact. The project should select environmentally friendly equipment, set guidelines for reagent usage and disposal methods of medical waste. If these guidelines are followed, then no negative environmental impact is expected. In December 2002, the Phnom Penn municipality started the "Improvement of Flood Control and Drainage Plan" and it is expected to be finished in fiscal year 2003. The Plan constructs an underground tunnel and connects No. 183 road, which is located on the southeast side of the TSMC, to water discharge canals which will be renovated in the Plan. The intake will be placed between No. 183 and a pond located on the TSMC's premises, establishing good water runoff, even though the adjacent trench itself will not be renovated in the Plan. (There is a possibility that the adjacent trench will be

renovated by the municipality with ADB funds, but confirmation is necessary). Once the Plan is completed, the frequency and scale of flooding at the TSMC will be reduced and the mosquito and odor problems caused by the adjacent trench will be solved.

4.5.3 Commitment of counterpart organizations and Cambodian government

Important Assumptions for achieving and maintaining the Overall Goal of the project, after project completion, were discussed by the counterpart organizations and noted in the PDM (please refer to 5.4 Analysis of Important Assumptions and risk of external factors). In order to achieve the Overall Goal, the preparatory study confirmed that (1) in accordance with regulations, the government will take measures for the TSMC and 4RTCs students to be assigned to public health institutions, and (2) MOH will take necessary measures to ensure private schools conducting basic training for co-medicals follow national standards and guidelines set by the project. Project members should discuss specific measures and receive MOH's commitment—in writing—before project implementation. In addition, it is important to confirm that the counterpart organizations have a sufficient sense of ownership over the project, and that MOH will not reduce the number of staff members, or the budget for the various working committees, after project completion.

4.6 Special consideration

Project implementation is not expected to generate significant negative gender concerns. Among 65 full-time TSMC teachers, 35 are female. More than half (224 out of 376) of the scholarship-students, which share most of the basic education courses, are female (see Attachment 13). Thus, there is no need to increase enrollment of female students and teachers in the project. However, the following four issues need special attention: (1) prepare a well-thought implementation plan, in order to efficiently implement a wide range of activities and achieve the Project Purpose. (Special consideration is needed on the timing of the Grant Aid Scheme's intervention). (2) collect information on x-ray and nurse-midwifery fields and 4RTCs, because the preparatory study could not sufficiently obtain them due to the time constraints. (3) discuss how to disseminate the curriculum and teaching materials, prepared at the TSMC, to 4RTCs before project implementation. (4) regularly collect information on other donors' activities.

5. Project design

This chapter explains the project framework written in the PDM. Estimated project duration is 5 years. The direct target group of the project is students at the TSMC and 4RTCs. The indirect target group is clients of public health institutions.

5.1 Overall Goal

The Overall Goal is the development effect seen 3-6 years after project completion resulting from the achievement of the Project Purpose. During the second preparatory study, the Overall Goal of the project was defined as: “Sufficient number of capable co-medicals is allocated at public health institutions.”

The Objectively Verifiable Indicators for measuring the realization of the Overall Goal are: (1) Number of public health institutions which comply with Minimum Package Activities and Comprehensive Package Activities (CPA/MPA) standards on co-medicals is increased. (2) Number of vacant posts for co-medicals at each public health institution is reduced, and (3) Number of TSMC and 4RTC graduates who work at public health institutions is appropriately increased.

The Means of Verification for (1) and (2) are the Human Resource Database, which will be established by Activity 2-1 and 2-2. The Means of Verification for (3) is a follow-up study by the Technical Research Office of TSMC and 4 RTCs, which is expected to be conducted under Activity 2-4. It is necessary to institutionalize them by conducting them regularly, even after completion of the project, in order to verify the results.

It is not written in the PDM, but a Super Goal, which is to be placed at a higher level than the Overall Goal is anticipated. It is defined as: “Service quality of public health institutions is improved through quality improvement of co-medicals,”

5.2 Project Purpose, Outputs, and Activities

5.2.1 Project Purpose

The Project Purpose is the goal which is expected to be achieved at the end of project. Project Purpose was defined as “Capable co-medicals are produced for public health institutions.” Capable co-medicals mean here the ones who can perform all required tasks in the workplace. Currently, those stationed at Health Centers should perform all required work defined by MPA standard and those assigned at RHs should perform all types of work set by CPA standard.

Four indicators were set to measure the realization of the Project Purpose: (1) The average score on the final exam of TSMC and 4RTCs students is increased. (2) The average score of project monitoring test for 3rd year TSMC and 4RTC students is

increased. (3) The performance of students at practical training hospitals is improved, and (4) The performance of graduates at public hospitals is improved. The Means of Verifications are set as: For (1), students' performance records on various TSMC examinations and 4RTCs is defined. Test results of 3rd year students were selected for (2). For (3) and (4), the project interviews the Personnel Department at hospitals, which accept students for their practical training and/or employment.

It is difficult to set quantitative indicators. The quality of students and staff should be evaluated to demonstrate whether or not the Project Purpose and Outputs have been met. The project will integrate the test, interview and questionnaire survey for this purpose.

5.2.2 Outputs and Activities

6 Outputs were defined as the means to realize the Project Purpose. Activities for Output 1 will be at HRD, Output 2 is for HRD and PD, Output 3 is for the TSMC, Output 4 and 5 are for the TSMC and 4RTCs and Output 6 is for all of the organizations. It is deemed appropriate to start from Output 1 and 3 among others, because the benefits of Output 1 (the national standards and guidelines) will be the inputs for Output 4 and 5 (preparation of teaching materials and staff training seminars at the TSMC and 4RTCs). If the TSMC's school management cannot be improved by activities under Output 3, then the Grant Aid Scheme cannot provide equipment and construct or renovate school buildings.

The following are 6 Outputs and the activities required to achieve them. The activities are written in chronological order, deemed appropriate by the preparatory study.

Output 1: National standards and guidelines for basic training of
co-medicals are produced.

1-1. Establish a steering committee.

1-2. Improve the coordination among health institutions.

1-3. Set guidelines for schools which provide basic training of
co-medicals.

1-4. Standardize teacher's qualification.

1-5. Standardize training contents/modules and set the level of the final
examination.

The Objectively Verifiable Indicator for Output 1 is: Necessary national standards and guidelines for institutions which conduct basic training for co-medical are issued. MOH Annual Report can provide the data. These national standards and guidelines have to match with the operational guidelines for co-medicals (ex. inspection guideline) at health institutions which HSD in MOH is obligated to prepare. It is important to check the contents of the operational guidelines and their preparation progress from the person

who will be dispatched from HSD for the project, in conducting above-mentioned activities.

Output 2: Information on public health institution staff is feed back into the training plan.

- 2-1. Upgrade the existing periodic reporting scheme for reporting the current condition and training needs of co-medicals at public health institutions.
- 2-2. Improve the Human Resource Database system to be able to update vacant positions and the condition of facilities at public health institutions (map creation).
- 2-3. Regularly update the list of new co-medicals who complete basic training (through registration and licensing system).
- 2-4. Conduct a follow-up study of the graduates' employment status.
- 2-5. Advise Department of Human Resource Development to use the information for human resource development plan.

Objectively Verifiable Indicator for Output 2 is: Public hospital's staffing and facility information is updated annually on the hospital information database, which will be established by this project. One of the reasons why the PD of MOH do not know the graduates' employment status is that they perceive the school to be a place for educating students, not placing them in jobs. However, a follow-up study (Activity 2-4) is indispensable, not only for promoting the graduates' employment at public health institutions, in order to meet the Overall Goal, but also for matching the class curriculum to real needs at health institutions.

The follow-up survey can illustrate the gap between the required work at health institutions and graduates' capabilities. It can also illustrate the difference in the equipment available to health institutions and the TSMC/4RTCs. The information is an indispensable input for conducting activities under Output 1, 4, and 5 and assists the upgrading of teaching modules, materials and ability of teachers.

Output 3: School management of the TSMC is improved.

- 3-1. Conduct training needs assessment and set criteria for evaluation.
- 3-2. Conduct training on school management (budget management, staff management, equipment maintenance, procurement, student's care etc.) and evaluate impact of the seminars.
- 3-3. Create school management checklists and regularly monitor actual performance.

Objectively Verifiable Indicators for Output 3 are: (1) Average scores at training

seminars for managers and administration staff are improved. (2) Performance level of monitoring checklists on school management is improved. Regarding (1), results of various training seminars on school management can provide the means for verification. For (2), the information can be obtained from a monitoring survey on school management.

The reason why two indicators were chosen is that it is essential to evaluate (1) whether staff members understand methods to improve the real situation at training seminars, and (2) whether the learnt skills and knowledge are utilized and school management is actually improved. Improvement of school management will be the basis for other activities at TSMC (Output 4 and 5). For smooth project operation, it is helpful to conduct institutional analysis (Activity 3-2) and set objective evaluation standards and methods in the early stage of project implementation.

Output 4: Teaching ability of instructors is improved.

- 4-1. Assess the training needs of teachers/instructors and set evaluation criteria.
- 4-2. Define appropriate training methods and create training manuals.
- 4-3. Conduct staff training seminars.
- 4-4. Regularly evaluate teaching ability.

Similar indicators were set for Output 4 with Output 3: (1) Average score at training seminars for teachers and instructors is improved, and (2) performance level of monitoring checklists on teaching ability is improved. Results of various training seminars on teaching ability can provide necessary information for evaluation (1). Monitoring survey on teaching ability will be conducted for (2).

Currently, there are two types of teachers at TSMC: teachers who can lecture and those who can supervise practical training. For instance, only 4 out of 10 teachers in the clinical laboratory course can lecture classes, so 10 outside lecturers are dispatched from MOH, NIPH, national hospitals, National Blood Transfusion Center and NGO hospitals. TSMC teachers are evaluated by the team, consisting of Director, Deputy Director, Chief of Administration and Finance Office and Technical Research Office. There is no self-evaluation system and evaluation by students. In 1995, Red Banner, an international NGO which supported the TSMC, initiated teachers' evaluations by students, but the system has not been continued. The TSMC depends totally on donor agencies for its teacher training. Also, staffs interaction between TSMC and 4RTCs does not seem to be active. Teacher training in the project should be based on the study guidelines, curriculum and syllabus, which will be prepared/revised in Activity 5-3, 5-4 and 5-5.

It is important to train teachers to upgrade their ability in a balanced manner, on both

lectures and practical training. It might be a good idea to introduce a financial incentive system for teachers' evaluations.

Output 5: Teaching materials are upgraded.

- 5-1. Conduct a survey on the current utilization of x-ray facilities at public health institutions.
- 5-2. Establish a steering committee to open the new x-ray department.
- 5-3. Revise the study guidelines for all departments.
- 5-4. Revise/establish appropriate curriculum, focusing on practical training.
- 5-5. Revise syllabi and introduce tests to evaluate training impact on students.
- 5-6. Increase the availability of Khmer textbooks for each course.

The Objectively Verifiable Indicator for Output 5 is: Teaching materials of all departments are produced and can be revised biannually without the help of Japanese experts. An annual report of TSMC and 4RTCs can provide the necessary information. Once the quality of teaching materials reaches a certain level (after revisions) revisions can be less frequent.

It has been suggested that insufficient primary education and basic scholarship prevent students from having specialized training and effective clinical training. Therefore, it is appropriate to consider including some basic education review modules when preparing/revising teaching curriculum and materials.

It is also important to seek the best educational impact by linking practical training at TSMC, clinics/hospitals and in the community (such as medical examination and health education activities at elementary schools and junior high schools) . In Cambodia, no training institution exists for X-ray technologists and their training materials and teaching/studying guidelines are not available. To set up a new x-ray course, the project needs to prepare them from scratch. In order to devise them appropriately, a survey of the current utilization of x-ray facilities (Activity 5-1) is needed and a steering committee should be established (Activity 5-2) to ensure smooth project implementation.

Output 6: Periodic monitoring and evaluation are conducted on above 5 "Outputs".

- 6-1. Conduct a survey to obtain baseline data for evaluation.
- 6-2. Regularly monitor each activity.
- 6-3. Hold project team meetings periodically to evaluate the progress of each activity.

Objectively Verifiable Indicator for Output 6 is: In-house evaluation meeting is conducted regularly. Monitoring and evaluation sheets can prove that there were meetings.

5.3 Inputs

Following inputs are expected in the project.

5.3.1 Inputs from Japanese side

1) Dispatch of long-term and short-term experts

Long-term experts would consist of Chief Advisor, Project Coordinator and Co-medical Education Expert. The Chief Advisor will be assigned to MOH project office and the rest will be stationed at TSMC project office. The former will work on Output 1, 2 and 6, and the latter will take care of Output 3, 4, 5 and 6 (please refer to 4.2 Implementation structure) .

For transferring necessary skills and knowledge to as many project counterparts as possible, training in Japan does not seem to be efficient. Since no difficulty is expected in recruiting experts for the project, Japanese experts can go to Cambodia and train counterparts. In addition, it is advisable to integrate a third country training scheme in the project, because Cambodian counterparts can learn from similar projects in South-east Asia. These projects can provide more relevant training by reflecting the real needs and level of medical service at Cambodian health institutions, rather than what would occur in Japan. If possible, it is preferable to bring experts in Southeast Asian countries to Phnom Penh, rather than sending selected members of MOH and TSMC to those countries. In order to maximize project benefits, it is important to select suitable counterpart members who will form the core of the project as training targets. They should be selected without bias about age and job title.

2) Equipment for practical training

The project plans to provide necessary equipment for the practical component of basic training course (for registered nurses, clinical laboratory technologist, physiotherapists and X-ray technologist) at the TSMC. The provision of equipments and the construction/renovation of buildings will be done either under JICA's Technology Local Adaptation Scheme or the Grant Aid Scheme. In either case, it is essential to prioritize the necessary equipments, and dispatch short-term experts to coincide with equipments installation. Equipments necessary for the service at RH and Health Centers should be given priority.

5.3.2 Inputs from Cambodian side

1) Personnel (Counterpart Committee will be formed with members from following organizations; HRD, PD, HSD, Health Planning and Information Department of MOH, TSMC, 4RTCs and others)

Specific staff allocation (i.e. number, sex and qualification of counterparts) should be

defined in Terms of Reference (TOR) by confirming the possibility of recruitment and allocation.

2) Project offices (One at MOH and the other at TSMC)

3) Operation and maintenance cost of the project offices

After examining the schedule and feasibility, specific responsibilities of MOH, TSMC and 4RTCs will be defined.

5.4 Important Assumptions and risk analysis

This section explains the Important Assumptions selected by the preparatory study. Important Assumptions are conditions that: (1) are required for the success of the project; (2) exist outside of the control of the project; (3) and cannot be positively determined to be fulfilled, or not. The mission could not set the indicators for the Important Assumptions, but it is desirable to discuss and define the trigger points, the prodigious signs that the assumptions cannot be met.

5.4.1 Overall Goal level

The following three assumptions are necessary to maintain the Overall Goal and/or to attain the Super Goal, “Service improvement of public health institutions through upgrading the quality of co-medicals.”

1) Number and training quality of continuing education courses (conducted by PHD and other donors) are improved.

The Bureau of Continuing Education of HRD had conducted 4-month midwifery training, especially for midwives working in the provinces, but they have been suspended since March 2002 due to the limitation of production capacity of the schools. One of the serious problems of continuing education run by donors in Cambodia is that many training courses follow donors’ schemes, but not Cambodian health policies. Another problem is that the level of continuing education courses is low, because students have not received quality basic education. HRD aims to assess their curriculum according to the MPA/CPA standards and upgrade the quality of teachers.

There are many donor agencies working to provide education for nurses and midwives. Their target areas are changing from the central to provincial/district/municipality levels. Thus, it is unlikely that number and quality of continuing education courses in the provinces would decline from the current level.

Once the project produces better-qualified TSMC and 4RTCs graduates, the continuing education courses can advance their teaching level. Besides, this project would enable HRD staff to prepare national standards and guidelines for the continuing education of

co-medicals, since HRD will receive training from Japanese experts for guidelines on basic education of co-medicals. In the process of establishing a HR database, the project will strengthen the collaboration between MOH and PHD. Considering all of the above, the project will enhance the quality of the continuing education of co-medicals.

In order to bring positive changes 3-6 years after project completion, it will be necessary to cooperate with other donors. It is crucial to seek mutually beneficial collaboration with them by checking their target areas, activities, schemes, duration and goals, even outside of the project framework.

2) MOH takes necessary measures to ensure private schools conducting basic training for co-medicals follow national standards and guidelines set by the project.

As mentioned, a new private school for co-medicals will open at fiscal year 2003. Training institutions such as these can be started at any point. As HRD wants to apply the national standards and guidelines to all private schools, it is highly likely that the assumption will be met. MOH and Ministry of Education and Sports have the authority to permit the establishment of new schools in this field. HRD should clearly state its supervisory mandate to the new schools at the initial stage and require them to follow the standards and guidelines.

3) Working conditions at public health institutions are improved.

Currently most newly employed public health institution staffs receive a 5-year working term, but many of them quit after 2 years or so due to the poor working conditions. This is especially true in rural areas.

Even if the project successfully allocate graduates to provincial hospitals, but they still quit due to poor working conditions, then the Overall Goal cannot be maintained and the Super Goal, "Service improvement at public health institutions through upgrading the quality of co-medicals," cannot be accomplished.

It is unlikely that working conditions at hospitals will be worsened, but the salary-rise would take a long time to be fulfilled. Basically, the treatment costs at public hospitals are free at this moment, so the possibility of having an independent source of revenue is slim. Therefore, health staffs engage in part-time work in the private sector to supplement their low salaries.

Since MOH's budget allocation for staffs has not been increased, salaries are unlikely to increase. To cope with the situation, donor agencies have pressured MOH to implement its budget more effectively. Also, a user-fee system has been put into place.

Thus, there is a possibility of improvement, but it will take time for salaries to rise. It is necessary to motivate staff to work at public health institutions through other means. HSD is in charge of the service and staff welfare at public health institutions. The preparatory study could not collect sufficient information on their activities.

In Cambodia, there are no operational guidelines, standards for laboratory tests/diagnostics at hospitals and rules for opening private laboratories. Speculation is that HSD is preparing standard equipment lists for public hospitals. The ADB, Department for International Development (DFID, United Kingdom) and World Bank plan to implement a Health Sector Support Project from 2003 to 2007 to upgrade the function of HSD, advance PHD's management capability, and provide necessary materials/equipment at Health Centers and RHs. The project has to carefully monitor their activity plan and the progress, and confirm the impacts on the project, by receiving information from HSD staff members who will be assigned at the project.

5.4.2 Project Purpose level

The following three assumptions are indispensable to achieving the Overall Goal, after achieving Project Purpose.

- 1) The central government does not freeze or drastically reduce the number of civil servants in health sector.

This assumption is likely to be fulfilled, because the health sector is given one of the priorities of the Cambodian government and there is no sign of staff reductions at this moment. Yet, a precedent has been set. The new recruitment of health staff was suspended from 1999 to 2002. Early detection of prodigious signs is important, and examples such as a change in health administration and Minister of Health or the effects of Structural Adjustment Program should be noted.

To minimize the negative effects on the project, a re-arrangement of the project framework and implementation approach would be needed. Clinical laboratory technologists and physiologists have very few job openings due to systematic problems, even though there are serious needs at public health institutions. The project will work on the problems by updating the hospital information database, and advising HRD and PD to use the information for human resource development and the deployment plan under Activity 2-5.

- 2) In accordance with regulations, the government takes measures for the TSMC and 4RTC students to be assigned at public health institutions.

If graduates will not be employed, the Overall Goal will not be met. Many TSMC and 4RTCs students/graduates take the civil servant's exam for the health sector, but they prefer to work at Phnom Penh and in provincial capitals. The appropriate deployment of TSMC/4RTC graduates requires an enhancement of the current recruitment and deployment system. The project will advise HRD and PD to prepare an appropriate human resource development plan and guidelines and improve the system. At this moment, it is not possible to tell what kind of measures will be taken and the necessary

duration for bringing about the desired effects.

Previously MOH had taken measures putting a priority on students from rural areas for school admission, but it failed for 2 main reasons. Firstly, MOH had difficulty giving them priority, because their academic capability is lower than students from cities. Secondly, many of them did not go back to their hometowns after graduation. They changed their census registration to Phnom Pen or the provincial capitals after enrollment.

If no effective countermeasures are taken, it can be a “Killer assumption” or crucial assumption, whose probability for success is considered very low. It could prevent the project from fulfilling the Overall Goal. MOH will reconsider the existing “Human Resource Development Plan (1996-2005)” and develop a new one (2004-2013) by the end of April, 2004. The plan will cover the appropriate deployment of health staff, management, financial rewards, salaries, and staff training. It is crucial to discuss with MOH about when, where, and how specific measures to address this Important Assumption will be taken, and include them in “the Human Resource Development Plan (2004-2013)”.

3) Working conditions at public health institutions are not worsened.

Considering the trend of the health sector in Cambodia, this assumption is likely to be met, unless donor agencies suddenly withdraw en masse from the health sector in Cambodia. Donor agencies financially support every aspect of the health sector, such as MOH’s operational costs, national programs, salary supplementation and equipment provision (Attachment 12). It is important to monitor this trend, since the preparatory study team heard that some donor agencies are withdrawing from Cambodia.

5.4.3 Output level

The following Important Assumption has to be met to realize the Project Purpose after meeting Outputs: “Places which provide practical training to TSMC and 4 RTC students continue existing.”

Clinical training is for 1-1.5 months, and TSMC and 4RTCs tell students where to go. Since TSMC does not have appropriate practical training equipment, it depends totally on clinics and hospitals to provide students with practical experience. The level and content of the training is dependant upon the condition of the hospitals/clinics, especially available equipment and hospital management.

There is a big gap among hospitals with, and without NGO’s support and between public and private hospitals. Some provincial hospitals only carry out the bare minimum when conducting clinical laboratory due to the unavailability of equipment. Others do not. Kampong Chhnang Provincial Hospital has good hospital management and a close

relationship with RTC and PHD. Hope Hospital and Battambang Hospital receive European NGOs' support and have the latest equipment.

The TSMC and 4RTCs desire to send their students to such places for clinical training, but there is a limit to the number of students when institutions are willing to accept. For instance, the physiotherapy course can only send 2 students annually to such places, out of around 10-15 students. As a result, many students have graduated without sufficient practical experience.

It is essential for TSMC and 4RTCs to exchange information and collaborate with various health institutions to increase the number of institutions accepting students and to increase the number of students they accept. Again, TSMC should think how to strengthen the hospitals of provinces under their coverage rather than send students to national Hospitals and Centers.

Establishment of clinical laboratory or university hospital at the TSMC and/or 4RTCs is an option to be discussed, because it would ensure technical and financial sustainability after project completion. If it is established, students will have a permanent place for practical clinical training where they can apply their learnt skills and knowledge. In addition, the TSMC and/or 4RTCs will increase the ratio of independent revenue by collecting fees from patients. Since this option closely relates to school management plans, it is indispensable to examine its merit and feasibility before jumping into it, preferably before the project commences.

5.4.4 Activity level

The following Important Assumption is necessary to achieve Outputs, after fulfilling Activities: "Cambodian counterparts shall be retained."

MOH anticipates that the staff turnover rate would be 3.5% in its "Human Development Plan (1996-2005)". Since many donor agencies are working in Cambodia, capable counterpart member may be lured away from the project by a better job offer. For example, the Health Personnel Education Project, conducted by Save the Children and AusAID, educated 21 health staffs in 1996/97, 20 in 99/2000 and 20 in 2000/2001. They were selected from MOH, NIPH, national hospitals/centers, TSMC and 4RTCs. Among the 21 graduates who studied in 96/97, only 8 are working at the same organizations as of January, 2002 and some of them are working at private pharmacies and NGOs.

This project will make an effort to minimize the staff turnover rate by (1) improving the TSMC's school management, including budget and staff management (such as improvement of recruitment, employment and working conditions), (2) providing training opportunities for teachers at TSMC and 4RTCs, and (3) furnishing equipment and teaching materials. It is vital to determine the allowable turnover level at the initial

stage, and monitor employment conditions throughout the project. Useful strategies to prepare for high turnover rate would be: (1) training as many as counterpart members in order to increase the number of staffs who can work for the project, and (2) establishing an internal system to share information among staffs. With them, a sufficient number of capable staffs will be retained, even if some will not be able to work for the project.

5.4.5 Preconditions

The following are preconditions that should be fulfilled before the project begins. The project cannot start the Activities without them. The project has to obtain MOH's commitment, more than a verbal promise, but with specific implementation plans that meet the preconditions. This must occur before signing the Record of Discussion, because it might be impossible to change the project approach once it has started.

- (1) "Sufficient and appropriate staff members shall be assigned at the TSMC and 4 RTCs by the government."
- (2) "PHDs agree to collaborate with the project."

Regarding teachers' recruitment, the Cambodian government needs to provide a sufficient number of teachers at the TSMC, because the small number of applicants for the civil service exam prefers TSMC posts. Even though the project aims to enhance the capability of teachers, administration staff and managers, through training seminars, it is crucial that personnel with sufficient academic ability and reliability are assigned in the initial stage of the project.

In addition, an appropriate student enrollment plan should be prepared and implemented for the success of the project. The TSMC's education quality has degraded due to the sudden increase in student numbers per teacher (50 students per class in the nursing course). This occurred, because without proper planning TSMC allowed an additional 130 self-supported students in order to increase revenue. They did this after attaining semi-autonomous status.

The PCM workshop was held during the preparatory study, and the project framework was developed with representatives from major counterpart organizations. The study team directly visited the organizations which could not attend the workshop and obtained assurances of their support. Due to time constraints, however, the team could not visit all 24 PHDs and receive their commitment. Thus, the above (2) precondition is written in the PDM, because their support is crucial to conducting Activity 2-1 and 2-2.

This assumption has a high probability to be met, since PHDs have conducted these activities as their task and no grounds for refusal are found at this moment. In order to ensure the reliability of data which PHDs will collect, it will be necessary to ask MOH and donor agencies working at the provincial level to follow-up their process and assist

PHDs, if necessity arises. It is desirable to receive their commitment before starting the project.

6. Overall project justification

6.1 Relevance

6.1.1 Accordance with Cambodian needs.

Cambodia has experienced political turmoil and conflict for more than 20 years since the 1970s and intellectuals, including co-medicals, were purged under the Pol Pot regime. Currently, Cambodia is in its rehabilitation stage. The government issued an “Interim Poverty Reduction Strategy Paper (I-PRSP) ” in October 2000. “The Second Socio-Economic Development Plan 2001-2005 (SEDP II) ” was decided by the cabinet in December 2002. They are both extremely important national strategic plans for poverty alleviation and socio-economic development in Cambodia. They prioritize social service improvement.

There is a substantial need for assisting TSMC. Training of clinical laboratory technologist matches the social needs in Cambodia. The mortality rate caused by communicable disease is high and there are many physically-handicapped persons in Cambodia. The TSMC is the sole public institution for training laboratory technologist and physiotherapists. There is no school for x-ray technologist, even though many people suffer from tuberculosis in Cambodia. Most provincial hospitals have x-ray equipment, but nurses use them without proper training. Equipment has not been maintained well either. Since basic education for nurses is not appropriate, PHDs and various donor agencies teach health staffs about primary healthcare issues, which basic education courses are supposed to cover. NGOs (such as Red Banner and MFS) , which had supported courses at TSMC in 1990s, withdrew.

Need for supporting MOH is also high. A staff allocation map (HR database) made by GTZ has not been used by MOH to plan human resource development, because the database has not been updated on time due to budget and staff deficits and no use from MoH top managers.

Besides, even though many donor agencies developed curriculum for co-medical education, there is no consistency among them. As a result, the level and contents of TSMC’s classes, based on the donor curriculum, have been inconsistent. In addition, a new private school (International University) which also train co-medicals is about to open, with no proper standards for curriculum and teacher’s qualification. Therefore, national standards must be established as soon as possible.

Considering above, this project matches with Cambodian needs.

6.1.2 Participatory planning

The preparatory study team held Project Cycle Management (PCM) workshop for project planning. They received representatives from major related agencies. (please refer to Attachment 16: PCM workshop report). The workshop participants were from

wide variety of organizations, both the sender of graduates (such as TSMC and 4RTCs), and their recipients (provincial and NGO's hospitals).

Prior to the PCM workshop, the team had separate sessions with students and teachers who will directly benefit from the project, in order to assess their needs. This was done because of the limitations of time and number of participants of PCM workshop. Students and teachers wrote problem cards that were brought to the PCM workshop and their opinions were integrated into the problem analysis and project planning.

The PDM was drafted in workshop style, with 2 representatives from TSMC and HRD. They are the personnel in charge of the project within main counterpart agencies, who will be working daily with Japanese experts once the project has commenced.

Since the opinions of many stakeholders were incorporated into the project framework through these processes, the project was designed in a participatory manner and the process successfully raised Cambodian counterparts' sense of ownership for the project.

6.1.3 Fairness and public benefit

The Project Purpose was defined as: "Capable co-medicals are produced for public health institutions." The Overall Goal was defined as: "Sufficient number of capable co-medicals is allocated at public health institutions." Considering the indirect target group, the project is very fair. Compared with private hospitals, medical expenses at public health institutions are low. In fact, they are so low that low-income citizens use them. Currently most health staffs working at public health institutions graduated from TSMC or 4RTCs. Once the project develops capable co-medicals through improved education and they are appropriately assigned to public health institutions, all Cambodians may benefit from the project.

In addition, the project will strengthen the activities of HRD and PD, such as by establishing national standards/guidelines for the basic education of co-medicals and the enhancement of the health staff recruitment and deployment system. The fruits of these activities can be integrated with "the Health Workforce Development Plan 2004-2013", and will be benefit of many medical services improvement.

Therefore, the project is appropriate as a Japanese ODA project.

6.1.4 Strategy in Japanese ODA

This project is consistent with a priority area in Japanese ODA strategies. As mentioned in 3.3, Japan has supported Cambodia as one of its priority countries, since Cambodia is in a post-conflict rehabilitation stage and lags behind other ASEAN countries in terms of socio-economic development. Advancement of health care is highlighted in "assistance for poverty program and social development," which is one of the 7 priority tasks of the Japanese Ministry of Foreign Affairs and one of the 8 priority areas of JICA cooperation.

JICA has conducted 2 health projects in Cambodia which are designated as national programs by MOH. Since the project educates health personnel and improves the staffing system, the benefits of the project (such as trained staff, accumulated skills and knowledge, and latest equipment) can be the inputs of the other 2 JICA projects. Once these 3 projects collaborate, multiplier effects can be expected.

Besides, support for establishing national standards/guidelines for curriculum, teacher's qualifications and regulations for schools have been long awaited, since no donor agencies have assisted. Japan can take the initiative as the pioneer in this field, which is a very important portion of HSSP.

6.1.5 Japanese technical advantages

Right after the Second World War, the Japanese Ministry of Health and Welfare set operational standards, a qualification system and regulations for co-medical training institutions. Hospitals, clinics and training institutions followed them. This collaboration significantly advanced the quality of health services in Japan. This project can effectively utilize this experience, since it will support MOH in establishing similar regulations for training institutions, such as facilities, training contents/modules and teacher's qualifications.

Below is an extraction from "Association for Clinical Laboratory Technologist, Operational Guidelines for Clinical Laboratory Technologists: Brief History of Laboratory Examination".

"In order to cope with the backward medical health and sanitation, in 1949 Japanese Ministry of Health and Welfare formed a planning committee to establish operational guidelines for health clinical laboratory technologists and assigned the task to experts. The most accurate and universal examination methods were selected and defined as national standards, because each laboratory used different examination methods at that time. The operational guidelines were used in the re-education textbook at the National Institute of Sanitation. Clinical laboratory technologists at local institutes of health research, Health Centers, hospitals, sanitariums, quarantine depots and pharmaceutical research institutions followed the technical guidelines."

"Besides, the Ministry of Health and Welfare enforced the Law for clinical laboratory technologists and health clinical laboratory technologists in April 1958. This was done because the social need for better laboratory examinations increased and it was deemed insufficient to depend only on continuing education. The law defines a co-medical's job, license registration and issue of license certificate, national examination and examiners and qualification of candidacy for the exam. In July 1958, rules and guidelines were issued for health and clinical laboratory technologists training institutions. Training institutions were obligated to submit detailed plans on schools (such as place, applicants, budget, financial plan, training contents, equipment and teachers' numbers and

qualification) to the Minister of Health and Welfare.”

Moreover, JICA can implement the technical cooperation project from 3 dimensions: technical transfer by Japanese experts, counterpart training and provision of equipment. Classroom shortages, aging school buildings, insufficient teaching material and a lack of practical training materials have limited the TSMC’s training capacity. The Grant Aid Scheme can also solve these problems.

In addition, JICA has conducted 2 previous health projects in Cambodia: The Maternal and Child Health Project (MCH project) and The Tuberculosis Control Project (TB project). It can effectively use the experience and personal network with MOH and PHDs. It would be wise to check whether there are any areas where the Japanese health administration system does not fit the Cambodian context, since Japanese experts in the areas of health policy and system, basic education, teaching methods and school management will be dispatched.

6.2 Effectiveness

6.2.1 Adequacy of project logic

The quality of education depends largely on available equipments, teaching materials and teachers. The project works to make improvements in these areas at TSMC and 4RTCs in Output 4 and 5. Facilities at TSMC are not sufficient to equip students with even the most basic knowledge and skills. Teaching materials are old and in short supply and teachers are too few. They also lack adequate teaching skills. In addition to Output 4 and 5, the project engages in additional activities in Output 1, 2 and 3 (Output 1 and 2: support for HRD, and Output 3: TSMC’s school management improvement), in order to implement Output 4 and 5 smoothly and efficiently and realize the Project Purpose.

The project consists of 6 Outputs which are closely related to each other. National standards/guidelines (i.e. regulations for school facilities, training contents and teacher’s qualifications) developed under activities leading to Output 1 will be utilized in the activities leading to Outputs 3, 4 and 5 at TSMC and 4RTCs.

Furthermore, information on staffing and training needs at public health institutions, which will be obtained at Output 2, will be the inputs for activities working toward Outputs 1 (establishment of national standards/guidelines) 4 and 5 (teacher’s training and preparation of teaching materials). Competent co-medicals, which will be raised by activities leading to Output 3, 4 and 5, will be allocated more appropriately by using the hospital information database, which will be upgraded by Output 2.

In addition, the Grant Aid Scheme considers the possibility for construction/renovation of school building and furnishing of equipment/facilities at the TSMC.

In the project planning stage, another approach was considered, namely, sending a

Policy Advisor for the activities surrounding Outputs 1 and 2. This would have separated them from the project, while the project concentrated on Outputs 3, 4 and 5. However, the option was not chosen, since all Outputs closely relate to each other. As a result, the project should cover a wide range of activities for the 5 year of its duration.

Therefore, it is indispensable to prepare a feasible implementation plan, by considering the timing of inputs, and duration necessary for each activity. It is necessary to keep a closer eye on the relationship among activities. While implementing the project, the need would arise to divide the project into 2 separate phases.

6.2.2 Relevance of indicators, possibility of project achievement.

Due to the unavailability of information, the preparatory study team could not set specific numbers and a ratio of the Objectively Verifiable Indicators for the Project Purpose. Under Activity 6-1, the project should conduct a baseline data survey and develop realistic numbers and realistic ratio for the indicators at the initial stage of project implementation.

The project unlikely to show quantitative positive results in the first half of its duration, since at that time preparatory work will be conducted (such as forming steering committees, needs assessment, establishing national standards and guidelines and improving TSMC's school management) for the activities in the second half. What's more, it takes time to see improvements in a student's ability, after the project has upgraded materials and the teaching ability of instructors. Considering that, the project's effects will increase in the second half.

The progress of each activity will be regularly monitored and discussed by the project team members, in order to ensure a close linkage among Outputs and Activities. This will be done by implementing Activities 6-2 and 6-3.

In case the indicators are added or changed in the implementation stage, it is desirable to consider the objectiveness of the indicators, and availability and cost for attaining the necessary data. It is also important to include the data collection and analysis in the monitoring plan, in order to compare the difference before and after the project.

Additional external factors, which the preparatory study team could not predict, may arise after the project commences. It is necessary to discuss which external factors and Important Assumptions would influence which Activities and Outputs. This trend should be monitored. As needs arise, it would be a good idea to reconsider the indicators.

6.2.3 Risk consideration

It is likely that Important Assumptions to achieve the Project Purpose will be met. The PCM workshop had participants from various stakeholder groups (in addition to the implementing and supervising agencies, the hospitals which receive students for clinical

training and/or employ them, and JICA's TB project and MCH project). Participants conducted Stakeholder and Problem Analyses and discussed risks of the projects. The project aims to minimize the risks, by carrying out counter measures as part of the project.

For instance, the project includes activities of Output 3, the improvement of TSMC's school management, to make sure the Project Purpose would not be hampered by poor school management. Healthy school management, including planning and budget management, is necessary for implementing the activities under Output 4 and 5.

An example of how TSMC's weak management has reduced the quality of education is as follows: TSMC allowed 130 self-supported students (students without scholarship) in this fiscal year 2003 without a proper plan. As a result, there was a shortage of classrooms, teachers and equipments. In order to have classrooms for students, TSMC dismissed students from old dormitories and even the new dormitory, which the ADB had constructed. In addition, TSMC gave priority to students without scholarship in assigning classrooms, teachers and equipments. They were given priority because they bring in revenue. The project aims to eliminate these unequal treatment of students.

To reduce risks that external factors may cause negative effects on the project, the preparatory study team had meetings with UHS, donor agencies, including French Cooperation (French governmental aid organization supporting UHS), and Departments in MOH and other related agencies. Remaining external factors were written in the PDM as Important Assumptions and Preconditions. Please refer to 5.5 in this document for the analysis.

6.2.4 Project management system

For supervising progress of the project, Supporting Committee and Joint Coordination Committee will be formed in Japan and Cambodia. Detailed information on a project management system is written in 4.2.

The project will also set up 2 steering committees, a Counterpart Committee and a Standardization Committee. Each committee member will maintain close contact with each other during project implementation. The preparatory study team could not spell out specific activities and their frequency due to the time constrains, so that it is important to decide them before project commencement.

6.2.5 Monitoring and evaluation system

Output 6 deals with monitoring and evaluation activities and Objectively Verifiable Indicators shown in the PDM are the specific evaluation items. Activities 6-1 will be conducted early in the implementation stage, because it is necessary to survey baseline data and set evaluation standards for the project so that a comparison can be made before and after the project.

A monitoring plan also should be prepared. It should define how often monitoring will be done, who will monitor and evaluate and what items will be used for evaluation.

In addition, with their Cambodian counterpart members, it is crucial for the project team to list all external factors which are not written in the PDM and monitor their trend and influence.

6.3 Efficiency

6.3.1 Adequacy of project inputs

<Equipment>

The Grant Aid Scheme would support TSMC at the same time as the technical cooperation project. If equipment provision and construction/renovation of school buildings are covered by the Grant Aid Scheme, the efficiency of the project input will be ensured. Since the application process of the Grant Aid Scheme will be started, after the project ensures preconditions of Grant Aid support will be met at TSMC and 4RTCs, the TSMC's school building will be constructed/renovated about 3.5 years after the project begins.

If the Grant Aid Scheme will not support the TSMC, the project has to confirm the usage of equipment and supplies at hospitals. Even if the project furnishes TSMC and 4RTCs with equipments, the learnt skills and knowledge will be in vain if the equipments and supplies are not available at hospitals where graduates will be employed. Therefore, the project has to select basic equipments based on CPA/MPA standards and should not select equipment requiring expensive maintenance.

The amount equipments available at public health institutions will increase, since the ADB/DFID/World Bank will conduct a Health Sector Support Project which will provide equipment to Health Centers and RHs from 2003 to 2007. As such, the project should also consider the future equipment allocation at public health institutions, using common sense, in order to decide what kind of equipment should be supplied at the TSMC and 4RTCs.

Information on X-ray equipment at public health institutions is especially essential to opening a new X-ray course at the TSMC. This information will be collected during Activity 5-1 in the early stage of the project. Apparently, most provincial hospitals have received X-ray equipment from ADB and other donor agencies, but few health care workers can use them properly. If so, there is a great possibility that diagnostic quality at hospitals will improve if the project produces competent X-ray technicians by opening a training course at the TSMC.

Regarding other equipments, it is also important to check whether there are donors' equipment provision plans. It has been suggested that information on available equipments at public institutions is not well updated. The project will also collect the information under Activity 2-2. GTZ has already provided the necessary software, GIS

and computers for conducting Activity 2-2. Little equipments will be needed for the activities under Output 1 and 2.

<Personnel>

The project will dispatch three long term experts. They will be stationed at project offices at TSMC and MOH, and will regularly visit and advise 4RTCs. Since the project has to cover a wide range of activities, it will be impossible for them to do it all by themselves. Therefore, the project will plan to dispatch short-term experts and conduct third country training effectively.

HRD will be the main counterpart for activities at MOH. HRD personnel will work with PHDs to upgrade the hospital information database. Since no Japanese experts will work directly with PHDs, it is necessary to receive the commitment of all PHDs to collect accurate information and report them timely to MOH. Please refer to 4.2 on the implementation system.

6.3.2 Relation between inputs and impact

It is not appropriate to evaluate the efficiency of the project by calculating EIRR (Economic Internal Rate of Return) and FIRR (Financial Internal Rate of Return). The efficiency of the project has to be evaluated qualitatively by comparing impacts to the level of inputs, since this is a human resource development project. As mentioned, the amount of inputs is expected to be reasonable.

On the other hand, substantial positive impacts can be expected, because the project would create the basic environment (i.e. national standards about training institutions and HR database) for upcoming health projects in Cambodia. Activities at MOH and support for training institutions will be conducted together, so that a multiplier effect can be expected.

Therefore, a highly efficient project can be anticipated. However, major social and economic impacts of the project cannot be expected during the project duration. If users of public health institutions will not increase through improvements in the quality of service, project efficiency will be lower.

6.4 Impact

6.4.1 Achievement of Overall Goal and its timing

HRD hopes to assign 2 clinical laboratory technologists, 2 physiotherapists and 2 X-ray technologists at 67 RHs by 2005. If we subtract current staffs from the target number, MOH needs to train and appropriately allocate 74 clinical laboratory technologists, 89 physiotherapists and 134 X-ray technologists within 3 years, if the target does not change. HRD has requested TSMC to train 100 nurses, 20 clinical laboratory technologists, 20 physiotherapists and 20 midwives annually providing

scholarships for them. The TSMC also trains additional self-supported students.

However, it is highly unlikely that the target and the Overall Goal of the project, that is, the appropriate allocation of trained co-medicals, will be fulfilled by 2005 (1.5 years after project commencement).

Major project effects will be seen in the second half of the project, since (1) it covers a wide range of activities, (2) it takes time to accomplish Outputs 1 and 2, because it requires changes to MOH's systems, (3) completion of equipments provision and building construction/renovation will be about 3.5 years after the project began. Realization of impacts, including achievement of the Overall Goal, will be slow but steady.

It is also important to note that realization of the Overall Goal will depend heavily on an Important Assumption: MOH will take specific measures to allocate graduates at public health institutions. At this time, it is not possible to tell when the Overall Goal can be met, since it is not clear when, how and what kind of measures will be taken.

6.4.2 Impact on important assumption for achievement of Overall Goal

As the PDM indicates, some Important Assumptions require strong MOH initiative, in order to meet the Overall Goal. (Please refer to 5.5 for analysis of Important Assumptions).

In order to increase the probability, the project includes activities (Activity 2-1, 2-2, 2-3 and 2-4) for assisting MOH, namely, the hospital information database which will be upgraded by Activity 2-1 and 2-2. It will assist HRD and PD by providing indispensable information for devising an appropriate human development plan and disseminating accurate job information to students. The project also includes Activity 2-3 and 2-4, which register graduates' names at MOH and follow-up on their employment/working conditions.

Some Important Assumptions for maintaining the Overall Goal or fulfilling the Super Goal are difficult to be met. It is essential to keep close contact with stakeholders and carefully monitor the trends during the project period. If the project team judges that an assumption is unlikely to be met, it is necessary to change the project approach.

6.4.3 Political impact

The project is significant in its support during the preparation of the health staffs development plan. The project closely relates with Strategies 12 and 13 of the 5-Year Implementation Framework of HSSP. Therefore, the project effects will be integrated with "the Health Workforce Development Plan 2004-2013". In other words, the project can provide the plan with a solid framework.

Once the achievements of the project are incorporated into the healthcare worker development policy and guidelines, project impacts will be maximized, because MOH's

and donors' future activities will be based on them well beyond project completion.

6.4.4 Institutional impact

The project aims to upgrade MOH's systems, such as the staff registration system (Activity 2-3) as well as the staffing systems at public health institutions (Activity 2-2). If information collected in Activity 2-2 and 2-3 will be effectively used, recruitment and staffing systems will be improved and contribute to the realization of the Overall Goal.

Currently in Cambodia, there is no licensing system for co-medicals. MOH considers graduates from training institutions to be qualified. A national licensing system can be developed only after: (1) each operational guideline is established, (2) training environment is prepared and (3) the national examination is implemented.

The project will support the establishment of national standards and guidelines for co-medial education. By making use of these experiences, MOH can develop the operational guidelines, implement national examination and establish national certification system. Then it will demonstrate the significant institutional impact of the project.

6.4.5 Social and cultural impact

Currently, there are 506 students in the TSMC's basic education courses. There are total of 3 grades in the course of nursing, physiotherapy and clinical laboratory. Freshmen in the TSMC's basic education courses number 268 (see Attachment 13). Students seem to be highly motivated and have good study skills, since they passed a very competitive entrance examination (1 out of 10 examinees is accepted).

The TSMC students who are, and will be, taking basic training courses will number 1,848 by 2008, based on the assumption that same number of freshmen this year will continue enrolling for the next 5 years. This number does not include students in the new X-ray course. 4 RTCs' students in the registered nursing course totaled 645 (total of 3 grades) and freshmen 210 in 2000/01. 4 RTCs' students who are, and will be taking the registered nursing courses number 1,695, based on the assumption that the same number of freshmen in 2000/01 are studying this year and will continue enrolling for the following 5 years (see Attachment 14) .

Thus, this project directly benefits a total of 3,543 students. However, the most significant social impact will be realized when the Overall Goal is achieved after project completion, when graduates are appropriately assigned at public health institutions. The social impact will be an increased satisfaction in patients and citizens, due to better services at public health institutions. This is a lofty goal and can be achieved only after the Important Assumptions of the Overall Goal and the achievements of the Super Goal are met.

6.4.6 Technical impact

The direct target group for technical transfer is comprised of 250 people, including 13 HRD staff members (excluding staffs on leave and part-time), 2 PD staff members, 122 TSMC full- and part-time staff members (excluding 4 staffs on leave) and 113 teachers at 4RTCs (Attachment 15). Based on prior experience, if HRD and PD staffs develop national standards and guidelines for doctors, pharmacists and dentists, which the project does not cover, then it will be regarded as a technical impact of the project.

The project may reinforce the administrative capacity of HSD and 24 PHDs. To further multiply and maintain the impacts, it is essential to develop in-house training and an information dissemination system, which enable the distribution of learnt skills to others in the associated organizations.

The project does not cover TSMC's and 4RTCs' professional education courses to a great degree. Japanese experts will not teach all staffs directly. Experts will support TSMC and 4RTCs counterpart members to: (1) assess the training needs of teachers, (2) set evaluation standards, (3) prepare detailed training plans, (4) develop training manuals for each seminar and (5) produce trainers of teachers. By making use of these experiences, if the counterparts conduct training seminars for Post-basic and Continuing Education courses without the help of Japanese experts, it will be seen as a technical impact. It is important to prepare a working environment where staff members can have access to new skills/ knowledge for updating the content of the training on their own.

If co-medicals trained by the project can utilize learnt skills and knowledge at hospitals, an enhancement of health services would be expected. clinical laboratory technologists, physiotherapists and X-ray technologists are in short supply at hospitals and clinics despite their needs. Once they are assigned, it is likely that the accuracy and number of clinical tests will be increased. If the results are appropriately used for doctors' diagnoses, the project may bring significant advancements in medical technology at public health institutions in Cambodia.

The speed and level of technical transfer would make a difference in the scale of technical impacts. Examples would be: Can the X-ray course produce graduates within the 5-year project duration? Will physiotherapy course teach new iatrophysics to students?

If the project strengthens collaboration among stakeholders, donated equipments and learnt skills/knowledge would be used by health staffs of such organizations. If their skills are also increased, it can be regarded as a technical impact of the project. Currently, there is a curriculum that fifth-year UHS students learn X-ray and medical imaging. It is crucial for doctors to correctly use the results of laboratory and radiographic tests in their diagnoses. Collaboration between the UHS and TSMC would enrich doctors' experience in this area.

6.4.7 Economic impact

If the project upgrades the hospital information database, employment of co-medicals at public health institutions would be enhanced. That can be regarded as an economic impact. Currently, information at public health institutions (staffing, vacant post and timing, usage of facilities, etc.) has not been upgraded. The Bureau of Registration and Certification of HRD must register all health staffs. But the reality is that the TSMC's and 4RTCs' graduates are not registered and their employment status is not understood.

Staffing of clinical laboratory technologists, physiotherapists and X-ray technologists at most of public health institutions do not meet CPA standard. However, ODHO and PHD do not grasp this reality and report incorrect information to PD, so that very few people are recruited for these positions. As a result, most graduates find jobs in the private sector and with NGOs.

6.4.8 Potentiality of realization of social and technical impact

Unless capable staffs continue working at assigned posts and use their skills and knowledge, medical services will not improve. Many Important Assumptions should be satisfied in order to realize the above-mentioned social and technical impacts.

The Important Assumptions include: (1) the working conditions at hospitals are improved, (2) private schools follow national standards and guidelines set by the project, and (3) the quality of continuing education courses is improved. In order to increase the likelihood of improved services, it is important to have updated information on the activities of MOH, PHD and donor agencies, and encourage/cooperate with their activities. It is also a good idea to collaborate with ongoing other JICA health projects (MCH Project and TB Project) to shoe greater impacts.

6. 4. 9 Consideration to negative impact

Please refer to 4.6 on the environmental impacts of the project, and see 6.4.5 on the consideration of gender. Currently, no negative impacts by the project are anticipated.

6.5 Sustainability

Please refer to 4.5 for a detailed analysis of sustainability.

6.5.1 Present capacity of the counterpart organization

At this moment, TSMC and HRD's basic institutional and financial capacities are very limited. The TSMC's school management is weak and staff quality is not sufficient enough. It is chronically over budget and MOH supplements the excess. The management of independent revenue sources, that is, student tuition and entrance fees, is also inappropriate.

The HRD staff, who participated in PCM workshop, seem to be very capable. However,

a shortage of manpower and funds are big problems at HRD. Since no departments of MOH have their own budgets, they request funds from the Budget Department as needed to finance necessary expenses. MOH depends heavily on donors' financial support, even for their daily operations. Future budget allocation is uncertain for any projects, including the development of health staffs.

In order to reduce above problems, the project includes activities for Output 1 and Output 3. (cf. Activities for Output 1 are completely consistent with HRD's tasks and work, and the ones for Output 3 are for the improvement of TSMC's school management.)

6.5.2 Receptivity of the methods to be used in the project

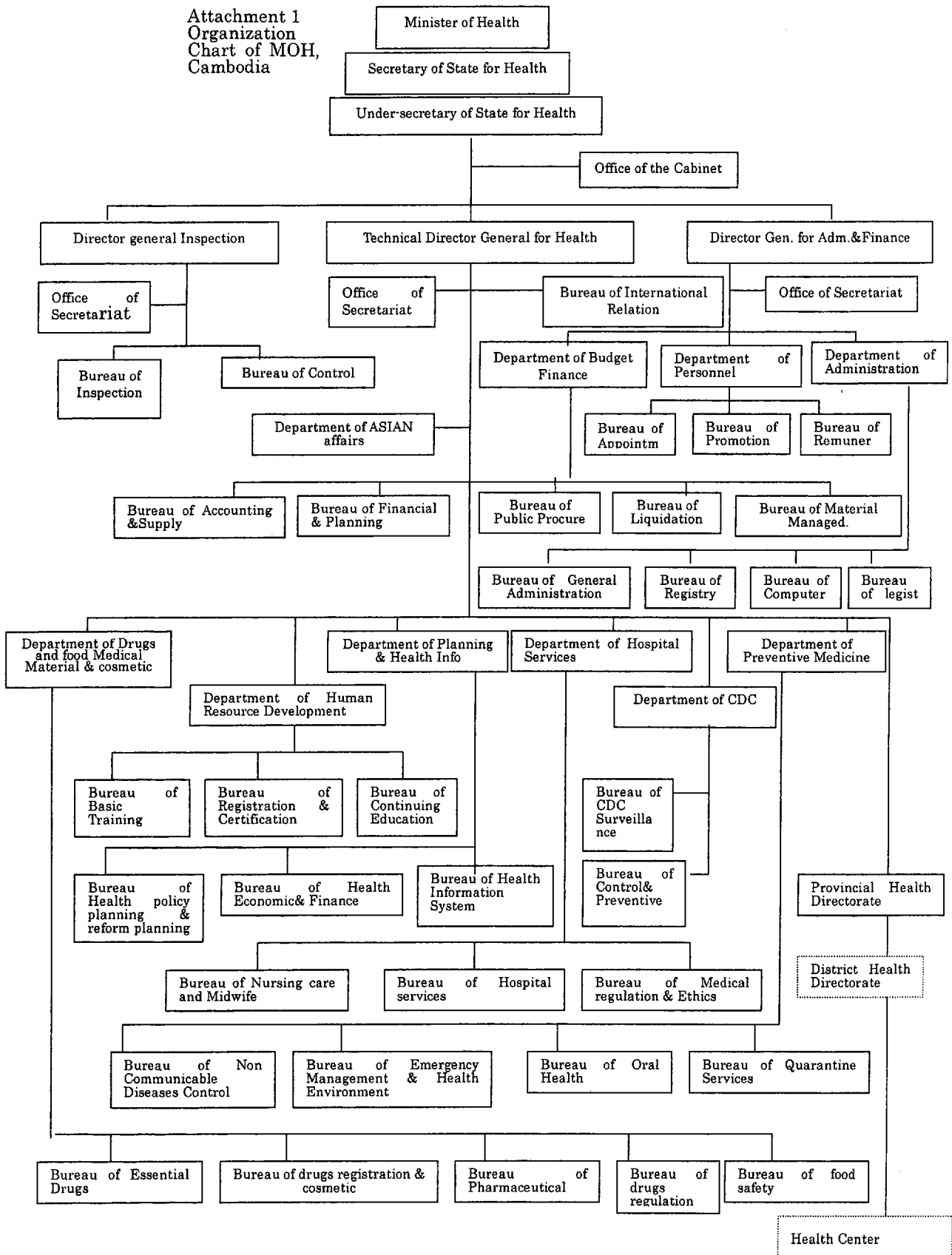
Many new methods should be introduced through project activities, especially for Output 1, 3, 4 and 5. Within the 5-year period of the project, Cambodian counterpart members need to attain necessary skills and knowledge to maintain the project influence without the assistance of Japanese experts.

A preparatory study team confirmed with stakeholders that these activities generally are not easy, but nor are they impossible. Moreover, they are indispensable for the development of health staff in Cambodia.

In order to systematically maintain project effects after completion, the HRD's leadership and coordination ability within MOH will be required. It would be a good idea to check its leverage within MOH before project commencement.

Regarding the TSMC's mission, the preparatory study team found that MOH is considering designating the TSMC as the core training institution for co-medical, once the project successfully improves its educational level. In order to ensure the TSMC will assume this role, collaboration with 4RTCs will be indispensable. To enhance this collaboration, the project will start taking measures such as: disseminating teaching materials to 4RTCs which will be developed at the TSMC and including 4RTCs' participants in staffs and teachers' training seminars at TSMC.

Attachment 1
Organization
Chart of MOH,
Cambodia



Attachment 2 Number of Co medicals

Province	OD	RH	H/C	Population	Number of Co medicals in the province					Number of Co medicals in referral hospital					Number of Co medicals in Health Center		Comparison between Number of existing and CPA planned Lab. Technician each province and					
					Nurse	Midwife	Lab.	X-ray	Physiotherapy	Nurse	Midwife	Lab.	X-ray	Physiotherapy	Nurse	Midwife	Provincial	Number of RH	Existing Lab. Technician	Planned Number of Lab. Technician for each Hospital	Number of Necessity for RH each province	Balance
Kandal	8	5	88	1,068,648	461	191	27	5	2	108	35	14	5	2	278	133	Kandal	5	14	2	10	4
Kampong Cham	10	10	128	1,539,312	487	207	76	0	0	188	88	10	0	0	194	274	Kampong Cham	10	10	2	20	-10
Kampong Chhnang	2	2	34	419,450	282	124	5	0	2	68	232	1	0	1	143	76	Kampong Chhnang	2	1	2	4	-3
Kampong Speu	3	3	50	574,597	409	85	10	0	2	115	32	7	0	2	203	48	Kampong Speu	3	7	2	6	1
Kampong Thog	3	3	50	569,060	250	169	15	0	2	68	42	9	0	2	159	109	Kampong Thog	3	9	2	6	3
Kampot	4	4	47	529,655	293	117	26	0	1	118	30	11	0	1	116	71	Kampot	4	11	2	8	3
Kep	1	1	4	28,175	37	6	2	0	0	9	2	1	0	0	16	3	Kep	1	1	2	2	-1
Koh kong	2	2	12	127,521	52	45	2	0	0	14	16	1	0	0	25	12	Koh kong	2	1	2	4	-3
Kratie	2	2	22	248,312	209	80	4	0	0	68	28	4	0	0	108	49	Kratie	2	4	2	4	0
Takeo	5	5	70	811,732	390	100	27	0	0	110	31	20	0	0	206	62	Takeo	5	20	2	10	10
Battambang	4	4	64	783,447	708	327	47	2	1	301	124	34	2	0	261	164	Battambang	4	34	2	8	26
Banteay Keancheay	3	3	54	604,257	471	177	23	0	0	139	42	11	0	0	258	114	Banteay Keancheay	3	11	2	6	5
Pailin	1	1	3	35,812	46	17	10	1	0	37	10	7	1	0	8	5	Pailin	1	7	2	2	5
Prey Veng	7	7	90	978,659	510	222	13	0	2	107	55	11	0	2	338	150	Prey Veng	7	11	2	14	-3
Preah Vihea	1	1	12	115,821	78	56	3	1	0	15	19	2	0	0	55	29	Preah Vihea	1	2	2	2	0
Pursat	2	2	30	355,592	257	115	25	3	3	41	27	3	3	3	145	66	Pursat	2	3	2	4	-1
Sihanoukville	1	1	11	139,370	136	55	7	0	1	56	22	4	0	1	-	-	Sihanoukville	1	4	2	2	2
Phnom Penh	4	1	37	96,911	314	137	18	0	0	-	0	0	0	0	-	-	Phnom Penh	1	0	2	2	-2
Mondul Kiri	1	1	6	37,914	-	-	0	0	0	-	0	0	0	0	-	-	Mondul Kiri	1	0	2	2	-2
Rattanak Kiri	1	1	10	95,592	136	64	2	0	0	10	11	2	0	0	103	51	Rattanak Kiri	1	2	2	2	0
Stung Treng	1	1	10	80,208	79	59	0	1	0	28	26	0	1	0	40	23	Stung Treng	1	0	2	2	-2
Siem Reap	4	4	57	724,336	361	293	60	0	3	106	69	9	0	3	233	105	Siem Reap	4	9	2	8	1
Svay Rieng	3	3	37	478,230	344	60	5	0	2	-	0	0	0	0	202	34	Svay Rieng	3	0	2	6	-6
Oddor Meanchey					125	30	1	0	0	14	2	0	0	0	8	27	Oddor Meanchey		0	2	0	0
Total	73	67	926	10,442,611	6,435	2,736	408	13	21	1,720	943	161	12	17	3,099	1,605	Total	67	161	48	134	27

RH	67	Nurse	Midwife	Lab.	X-ray	Physiotherapy
Planned number of CPA	20	4	2	1	1	
	1,340	268	134	67	67	

H/C	926	Nurse	Midwife
Planned number of CPA	2	2	
	1,852	1,852	

33 Number of insufficient

60

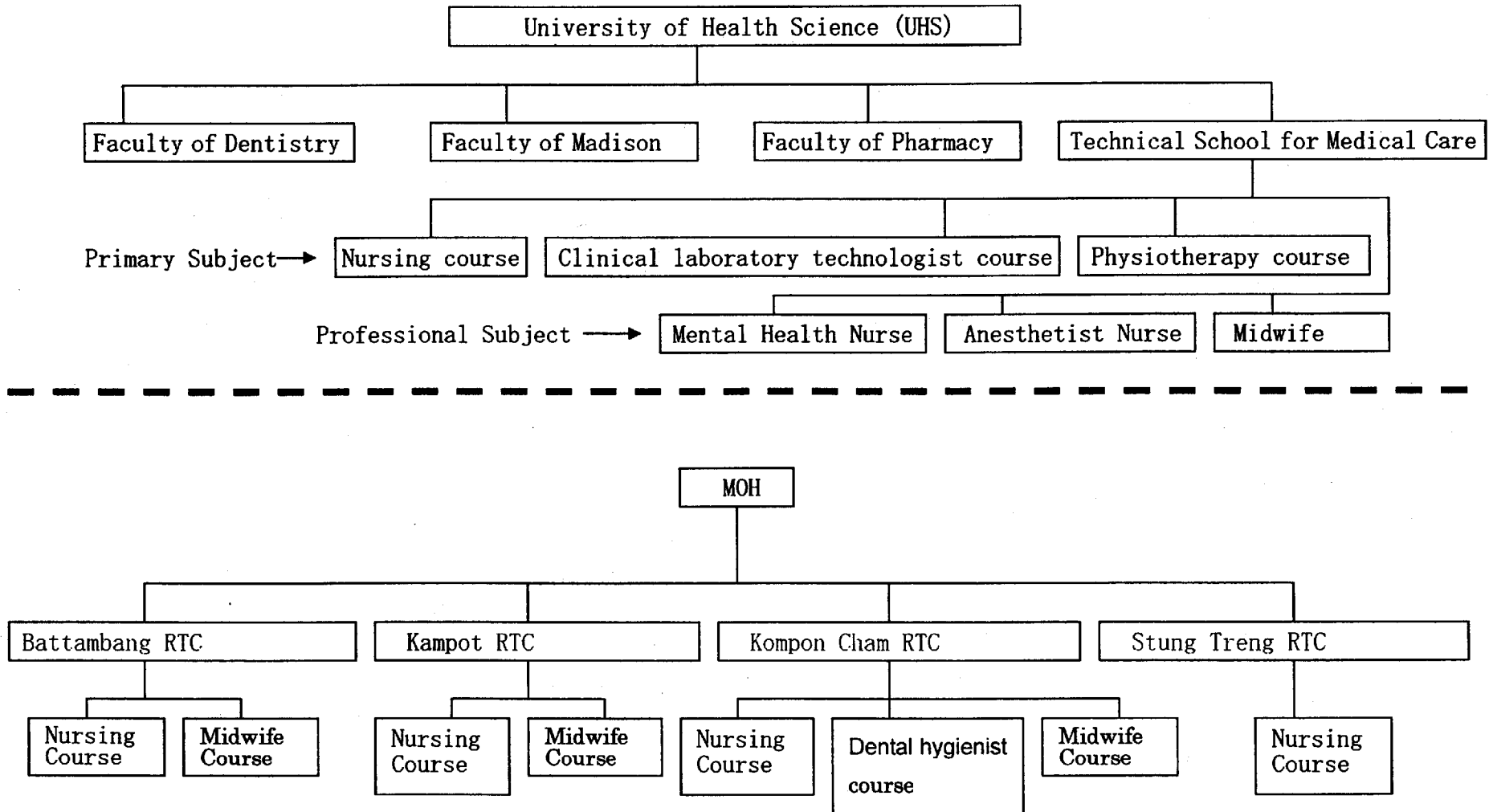
Attachment 3 「ODA/Public Investment Program 1999-2001」
Health and Medical Cooperation (Under MOH)

Project Name	Assistance Country and Organization	Duration	Total Budget for the Project	Planned investment (1999-2001)			
				Total	Cambodian Government	Foreign countries	UN
Capital Investment Project							
Strengthen Basic Health Services (BH. 1)	ADB, WB, KfW Japan, NGOs	1995-2001	147,500	111,491	73,914	24,500	13,077
Women&Child Health (MC. 2)	NGOs	1995-2001	53,012	48,230	770	5,830	41,630
Tuberculosis Control (TB. 5)	WHO, Japan/JICA, WFP, NGOs, MSF	1995-2001	17,122	15,485	2,975	1,797	10,712
Control of Malaria, Dengue, Schistosomiasis (MA6)	UKODA, EU, WHO, USAID, WB, NGOs	1995-2001	17,500	10,615	2,569	3,480	4,566
Pharmaceutical Sector Reform/Essential Drugs (ED. 7)	WHO, UNICEF, WB, KfW/Gemany	1996-2001	12,710	58,771	18,000	9,059	31,712
AIDOOS/STDProgramme (AI. 9)	UNICEF, UNDP, UNFPA, EU, GTZ, NGOs	1995-2002	51,798	41,988	3,732	3,180	35,076
Rehabilitation of National Hospitals (NH. 10)	On-Going activity, NGOs	1995-2001	40,000	23,799	7,604	4,100	12,095
Expanded Program: Immunization & Polio Eradication (EP/14)	AusAid, WHO, JICA, NGOs, Rotary Club	1996-2001	20,651	13,648	240	1,700	11,708
EENT/Mental Care (NO. 15)	NGOs	1996-2001	4,504	4,909	970	1,952	1,987
National Institute of Public Health (NPH 16)	ADB, GTZ	1996-2005	5,926	1,797	654	370	773
Blood Transfusion Programme (BLO. 17)	On-Going activity, Donor Sought	1995-2001	8,600	3,284	1,323	0	1,962
Capital Investment Project for Health and Medical Cooperation subtotal			379,323	334,016	112,751	55,968	165,297
Technical Cooperation Project							
Strengthening Health MGT. & Planning (IN-SH. 3)	AusAid, UNDP, UNICEF, WHO	1995-2001	45,601	26,222	14,821	4,500	6,901
Human Resources Development (IN-HR. 4)	AusAid, France, WHO, KfW (Germany) Japan, NGOs	1995-2001	12,213	7,589	2,794	194	4,601
Leoprosy Elimination (LEP. 11)	WHO, WFP, NGOs, CIOMAL/France	1995-2001	3,744	1,848	189	980	679
Infection Control (IN. 12)	On-Going Activity, Donor Sought	1997-2001	4,400	2,844	1,488	0	1,356
Health Education, Hygiene & Primary Health Care (HEP. 18)	NGOs, World Education	1996-2001	5,118	2,959	702	996	1,261
Cancer Prevention Program (CPP. 17)	On-Going Activity, Donors Sought	1995-2001	8,600	800	70	0	730
Capital Investment Project for Health and Medical Cooperation subtotal			79,676	42,262	20,064	6,670	15,528

(Source) CDC/CDRB (1999)

別添 4 Attachment 4						
23	HIGHER EDUCATION	Universities & Institutes	-Faculty of Medicine, Pharmacy and dentistry -Royal University of Fine Arts	-Institute of Technology of Cambodia -Faculty of Law and Economic Sciences	-Royal University of Agriculture -Royal University of Phnom Penh -National Institute of Management -Maharshi Vedic University -Faculty of Pedagogogy	Non-Formal Education
22						
21						
20						
19						
18						
17	Upper Secondary		Grade 12 Examination		Techni	Non-Formal Education
16			Grade 11			
15			Grade 10			
14	9 YEAR BASIC EDUCATION	Lower Secondary	Grade 9 Examination			
13			Grade 8			
12			Grade 7			
11		Primary	Grade 6			
10			Grade 5			
9			Grade 4			
8			Grade 3			
7			Grade 2			
6	Grade 1					
5	Pre-School	High Step		Community Pre-School		
4		Medium Step				
3		Lower Step				

Attachment 5 Co-Medical Training Institutes in Cambodia



**THE CURRENT SITUATION
OF X RAY TECHNICIAN IN CAMBODIA**
February 2003

I. INTRODUCTION

There was no X Ray technician since 1970. Therefore, X Ray technician is an urgent need based on the health coverage plan (the word of X Ray technician in this report refers to the staff who works in the X Ray service, not refers to the staff who acquired the formal qualification or degree as an X Ray technician). Referral hospital should be equipped with the X-ray service that need X-ray technicians working there. In the reality, this service has been functioning in some referral hospital and some other already has X Ray machine, yet it was not functioning in some referral hospitals due to the lack of technical staff or inappropriate room for operating X-ray service.

At the present, most of the staff working for this service has no formal qualification. They learnt through practice especially from the national hospitals/provincial hospitals. Therefore, in response to the health service delivery, Cambodia is in an urgent need in both quantity and quality of X-ray technician to support health service delivery and also to maintain the equipment.

II. STRENGTH

Even though there was no training, the staff can learn from work experience through continuing education/on the job training within the country. As a result, the operation of this service can support health service delivery with the acceptable standard.

In the past, there was international technical assistance help to operate this service in some provincial hospitals and provided a good opportunity to the Cambodian staff to absorb this skills like in Koh Kong assisted by Red cross, Rattanak Kiri by COERR and Puorsat by Red Cross etc...Now this skill is generating from one to others.

III. WEAKNESSES**1. X Ray technician training in Cambodia**

Since 1970 there was no any formal training for X -ray technician in Cambodia. Mainly, the training was conducted as continuing education/on the job training. Firstly, the training was done through daily work. The primary or secondary nurse, medical assistance or medical doctor received training through working with donor experts at the local hospitals or get instruction from the staff who experience with this service. An other way of training is that the staff working in the X-ray service where there was no experience on this area

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especially from the provincial hospitals comes to the hospital where there was more experience especially in the national hospital for one week to six months to absorb the X-ray skills and knowledge. Within the province the staff from the referral hospital where the

X Ray has not been introduced come to other referral hospitals especially provincial hospitals to absorb the same skills and knowledge for the similar period of time.

Secondly, A few health staff was trained in overseas as a formal training or as a continuing education. The number of this staff category is difficult to identify because they work in other services in some cases, not in imaging service.

According to the information collected (Table 1), the majority of staff was trained in Calmette hospital for a period of 3 to 6 months. The candidates selected for this training can be primary nurse, secondary nurse, medical assistant and medical doctor. The expected outputs from this training program is to have X-ray technician who can perform the job as specified in the role of X-ray technician below. Not only the Calmette hospital, but also other hospitals provided such training produced the same expected outputs. More important, there was no follow up after training.

2. The role of X Ray technician and their performance

The role and responsibility of staff who working the X Ray service perform the routine job. Their jobs consist of two main steps. First, prepare the patients and then operate the X Ray machine according to the demand of physicians. The second is the film development. Most of the hospital use manual development technique. After that the film is to be interpreted by the physicians. In some hospital there are medical doctor in X Ray service to provide interpretation, but in some other hospital the physician who order X Ray examination interprets the film.

Through the discussion, it is revealed that the quality of X Ray technician performance is still required for training, yet it is acceptable for supporting the diagnosis process. It is estimated that the technical appropriateness is about 70 % to 80%. Not only the lack of the technical capacity contribute to the low quality performance, but also the lack of materials. For instance, Preah Bat Norodom Sihanouk hospital complained that the film is cut into two/three pieces for usage and the out of date cassette is still use due to the lack of resources.

Moreover, the X Ray technicians have no skills to maintain the X Ray equipment. The maintenance role is just to clean up the outside machine and report to the Ministry of Health when the machine is broken. This is a main issue that should be considered in organizing X Ray training program.

3. The size of X Ray technician

There is 126 staff working in the X-ray service of 53 Referral Hospitals and 5 National hospitals and Programs. This size composed of staff with different background, in which consist of 11 primary nurses, 64 secondary nurses, 12 medical assistants, 31 medical doctors and the other 8 qualified as X-ray technicians (some of them are medical doctors). Among them, 34% got learning practice from Calmette hospital, 32 % gained skills from daily work

Dr. Yath Yathy & Uy SoPhoat, HRD Department

learning and 26% received short course training organized in different institutions. The rest gained skills and knowledge from different ways as specified in the Table 2 attached.

IV. THREAD

The health service delivery is in the big gap in term of X-ray service to reach the objective according to the health coverage plan and the Complementary Package of Activity Guideline for Referral Hospital. There are about 68 referral hospitals and 7 national hospitals and centers. Each referral hospital should have a Medical Imaging Service with X-ray unit and when possible an Ultra-sound unit. Appropriate selection of imaging method and correct interpretation are done in consultation with concerned medical consultant. This service should adhere to radiation safety principles relating to both patients and staff safety. X-ray is the first choice of imaging equipment. The radiographs are recorded on well-preserved X-ray films. X-ray can image the lungs, skeleton, Kidneys, gal-bladder and bowel. X-ray use ionizing radiation with potential risk to personnel and patients (*CPA Guideline for Referral Hospital, Feb. 2003*). It also stipulated that the X-ray are done by qualified technician.

Because of this service should be available 24 hours, it is estimated that each referral hospital should employ at least 3 X-ray technicians. Therefore, at least 204 qualified X-ray technicians should be available for referral hospitals. Even though at the present time the MoH employs 126 staff working in this service, they have never received formal training with a standard qualification (See table 1). Some learnt through daily work and other gained skills through practice learning from hospital where the X-ray service is more qualified and active (especially from Calmette Hospital).

V. CONCLUSION

It is to conclude that the X-ray service is performing better especially in the national level, but at the referral hospital level require both improvement in quantity and quality of X-ray technicians. Some referral hospitals is still lack of equipment and human resources. In preparing training program on X-ray, two issued should not excluded, which are the training for the existing staff who has been working for this service and the simple skills for maintenance. Last but not least, film readers are also in needs.

Dr. Yath Yathy & Uy SoPhoat, HRD Department

Attachment 6-2—Table 1. X-ray technician in Cambodia, the situation as at February 2003

No.	Provinces	Background						Remarks
		Prim Nurse	Secd Nurse	MA	Doctor	qualified Rx technician	Total	
National Level								
1	Peah Kosomak H		4		1		5	4 learnt from daily work, 1Dr got short course training as on the job training and play a rol as a reader
2	Preah Bath Norodom Sihanouh H		1	1		1	3	1 qualified Rx technician studied at HUNGARY for 3 years, 2 nurses studied short course from UHS and SENAT
3	Camette H		4		9	6	19	1 Rx technician study 4 years in Bulgary . 9 have been on the job training in Calmette hospital. 1MD studied 4 year in Germany. Oother 4 MD graduated from UHS(CEF) and other 4 MD hae been on the job training in Calmete Hospital as well
4	CENAT	1	2		7		10	7 MD work as readers and other 3 nurses learnt from daily work
5	Monivong H	2	1				3	3 nurses learnt from daily work
Provincial Level								
6	Battambang							
	Battambang H		3				3	Learnt from daily work
	Sampov Loun H		2				2	2 weeks practice learning in Battambang H(KR)
	Morning Roeusey		1		1		2	1 doctor got 2w practice learning at CENAT, an other learnt from daily work
7	Kampong Cham							
	Kampong Cham H		2				2	Continuing education
	Srei Santhor		1				1	Practice learning in Kampong Cham H
	Tbaong Khmum		1				1	Practice learning in Kampong Cham H
	Memot		1				1	Practice learning in Kampong Cham H
	Choeung Prey		1				1	Practice learning in Kampong Cham H, Rx not yet functioning
8	Pailin							
	Pailin RH			1			1	6 month practice learning Calmmette H
9	Koh Kong							
	Koh Kong RH	1					1	Study from Red Cross 1y in Koh Kong H
	Sre Ambil H						0	Rx machin already exist, but no Rx technician, (not functioning yet)
10	Kampong Chhnang							
	Kampong Chhnang H	1					1	Learnt from daily work
11	Kampong Spoeu							
	Kampong Spoeu H		1		1	1	3	1Dr got 6 month practice learning in Calmette H, an other Dr Study Rx from Franch(to be transfer to PP), 1Nurse learnt from daily work
	Oddong		1		1		2	1Dr got 1 year practice learning in Calmette H, 1 nurse learnt from daily work, Rx service is not functioning. This hospital has no surgery ward
	Kong Pisey				1		1	1Dr got practice learning from national hospital
12	Mondul Kiri							
	Mondul Kiri H		1	1			2	Both of them got 2 weeks practice learning in Calmette H
13	Rattanakiri							
	Rattanakiri H		2				2	1Nurse study and work with COERR in the field of Rx in 1993 and an other learnt from daily work
14	Takeo							
	Ang Rokar		2				2	They are underpractice learning, Rx is not functioning yet Rx machine is still in the box
	Kiri Vong		1				1	1 month practice learning in provincial hospital
	Takeo Provincial H		2				2	Many short training course from PP
15	Krong Kep							
	Kep RH		1				1	Staff work flexibly with the Rx machine with low technical quality
16	Oddarmeanchey							
	Oddarmeanchey RH	1					1	has 2 Rx machines with 1responsible staff who got 10 days practice learning in Kampot hospital
17	Pey Veng							
	Prey veng RH		1	2			3	2 MA got 6 month practice learning in Calmmet and nurse learnt from dailly work
	Nak Leung RH	1		1			2	1MA got 6 months practice learning in Calmette hospital
	Kompong Trobek RH			1			1	1MA got 6 months practice learning in Calmette hospital

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Attachment 6-2 – Table 1. X-ray technician in Cambodia, the situation as at February 2003

	Pea Raing RH			1		1	1MA got 6 months practice learning in Calmette hospital
	Me Sang RH			1		1	1MA got 6 months practice learning in Calmette hospital
18	Puorsat						
	Puorsat RH		3			3	Study from RED CROSS in their hospital
19	Siam Reap						
	Kro Lanh RH	1				1	Got 3 month practice learning in provincial referral hospital
	Siam Reap RH		1		1	2	Both of them got 6 months practice learning in Calmette hospital
	Sout Nikum RH		1			1	Got practice learning in Siam Reap RH for 3 months
20	Svay Rieng						
	Provincial RH		2		1	3	2 got 3 month practice learning in Calmette hospital , 1 Dr is a reader.
	Romeas Hek RH				1	1	Got 1 month practice learning in Calmette hospital
	Chi pho RH					0	just received 1Rx machine, but no staff
21	Kampong Thom						
	Stoung RH		1			1	He is a lab technician and got 1 month practice learning in provincial RH
	Baray RH	1	1			2	Both of them got practice learning in provincial referral hospital
	Kompong Thom RH		3	1	1	5	1 Dr and 1 nurse got 9 month practice learning in HOPE Center. 1MA & 2 nurse learnt from daily work
22	Kam Pot						
	KomPot RH		2			2	2 nurses got 3 month practice learning in Calmette
	KomPong Trach RH		2			2	2 nurses got 3 month practice learning in Calmette and an other nurse studied before 1975
	Chhouk RH		1			1	Got 3 month practice learning in TAKEO RH
	Angkor Chey RH					0	No X Ray staff
23	Sihanouk ville						
	Sihanouk ville RH		3		1	4	1 Dr. got 6 month practice learning in Calmette hospital nad other 3 nurses learnt from daily work
24	Kandal						
	Koh Thom RH		1		1	2	1 Dr. got 1 year and an other nurse got 6 month practice learning in Calmette hospital
	Sa ang RH		1		1	2	Dr got 6 months and nurse got 3 month practice learning in Calmette hospital
	Ta Khmao		2		2	4	2 Dr got 1 year and 1 nurse got 6 moth practice learning in Calmette hospital. An other nurse got 6 month practice learning in Preah Kosomak Hospital
25	Stung treng						
	Provincial RH		2			2	1 nurse got 3 month practice learning in SIHANOUK H
						0	1 nurse learnt from daily work
26	Kratie						
	Chhloung RH		1	1		2	1MA got 3 month and an other nurse got 6 month practice learning in SIHANOUK H
	Kratie RH			1		1	1nurse got 6 month practice learning in Calmmet H
27	Phnom Penh						
	Manucipal Hospital	2			1	3	1 Dr. got 6 month practice learning in Calmmet H and other 2 learnt from daily work
28	Preah Vihea						
	16 Makara RH		1			1	Got 3 month practice learning in SIHANOUK H
		11	64	12	31	8	126

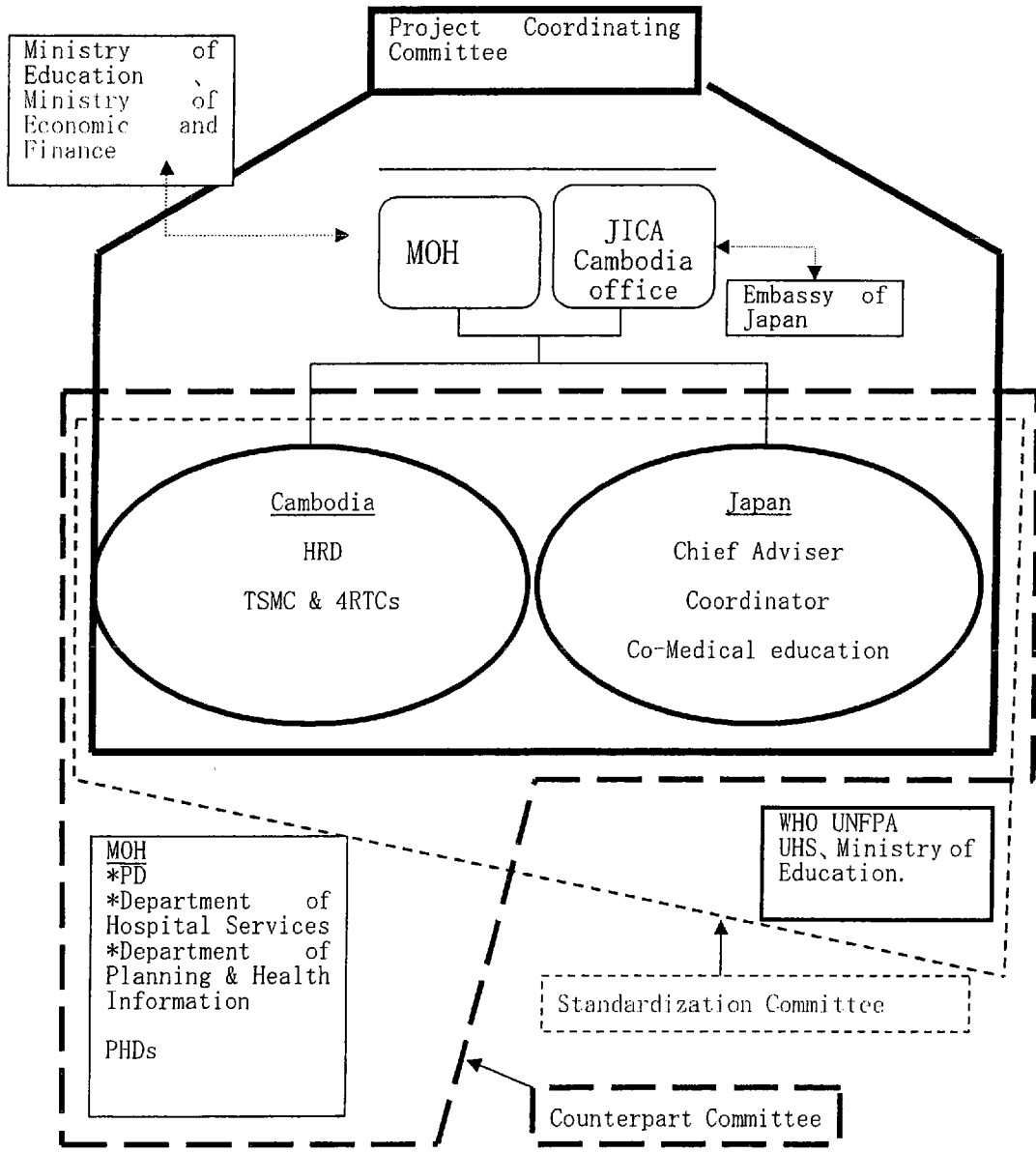
Table 2. Clacification of training according to duration and methdology

Practice learning in National and Provincial Hospitals	Number of trained staff	Percentage
Duration		
1 year	4	3%
9 months	1	1%
6 months	34	27%
3 months	13	10%
1 month	2	2%
2 weeks	5	4%
Practice learning with international technical assistants(in local hospital)	5	4%
Short training course (in differenthospitals/institutions)	26	21%
Daily work learning	32	25%
Study from overseas	4	3%
	Total	126
		100%

**Practice learning* means come to hospital where X-ray service activity is more qualified and active to get instruction and practice as X-ray technician

**daily work learning* means get instruction as they work along from the experienced staff at the workplace

Attachment 7 Project Coordinating Committee



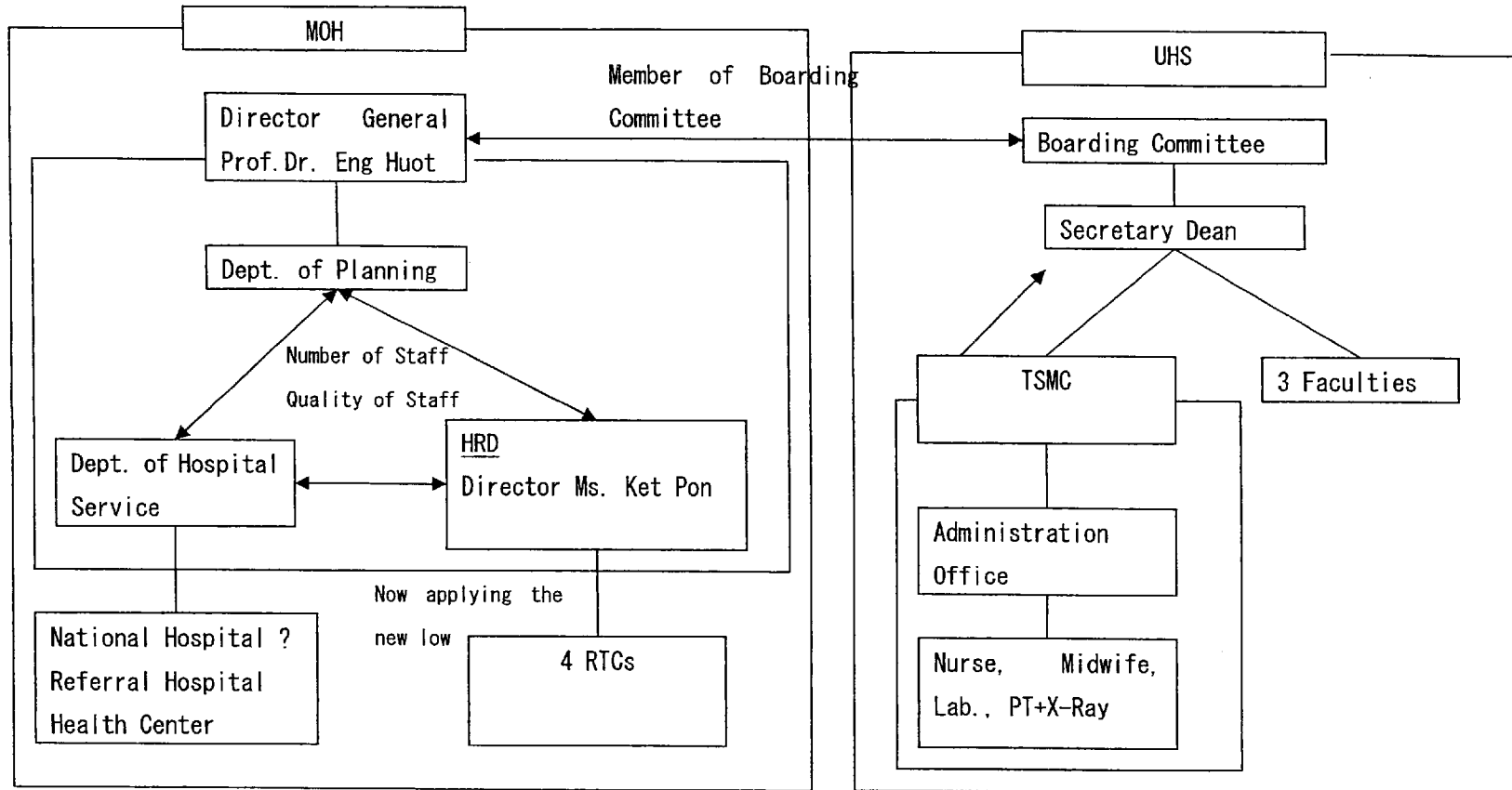
Attachment 8 Technical school for
Medical Care Budget Plan 2003

Chapter	items	paragraph	items of expenditure	Budget plan 2003		
				Riel	US\$	¥
			Total from MoH Credit	1,793,825,400	448,456	55,608,587
			Total expense			
			Type I Means of service	1,766,325,400		
10			Salary and Remuneration	311,216,400		
10	2		Salary and permanent staff remuneration	303,728,400		
10	2	1	Annual basic salary	47,242,800		
10	2	2	Family remuneration	2,340,000		
10	2	2	1 Children >15	870,000		
10	2	2	2 Secondary school children	750,000		
10	2	2	3 In charge children remuneration	720,000		
10	2	3	other remuneration	254,145,600		
10	2	3	1 Position remuneration	26,145,600		
10	2	3	2 overtime remuneration	228,000,000		
10	3		Salary and temporary staff remuneration	4,992,000		
10	3	1	Basic salary	4,992,000		
10	4		Staff under contract as government assistant	2,496,000		
10	4	1	National staff under contract	2,496,000		
11			Process expenditure, Administration material and minor repairing	1,043,109,000		
11	1		Material and administrative management expense	953,109,000		
11	1	1	Material and administrative management	541,000,000		
11	1	1	1 Administration office rental	5,000,000		
11	1	1	2 Organization and maintenance	452,000,000		
11	1	1	3 Water	24,000,000		
11	1	1	4 Electricity	60,000,000		
11	1	2	Movable property and material	75,527,000		
11	1	3	Telecommunication, telephon and telemessage	10,000,000		
11	1	4	Printer paper and stationary	56,582,000		
11	1	5	Note book and document	10,000,000		
11	1	6	conference and meeting	10,000,000		
11	1	7	Car material	121,000,000		
11	1	7	1 Maintenance and operation	83,000,000		
11	1	7	2 Fuel and Lubricant	36,000,000		
11	1	7	3 payment on car repairing	2,000,000		
11	1	8	Payment on guest	10,000,000		
11	1	8	1 Payment on foreigner guest	5,000,000		
11	1	8	2 Payment on national guest	5,000,000		
11	1	9	Payment on cereblation	1,000,000		
11	1	9	1 National ceremony	1,000,000		

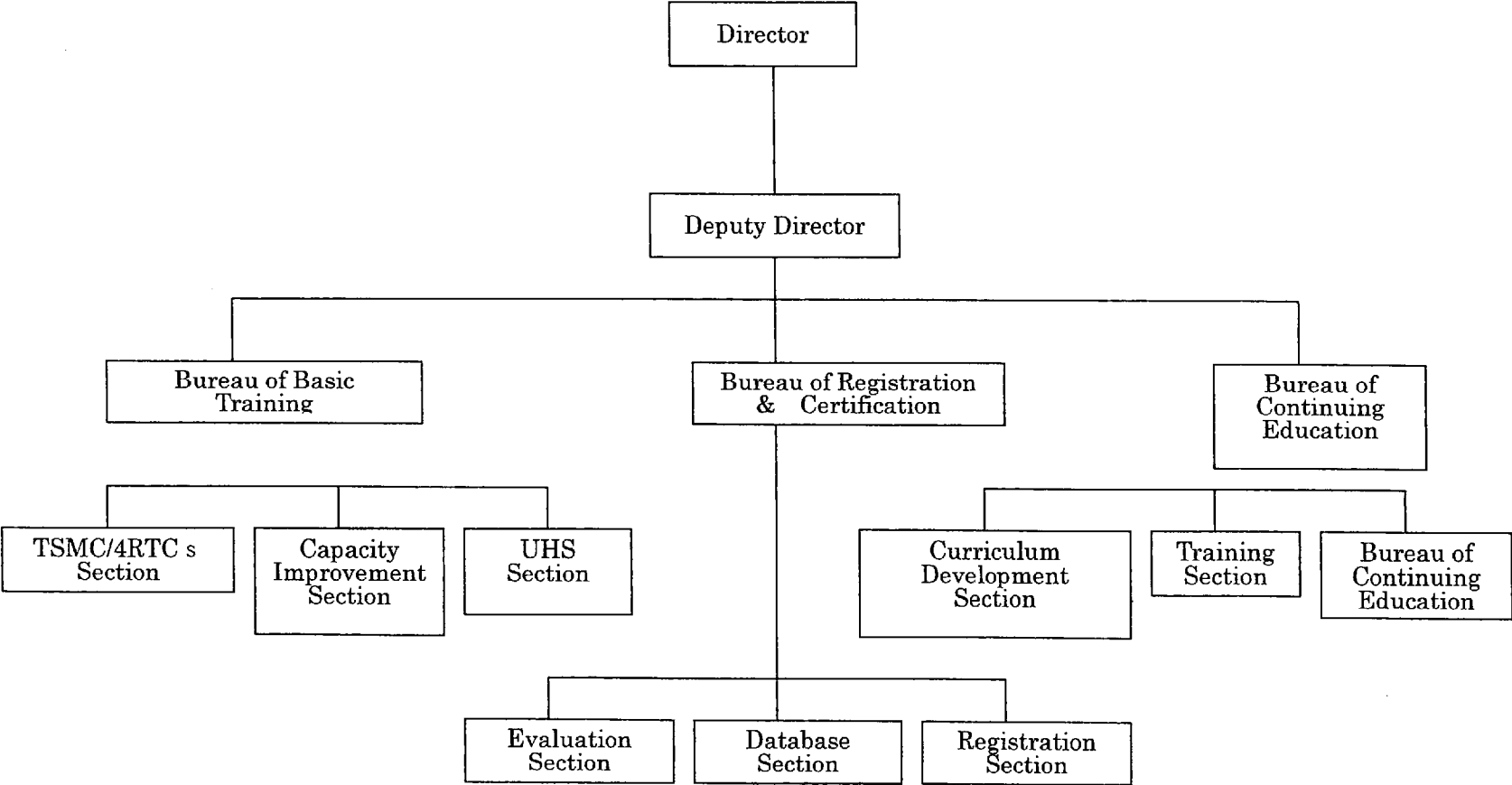
Attachment 8 Technical school for
Medical Care Budget Paln 2003

11	1	10		Uniform	7,000,000
11	1	11		Security	4,000,000
11	1	12	1	Study and tresting	2,000,000
11	1	12	2	Laboratory material and miuor technique, material daily use	11,000,000
11	1	14		Other expense	92,000,000
11	1	14	1	Hopital drug	5,000,000
11	1	14	2	Minor medical material	15,000,000
11	1	14	3	Medical mentenance	10,000,000
11	1	14	5	Oxyzen	1,000,000
11	1	14	6	Cleaning expence	26,000,000
11	1	14	7	Clothes and materials for in patient	5,000,000
11	1	14	13	Examination expense	30,000,000
11	1	99		Other expense on other consumption and service	2,000,000
11	2			General expense	90,000,000
11	2	1		Total domestic expense	90,000,000
11	2	1	1	Transportation expense	5,000,000
11	2	1	2	Mission expense	25,000,000
11	2	1	3	accomodation expense	60,000,000
13				Special program of health service agrement	412,000,000
	1	2		Management and control	412,000,000
				Type II	27,500,000
31				Social and culture intervation	
31	1			Social and culture intervation	27,500,000
31	1	1		Direct social expense	9,500,000
31	1	1	1	Birth attendannt	1,000,000
31	1	1	2	Illness staff allowance	1,000,000
31	1	1	3	Accident in service	1,000,000
31	1	1	4	Death	1,000,000
31	1	1	5	?	1,000,000
31	1	1	9	Staff abandon chil supporting	500,000
31	1	1	10	Retired pension	2,000,000
31	1	1	11	Resign of job pension	2,000,000
31	1	2		Schoolership expense	18,000,000

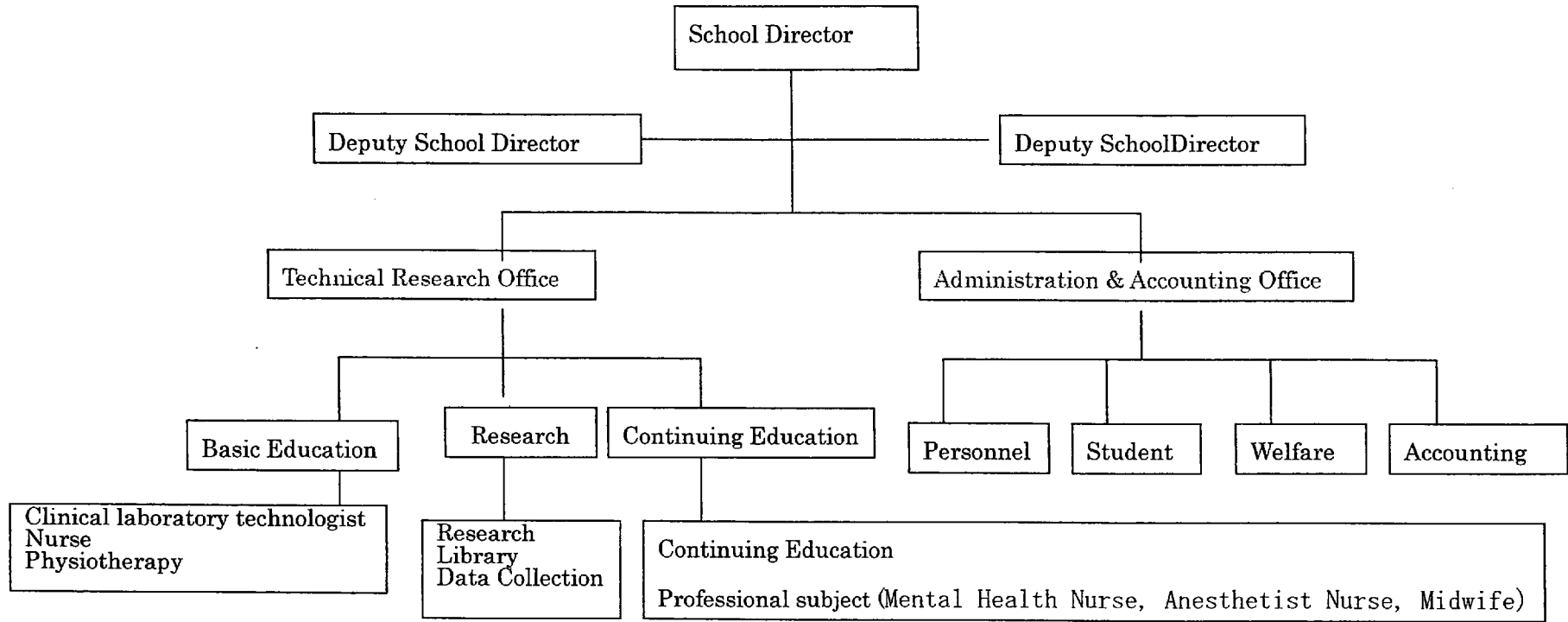
Attachment 9 After introducing the Autonomy to University of Health Sciences and TSMC



Attachment 10 Organization Chart of HRD



Attachment 11 Organization Chart of TSMC



Attachment 12 : Public Sector Health Spending 2001

	Cambodian Government		Donor Organizations		Total	
	1000's USD	%	1000's USD	%	1000's USD	%
Departments of MOH	4,141.93	4	3,136.92	3	7,278.84	7
National Program	4,977.99	5	11,131.37	11	16,109.36	16
National Hospital & Research Institutions	5,781.72	6	16,934.72	17	22,716.44	23
Sub-total (For Central)	14,901.64	15	31,203.00	32	46,104.64	47
Provincial Health Department	18,084.19	19	34,141.81	34	52,225.99	53
Total	32,985.83	34	65,344.81	67	98,330.64	100

Source: MOH

Attachment 13 : Number of Students of Basic Training Course at TSMC (2002 - 2003)

Category	1 Grade			2 Grade			3 Grade			Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Registered Nurse			198			98			92	388
Scholarship Students	44	59	103	26	72	98	29	63	92	293
Students who pay tuition			95			0			0	95
Physiotherapist			18			15			9	42
Scholarship Students	8	8	16	9	6	15	4	5	9	40
Students who pay tuition			2			0			0	2
Clinical laboratory technologist			52			24			0	76
Scholarship Students	14	5	19	18	6	24			0	43
Students who pay tuition			33			0			0	33
Total			268			137			101	506
Scholarship Students	66	72	138	53	84	137	33	68	101	376
Students who pay tuition			130			0			0	130
Source : TSMC									Scholarship Students (Male)	152
									Scholarship Students (Male)	224

Attachment 14: Number of Students of Registered Nurse course of 4RTCs(2000 – 2001)

Category	1 Grade			2 Grade			3 Grade			Total
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Battamban	20	40	60	50	27	77	13	34	47	184
Kompon CHam	35	25	60	33	26	59	35	21	56	175
Kampot	37	23	60	57	26	83	28	24	52	195
Stung Treng	25	5	30	26	6	32	16	13	29	91
Total	117	93	210	166	85	251	92	92	184	645

SourceHRD, MOH "Second Biennial Review of the Health Workforce Development Plan 1996-2005" (Phnong Pen : August, 2001)

Attachment 15 Number of Teacher and Staff at RTCs and TSMC

Categories	Bttanbang RTC	Kampong Cham RTC	Komport RTC	Stung Treng RTC	TSMC	UHS	TOTAL
Medical specialist	0	0	0	0	0	3	3
Pharmacist/specilist	0	0	0	0	0	1	1
Medical doctor/Doctorate Degree	0	0	0	0	0	4	4
Pharmacist/Doctorate Degree	0	0	0	0	0	0	0
Medical doctor/Mater Degree	0	0	0	0	1	3	4
Pharmacist/Master Degree	0	0	0	0	0	0	0
Dentist/Master Degree	0	0	0	0	0	0	0
Medical Assistant/Master degree	0	0	0	0	0	0	0
Medical doctor	6	2	2	0	14	20	44
Pharmacist	1	0	1	1	4	7	14
Dentist	0	1	0	0	0	23	24
Medical Assistant	6	0	1	2	2	4	15
Pharmacist Assistant	1	0	0	0	1	1	3
Dental Assistant	0	2	0	0	0	7	9
Secondary Nurse	22	14	7	4	16	13	76
Secondary Midwife	9	9	4	2	9	1	34
Secondary Laboratory Technologist	1	2	0	0	6	6	15
Secondary Dental Nurse	0	0	1	0	0	0	1
Primary Dental Nurse	3	0	0	0	0	0	3
Secondary basic eye nurse	0	0	0	0	0	0	0
Anesthetic nurse	0	0	0	0	0	0	0
X-Technisian	0	0	0	0	0	0	0
Physiotherapist	1	0	0	0	2	0	3
Primary nurse	0	0	0	1	1	0	2
Primary midwife	1	0	0	0	0	0	1
Primary Labortory techinologist	0	0	0	0	0	0	0
(Health agent)	0	0	0	0	1	0	1
Pharmacist preparation	0	0	0	0	0	1	1
Secourist	0	0	0	0	0	0	0
Medical traditional	0	0	0	0	0	0	0
Non Health technical stuff	0	3	0	0	3	16	22
Non Health non technical stuff	0	0	0	0	9	0	9
Ohters	3	0	0	0	1	10	14
Total	54	33	16	10	70	120	303

Summary of the Project Cycle Management (PCM) Workshop

Keiko Noji (workshop moderator)

1. Purpose

The government of Cambodia requested technical assistance from the Japanese government to help improve human resource development in medical care (including clinical and radiological technologists, physical therapists and nurses). The purposes of the PCM workshop were as follows:

- ① To identify circumstances surrounding co-medicals and existing problems in their training and job placement.
- ② To discuss necessary approaches to be taken in an envisioned new project
- ③ To clarify perspective and direction of the new project

2. Participants and Language

<Participants> (See Annex 1 Participants List)

- 20 Cambodian participants from related agencies
- 5 participants from the JICA Maternal and Child Health Project and the JICA Tuberculosis Control Project
- 1 staff member from the JICA Cambodia office
- 4 Japanese delegates (including 1 moderator)

<Venue>

Conference room at the Sunway Hotel

<Language>

English and Khmer

English – Khmer translation was provided.

The Khmer version of the PCM textbook was sent to the workshop participants beforehand.

3. Schedule and Program

<March 18>

Time	Program	Person in charge	Output
	Brief introduction of the workshop for managers of the Technical School for Medical Care (TSMC)	Keiko Noji	
9:30-10:30	Needs assessment of TSMC students	Keiko Noji	Problem cards written by 15 students
10:30-11:30	Needs assessment of TSMC teachers	Keiko Noji	Problem cards written by 6 teachers
14:30-14:35	Introduction of PCM workshop	Mr. Tsuyoshi Yusa, JICA Cambodia office	
14:35-15:15	Procedures of PCM workshop	Keiko Noji	
15:30-17:00	Stakeholders Analysis	Participants	Participation Table

Needs Assessment of Students and Teachers at TSMC

Students and teachers at TSMC are the direct beneficiaries of the project and it is crucial to incorporate their views into the project planning process. The moderator decided to have separate sessions with students and teachers in order to assess their needs, rather than include their representatives in the PCM workshop. The reasons are: first, there is a limit on the number of participants that will allow for smooth and effective workshop facilitation; second, students and ordinary teachers might not be able to speak frankly in front of other participants, who are their superiors and supervisors (ex. officials at Ministry of Health, TSMC principal, deans and chief of provincial hospitals).

The study team met 15 students (4 females and 12 males) and requested they write on cards about difficulties they have faced at TSMC. They were first-year students from the Registered Nursing Course (8 students), Lab-technician's Course (4 students) and Physiotherapy Course (2 students). The Moderator sorted the cards and summarized their main points on the blackboard. A similar type of session was held with 6 teachers (4 females and 2 males). They were teachers for the Midwifery Course (3 teachers) and Lab-technician's Course (3 teachers). The summaries of the problem cards were brought to the PCM workshop, after participants finished their stakeholder analysis. (Please refer to Annex 2)

Stakeholders Analysis: Participation Table

Stakeholder Analysis consisted of 2 exercises. The first exercise was conducted on March 18. All participants clarified the characteristics, conditions and potential of all the parties who would be influenced by the project and completed a matrix to show the features of the major related parties. (Please refer to Annex 3).

<March 19>

Time	Program	Person in charge	Output
8:30-10:00	Stakeholder Analysis	Participants	Detailed Group Analysis on TSMC students
10:15-10:30	Explanation Problem Analysis	Keiko Noji	
10:30-12:00	Problem Analysis (Core problem and Direct Causes/Effects)	All participants	
12:00-14:00	Lunch		
14:00-17:30	Problem Analysis (Subgroup exercise)	All participants	

Stakeholders' Analysis: Detailed Group Analysis on TSMC students

Students studying at TSMC, who were categorized as one of the direct beneficiaries during the previous exercise, were chosen as subjects of the Detailed Group Analysis. Participants wrote what they knew about TSMC students on cards, and sorted them according to the following categories: basic information on TSMC and students, strengths and potential of TSMC students, student's needs at TSMC, their needs for job placement and their needs at public hospitals. (Please refer to Annex 4.)

Problem Analysis

The exercise was to clarify problems surrounding the intent of the envisioned project, that is, human resource development of co-medicals. The core problem was defined as "Insufficient number of qualified co-medicals is allocated at public hospitals." The direct causes were defined as "Co-medicals are not appropriately allocated at public hospitals" and the "Quality of graduates is not satisfactory." Participants were divided into 2 groups and analyzed the direct causes, establishing a cause-effect relationship. Each group presented results of their discussions and other groups commented on them. Based on the comments, 2 problems were added to the problem tree. They were: "school management of TSMC is not good" and "There is no quality control/supervision for co-medical training institutions." They also analyzed the causes of the 2 problems further by subgroups.

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<March 20>

8:30-10:15	Problem Analysis (Subgroup presentation and correction)	All participants	Problem Tree
10:30-10:40	Explanation about Objectives Analysis	Keiko Noji	
10:45-12:00	Objectives Analysis (Subgroup exercise)	All participants	
12:00-14:00	Lunch		
14:00-15:00	Objectives Analysis (Subgroup presentation and correction)	All participants	Objectives Tree
15:15-15:30	Explanation about Project selection	Keiko Noji	
15:30-16:30	Project Selection	All participants	Comparison matrix of project approaches
16:30-16:40	Closing Address	Keiko Noji	

Objectives Analysis

By using the Problem Tree, participants formulated the Objectives Tree, which indicates desirable situations to be achieved. The Core Objective was defined as “Qualified staff (co-medicals) will be allocated at appropriate workplaces.” Please refer to Annex 5.

Project Selection

Participants selected 9 approaches and ranked them based on the following criteria: priority, positive impact, feasibility, sustainability after the project and efficiency (cost effectiveness). Each participant made a matrix and allocated points for indicating priority: 3 points for high, 2 points for medium and 1 point for low. A comparison matrix for project approaches was completed by calculating the total points of all Cambodian participants (See Annex 6).

<March 21>

8:30-8:45	Explanation about PDM	Keiko Noji	
8:45-12:00	Narrative Summary	Participants	Narrative Summary
12:00-13:30	Lunch		
13:30-13:45	Explanation about Important Assumptions	Keiko Noji	
13:45-15:30	Important Assumption	Participants	Important Assumption
15:30-15:40	Closing Address	Keiko Noji	

Attachment 16

Formulation of Project Design Matrix (PDM): Narrative Summary and Important Assumption

Two participants from both TSMC and the Department of Human Resource Development, Ministry of Health and Japanese delegates formulated the draft of project framework, PDM, based on discussions and outputs of the above-mentioned stages of analysis. Due to time constraints, sections of Objectively Verifiable Indicators, Means of Verification and Inputs on PDM were not discussed and completed by Japanese delegates over the weekend. The draft of PDM was explained to all relevant parties from 24th to 27th March. Their opinions were integrated into the final version of the PDM draft (please refer to Annex 7) and received their consensus before signing the Minutes of Meeting.

Attachment16-Annex 1

List of Participants in the Project Cycle Management Workshop

<18-20 March, 2003>

No.	Name	Position
1	Ms. Keat Phuong	Director of Human Resource Development, Ministry of Health (MOH)
2	Dr. Lim Huy	Human Resource Development, MOH
3	Mr. Uy Sophoat	Human Resources Development, MOH
4	Ms. Sok Khim	Laboratory Unit, MOH
5	Dr. Lo Veasna Kiry	Director, Planning, MOH
6	Dr. Huy Sovath	Director of the Technical School for Medical Care (TSMC)
7	Dr. Lim Sunly	Deputy Director, TSMC
8	Dr. Peav Sao	Deputy Director, TSMC
9	Dr. Chhim Pum	Technical Office, TSMC
10	Ms. Ouk Kaiyan	Laboratory Office, TSMC
11	Mr. Phon Saphan	Administrative Office, TSMC
12	Dr. Hay Sundy	Physiotherapy Office, TSMC
13	Mr. Lim Vuthy	Chief, Nursing, TSMC
14	Dr. Ly Sim Cheng	University Health Science
15	Dr. Kim Boun An	Director, Kg. Cham Regional Training Center (RTC)
16	Dr. Math Bumthau	Director, Kompot RTC
17	Dr. Miarh Sevuthy	Director, Kg. Speu Referral Hospital
18	Ms. Laurie Felker	Director, Nursing, Hope Hospital
19	Ms. Mala Khun	Staff, Hope Hospital
20	Mr. Simuth Denna	Chief, Laboratory, National Institute of Public Health
21	Dr. Takashi Miura	Medical Technologist, CENAT, Tuberculosis Control Project (TB Project), JICA
22	Mr. Peov Satha	Chief, X-ray Unit, CENAT, TB Project, JICA
23	Dr. Kazuhiro Kakimoto	Chief Advisor, Maternal and Child Health Project (MCH Project), JICA
24	Dr. Yasuo Morikawa	Clinical Laboratory Advisor, MCH Project, JICA
25	Ms. Izumi Suzumori	Project Coordinator, MCH Project, JICA
26	Mr. Tsuyoshi Yusa	Assistant Resident Representative, JICA Cambodia Office

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<21 March, 2003>

No.	Name	Position
1	Dr. Lim Huy	Human Resource Development, MOH
2	Mr. Uy Sophoat	Human Resource Development, MOH
3	Dr. Peav Sao	Deputy Director, TSMC
4	Dr. Chhim Pum	Technical Office, TSMC

Attachment 16-Annex 2

Difficulties faced by the TSMC students

Difficulties faced by the teachers at TSMC

Study without sufficient practice experience.	Lack of motivation due to poor living standard.
Lack of qualified teachers.	The teachers did not use time in proper way because they need time for extra income.
Number of teachers is insufficient.	Teachers are poor in foreign language.
Teaching ability is insufficient.	Lack of teaching experience.
Training opportunities outside of TSMC are insufficient.	The capacity of teachers is still low; they still use old methods.
Number of English teachers are too few.	
English/French classes are not available.	Teachers cannot use group discussion method because of the large number of students in a class.
Study materials (books, text books, etc) are not up-to-date.	Time is not available for group discussions.
Khmer study materials are not available.	
Lack of available modern books for students at library.	Lack of transportation to clinical and community practice sites.
Books in the library are not sufficient.	Not enough classrooms.
Amount of equipment is insufficient for practice.	
Modern equipment is not used.	Lack of materials for demonstration.
Classrooms are small and old.	Lack of safety equipment in laboratory practice.
No computer connected network.	Lack of materials for practice in laboratories.
No photocopy machines.	Lack of teaching aid: OHP, big sheet of transparent paper.
Assistance for job search is not available.	
Job searching know-how is not available.	
Job opening information is not available.	
Social recognition to TSMC is insufficient.	
Environment behind the school complex is not good.	
Flooding of the school.	
Prohibitive study expenses	
Accommodations for students from rural areas are not sufficient.	
Toilet facilities are not sufficient.	
Access to school is not good.	

Attachment 16-Annex 3: Participation Table

Indirect beneficiaries	Direct beneficiaries	Implementing agencies	Funding agencies	Supervising agencies	Potential collaborators	Potential opponents
Patients and clients at private hospitals	Trainers at TSMC	HRD, DPMI at Ministry of Health	JICA	Supervisory team JICA+TSMC+MOH	Trainers & staff at UHS	(Groups that would like to help, but left the fund)
Patients received good results		Technical office at TSMC	MOH	Project management unit	Shianouk hospital	Conservative persons in any related organizations
(Poor) population	All staff at TSMC	JICA representative team	NGOs	MOH	Hope Hospital (NGO hospital)	Traditional healer
Community			USAID?	UHS management	People responsible for the medical course at the hospital	Private nursing school
	Teachers at TSMC	Implementers			All hospital levels in	
International Organizations		Trainers & staff of TSMC			Laboratories of national and OD-level hospitals	
NGOs	All student studying at TSMC	JICA experts			HRD (Human Resource Department, MOH)	
Private hospital		Directorate committee of TSMC			Personnel Department, MOH	
Ministry of Education					Clinical instructors in hospitals	
					National Hospital	

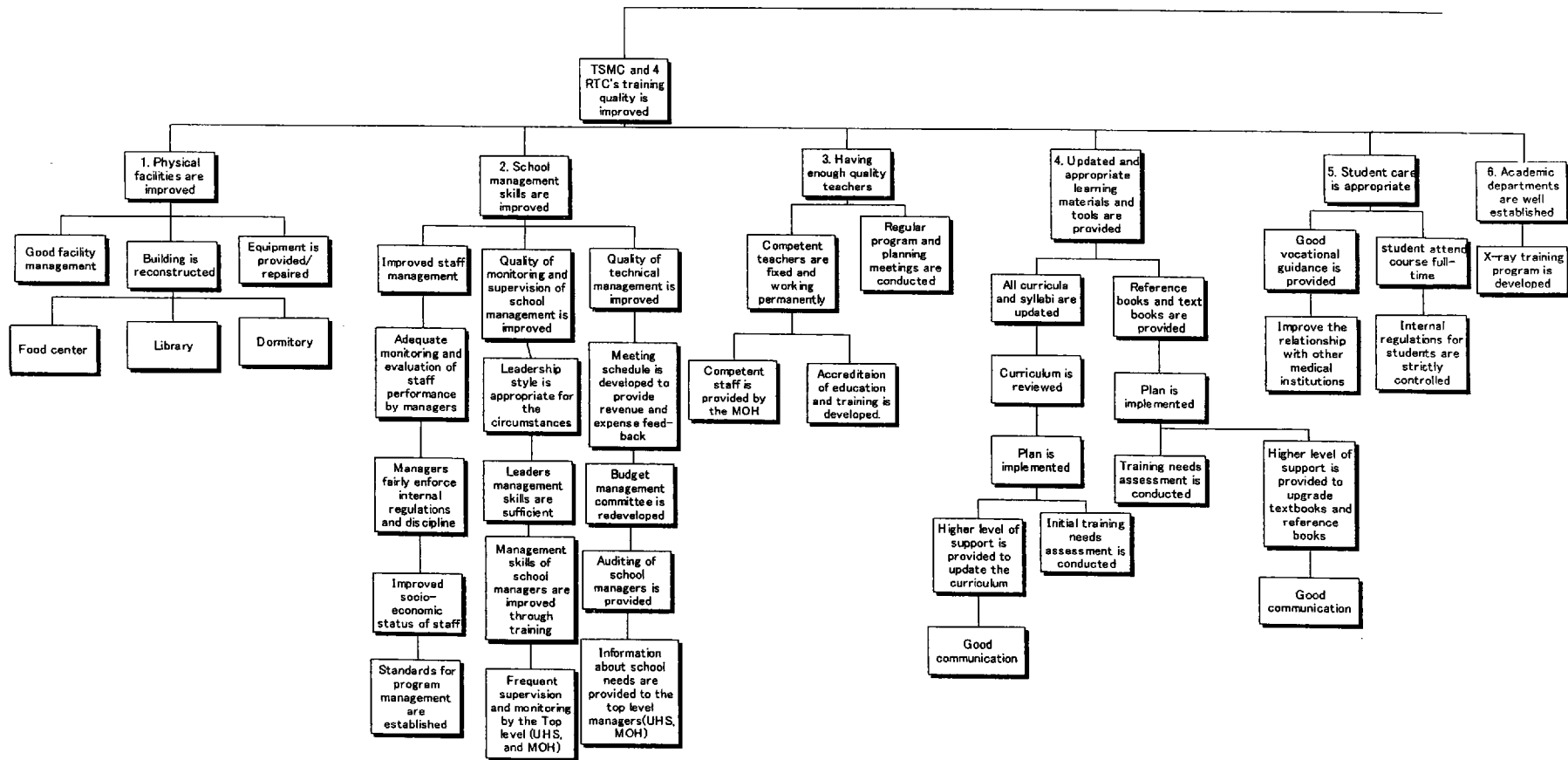
Attachment 16-Annex4:Detailed Group Analysis

Basic information on TSMC	Basic information of TSMC students	Strength and potentials of students	Student's needs at TSMC	Student's and graduate's needs for job placement	New staff's needs at public hospitals
<u>Concerns:</u>	About 600 students	Desire to learn	<u>Training program:</u>	Employment (TSMC should not accept too many new students)	<u>Guidelines:</u>
Mission of TSMC is clear?	2 types of students: with and without scholarship	Developing confidence in their knowledge and skills through the training at	Clinical training is increased	Information on job responsibility at hospitals	Guidelines for good quality of work
Vision of TSMC is clear?	They are not treated equally	Professional and behavioral change	Curriculum relevant to the health needs of community	Employment support from the government	
Internal regulation		Community and clinical oriented	Stronger fundamentals (science, math, etc.)	Post-graduates can get jobs	<u>Information sharing system:</u>
Policy on enrollment of self-supported students?	Students come from all provinces		<u>Practice opportunities:</u>	Regular selection for posts by MOH	Exchange knowledge between institutions (seminar, study tour, etc.)
Working conditions and promotion of the staff			Appropriate clinical practice sites	Allocation policy for new graduates (both type of students)	Have opportunities to get benchmarks overseas
Buildings and equipment			Hospital for practical training activity		
			Good communication with Clinical practice sites		<u>Continuing education:</u>
<u>New challenges:</u>			<u>Teaching ability:</u>		Post-graduate education system (courses)
New structure brought by autonomy			Increased number of full-time teachers		New staff orientation programs
Start accepting both scholarship students and self-supported students			Teachers' competence		
			Getting knowledge without conditionality		<u>Hospital management:</u>
			Modernization of teaching		Good management

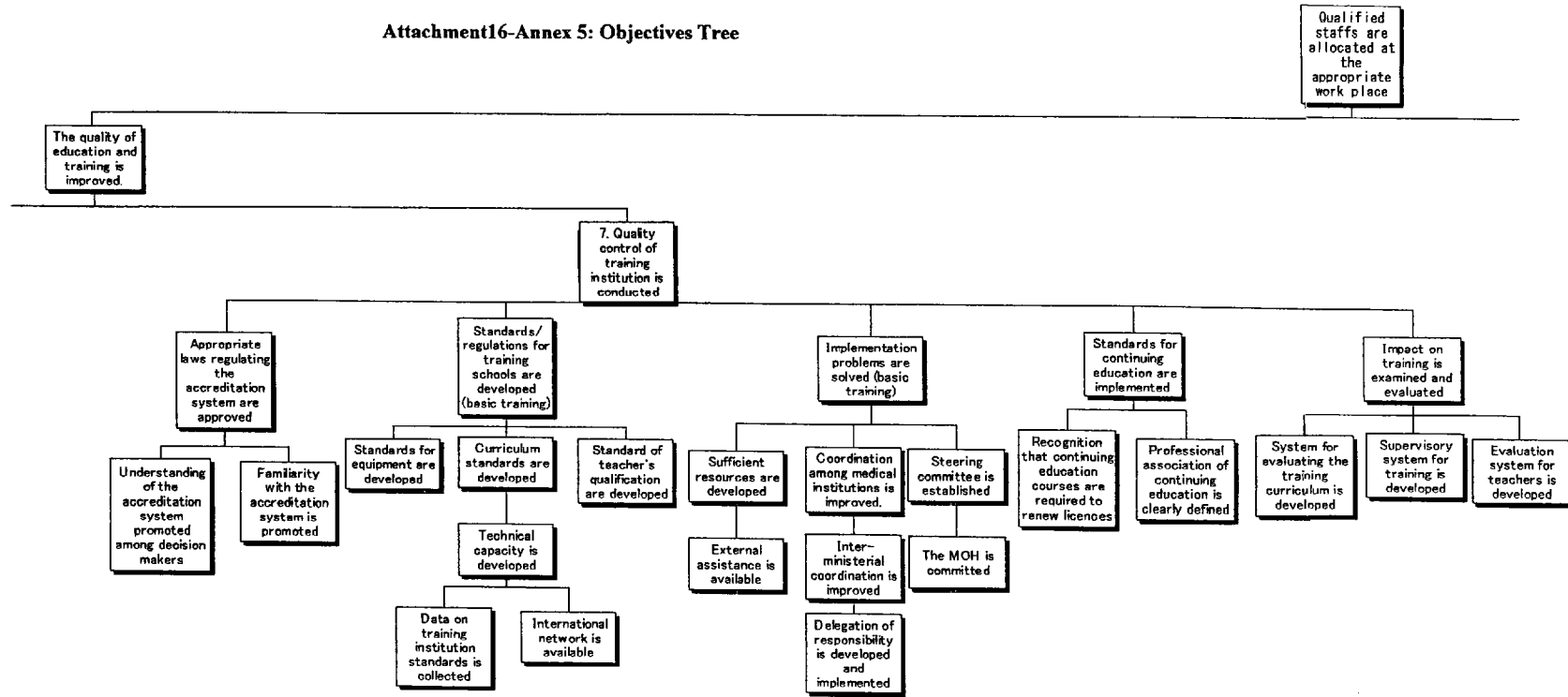
Attachment 16-Annex4:Detailed Group Analysis

			<u>Study materials:</u>		Good communication
			Availability of textbooks in		Experienced staff
			Good textbooks		
			Adequate learning materials		<u>Working conditions:</u>
			Library with a lot of books		Appropriate salary and allowance
			<u>Facilities:</u>		
			Dormitory		Motivation in working
			Student center		
			<u>Good school management:</u>		Availability of equipment
			Equal opportunity to learn among students		
			Good management of Technical Research Office		Experience in healthcare and nursing
			Financial support		
			Sharing experience with other countries		

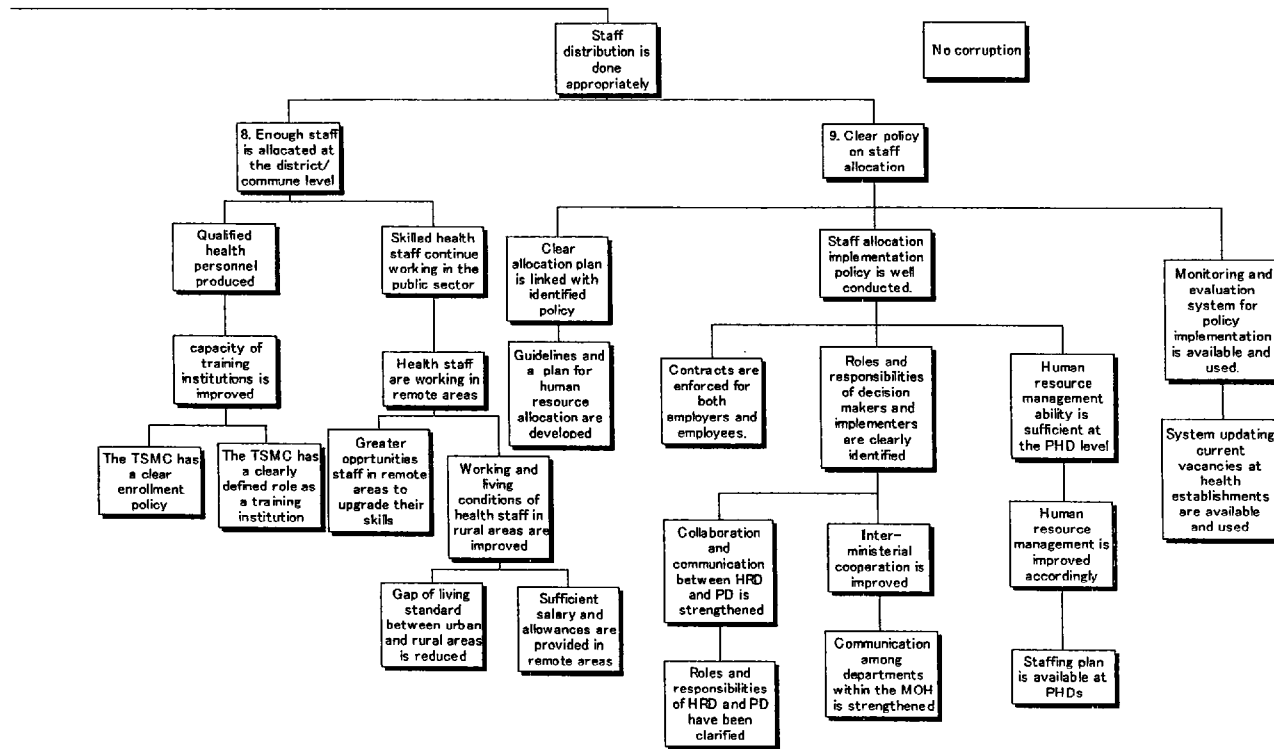
Attachment16-Annex 5: Objectives Tree



Attachment16-Annex 5: Objectives Tree



Attachment16-Annex 5: Objectives Tree



Attachment 16-Annex 6: Comparison Matrix of Project Approaches

	1: facility	2: school management	3: teaching quality	4: teaching materials	5: student care	6: establishment of academic department (x-ray)	7: quality control of training institutions	8: measures for remote areas	9: allocation policy
Priority	44	37	39	42	34	40	35	34	36
Positive impact	39	39	35	43	30	35	37	33	32
Feasibility	38	38	31	39	35	33	28	25	22
Sustainability after the project	36	33	30	35	29	32	30	25	24
Efficiency (Cost effectiveness)	37	34	34	34	32	33	34	33	31
Total	194	181	169	193	160	173	164	150	145

High: 3 points

Medium: 2 points

Low: 1 point

Attachment 17

Project Design Matrix

Project Name: Human Resource Development of Co-medicals

Date: May, 2003

Duration: 2003/9-2008/9

Project Area: Cambodia

Direct target group: Students at the TSMC and 4 Regional Training Center (RT Version: PDM0)

Indirect target group: Clients of public health institutions (facilities)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal Sufficient number of capable co-medicals are allocated at public health institutions.	Number of public health institutions which comply with Minimum Package Activities and Comprehensive Package Activities (CPA/MPA) standards on co-medicals is increased.	The hospital information database, which will be established by the project	Number and training quality of continuing education courses (conducted by Provincial Health Department and other donors) are improved.
	Number of vacant posts for co-medicals at each public health institution is reduced.	The hospital information database, which will be established by the project	The MOH takes necessary measures to ensure private schools conducting basic training for co-medicals follow national standards and guidelines set by the project.
	Number of TSMC and 4 RTC graduates who work at public health institutions is appropriately increased.	A follow-up study by the Technical Research Office of the TSMC and 4 RTCs	Working conditions at public health institutions are improved.
Project Purpose Capable co-medicals are produced for public health institutions.	The average score on the final exam of TSMC and 4 RTCs students is increased.	Students' performance records on various examinations	The central government does not freeze or drastically reduce the number of civil servants in health sector.
	The average score of project monitoring test for 3rd year TSMC and 4 RTC students is increased.	Project survey	In accordance with regulations, the government takes measures for the TSMC and 4RTC students to be assigned at public health institutions.
	The performance of students at practical training hospitals is improved.	Survey at hospitals which accept TSMC and 4 RTC students for their practical training	Working conditions at public health institutions are not worsened.
	The performance of graduates at public hospitals is improved.	Survey at public hospitals which employ TSMC and 4 RTC graduates	
Outputs	Necessary national standards and guidelines for institutions which conduct basic training for co-medical are issued.	Results of various training seminars on school management	Places which provide practical training to TSMC and 4 RTC students continue existing.

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1. National standards and guidelines for basic training of co-medicals are produced.	Public hospital's staffing and facility information is updated annually on the hospital information database.	Monitoring survey on school management	
2. Information on public health institution staff is fed back into the training plan.	Average scores at training seminars for managers and administration staff are improved.	Results of various training seminars on teaching ability	
3. School management of the TSMC is improved.	Performance level of monitoring checklists on school management is improved.	Monitoring survey on teaching ability	
4. Teaching ability of instructors is improved.	Average score at training seminars for teachers and instructors is improved	Annual report of TSMC and 4 RTCs	
5. Teaching materials are upgraded	Performance level of monitoring checklists on teaching ability is improved.	Ministry of Health Annual Report	
6. Periodic monitoring and evaluation are conducted on above 5 "Outputs".	Teaching materials of all departments are produced and can be revised biannually without the help of Japanese experts.	The hospital information database, which will be established by the project	
	In-house evaluation meeting is conducted regularly.	Monitoring and evaluation sheets	
Activities	Inputs		
1-1. Establish a steering committee.	Japanese side	Cambodian side	Cambodian counterparts shall be retained.
1-2. Improve the coordination among medical institutions.	Personnel	Personnel	
1-3. Set guidelines for schools which provide basic training of co-medicals.	<u>Long-term/short term experts:</u>	Staff	
1-4. Standardize teacher's qualification.	Chief Adviser	<u>Counterpart Committee</u>	
1-5. Standardize training contents/modules and level of final examination.	Project coordinator Others	Human Resource Development, Personnel Department, Hospital Service Department, and Planning Department of Ministry of Health TSMC and 4 RTCs	
2-1. Upgrade the existing periodic reporting scheme for reporting the current condition and training needs of co-medicals at public health institutions.			Preconditions

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<p>2-2. Improve the hospital-information database system to be able to update vacant positions and the condition of facilities at public health institutions (map creation). 2-3. Regularly update the list of new co-medicals who complete basic training. 2-4. Conduct a follow-up study of the graduates' employment status.</p> <p>2-5. Advise Human Resource Development to use the information for human resource development plan.</p>	<p>Counterpart Training</p> <p>Equipment</p> <p>Equipment for practical training</p>	<p>Others</p> <p><u>Project Coordinator</u></p> <p>Project Office</p> <p>Project office at TSMC Project office at Ministry of Health</p>	<p>Sufficient and appropriate staff members shall be assigned at the TSMC and 4 RTCs by the government.</p> <p>Provincial Health Departments agree to collaborate with the project.</p>
<p>3-1. Conduct training needs assessment and set criteria for evaluation. 3-2. Conduct training on school management (budget management, staff management, equipment maintenance, procurement, student's care etc.) and evaluate impact of the seminars. 3-3. Create school management checklists and regularly monitor actual performance.</p>		<p>Local cost</p>	
<p>4-1. Assess the training needs of teachers/instructors and set evaluation criteria. 4-2. Define appropriate training methods and create training manuals. 4-3. Conduct staff training seminars. 4-4. Regularly evaluate teaching ability.</p>		<p>Operation and maintenance cost of the project offices</p>	
<p>5-1. Conduct a survey on the current utilization of x-ray facilities at public health institutions. 5-2. Establish a steering committee to open the new x-ray department. 5-3. Revise the study guidelines for all departments.</p>			

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<p>5-4. Revise/establish appropriate curricula, focusing on practical training.</p> <p>5-5. Revise syllabi and introduce tests to evaluate training impact on students.</p> <p>5-6. Increase the availability of Khmer textbooks for each course.</p>			
<p>6-1. Conduct a survey to obtain baseline data for evaluation.</p> <p>6-2. Regularly monitor each activity.</p> <p>6-3. Hold project team meetings periodically to evaluate the progress of each activity.</p>			