

DOCUMENT # 1

Multi-Year Plan of Action January 2007 – June 2008

Vaccine Preventable Disease Program (VPDP) Bhutan

Prepared by:

Vaccine Preventable Disease Program
Communicable disease Division
Department of Public Health
Ministry of Health, Bhutan

With Technical Support from WHO

Chapter1

Introduction

Comprehensive Multi Year (c-MYP) of the immunization program is a tool of setting priorities, mobilizing resources, and using resources effectively throughout the program implementation. Broadly, this process leads to improvement in health status of the children, contributes to poverty alleviation, promotes equity and eventually results in higher levels of economic development. The need for c-MYP is certainly true for Bhutan where total plan expenditure for health for 2002-2006 was Nu 6536 million, of which public expenditure was around 90% (government plus grants and loans). Although health indicators in Bhutan are generally better than the average by international standards, the health indicators of Bhutan indicate that the country still has a long way to go in achieving the levels of health outcomes as enunciated in Millennium Development Goals (MDG). For example, the under-five mortality rate was 97 per 1000 livebirths in 1994 and 61 per 1000 livebirths in 2005, according to the MDG it should be reduced to around 33 per 1000 livebirths in 2015.

Bhutan follows five year planning cycles. The current 9th five year plan ends in June, 2007. However, Bhutan is undergoing transition towards democratically elected government in year 2007. Accordingly, the life of 9th five year plan has been extended by a year and the new plan period will be July 2008 to June 2013. During 9th five year plan, an outlay of Nu 6536 million have been planned for health sector. This outlay includes Nu 4505 million for central health sector. Mid term conducted in end 2004 showed 35% utilization of allocated plan outlay at end of two and a half years. The review brought out the implementation issues as shortage of skilled manpower, restriction/delay in releases of funds and weak monitoring and supervision.

c-MYP aligns itself with planning cycle of the country. Therefore, it has been decided to develop current c-MYP for a period of 18 months only – January, 2007 to June, 2008. The extension of current MYP was considered an option but was found not suitable since most of planned objectives were achieved and Bhutan was keen to move ahead with new activities like introduction of Pentavalent vaccine and consolidate coverage with two doses of MR vaccine. The validity period of current MYP ends in December, 2006.

Another step towards financial planning exercise was taken a year ago, when the country prepared the Financial Sustainability Plan (FSP), and submitted this to GAVI. Since then, the FSP exercise has been dovetailed more effectively into a comprehensive Multi Year Plan (c-MYP), based on a tool developed jointly by WHO-UNICEF. Developing a c-MYP gives an opportunity for countries to consolidate existing plans into a single document that addresses national immunization objectives, which are broadly consistent with global aims.

Thus, the c-MYP has the potential to help the government and its partners to identify key financing issues including gaps, develop targets for sound financing that are consistent with the program objectives, and agree about specific steps to move toward those targets. The methodology of developing the c-MYP is based on information and analysis of various plan documents such as Health Sector Review of the 9th five year plan, Mid term review of 9th five year plan, MYP for period 2002-2006, National EPI

review (2002), Coverage Evaluation Survey (2002), Report of National Health Survey (2002), Cold Chain Assessment (2004), Population & Housing Census of Bhutan (2005), Annual health Bulletin (2006), and RGOB Budgets/Expenditures and related data from Ministry of health. Critical inputs and feedback could be obtained based on a series of discussions and meetings with stakeholders like WHO, UNICEF and JICA, policy makers, ICC members. The final document was prepared based on technical inputs from staff and consultants from WHO-SEARO.

The next chapter describes briefly the country profile, and presents broad demographic and socioeconomic indicators, as well as some insight into financing issues, especially health financing scenarios. In chapter 3, we describe the EPI in Bhutan in some detail through a situation analysis of immunization in the country. In Chapter 4, the strategies and activities of EPI are presented. Chapter 5 presents the detailed costing of the different options that the country is planning to follow in the next 18 months.

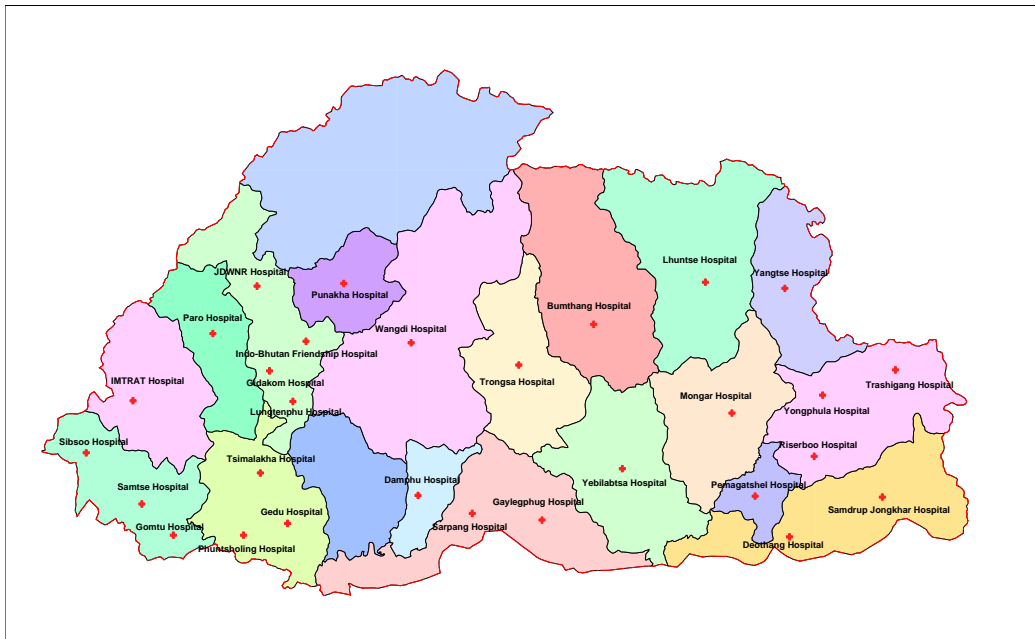
Chapter 2

Country Background

Bhutan is a small landlocked country located in the Eastern Himalayas, covering an area of 38,394 sq. kilometers (figure below). Its three major landforms are southern foothill, the inner Himalayas and the higher Himalayas. Central Bhutan consists of rather broader valleys of Paro, Thimphu, Punakha, Wangdue and Trashigang. The northern region comprises of main Himalayan range and has sparse population. The southern belt has a hot and humid climate. The central inner Himalayas have cool temperate climate while the higher and more northern region has a severe alpine climate.

From the 2005 population and housing census, the total population of Bhutan was 672,425 with the growth rate (natural increase) of 1.3%. The crude birth rate was 20 per 1,000 population. The crude death rate was 7 per 1,000 population. The birth cohort was therefore around 12,000. The infant mortality was 40.1 per 1,000 live births. The under 5 mortality rate was 61.5 per 1,000 live births.

The total GDP estimated in 2006 was Nu 23,104 million and the GDP per capita was USD 1320 in the same year. Bhutan has an average GDP growth rate of 7.5%. The planned health budget for 2006-2007 was Nu 2280 million, which was 12% of total budget.



Health system

Bhutan adopted Primary Health Care (PHC) approach to the health delivery system in 1979. Currently, the health care is provided free of charge to all its citizens including foreign nationals working in the country through a network of 29 hospitals, 176 Basic Health Units (BHUs), and 485 outreach clinics (ORCs). These health facilities spread throughout the country, covering almost all the remotest population pockets are manned by doctors, nurses, paramedics and technicians. At the community level, village health workers assist regular health staff in reaching out healthcare to the communities particularly in the far flung areas of the country.

In 2005, Bhutan had 145 doctors (including expatriates), the doctor per 10,000 population ratio was 2.3. The nurse per 10,000 population ratio was 8.3

Immunization Program

Royal Government of Bhutan acknowledges that Expanded Program on Immunization has significantly contributed towards improving the health status of children. The EPI service in Bhutan started on November 15, 1979 with an objective of reducing 6 vaccine preventable diseases, namely tuberculosis, diphtheria, pertussis, tetanus, polio measles.. Tetanus toxoid for pregnant women was introduced in 1983. Hepatitis B was introduced in 1997. The measles-rubella (MR) vaccine has been introduced in early 2006, replacing monovalent measles. EPI was fully integrated in the general health system. The service are provided through out the country from the fixed centers at hospitals/BHUs and outreach clinics. The primary health care workers ie. Health Assistant (HA), Auxiliary Nurse Midwife (ANM) and Basic Health Worker (BHW) are responsible for providing the immunization to the target children and pregnant women. Following immunization schedule is followed currently for children 0-24 months.

Antigen	Age of Administration
BCG / OPV0	At birth
OPV1 / DTP-HB1	6 weeks
OPV2 / DTP-HB2	10 weeks
OPV3 / DTP-HB3	14 weeks
MR1	After 9 months
DT / MR2	24 months

Bhutan declared universal childhood immunization (UCI) in 1991, since then the nation has been successful in sustaining coverage of above 80% for all EPI antigens. The latest immunization coverage survey conducted in 2002, whereby the coverage at national level, by card only was found to be BCG 94.9%, DPT3 93.5%, OPV3 94.9%, HepB 91.6%, measles 91% and TT2 to pregnant women 46.1%. Detail in below table.

Antigen	Coverage by card only	Coverage by card & history
BCG	94.9%	99.5%
DTP3	93.5%	98.6%
OPV3	94.9%	98.6%
HepB3	91.6%	96.3%
Measles	91.0%	96.3%
TT2	46.1%	86.3%

Vaccine Preventable Disease reported

The last clinically compatible poliomyelitis case in Bhutan was reported in 1986 in Tsirang. The polio eradication in Bhutan was started in 1995. The joint national-international AFP surveillance review in 2005 suggested that there was no evidence of wild polio circulation in Bhutan and its AFP surveillance system was strong enough to detect any emerging case if occurred. In 2005, 6 AFP cases were reported though none of them were proven to be polio.

Surveillance for other diseases beside AFP was not yet function at the satisfactory level. Currently surveillance for measles and neonatal tetanus is integrated into the AFP surveillance, hoping to use the strong AFP surveillance as base. However, the program is still facing with incomplete report, esp. neonatal tetanus. Because of limited neonatal death investigation, neonatal tetanus case was not identified. Outbreaks of measles-like illness were not fully investigated.

With this limited disease surveillance, 1 case of neonatal tetanus was reported in 2006. In 2005, there were no reported diphtheria and pertussis case, while 69 cases of measles were reported.

Chapter 3

Analysis of EPI situation

According to the 9th five year plan of 2002-2006, Bhutan targeted by end of 2005 to 1) achieve polio free certification by 2005, 2) elimination of neonatal tetanus and 3) reduce measles cases by 90% and deaths from measles by 95% as compared to 1999 level.

Since the last polio case in 1986, Bhutan joined the international polio eradication in 1995 and has remained polio free. Until now Bhutan can sustain high level of OPV3 coverage and strong AFP surveillance.

As for MNT, although there is no case reported until February 2006 when 1 case was reported, Bhutan is still believed to be at risk.. TT2+ from the 2002 immunization coverage survey was only 46.1%. Although this believed to be due to recording problem, there is so far no evidence to support it. The report coverage will also not be available until the end of 2006. Beside, proportion of unattended delivery at home was high at 51% in 2005.

The nation-wide measles coverage reported was 93% in 2005, however there are still two districts with coverage less than 80%. However, with the MR campaign conducted recently, outbreak of measles as well as rubella is unlikely. In 2005 there were 69 measles cases without death, of these 26 were among children under 5 years of age.

Situation analysis by accelerated disease control activities

Component	Indicator	Year	
		2004	2005
Polio	OPV3 coverage (%)	90	95
	AFP rate per 100,000 children < 15 yrs.	1	1.99
MNT	TT+2 coverage	NA	NA
	Proportion of delivery attended by trained person (%)	32	51
Measles and Rubella	Measles coverage	87	93
	Number of outbreak reported	0	2
	Number of measles death	0	0

Bhutan has been successful in sustaining high EPI coverage since UCI declaration. Incidence of target EPI diseases are showing decreasing trend. The latest EPI survey conducted in 2002 revealed 89.7% coverage for all antigens. Currently, the EPI services are fully integrated into the general health services and MCH/FP in particular. It is delivered through existing Hospitals, BHUs and ORCs. In continuation towards improving the quality of immunization services in the country, new antigens are added in the immunization services if indicated by the disease burden. Since 2003, AD syringes are used for immunization.

Surveillance for AFP is exceptionally well. Integration of vaccine preventable disease surveillance is being carried out, however, the surveillance system is still at its initial stage and needs improvement. Apart from the AFP surveillance, there are no zero reporting for other vaccine preventable disease including the AEFI surveillance. Surveillance data as well as other health information data are hardly analyzed and used at source, esp at the district level. The surveillance system itself needs to be strengthened.

High vaccine wastage is a problem in Bhutan but no assessment has been carried out to determine the actual cause of the vaccine wastage. Bhutan, rarely has vaccine stock-out. At present, there are 6 EPI technicians posted in three regional cold stores with sole responsibility of vaccine supply and cold chain management. Waste management plan exists in all the health facilities but implementation has not been monitored.

Human resource availability is a major issue in Bhutan. Inadequacy in terms of number and technical capacity of the staffs at all level has been major set back for the country's EPI program. Currently, EPI is manned by two personnel at the central level, assisted by 6 cold chain technicians at regional level. This problem at the central level has immensely contributed to weak program management and supervision of EPI activities at district levels.

Currently, Bhutan funding for vaccine is mainly by donors although all the recurrent expenses for immunization is borne by the Royal government of Bhutan. Bhutan Health trust Fund was initiated as a long term strategy to sustainability. BHTF's main objective is to fund the basic medicine and vaccines. Although the principal amount of the trust fund has not been achieved, the trust has already been operationalised. In 2006 the trust financed the Measles and Rubella Vaccination Campaign and is also funding to buy vaccines like Hep-B and anti rabies vaccines. is expected that this trust fund will be fully operated and funded most of basic vaccines.

Situational analysis of routine EPI by system components

System component	Suggested indicators		
		2004	2005
Routine coverage	DTP 3 coverage (%)	89	95
	% of district with > 80% coverage	100	90
	National DTP1-DTP3 drop out (%)	4	2
	Percentage of district with drop out rate DTP1-DTP3 > 10	0	0
New vaccine	HepB3 coverage	89	95
Routine surveillance	% of surveillance reports received at national level from districts compared to number of reports expected.		
Cold chain/logistics	% of districts with adequate numbers of functional cold chain equipment	100%	100%
Immunization safety	% of districts that have been supplied with adequate number of AD syringes for all routine immunization	100%	100%
Vaccine supply	Was there a stock out at national level during the last year	No	No
	If yes, specify duration in months		

	If yes, specify which antigen(s)		
Communication	Availability of a plan	NA	partial
System component	Suggested indicators		
Financial sustainability	What % of total routine vaccine spending was financed using govt. funds? (including loans and excluding external public financing)	Nil	Nil
Linking to other health interventions	Were immunization services systematically linked with delivery of other interventions (malaria, nutrition, child health) established.	Yes	Yes
Human resource availability	Number of health workers/vaccinators per 10000 population		14/10000
Management planning	Are a series of districts indicators collected regularly at national level?	Yes	Yes
NRA	Number of functions conducted	Nil	Nil
ICC	Number of meetings held last year		2
Waste disposal	Availability of a waste management plan		Yes
Program efficiency	Vaccine wastage monitoring at national level for all vaccines	NA	NA

Chapter 4

Strategies and implementation plan

General Objective: Reduce child mortality and morbidity associated with vaccine preventable disease, consistent with Millennium Development Goal 4 (reduction of under-five child mortality by two thirds by year 2015.)

<p>Strategy 1 Maintain high immunization coverage (more than 90%) and improve quality of services</p> <p><u>Activities</u></p> <ol style="list-style-type: none"> 1. Vaccine management – procurement, distribution, utilization 2. Cold chain management 3. Supplementary interventions for hard to reach population 4. Interventions for low (<90%) TT2+ coverage for pregnant women 5. IEC and demand generation for new vaccines 6. Strengthen Central EPI unit 7. Managerial and technical capacity building of National and District Managers 8. Nation wide comprehensive supervision strategy or immunization, utilizing partners within and outside the Ministry of Health 9. Resource mobilization from Bhutan Health Trust Fund and donors 	<p>Strategy 3 Effective monitoring and surveillance</p> <p><u>Activities</u></p> <ol style="list-style-type: none"> 1. Integrated disease surveillance for the Vaccine Preventable Diseases 2. Surveillance for adverse event following immunization (AEFI), including those of new vaccines 3. Strengthened Health management Information system, data collection and utilization at source 4. EPI program review and immunization coverage survey
<p>Strategy 2 Introduction of new vaccines</p> <p><u>Activities</u></p> <ol style="list-style-type: none"> 1. Introduction of Pentavalent (DTP-HB-Hib) vaccine from the year 2007 2. Strengthen vaccine wastage monitoring and reporting 	<p>Strategy 4 Capacity building of community level volunteers and health workers</p> <p><u>Activities</u></p> <ol style="list-style-type: none"> 1. Integrated training for village health workers, using cascade training strategy 2. Training of Health staff giving vaccination – HAs, ANMs and BHWs 3. Intensified supportive supervision for BHUs: immunization sessions supervisory tools, field visits and corrective feedback

Strategy 1: Maintain high immunization coverage and improve quality of immunization services

Having achieved a consistent coverage of 90% with all antigens in recent years, the attention will be on ensuring high coverage as well as improve quality of services that

would facilitate in reducing/eliminating/eradicating vaccine preventable diseases. The activities will include:

<i>Activity 1.1</i>	<i>Starting period</i>
Efficient vaccine management – Vaccines, Syringes and other immunization supplies are centrally procured and distributed to health facilities through regional/district stores. National EPI unit, with a dedicated Logistician (seconded by a partner agency) will be responsible for this activity. A good inventory management system will eliminate vaccine stock outs and reduce wastage on account of expiry.	
<ul style="list-style-type: none"> • Forecasting of needs for vaccines, A.D. syringes and other immunization supplies 	
<ul style="list-style-type: none"> • Procurement through UNICEF 	
<ul style="list-style-type: none"> • Distribution of supplies 	
<ul style="list-style-type: none"> • Operational inventory management system 	
<ul style="list-style-type: none"> • Annual assessment of utilization rates, wastage rates and identify reasons 	
<i>Activity 1.2</i>	
Cold chain management system – There have been problems with respect to freezing of vaccines and unsatisfactory management of cold chain. Further, introduction of new vaccines and changing over to smaller vaccine vials with one or two doses will require additional cold chain equipment. A good system will eliminate the problem of freezing of vaccines and consequent wastage of vaccines	
<ul style="list-style-type: none"> • Distribution of cold chain equipment based on additional needs following introduction of new vaccines 	April 07
<ul style="list-style-type: none"> • Introduction of Freeze tags 	
<ul style="list-style-type: none"> • Training of Cold chain handlers at all levels 	
<ul style="list-style-type: none"> • Monitoring of cold chain as part of integrated supervision system 	
<i>Activity 1.3</i>	
Biomedical waste management – Introduction of auto-disable syringes has almost eliminated complications due to unsafe injections such as injection abscesses. However, biomedical waste generated by used auto-disable syringes has created new problems because of non-compliance. This exposes the health workers and community, especially children, to higher incidence of needle sticks and potential transmission of Hepatitis B and C.	
<ul style="list-style-type: none"> • Standard protocols on disposal of used auto disable syringes 	
<ul style="list-style-type: none"> • Training of Health workers and hospital staff handling biomedical waste 	
<ul style="list-style-type: none"> • Monitoring compliance during supervisory visits 	
<i>Activity 1.4</i>	
Reached hard to reach populations – Due to sparse population with poor communication facilities, especially in northern region, are difficult to reach for immunization services. This becomes critical during winter season when communication links are broken.	
<ul style="list-style-type: none"> • Identify districts with hard to reach populations 	
<ul style="list-style-type: none"> • Establish one mobile team in each of these districts for immunization services 	
<ul style="list-style-type: none"> • Develop calendar of activities/schedule for mobile team 	

for a year. The plan	
<ul style="list-style-type: none"> • includes dates/sites for delivering immunization services 	
<ul style="list-style-type: none"> • Mobilization of eligible children for immunization by village health workers 	
<ul style="list-style-type: none"> • Organization of immunization services in hard to reach areas 	
<ul style="list-style-type: none"> • Assessment of unit cost of service delivery in hard to reach areas 	
Activity 1.5	
Increasing TT coverage for pregnant women – A case of neonatal tetanus was reported after a gap of ten years. This has raised doubts about current TT coverage.	
<ul style="list-style-type: none"> • Encourage universal antenatal coverage and institutional delivery 	
<ul style="list-style-type: none"> • Conduct NT validation exercise in year 2008 	
Activity 1.6	
IEC and demand generation – Whenever a new vaccine is introduced, community has misconceptions about its utility and side effects. A good IEC campaign goes a long way in alleviating these and accelerate uptake of new vaccines.	
<ul style="list-style-type: none"> • Develop communication materials and messages on importance of Hib vaccine 	
<ul style="list-style-type: none"> • Develop communication materials on AEFIs associated with vaccination 	
<ul style="list-style-type: none"> • Educational campaign for community 	
Activity 1.7	
Central EPI Unit - A strong EPI management unit is essential monitoring program implementation in the districts. The unit needs to be managed by adequate number technically competent managers. The current structure is; Central level: Program officer, MPH and Assistant Program Officer, EPI technician Regional Store: Six EPI technicians in 3 regional stores and at central store.	
Health staff from partner organizations like WHO, UNICEF and possibly JICA could provide ongoing support to EPI unit in monitoring of activities in districts.	
<ul style="list-style-type: none"> • Development of supervision and monitoring plan 	
<ul style="list-style-type: none"> • Evaluation or impact assessment plan 	
<ul style="list-style-type: none"> • Cold chain and waste management assessment 	
<ul style="list-style-type: none"> • Vaccine Preventable Disease research 	
Activity 1.8	
Program monitoring – Mid-term review of IXth five year plan identified weak supervision as a critical barrier in implementation of health programs. Since EPI services are integrated into general health services, program monitoring needs to be addressed as a priority to improve quality of services. Three mechanisms used to operationalize monitoring and supervision is field visits, periodic reviews and regular reporting.	
<ul style="list-style-type: none"> • At least 2 supervisory visits to each of 20 districts by National EPI program 	
<ul style="list-style-type: none"> • Annual review of districts in each of 5 regions in addition to annual health meeting 	

<ul style="list-style-type: none"> • Monthly reporting of performance and feedback for each of 20 districts 	
Activity 1.9	
<p>Resource mobilization – At present, JICA is paying for purchase of EPI vaccines through UNICEF. In addition, GAVI is funding for purchase of DTP-Hepatitis B vaccine. As such the funding is secured till end 2007. JICA has been funding purchase of EPI vaccines, cold chain equipment and immunization supplies. Currently, JICA is reviewing existing cooperation, including support for EPI services. There is a need to identify sources of funding for future. The possibilities include higher allocation by RGOB for EPI, use of newly established Health Trust Fund and GAVI. In order to fully utilize funding windows by GAVI, two proposals need to be prepared.</p>	
<ul style="list-style-type: none"> • Complete c-MYP with funding gaps identified 	
<ul style="list-style-type: none"> • Present and secure Government and donor funding 	
<ul style="list-style-type: none"> • Develop and submit a proposal to GAVI for introduction of Pentavalent vaccine 	
<ul style="list-style-type: none"> • from year 2007 (long term proposal with planning done till year 2015) 	
<ul style="list-style-type: none"> • Submit a proposal for strategy 4 using HSS funding 	

Strategy 2: Introduction of new vaccines

Since starting of EPI in 1979, Bhutan is striving for a better immunization service to its population. In 1997, Bhutan introduced hepatitis B vaccine into its schedule of existing 6 basic antigens, by 2004 it was replaced by DTP-HB combination. In 2006, Bhutan introduced the combination measles-rubella (MR) to replace measles at 9 months as well as a second dose of MR at 24 months of age. Therefore, with the future hope of expanding the number of antigens available for children, Bhutan is focusing on Hib antigen as a component in new pentavalent vaccine (DTP-HB-Hib).

In Bhutan, respiratory infection is a major cause of morbidity and, probably mortality as well. In 2005, among children under 5 year old, pneumonia cases reported was 8121. In the same year, meningitis/encephalitis cases reported among those children was 50. According to the result from the 2002 WHO study to estimate burden of Hib in Bhutan (the Hib rapid assessment tool: HibRAT) among children under 5 year old, the Hib meningitis cases was estimated at 16-54 cases per year, while the Hib pneumonia cases was estimated at 80-270 cases per year. Comparing to incidence in other countries, these incidences are on the high side.

The GAVI phase II gives a window opportunity for Bhutan to start introduction of this new vaccine as soon as 2007. Although the offer is conditioning by co-payment from the country, Bhutan is considering accepting this opportunity and planning for mechanism of co-payment.

<i>Activity 2.1</i>	<i>Period</i>	<i>Amount in US\$</i>
Introduction of Pentavalent (DTP-HB-Hib) vaccine from the year 2007		
Submit GAVI application incorporating guidelines on co-payment mechanism	Jan 07	
Receive communication from GAVI on application status	Feb 07	
Receive the vaccine from UNICEF as per introduction schedule	May	
District level IEC activates for health workers and community	March-April	20000
Modification of information system to fit with the new vaccine	March	1000
Development and Information dissemination through national media on the introduction of new vaccine	March	5000
Briefing of all the MCH in-charges on the new vaccine introduction	March	30000
Procurement of 10 # refrigerators	April	23000
Vaccination with Pentavalent vaccine starts	June	
Activity 2.2		
Strengthen vaccine wastage monitory and reporting		
Monthly close monitoring of problem/question regarding this new vaccine by district staffs and report to central unit for the first 6 months	July	3000
Quarterly monitor of vaccine wastage at BHU, hospitals and districts	July onwards	5000
Investigate cases of high/ unexpected wastage rate at all levels		2000
Summarize wastage data and convene a meeting among stakeholder to discuss the issue quarterly	Oct	2000
Strengthen surveillance for pneumonia and meningitis/encephalitis in order to assess impact of this new vaccine	July	9000

Strategy 3: Effective monitoring and surveillance

Surveillance has an important role especially when the disease is near elimination and eradication. It is known that it must conduct continuously. Good surveillance leads to timely control of an outbreak. Affords to improve integrated disease surveillance had started in the last cMYP of 2002-2006, using AFP surveillance as a base. Measles, congenital rubella and NNT were integrated. Guideline for surveillance and outbreak investigation are in placed. Continue efforts to achieve good surveillance coverage is planned in this cMYP.

AEFI surveillance was also introduced in Bhutan during the last cMYP. However, only a few cases were reported. Generally community and health staffs do not have a good understanding of the AEFI incidence and the treatment.

Health Management Information System has been the key in monitoring the immunization service in Bhutan. Currently the Ministry of Health is pushing for effective use of the data at all level. The data is also needed to be confirmed by immunization coverage survey from time to time.

Activity 3.1	Starting period
Integrated disease surveillance for the vaccine preventable diseases	
<ul style="list-style-type: none"> • Regular analysis of data at district level at least once a week 	
<ul style="list-style-type: none"> • Analyze the data on completeness and timeliness of the surveillance report 	
<ul style="list-style-type: none"> • Investigate surveillance performance of silent area 	
<ul style="list-style-type: none"> • Implement measles outbreak investigation to identify problem on vaccine coverage/ potency 	
Activity 3.2	
Surveillance for adverse event following immunization (AEFI), including those of new vaccines	
<ul style="list-style-type: none"> • Educate community and health staffs about AEFI 	
<ul style="list-style-type: none"> • Strengthen the AEFI surveillance through supervision and feedback 	
<ul style="list-style-type: none"> • Develop response mechanism for severe AEFI cases 	
Activity 3.3	
Strengthened health management information system, data collection and utilization at sources.	
<ul style="list-style-type: none"> • Regular analysis of data at facility/district/regional/central level at least once a month 	
<ul style="list-style-type: none"> • Feedback suggestion to the lower level once a month 	
<ul style="list-style-type: none"> • Provide program information needed to the HIMS before starting of the next cMYP 	
Activity 3.4	
EPI program review and immunization coverage survey	
<ul style="list-style-type: none"> • Conduct EPI program review before planning of the next cMYP 	
<ul style="list-style-type: none"> • Conduct immunization coverage survey before planning of the next cMYP 	

Strategy 4: Capacity building of community level volunteers and health workers

Community level volunteers, so called village health workers (VHW), have been a crucial link between the health setting and community in Bhutan. It was introduced to supplement the work of rural health facility since early 1980, after the starting of PHC. Currently, about 1,200 VHWs are functioning in the country and their contribution to improve rural health situation is highly recognized. They assist the BHU staffs delivering service to the target population. The main roles of VHW are 1) to facilitate increased access to health care services 2) to improve healthy lifestyle of the community and the health service, and 3) to provide first aid and treatment of minor ailments

Among 21 tasks for VHWs defined in 1995 at the review meeting between the health Division and donor agencies (UNICEF and WHO), VHWs have a specific task in

immunization to “help mothers to attend maternal and child health clinics regularly”. They also have a task to “observe for any disease outbreaks in the community” and “notify the nearest health center immediately”. Beside, they are a good source in notifying existing of new mother or migration of target population to the BHU.

Although, work of VHWs contributed to the improvement of health status is highly praised. Results from the Rapid Needs Assessment for Better Community Health: Focus on VHW conducted by JICA in February 2005 suggested that supporting system for VHW needed to be improve ie. 1) refresher training should be carried out regularly, 2) training for new VHWs should be held, 3) drugs for VHWs from BHU should be appropriately supplied, 4) VHW medical kit should be reissued, 5) government should commend VHWs with extraordinary work and giving VHW certain authority together with responsibility, 6) compensation should be well discussed, and study tour should be carried out. The Ministry of Health fully supported the suggestion and also recognized the need to strengthen capacity of BHU staffs to become strong supervisors for VHW. The following activities are purposed in line with it.

<i>Activity 4.1</i>	<i>Starting period</i>
Integrated training for village health workers, using cascade training strategy	
<ul style="list-style-type: none"> • Revised integrated manual/guideline for VHW 	
<ul style="list-style-type: none"> • Revised integrated training module for VHW 	
<ul style="list-style-type: none"> • Conduct the integrated training for VHW 	
<i>Activity 4.2</i>	
Training of health staff giving vaccination – HAs, ANMs, BHWs	
<ul style="list-style-type: none"> • Revised immunization training module for BHU staff, partly used as VHW training for the trainer 	
<ul style="list-style-type: none"> • Conduct refreshing training for BHU staff, cover all in-service staffs who have not received immunization training in the last 5 years in next 3 years 	
<ul style="list-style-type: none"> • Regularly update teaching personnel in teaching institution/ faculty with new immunization issues 	
<i>Activity 4.3</i>	
Intensified supportive supervision for BHUs: immunization sessions, supervision tools, field visits and corrective feedback	
<ul style="list-style-type: none"> • Develop annual planned for supervision to BHUs by EPI-trained staffs from district/ regional/central level 	
<ul style="list-style-type: none"> • Standardize the supervision tools and method 	
<ul style="list-style-type: none"> • Develop mechanism to feedback and feed-forward the supervision finding as well as solution to and from each level 	

Chapter 5

Future resource requirement and program financing, gap analysis

This section projects future costs (based on assumptions about the inputs required) and estimates and analyses the gap between future resource requirements and available financing.

The cMYP examines the current status of funding for EPI and projects the future need. As mentioned earlier, the baseline scenario is for the year 2004 and the future projections are done only for two years i.e. 2007-2008.

Currently EPI focuses on six primary series antigens: BCG, DPT, OPV, Measles, TT for pregnant women, and Hepatitis-B. In response to the emerging need, Measles vaccine was replaced with MR in 2006. Additionally, a second dose of MR and a dose of DT at 24 months are also now a part of EPI. Tetravalent (DPT-Hep B) vaccine is being given since 2004 and it is being planned that it will be replaced by the Pentavalent (DPT- Hep B-Hib) vaccine from 2007. We have worked out two scenarios – with and without pentavalent vaccine - to look at the resource implication of the introduction of Hib vaccine. Among campaigns, there is no plan of any campaign during the projection years.

Before turning to the costing and financing results, below is a brief mention of the various partners of the government of Bhutan in immunization activities.

Historically, the main multilateral agencies active in the EPI are UNICEF and WHO, which mainly provide technical support. The bilateral external development partners are JICA and DANIDA. The DANIDA support to EPI came to end in 2002, and since then the funds are directed towards the budget support to the health sector as a whole. JICA provides funding support only on request, and has no earmarked budget for the immunization activities. However, JICA has been lending support through UNICEF, mainly for the procurement of traditional vaccine and cold chain equipments, since almost ten years.

GAVI has awarded funds for the introduction of tetravalent vaccine (DTP-Hep B) and injection safety for all vaccines from the year 2003 to 2007. This includes of \$439,500 for new and underused vaccines with \$29,000 for injection safety and a sum of \$100,000 for other support, which has been donated to the Bhutan Health Trust Fund (BHTF).

The BHT Fund was created in 1998 with an aim to with the objective to raise the fund with the target of USD 24 million. As of today, BHTF has secured USD 19 million; it will only become operational when the core funding reaches \$24 million. It is believed that BHTF will be used to pay for essential drugs and vaccines, and is accounted to be a major source of funding for immunization in the coming years.

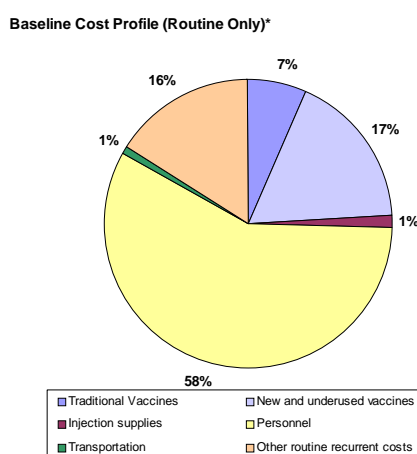
As long-term partners, WHO, UNICEF and JICA are expected to continue to support EPI activities. GAVI – though the current funding is going to end in 2007 - is expected to continue its support with underused and new vaccines as Bhutan has achieved the commitments expressed in the first phase.

Baseline cost scenario

Costing of baseline as well as projections are undertaken using the cMYP tool after taking into account the costs of salaries, allowances, campaigns and program goals with proposed new and underused vaccine introductions. The overall costing in 2004 was \$1,486,730 of which 48 percent costs were for shared activities within the government. Since there were no campaigns, the rest 52 percent of the costs was for routine immunization. If one considers only immunization expenditures leaving out shared costs, the cost per capita is about \$1.2, and cost per DTP3 child is about \$68.4 in 2004. The table below presents the baseline indicators for 2004.

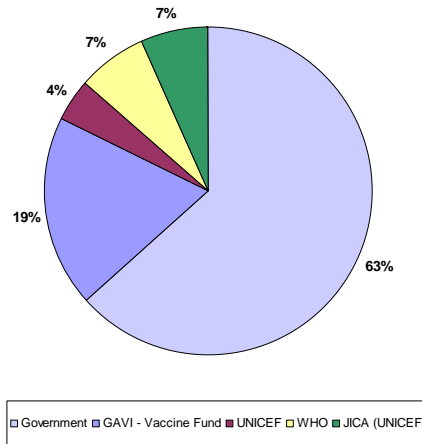
Baseline Indicators	2004
Total Immunization Expenditures (US\$)	770,300
Routine Immunization only (US\$)	770,300
per capita (US\$)	1.2
per DTP3 child (US\$)	68.4
% Vaccines and supplies	25.6%
% National funding	63.3%
% Total health expenditures	3.2%
% Gov. health expenditures	3.5%
% GDP	0.1%
Total Shared Costs (US\$)	716,429
% Shared health systems cost	48%
TOTAL (US\$)	1,486,730

The pie chart presented below breaks down the total cost by items: as can be seen the bulk of the expenditure comes from personnel costs (58%), followed by new and underused vaccine (17%). Other routine recurrent costs (including training cost) accounts for 16%, while traditional vaccine costs are 7 percent.



What were the sources of financing of immunization expenditure in 2004? The pie diagram below indicates the major sources.

Baseline Financing Profile (Routine Only)*



Currently, the government of Bhutan remains the major contributor to immunization with 63 percent of total expenditure. The other major donor was GAVI vaccine fund (19%); the WHO and JICA contributed 7% each.

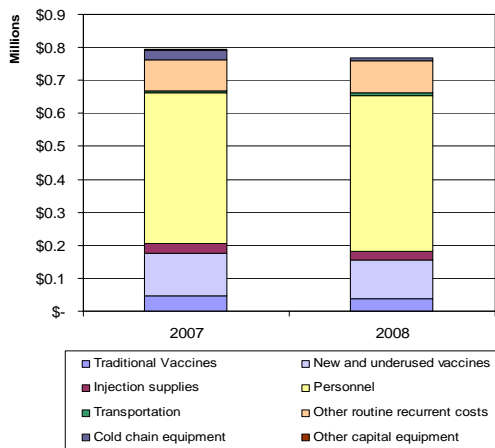
Future resource requirements, financing and gaps

As discussed earlier, Bhutan intended to carry out planning of the EPI only for the two years viz. 2007 and 2008. Based on the EPI objectives on traditional vaccines and new vaccines – Tetravalent and Pentavalent - for these years, detailed costing was done using the cMYP tool.

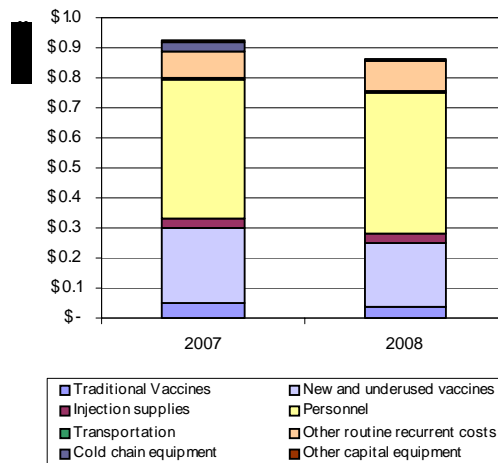
Resource requirements – Tetravalent

Resource requirements - Pentavalent

Projection of Future Resource Requirements



Projection of Future Resource Requirements

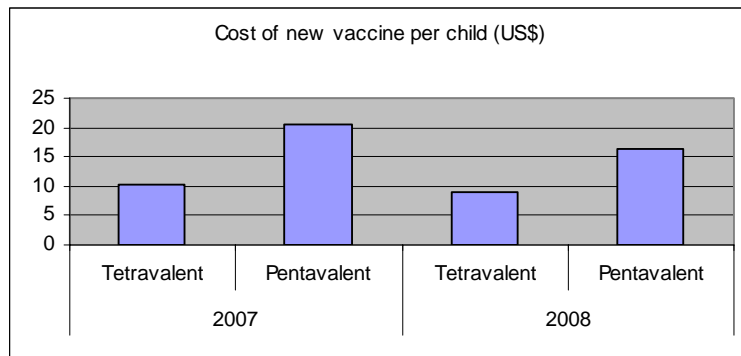


Graphs above show the resource requirement across for two years, for both the scenarios. As in the baseline year, personnel continue to remain major proportion of total resource requirement. Although the total cost is increasing, the objective of

* Immunization specific funding only. Shared costs are not included. Although the total resource requirement is increasing, the objective of reducing the wastage rate (from current 60% of 10 doses per vial tetravalent vaccine

to 30% of 2 doses per vial pentavalent vaccine) reduces overall cost of vaccines; thus, there is a slight decline in the cost of new vaccines in 2008. The total resource requirement for scenario I (Tetravalent) is estimated to be US\$ 793,515 and US\$ 768,142 for 2007 and 2008 respectively. As for the scenario II, where Tetravalent is being replaced with Pentavalent, despite of the price difference of these combination vaccines, the overall cost does not seem to be increasing drastically. Total resource requirements for scenario II are US\$ 922,316 and US\$ 861,381 for 2007 and 2008 respectively. The higher resource requirement in 2007 also includes buffer stock (25%) of the pentavalent vaccine.

What is the cost implication of the introduction of Hib vaccine? As can be seen from the graph, the difference in the cost of vaccine per child is US\$ 10 in 2007 and is reducing to US\$ 6 in 2008 (the reduction due to no buffer stock required for 2008). Over all, average cost of per DTP targeted child during the projected year is US\$ 65 for the tetravalent scenario and for the Hib introduction, the same figure is US\$ 74.



The difference in total cost of Hib introduction can mainly be attributed to the significant reduction in wastage rate – because of the introduction of 2-dose vial for the pentavalent – which is reducing the absolute cost of introduction of the pentavalent vaccine.

What kind of financial resources are available to match the projected resource implications?

The tables and graphs below give the details of sources of funding, division of the funding sources between secure and total (secure and probable) funding, and gaps in funding for both the scenarios.

Table : Estimated funding and resource gap Scenario I - Tetraivalent				
Particulars	Secure Funding		Secure and Probable funding	
	2,007	2,008	2,007	2,008
Total resource requirement	793.5	768.7	793.5	768.7
Total available projected funding				
Government	508.6	537.3	508.6	558.1
GAVI - Vaccine Fund	127.7	0	144.2	9.2
UNICEF	14	0	14	15
WHO	21.7	0	21.7	23.2
JICA (UNICEF)	105.2	0	105.2	39.8
BHTF (Trust fund)	0	0	0	7.8
Total funding	777.1	537.3	793.5	653.2
Funding Gap				
Funding gap (in US\$ '000)	16.5	231.4	0	115.5
Funding gap (in percentage)	2.1	30.1	0.0	15.0

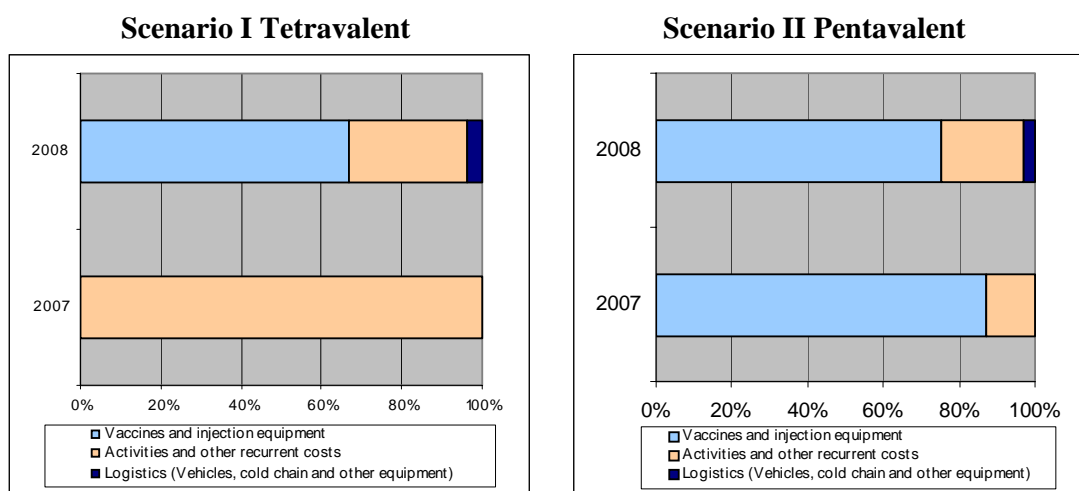
Table Estimated funding and resource gap Scenario II - Pentavalent (in US\$ '000)

Particulars	Secure Funding		Secure and Probable funding	
	2,007	2,008	2,007	2,008
Total resource requirement	922.3	861.4	922.3	861.4
Total available projected funding				
Government	523.9	549.7	523.9	570.6
GAVI - Vaccine Fund	127.7	0.0	144.2	9.2
UNICEF	14.0	0.0	14.0	15.0
WHO	21.7	0.0	21.7	23.2
JICA (UNICEF)	105.2	0.0	105.2	39.8
BHTF (Trust fund)	0.0	0.0	0.0	7.8
Total funding	792.4	549.7	808.9	665.6

Funding Gap

Funding gap (in US\$ '000)	129.9	311.6	113.5	195.8
Funding gap (in percentage)	14.1	36.2	12.3	22.7

Composition of funding gaps across scenarios

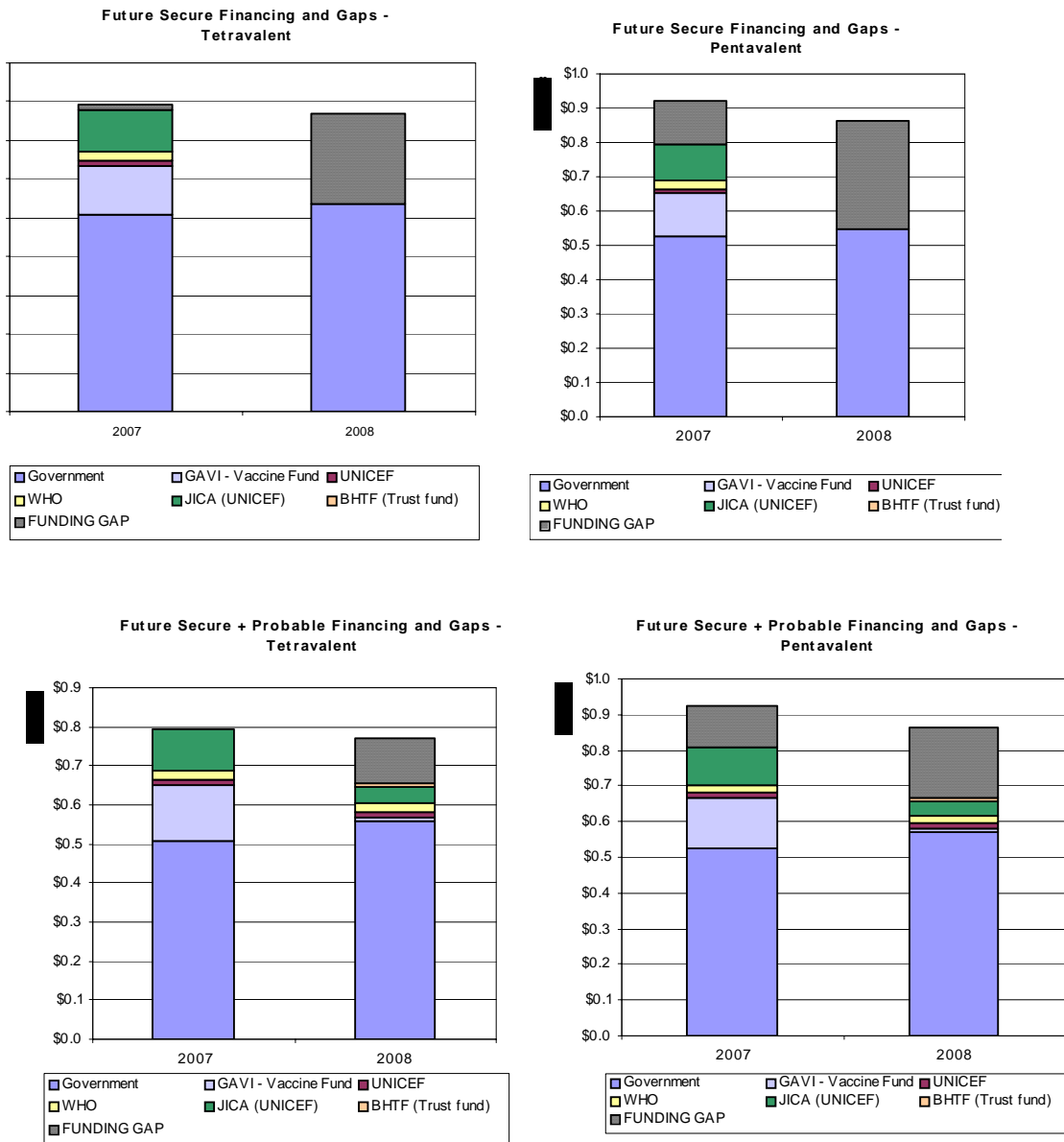


The following points emerge from the table and the various graphs:

1. The total resource requirements decreases in 2008; higher costs in 2007 can be attributed to a) capital costs b) relatively higher wastage rates and c) in case of scenario II, provision of buffer stock of the newly introduced vaccine in the first year.
2. The per capita resource requirements for scenario I remains same for the two years at US\$ 1.2; while average per capita resource requirement for scenario II is US\$ 1.4.
3. Routine outreach activities comprise the biggest source of costs, in the absence of campaign activities.
4. The secured funding sources for the year 2007 are the government of Bhutan, GAVI, WHO, UNICEF and JICA. For 2008, only source of secure funding is the government.
5. Taking into account secured funds only, the funding gap as a percentage of total needs for scenario I increase from 2 percent in 2007 to 30 percent in 2008.
6. For scenario II, government is committing US\$ 0.23 per dose of pentavalent for both the projected years. Taking into account secured funds only, the funding gap as a percentage of total needs for scenario II increase from 14 percent in 2007 to 36 percent in 2008; despite government contribution to pentavalent vaccine, this gap is mainly because GAVI and JICA fund – the regular donors for vaccine procurement – is not secure in 2008.

7. If both secure and probable sources are taken into account, there is no funding gap for scenario I in 2007; for 2008, it reduces to 15 percent. For scenario II, the corresponding figures are 12 and 23 percents for 2007 and 2008 respectively. BHTF has been included as a probable source of funding in 2008.
8. As the figure on composition on funding gap indicates, the main source of shortfalls is vaccines, as expected. In 2008, the cost of new vaccines largely remains unfunded.

The two sets of graphs below indicate the projections for future secure financing and gaps and future secure plus probable financing and gaps.



From the analysis it can be concluded that Bhutan can sustain the program continuing with traditional vaccines, including Hepatitis B. However, external support will be extremely crucial in initiating new or underused vaccines (Pentavalent, in the case of Bhutan). The overall size of the “gap” increases in 2008 as the contribution from other partners is no longer defined as “secure” and long-term projection and commitment is difficult to obtain. JICA, the traditional partner funding for the traditional vaccines, no longer seems to commit for it from 2008 onwards, and at the same time GAVI phase I funding ends in 2008. This together puts extra burden of vaccine procurement, making traditional vaccine under probable source and newer vaccines almost unfunded.

The options for dealing with these funding risks are: (i) Accelerating the potential improvements in programme efficiency – reduction in wastage rate; and (ii) Exploring various additional funding sources such as development loans.

The main effort would lie in making the probable sources, secure in the near future, so that there is no uncertainty of funding, even in the enhanced immunization programme with newer vaccines. However, while negotiating for the next round of funding for existing vaccines, introduction of Hib makes a stronger case, mainly because with the introduction of 2 dose vial, the net cost of new vaccine introduction reduces significantly. Bhutan Health Trust Fund remains an important source for vaccine procurement. EPI may advocate strongly for the secured commitment from BHTF, with the aim of increasing self-sustainability.

Currently, health sector comprises of 12 percent of total budget, and EPI comprises of about 4 percent of total health budget. The 10th Five Year development plan is expected to start in the year 2008/9 and MoH anticipates significant increases in the Health Sector allocations.

The major sources of “probable” funding are GAVI and JICA. The government is confident of continued support from WHO and UNICEF in the coming years. There is also a good possibility of support from the Government of Japan in the area of cold chain strengthening, like it has already done in the past, though since the funding is on annual basis, it may need a stronger advocacy for continued support next year

The government of Bhutan expects continued support from GAVI for initiating new vaccines like Hib in the future: if GAVI-II considers favorably its possible support for pentavalent (DPT+ Hib+ Hepatitis B) vaccine, it will give ample opportunity for the sustainability of program. One suggestion could be that the government secures funding for the tetravalent vaccines from sources other than GAVI, and seek GAVI support for the difference in the funding while introducing Hib vaccine.

Although the analysis is suggestive of some “real” risk to the financing of immunization services in 2008, part of the risk is simply due to the lack of the commitment by various partners in 2008. Nevertheless, the projected funding “gap” does suggest that there is a definite need to mobilize more funding for immunization services and to realize any efficiency gains that lower costs. This is particularly so if the ambitious objectives in introducing newer vaccines are to be realized. Clearly, the government of Bhutan will have to explore other possibilities from the different

sources like GAVI, BHTF and various development partners like JICA and Government of India etc for future funding.