Ministry of Health of Viet Nam

National Expanded Programme on Immunization

Multi-Year Plan for EPI
2006-2010

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List of Acronyms

AEFI	Adverse Events Following Immunization
AD syringes	Auto-Disabled Syringes
ADB	Asian Development Bank
BCG	Bacille-Calmette Guerine Vaccine
c-VDPV	Circulating-Vaccine derived polio virus
CBAW	Women in Child-bearing age group
DPT	Diphtheria-pertusis-tetanus vaccine
DPT3	Third dose of DPT vaccine
EPI	Expanded Program on Immunization
Hepb3	Third dose of hepatitis B vaccine
HPV	Human Papilloma Virus
GAVI	Global Alliance for Vaccines and Immunization
ICC	Interagency Coordination Committee
JE	Japanese Encephalitis
JICA	Japan International Cooperation Agency
MSV1	Measles vaccine first dose
MSV2	2^{nd} dose of measles vaccine
OPV	Oral Polio Vaccine
OPV3	Third dose of OPV vaccine
PATH	Program for Appropriate technologies in Health, an international NGO
SIA	Supplementary Immunization Activity
SNID	Sub-national Immunization Days
UNICEF	United Nations Children Fund
WHO	World Health Organization

Executive Summary

Governement of Vietnam has issued a legislative decree number 36 providing right to free health care to children less than six years of age in 2005 demonstrating its commitment to child health. A well functioning EPI is an important component of child health services, and government budget increased by almost 57% between 2001 to 2005, with almost all the six traditional antigens being financed from domestic resources.

Vietnam's EPI has lot of successes to its credit in the previous plan period (2001-2005). Most of the current vaccine preventable diseases—diphtheria, pertusis, measles, tetanus, polio—have been effectively controlled by keeping routine EPI coverage with six traditional antigens more than 90% among children less than 1 year of age. WHO validated eliminated of maternal and neonatal tetanus in 2005. Efforts were strengthened for measles eliminatin with setting up of case- and lab-based surveillance for measles with high quality SIAs in high-risk areas. Hepatitis B vaccine was successfully integrated with routine EPI in 2002-03 with GAVI support, increasing the HepB3 coverage from less than 20% in 2000 to more than 90% in 2005. Injection safety efforts got a boost with introduction of AD syringes in 2003. JE vaccination was expanded to cover almost 50% population in 2005 from domestic resources, along with maintaining vaccination of population in high-risk areas with typhoid and cholera vaccines.

However, there are more milestones and goals to be achieved in the current five-year plan (2006-2010). Some of these goals include measles elimination by 2010, hepatitis B control by 2012, nationwide expansion of JE vaccine by 2010, evaluation of new vaccines (Hib, rubella and rotavirus), and establishment of a nationwide AEFI system in 2008. The training systems for staff needs to be strengthened and systematized at all levels to improve their skills and capacity for better service delivery and program management. The plan document presents outline of programmatic strategies and activities to be conducted for achievement of these goals.

The total cost of EPI program excluding the cost/rental of health facility building and human resources will vary from US$11.2 million in 2006 to US$15.8 in 2008 to US$ 13.6 in 2010. Majority of these costs will be funded by Government budget, with JICA and Luxemborg providing funding for cold chain, and GAVI providing funding for introduction of 2nd dose of measles vaccine. The funds for proposed strengthening of cold chain at commune level still remains unfunded.

Part I

EPI in 2001-2005: Achievements and challenges

Vietnam has committed to the Millennium Development Goals and the Convention on the Rights of the Child. Vietnam is the second country to sign the international convention on children's right in 1990 showing country's commitment to children. Other Indicators of the Vietnamese Government's commitment are the various laws, directives and strategies related to the well being of children. A law on protection, care and education of children was promulgated in 1991 and improved in 2005, and a strategy for People's Health Care and Protection (2001-2010) was endorsed. The Ministry of Health issued several documents, including the National Nutrition Strategy (2001-2010), the National Plan on Safe Motherhood (2003-2010), the National Targeted Program on Reproductive Health (2006-2010) and the development of strategic directions in neonatal health.

Decree 36, issued in 2005, stipulates the right of children under six years of age to free health care (therefore being exempted from paying user fees). Until recently, though, this commitment has not been fully backed up by adequate allocation of financial resources. However, to support decree 36, the Government has earmarked about $ 5 per child per year to reimburse public health facilities for health care provided to children under six. This is an encouraging sign of Government commitment to child health and should lead to increased access to, and utilization of, health services for children, particularly for the most disadvantaged children, including poor and ethnic minority children.

An effective preventive health care system, critical for implementing EPI programme, has been established and operating effectively from national to the commune level. The financial and technical support provided by WHO, UNICEF, GAVI, JICA, PATH, government of Luxembourg and Japan greatly benefitted EPI in this period. Vietnam has been domestically producing nine out of 10 vaccines currently used in EPI: OPV, BCG, DPT, HepB, JE, Cholera, since 1997.

Table 1 provides a brief summary of situation analysis of EPI program between 2001 and 2005. The key achievements EPI achievements between 2001 and 2005 can be summarized as below:

- **Effective control of vaccine preventable diseases through routine high immunization coverage**:
  All antigens included in EPI had coverage over 90%[1], substantially reducing the morbidity and mortality due to diphtheria, pertusis and measles, and keeping the country polio-free. Very high coverage was achieved in the supplementary immunization campaigns conducted for measles in 2002 and 2003 targeting 15 million children between 9 months and 10 years, and for polio—targeting 2.5 million children less than five years of age living in high-risk provinces in 2005.

[1] Only in year 2002, the coverage of DPT3 dropped to 89.7% due to shortage of the vaccine.

⇨ **Elimination of maternal and neonatal tetanus**: WHO validated the elimination of maternal and neonatal tetanus in December 2005. The incidence of neonatal tetanus declined from 27 per 1000 births in 1985 to 0.4 per 1000 births in 2005.

⇨ **Integration and expansion of hepatitis B vaccine**: Hepatitis B vaccine was fully integrated with EPI in 2003 with GAVI support. The Hepb3 coverage increased from less than 20% in 2000 to more than 90% in 2005. Hepatitis B birth dose policy was changed from being provided in the first 3 days of birth to within 24 hours of births. With regular inputs in training, cold chain, and IEC, the birth dose coverage of 62.2% was achieved in 2005.

⇨ **Introduction of AD syringes**: Vietnam EPI introduced AD syringes on a limited scale in 2001, and expanded nationwide (except for BCG syringes) in 2003 with GAVI support.

⇨ **Establishment of case-based surveillance for measles:** The measles case-based surveillance system has been established for the first time during this period in support of its measles elimination goal and has been working effectively.

⇨ **Expansion of vaccination for Japanese Encephalitis (JE)**: JE vaccine was first introduced in year 1997. During last plan, JE vaccination for children under five years of age was expanded from 15% in 2000 to 46.6% of the eligible population in 2005.

⇨ **Maintaining vaccination for other under-utilized vaccines**: Vaccination for typhoid (3-10 years) and cholera (2-5 years) was maintained in high-risk areas achieving high coverage in the targeted group.

⇨ **Strengthening of cold chain**: All provincial and district storekeepers were trained on vaccine store and management. An Effective Vaccine Store Management assessment (EVSM) was conducted in May 2005. The plan was prepared for the replacement of refrigerators at provincial and district levels.

⇨ **Achieving self-sufficiency in vaccine production**: Substantial progress was made in the facility of measles vaccine production. Completion of this facility will help to achieve self-sufficiency in measles vaccine.

⇨ **Improved financial sustainability of the program**: The Government budget for EPI increased by 57% during this plan from VND 70 billion in 2001 to VND 110 billion in 2005.

1.2 Unfinished work and challenges ahead for next plan [2006-2010]

Table 2 provides a brief description of the key findings and recommendations of different research studies and EPI assessments done in this period. Briefly, the key challenges in the next EPI plan can be listed as below:

- ⇨ Transition to domestic funding for Hepatitis B in 2007 and increasing the coverage with birth dose
- ⇨ Transition to domestic funding for AD syringes in 2007 and developing the systems for safe disposal of AD syringes as part of overall national health care waste disposal.
- ⇨ Measles elimination by 2010: Having achieved a very effective control of Measles, Viet Nam wants to go the next phase of measles elimination
- ⇨ Regular replacement of cold chain as planned in the national plan for cold chain replacement.
- ⇨ More effective control of JE by expansion of JE vaccine nationwide to cover 100% eligible population
- ⇨ Evaluation of other new vaccines (e.g. Rubella and Hib) for introduction
- ⇨ Strengthening of AEFI system at all levels
- ⇨ Strengthening the system of supportive supervision at all levels by regular trainings and assessments
- ⇨ Establishing a system for regular training of EPI health workers at all levels with special focus on commune level health workers

Table 1: Situational analysis by accelerated diseases control initiatives, based on previous years' data

Component	Suggested indicators	National				
		2001	2002	2003	2004	2005
Routine DPT3 Coverage	*DPT3 coverage*	96.2%	74.8% *	100.2%	96.2%	94.6%
	% of district with > 90% coverage	93%	87.7%	87%	91.8%	88.3%
	National DPT1-DPT3 drop out rate	ND	12.3	(-4)	5	(-0.3)
	Percentage of districts with DPT1-DPT3 drop out rate>10	2.7%	44%	3%	2.7%	0%
Polio	*OPV3 coverage*	96.4	91.6	95.8	96.3	94.5
	Non polio AFP rate per 100,000 children under 15 yrs. of age	1.09	1.36	1.19	1.48	1.46
	SNID (high risk areas)					
	Coverage	97.8%	98.5%	96.6%	97.2%	96.6%
Maternal and neonatal tetanus	*TT2 +PW coverage*	88.6%	89.3%	91%	89.5%	93%
	TT2+CBAW coverage in selected districts	94.5%	91.2%	92.5%	90.3%	99%
	Protection at birth (PAB) again neonatal tetanus	83.5%	83.7%	85.4%	85.3%	85.9%
	Number of high-risk districts	14	25	28	4	0
	Organization of SIA	Y	Y	Y	Y	Y
Measles	*Measles coverage*	97.6%	95.7%	93.2%	97.1%	95.2%
	No. of measles cases reported	12,058	6,755	2,297	217	410
	SNID: Coverage		99.34	99.1	94.8	
	Age group		(9m- 10y)	(9m – 10y)	(12 – 18y)	
New vaccines	*HepB3 coverage*	96.5%	65.1%	78%	94.2%	93.7%

Component	Suggested indicators	National				
		2001	2002	2003	2004	2005
Immunization safety	*Percentage of districts have been supplied with adequate (equal or more) number of AD syringes*[2]			50%	100%	100%
Vaccine supply	*Stock-out at national level in last one year*	No	Yes (for 3 months for DPT	No	No	No
Communication	*Availability of a plan*	Yes	Yes	Yes	Yes	Yes
Financial sustainability	*Percentage of total routine vaccine spending financed using Government funds (including loans and excluding external public financing)*	45%	50%	60%	70%	70%
Linking to other health interventions	systematic linking of immunization services with delivery of other interventions (Malaria, Nutrition, Child health) established	Yes	Yes	Yes	Yes	Yes
Human resources availability	*No. of health workers/ vaccinators per 10,000 population*	4	4	4.5	4.5	4.5
Management planning	*Regular collection of district indicators at national level*	N	N	Y	Y	Y
NRA	*Number of functions conducted*			4	4	4
Research/studies	*Number of vaccine related studies conducted/ being conducted*	4	5	6	6	6
ICC	Number of meetings held last year	2	2	3	2	2
Waste disposal	Availability of a waste management plan	N	N	N	N	N
Programme efficiency	Vaccine wastage monitoring at national level for all vaccines	N	N	Y	Y	Y

***: DPTShortfall in 2002**

[2] AD syringes are not being used for BCG vaccinations due to lack of a local supplier

Table 2: Key recommendations from previous evaluations, studies and assessments

Name and year	Main Findings/recommendations	Objectives for the new plan
National EPI review 2003	▪ Develop and implement a comprehensive human resource strategy including a strategy for supportive supervision at each level to strengthen EPI manpower and skills. ▪ Regular assessment of coverage data quality and development of a standard method to estimate the target population. ▪Collaboration with curative services to develop a comprehensive national policy on injection waste disposal and on vaccination of infants and children at hospitals. ▪ Nationwide expansion of AEFI surveillance with a standard reporting, investigation and response system.	⇨ Regular training of EPI health workers at all levels with special emphasis on commune health workers. ⇨ Introduction of supportive supervision through training at all levels. ⇨ Introduction of hepatitis B vaccine birth dose in all district and provincial hospitals. ⇨ Developing systems for safe disposal of AD syringes ⇨ Set up AEFI system at all levels
National analysis of system wide barriers to health	- Shortage of financial resources for EPI activities is the most important barrier to EPI. - Shortage of skilled human resources. Manpower provided has not met the increasing demand of EPI services, especially in mountainous and remote areas	-regular advocating with MOH and finance department to increase resources for EPI. -Regular training of EPI workers, especially at the communes in mountainous, remote areas and in communes with high proportion of ethnic minority's people.
RED evaluation	Need to improve supportive supervision	Regular supervision and follow-up in priority areas

Part II

Multi-year plan for EPI: 2006-2010

This plan is built on the achievement of the previous plan to further consolidate and maintain the gains made, and set new milestones and targets. Table 3 provides in brief the national goals and milestones vis a vis the regional and global goals between 2006 and 2010. Table 4 presents all the national goals and objectives in the order of priority. Table 5 presents timetable for different activities to be undertaken to achieve different goals and objectives.

The plan also intends to strengthen the linkages of EPI with broader health systems. Introduction of birth dose for hepatitis B vaccine will be exploited to streghten the overall linkages with maternal health services. Similarly, the efforts to improve immunization safety will link with the overall plans for health care waste disposal and management.

2.1 Maintaining high immunization coverage with current vaccines to keep these diseases under control:

Though most of the vaccine preventable diseases such as diphtheria, pertusis, measles, hepatitis B, polio are largely controlled, with number of cases and deaths from diseases at historical lows, these diseases are not yet eradicated. Hence, there is a need to maintain high coverage with these antigens to maintain the gains in reduction in disease mortality and morbidity. This is very well exemplified by the large-scale outbreaks of diphtheria and pertusis in Eastern Europe after 1990. Even for polio that has been eradicated nationally, there is a need to maintain high coverage levels until the disease is eradicated globally. The re-introduction of polio- virus in Indonesia and Bangladesh after staying polio free for almost 10 years, and emergence of c-VDPV in some countries in the Region emphasizes the need to continuously maintain high coverage of OPV3.

Hence one of the key objectives of the plan is to maintain more than 90% coverage in each district with all the seven vaccines included in the national schedule--BCG, DPT, Hepatitis B, Measles, OPV for children under 1 year old. Another objective will be to sustain the high coverage of TT2+ among pregnant women to maintain the maternal and neonatal tetanus elimination status.

2.1.1 Programmatic strategies

— Continue to improve the skills and capacity of relevant staff at all levels

- Developing new training materials and adapting existing WHO training materials for Vietnam such as mid-level managers training modules.
- Regular assessment of training needs of staff at different service delivery levels
- Training of commune health workers in ‘Immunization in Practice’ including AEFI

- Vaccine logistics and management to ensure no vaccine stock-outs in the plan period
- Improving the cold chain by establishing a national inventory of cold chain equipment that will be regularly updated.
- To reduce vaccine wastage levels by improving vaccine logistics and management and efficiency of service delivery sessions.
- Improving Immunization Safety by

  - *establishment of an effective AEFI system by 2008*
  - establish a national data base to enable district level monitoring
  - Improving the skills and capacity of national regulatory authority by regular training of the relevant staff in the six key NRA functions
  - Regular training of EPI directors and health workers in AEFI investigations

- Better data management and analysis to improve program performance

  - Maintaining and improving the national database of indicators on coverage, vaccine wastage and other program indicators for each district

2.1.2 Activities and cost

Table 5 presents the different activities to be undertaken to strengthen the routine immunization and the time-line for their implementation. Most of these activities are continuing activities from the last plan. There will be no incremental costs on account of human resources or health facilities building etc. However, additional investments will be made to improve the cold chain with the support of JICA and Government of Luxembourg, as detailed in section 3 on costs and financing. In addition, support from both Government budget and potential funding from GAVI will be used to carry out additional training of the staff in microplanning, AEFI investigations, and supportive supervision.

The current EPI card held by parents of the child as a record of child's immunization history will be revised in the current plan to make it more effective tool of IEC for the parents. Please see section III, table 16 for the estimated operational costs to streghten the routine immunization.

2.2. Achieving measles elimination by 2010

The measles incidence and mortality in Viet Nam was at all-time low at the end of 2005 with only 410 measles cases reported in 2005 despite much enhanced case- and lab-based surveillance. However, since in case of measles, no control is good control, a national goal of measles elimination is set by 2010. Viet Nam hopes to achieve the goal before the Regional target date of 2012 (Table 3). The achievement of measles elimination goal is prioritized at # 8 (Table 4).

2.2.1 Programmatic strategies and milestones:

- Introduce a routine second dose by beginning of 2007 at six years of age
- Maintenance of high coverage with two doses of measles vaccine, reaching at least 95% of all children in all the districts.
- Supplementary immunization activities for children living in high-risk areas in 2007-08
- Strengthening of laboratory- and case-based surveillance for measles
- Putting in place a system for checking of immunization records at school entry

2.2.2 Activities:

- IEC activities to generate awareness among health workers and parents before introduction of 2nd dose of measles: Jan-Dec 2006
- A pilot project to test the feasibility of introduction of 2nd dose of measles vaccine at six years of age,: Nov.- Dec 2006
- Establishing a system of mandatory school entry check with training of teachers and involvement of education department: January to December 2007
- Regular monitoring and supervision of disaggregated coverage data by district to ensure achievement of 95% coverage levels.
- Supplementary immunization campaign in 153 districts in 17 provinces in 2007 and 52 districts in five provinces in 2008.
- Training of laboratory personnel, proficiency testing of national measles laboratory
- Pilot of dry blood spot test for measles testing.

2.2.3 Projected cost:

Assuming, that apart from one-time IEC, training of personnel, the only incremental costs of introducing 2nd dose of measles vaccine will be that of cost of vaccine and injection supplies. No incremental costs will be incurred for additional cold chain requirements or additional human resources requirements. It is estimated that the annual incremental cost of introducing measles 2nd dose will be about $600,000, with the total cost over five years to be around $3.1 million. The measles 2nd dose will be introduced with GAVI support. GAVI will support vaccine and injection equipment cost for five years (2007-2011). The government is expected to take over the funding after 2011. Please see table 6 for detailed breakdown of the cost and financing.

Table : Incremental cost of introducing 2nd dose of measles vaccine

Item	2007	2008	2009	2010	2011	Total
Vaccine	$455,596	$462,430	$469,366	$476,407	$483,553	$2,347,352
Injection Supplies	$126,451	$128,348	$130,273	$132,228	$134,211	$651,511
One-time IEC	$50,000	0	0	0	0	$50,000
One-time training of personnel	$50,000	0	0	0	0	$50,000
Total	$682,047	$590,778	$599,639	$608,635	$622,999	**$3,098,863**

In addition, the incremental cost of proposed measles SIA in high-risk areas will cost $4.1 million. The costs are proposed to be financed through GAVI funds to be channeled through UN foundation.

Table : Incremental cost of financing Measles SIA in 2007 and 2008

	2007	2008	Total
Vaccine	**$988,334**	**$355,705**	$1,344,039
Injection supplies	**$315,697**	**$113,621**	$429,318
Operational costs (per diem, transport)	$2,334,548	$840,213	$3,174,761
Total	$3,638,579	$1,309,539	**$4,4,948,118**

2.3 Improved hepatitis B control

As referred in table 3, the main objective of hepatitis B control through universal hepatitis B vaccination is to reduce the hepatitis B chronic infection rates to less than 2% by 2012 by

- Maintaining hepB3 coverage more than 95% in all districts in country
- Increasing the timely birth dose coverage to 70% by 2008 and 80% by 2010

2.3.1 Programmatic strategies:

- Transition to domestic funding for hepatitis B vaccine by 2007
- Achieve VVM labelling of domestically produced hepatitis B vaccine by 2008
- Pilot of out of cold chain delivery of birth dose
- Universal expansion of hepatitis B birth dose in hospital in both public and private sector
- Priority provision of cold chain equipment in labor rooms in the hospitals and other health facilities
- Introduce compulsory immunization for health care workers

2.3.2 *Activities* and costs

- Microplanning for increasing the rate of Hepatitis B birth dose coverage in all remote districts
- Monitoring and supported supervision to district and commune levels
- Introduction hepatitis B birth dose in all district and provincial hospitals
- Other program activities as applicable to strengthening overall routine immunization services
- Discuss with therapy Dept. of MoH to introduce Hep. B immunization for health care workers

The support from GAVI will be end in June 2007. Singe dose/vial vaccine and injection equipment will be received from GAVI for 2007. The government will take over the funding from July 2007. Please see table 6 for detailed breakdown of the cost and financing.

2.4 Expansion of under-utilized vaccines:

Some vaccines are currently provided either only to high-risk population (e.g. cholera and Typhoid) or are being introduced in a phased manner (JE). At the end of 2005, the coverage of JE vaccine was only around only 30-40% of total eligible population. It is proposed to do

- Nationwide expansion of Japanese encephalitis vaccine in 2007 if ADB funding becomes available or introduce in a phased manner to reach nationwide expansion in 2010
- Maintain typhoid vaccination for selected high-risk population as in previous plan
- Maintain cholera vaccination for selected high-risk population as in previous plan

2.4.1 Key programmatic strategies:

- Expansion of JE vaccine to the whole country by 2010. A catch-up campaign for children 2-5 years will be implemented in the areas/provinces where the vaccine will be introduced for the first time.
- Strengthen the surveillance system for Japanese encephalitis.
- Evaluation of the impact of typhoid and cholera high-risk vaccination strategies to justify their continuation through the plan period.
- IEC activities to generate awareness among health workers and parents

2.4.2 *Activities and costs*:

No additional activities are envisaged other than those performed in previous plan for cholera and typhoid. However, a one-time evaluation of the impact of high-risk vaccination strategies will be undertaken for cholera and typhoid to adjust the vaccination strategies during the plan or in the next plan (Table 5).

The incremental cost of nationwide expansion of JE vaccination will be about $ 500,000 above the current financing levels in 2006, which may be financed through ADB grant from 2007 to 2010 or through the government budget if ADB financing does not come through. Please see section III for details on costing and financing.

2.5 Evaluation of other new and under-utilized vaccines for introduction into EPI programme.

Some diseases such as Hib, HPV mumps, rubella, pnemococcus and rotavirus, for which vaccines are either available or will be available shortly, but are not used in the EPI, are perceived to cause high levels of morbidity, disability and mortality. For example, in 2004 and 2005 there were over 20,000 cases of mumps and rubella, respectively each year. In the Rubella outbreak in Cu Chi district of HCM city, more than 1000 cases were detected, 70% of which were among women, and over 10% among pregnant women. However, limited financial resources available with EPI despite substantial increase in government budget in last plan period, implies that is will not be possible to introduce all the new and underutilized vaccine. Rather it will require a very careful evaluation of the available under-utilized or current vaccines in term of their public health impact and cost-effectiveness. Some of the vaccines that are currently being considered for evaluation include vaccine for hib, rubella and rotavirus.

Some of the key objectives during this plan period are *to:*

- conduct disease burden studies and cost-effectiveness evaluation for Hib vaccine by 2007;
- conduct disease burden and cost-effectiveness evaluation for rubella vaccine by 2007; and
- sustain surveillance systems for assessment of rota virus disease burden

2.5.1 Programmatic Strategies:

- Rapid assessment of Hib disease burden using RAT tools and triangulation of results with other existing data—2006
- Introduction of Hib vaccine if justified on the basis of disease burden and cost-effectiveness
- Assessment of need for rubella vaccine in 2007
- Introduction of rubella vaccine if justified on the basis of disease burden and cost-effectiveness
- Supporting sentinel rota virus surveillance in selected hospitals

2.5.2 *Activities and costs*:

One of the key activities for new/underutilized vaccine will be the assessment of disease burden, and cost-effectiveness. Please see table 5 for time-line of these activities. The cost for Hib sentinel surveillance, rapid assessment and cost-effectiveness will be potentially

covered by GAVI through Global Hib initiative, while the sentinel rotavirus surveillance is being sponsored and financed by RotaADIP. The funding for one-time assessment of rubella vaccine will be secured either from government resources or from other donor/partners.

2.6 Increasing financial sustainability of the EPI:

One of the long-term key objectives of the EPI is to reduce its dependence on short-term unpredictable financing from external donors and to carry out long-term financial planning to ensure predictable and adequate financing from internal and external resources. During this plan period, government budget will be increased to take up the financing of hepatitis B vaccine, AD syringes and expansion of JE vaccine.

2.6.1 Programmatic strategies:

- Increasing the government EPI budget to include financing for hepatitis B vaccine and AD syringes
- Regular updating (at least annually) of the costing and financing of the EPI work plan and multi-year plan in consultation with government (finance and ministry of health) and external donors/partners.
- Regular sharing of the fully-costed plan in the ICC meeting

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2.6.2 Activities and costs:

Different training activities will be organized to build the financial planning and management capacity of the key staff at national and provincial level (Table 5). The total additional burden on the government EPI budget due to transitioning to domestic funding for AD syringes and hepatitis B vaccine will ranges from more than $2 million for AD syringes and $ 1.8-$1.9 million for hepatitis B vaccine (please see Section III for details). The total cost of the whole EPI program as detailed in section III has been estimated to be $11.2 million to $13.6 million excluding the cost of human resources and capital/maintenance costs for buildings of health facilities.

2.7 Injection safety

Since most of the immunization are still given by injections, ensuring injection safety, which includes observing safe injection practices during service delivery to minimize risk of injection-related infections to both the client and the health care provider and safe collection and disposal of the used syringes and needles. In the last plan, major progress was made in ensuring injection safety by introduction of autodisabled (AD) syringes for all immunization except for BCG, which reduced the risk of injection-related infections to the child by preventing re-use of the syringes by health care providers. In the last plan, GAVI provided funding for introduction of AD syringes for three years (2004-2006). In addition, the EPI injections comprise only a small fraction of overall injections, and hence, EPI needs to work with curative care departments to development holistic national health care waste management plans. So the key objectives in this plan include:

- continuation of use of AD syringes by securing domestic funding for AD syringes in 2007;

- developing a national health care waste management/ disposal *plan; and*
- developing systems for safe disposal of AD syringes

2.7.1 Programmatic strategies:

- Introducing AD syringes for BCG
- Including a budget line for procurement of AD syringes from domestic budget in 2007
- Implementing vaccine delivery assessment will include assess waste treatment and to advocate the use of AD syringes for other non-EPI injections as well.

2.7.2 Activities and costs:

Please refer to Table 5 for the time-line of different activities planned to improve injection safety. The total cost of AD syringes and safety boxes will vary from US$ 2 million in 2006 to US$ 2.4 million. The cost will increase from 2007 due to introduction/expansion of new and underutilized vaccines such as JE. In addition, cost of injection materials for SIAs activities will vary from $225000 to $298000 in different plan period (please refer to section III for more details). Most of these costs from 2007 will be financed through government budget except for the vaccine supplies received from GAVI that come bundled with injection supplies.

Table 3: Global goals, regional goals, national objectives and milestones

Global goals (until 2010)	**Regional goals (until 2010)**	**National objectives based on global and regional goals**
Coverage[1] 1. By 2010 or sooner all countries will have routine immunization coverage at 90% nationally with at least 80% coverage in every district	Same as the global goal	90% DPT3 in every district by 2010
Polio[1] 2. By 2005, the world will be certified polio-free	Region certified polio free in 2000. Maintain polio-free status	Maintain polio-free status
Measles[2] 3. 90% reduction in infant mortality by 2010 compared to 2000	Elimination by 2012	Elimination by 2010
NT[1] 4. Elimination in every district by 2005	Same as global goal. Five countries[3] in Region yet to achieve elimination.	maintenance of elimination status
HepB[3] 5. By 2002, 80% of all countries with adequate delivery system will have introduced hepatitis B vaccine. By 2007, all countries will have introduced hepatitis B vaccine. By 2007, all countries	Reduce HBsAg+ rate to 2% in children under 5 by 2012	Reduce HBsAg+ rate to 2% in children under 5 by 2012
JE vaccine		95% of target population will receive JE vaccine by 2010

[3] These countries include Cambodia, China, Lao PDR, Philippines and Papua New Guinea

Table 4: National priorities, national objectives, milestones, and order of priority

Description of national priority	National objectives based on national priority	Milestones	Order of priority
Measles elimination	Introduction of 2nd dose of measles	Introduction of 2nd dose by 2007 Measles elimination by 2010	8
Expansion of JE vaccine	Nationwide expansion of JE vaccine to all children under five years of age	60% population by 2007 70% by 2008 80% by 2009 100% by 2010	7
Hepatitis B control	Increase coverage of birth dose of hepatitis B vaccine	70% by 2008 80% by 2010	6
Financial sustainability	Transition to domestic funding for Hepatitis B, AD syringes by 2007. Increase national funding for vaccines by 10% per year	2006: cMYP 2006 - 2010 for EPI will be approved from MOH and Gov.	2
No stock-outs of all EPI vaccines	No stock-outs nationally by 2007	2007: 0% districts with no stock outs	1
Enhance national immunization advocacy and communications	Create and implement new plan in 2007 and 2008	2007: Expert group meeting to work on the plan	3
Safe disposal of waste	All AD syringes disposed safely by 2008	2007: Incinerators in 25% of districts 2008: Incinerators in 50% of districts	5
Improving programme efficiency	By 2007, all provinces to review session plans regularly to ensure efficient use of sessions	2007: 75% provinces develop and review session plans 2008: All provinces develop and review session plans	4

Table 5: Timetable of activities for EPI 2006 - 2010

Key activities	2006	2007	2008	2009	2010
A. Strengthening Routine Immunization					
1. Micro-planning workshops	x	x	x	x	x
2. Supervisory follow-up in priority districts	x	x	x	x	x
3. Establish national database of district indicators	x	x	x	x	x
4. Adapt WHO training materials (e.g. MLM modules)	x	x			
5. Training need assessment of staff at different service delivery levels		x	x		
6. Training on IIP include AEFI for communes health workers	x	x	x	x	
7. Include AEFI national database for district monitoring		x	x	x	
Vaccine supply quality and logistics					
8. Replace 10% cold chain equipment every year	x	x	x	x	x
9. Monitor stock management in every province	x	x	x	x	
10. Set up a monitoring vaccine wastage network at sentinel sites	x	x			
Advocacy and communications					
11. Conduct ICC meeting quarterly	x	x	x	x	x
12. Develop key message for strengthening routine immunization		x	x	x	
13. Include MNTE in key messages on routine	x	x	x		
Programme management					
14. Build financial planning and management capacity			x	x	x
15. Review policies for outreach immunization services			x		
16. Include session plan review in supportive supervision			x	x	x
17. Organize workshops to review strategies for sustaining MNTE	x				
18. Conduct EPI meeting with regional and selected provinces staff quarterly	x	x	x	x	x
B. Disease specific activities					
19. Maintaining Polio-Free Status: Two polio sub-NIDs for children <5yr in high risk areas	x				

Key activities	**2006**	**2007**	**2008**	**2009**	**2010**
Measles Elimination Initiative					
20. Measles keep-up campaign for 2-18yrs in mountainous areas		x	x		
21. Introduction of measles 2nd dose		x			
Hepatitis B control Initiative					
22. Monitoring HepB 3 coverage in every district	x	x	x	x	x
23. Pilot HepB birth dose use in selected hospitals	x	x	x		
24. Assessment of Hepatitis B birth dose in mountainous areas and possible introduction of out of cold chain policy	x	x	x	x	x
25. Following up with vaccine manufactures to ensure VVM labelling on domestically produced vaccine		x	x		
JE control					
26. Expansion of JE vaccine to cover the whole eligible population*		x			
27. Catch-up campaign for 2-5 years in the new areas of introduction	x	x	x	x	x
Typhoid and Cholera control					
28. Maintenance of high risk immunization for typhoid and cholera	x	x	x	x	x
29. Evaluation of the impact of high-risk vaccination strategy		x			
C. Surveillance					
27. Active surveillance for AFP, measles and MNT in all districts	x	x	x	x	x
28. Integrate measles/polio laboratory support, training, logistic and supplies	x	x			
29. Establish sentinel surveillance sites for Hib and other potential diseases for which new vaccines may be available		x	x		
30. Active surveillance improvement for JE in 2 pilot provinces	x	x			
31. Continuation of Rotavirus sentinel surveillance	x	x			
D. Injection safety					
32. Introduce AD syringes for BCG			x	x	x
33. Improve district reporting of AD supply and use			x	x	x
34. Hold consultation and develop national policy for health care waste disposal including safe disposal of AD syringes	x	x	x	x	x

Key activities	2006	2007	2008	2009	2010
E. Evaluation of new and underutilized vaccines					
34. Cost-effectiveness analysis of Hib vaccine		x			
35. cost-effectiveness analysis of Rubella vaccine		x			

Part III

Costing and financing of EPI: 2006-2010

The costing of EPI multiyear plan for 2006-2010 included the costing for vaccines, injection equipment and supplies, cold chain equipment and operational costs. No costing was done for the capital cost of buildings and rentals and personnel salary and wages costs, as these items will not be changed during the current plan (e.g. no additional staff are planned to be hired), nor EPI has the powers to change the salary and wages of the staff. A detailed excel worksheet accompanies this description to provide the formulas, assumptions and basis of different calculations.

3.1 Vaccines

3.1.1 *Vaccines for routine EPI programs*

The total cost for *traditional* six antigens (BCG, DPT, MSV1, OPV) for children under 1 years of age and for tetanus immunization for pregnant and childbearing women as per the current immunization schedule is estimated to be about $ 2.2 million per year (Table 6). Majority of these vaccines costs will be financed from government resources, except for 42% of the first dose requirement of measles vaccine supported by JICA in 2007 (confirmed) and 2008 (probable).

Among *underutilized* vaccines, Vietnam currently provides hepatitis B vaccine (monovalent) to all the eligible populations, and plans to expand the JE vaccination to cover 100% of all targeted population by 2010[4]. The cost of these vaccines ranges from $2.4 million in 2005 to $3.1 million in 2010. All the cost of these vaccines will be borne by the government in 2010, as government will take over the funding of hepatitis B from GAVI starting from 52% in 2007 to 100% in 2008.

However, the proposed introduction of measles 2nd dose will increase the cost of the vaccines from $4.7 million to $ 5.3 million in 2007. The total cost of vaccines as per the current plan will range from $4.7 million in 2006 to $5.9 million in 2010. These do not include the costs of potential introduction of Hib or rubella vaccines.

[4] By 2007 if ADB support for Vaccine procurement is confirmed

Table 6. Projected cost of traditional, underutilized and proposed new vaccine introduction during 2006-2010

Name of Vaccine	2005	2006	2007	2008	2009	2010
Traditional antigens						
BCG	$283,639	$289,529	$285,709	$289,995	$286,389	$290,685
DPT	$578,220	$578,834	$569,713	$561,252	$561,414	$561,695
OPV	$402,073	$414,743	$407,600	$413,714	$406,999	$413,104
Measles first dose	$583,862	$591,359	$590,851	$590,487	$590,263	$564,882
TT for pregnant women	$168,675	$165,829	$165,687	$168,172	$168,069	$170,590
TT for child bearing women	$216,522	$219,769	$219,580	$222,874	$222,737	$226,078
subtotal	*$2,232,991*	*$2,260,064*	*$2,239,140*	*$2,246,494*	*$2,235,872*	*$2,227,034*
Underutilized						
Hepatitis B	$1,858,234	$1,895,244	$1,855,778	$1,883,615	$1,911,869	$1,940,547
Japanese encephalitis	$559,207	$609,008	$741,772	$878,381	$1,018,922	$1,228,120
subtotal	$2,417,441	$2,504,252	$2,597,550	$2,761,996	$2,930,792	$3,168,667
Current traditional+underutilized	*$4,650,432*	*$4,764,316*	*$4,836,691*	*$5,008,490*	*$5,166,663*	*$5,395,701*
New introductions						
Measles 2nd dose	$0	$0	$455,596	$462,430	$469,366	$476,407
subtotal	*$0*	*$0*	*$455,596*	*$462,430*	*$469,366*	*$476,407*
GRAND TOTAL	**$4,650,432**	**$4,764,316**	**$5,292,286**	**$5,470,920**	**$5,636,029**	**$5,872,108**

Table 7. Summary of Vaccine financing for routine EPI program between 2005 and 2010

	2005	2006	2007	2008	2009	2010
Traditional six antigens	*$2,232,991*	*$2,260,064*	*$2,239,140*	*$2,246,494*	*$2,235,872*	*$2,227,034*
Govt	$2,232,991	$2,260,064	$1,989,140	$1,996,494	$2,235,872	$2,227,034
JICA	0	0	$250,000	$250,000	0	0
Current underutilized	*$2,417,441*	*$2,504,252*	*$2,597,550*	*$2,761,996*	*$2,930,792*	*$3,168,667*
Govt	$912,272	$969,104	$1,706,776	$2,761,996	$2,930,792	$3,168,667
GAVI	$1,505,169	$1,535,148	$890,774	$0	$0	$0
New introduction (MSV2)	*$0*	*$0*	*$455,596*	*$462,430*	*$469,366*	*$476,407*
GAVI	$0	$0	$455,596	$462,430	$469,366	$476,407
GRAND TOTAL	**$4,650,432**	**$4,764,316**	**$5,292,286**	**$5,470,920**	**$5,636,029**	**$5,872,108**

3.1.2 Vaccines for use during Campaigns

Only, two SIAs—one high risk campaign for OPV vaccination in 2007 and other for measles vaccine in 2007 and 2008 is planned. In addition, one-time catch-up campaign for children 2-5 years will be organized for Japanese encephalitis wherever the vaccine will be introduced during this plan period, followed by regular vaccination starting at age 1. In addition, typhoid and cholera vaccines are provided to selected high-risk population group in the age group, though on a regular basis, but in a campaign mode[5] (please see annex 2 on immunization schedule). The total cost of the vaccines to be used in different SIAs will range from $1.5 million in 2005 to $1.9 million in 2007 to $1.1 million in 2010 (table 8).

While the SIAs for polio, JE, cholera and typhoid will be financed through the government resources (Table 9), the measles SIAs are planned to be financed through GAVI funds available through UN foundation. However, the funding for JE catch-up campaigns is not yet fully secured, with only 50% of current cost likely to funded by government.

Table 8. Projected cost of vaccine during campaigns 2006-2010

Type of SIA	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Polio	$170,411	$160,241	$0	$0	$0	$0
Measles	$0	$0	$988,334	$355,705	$0	$0
Japanese encephalitis	$159,525	$184,412	$352,595	$357,759	$365,135	$553,235
Cholera	$650,191	$592,941	$423,529	$423,529	$423,529	$423,529
Typhoid	$517,219	$619,624	$168,988	$168,988	$168,988	$168,988
TOTAL	**$1,497,346**	**$1,557,217**	**$1,933,447**	**$1,305,982**	**$957,653**	**$1,145,753**

Table 9. Summary of Vaccine financing for campaigns between 2005 and 2010

	2005	2006	2007	2008	2009	2010
Total cost	$1,497,346	$1,557,217	$1,933,447	$1,305,982	$957,653	$1,145,753
Government	$1,497,346	$1,557,217	$768,815	$771,397	$775,085	$869,135
GAVI through UN foundation	$0	$0	$988,334	$355,705	$0	$0
Unsecured (for JE catch-up)	$0	$0	$176,298	$178,880	$182,568	$276,618

[5] Both Cholera and typhoid vaccines are not provided through the health facilities on regular basis, but through special annual campaigns targeting specified age group children in selected high-risk areas.

3.2 Injection equipment and supplies

Vietnam introduced domestically produced AD syringes (except for BCG) in 2003 with GAVI support. The government of Vietnam will take over the funding of AD syringes from GAVI in 2007. In addition, it intends to introduce the AD syringe for BCG, which is currently not manufactured in the country. However, the syringes for the new vaccines (e.g. for MSV2), if support becomes available from GAVI, will come from GAVI as well. The total cost of the AD syringes and safety boxes will range from $1.9 million in 2005 to $2.4 million in 2010 (Table 10). Majority of these costs will be financed by government beginging from 2007, except for the new vaccine introduction, which will be financed by GAVI (Table 11).

Hence, funding for AD syringes and safety boxes is fully secured during this five-year plan period.

Table 10. Cost of injection equipment supplies (AD syringes and safety boxes) for routine EPI

	2005	2006	2007	2008	2009	2010
Traditional six antigens						
BCG	$139,482	$142,379	$144,297	$146,462	$148,447	$150,674
DPT	$395,116	$408,295	$414,419	$420,635	$426,945	$433,349
Measles first dose	$141,418	$143,234	$145,247	$147,292	$149,370	$151,115
TT for pregnant women	$259,563	$255,184	$259,012	$262,897	$266,841	$270,843
TT for child bearing women in high risk areas	$333,191	$338,189	$343,261	$348,410	$353,637	$358,941
subtotal	*$1,268,769*	*$1,287,280*	*$1,306,236*	*$1,325,696*	*$1,345,239*	*$1,364,922*
Underutilized						
Hepatitis B	$400,321	$408,295	$414,419	$420,635	$426,945	$433,349
Japanese encephalitis	$230,462	$255,184	$302,181	$350,529	$400,261	$428,835
subtotal	*$630,783*	*$663,479*	*$716,600*	*$771,165*	*$827,206*	*$862,184*
Current traditional+underutilized	**$1,899,552**	**$1,950,759**	**$2,022,836**	**$2,096,861**	**$2,172,445**	**$2,227,106**
New introductions						
Measles 2nd dose	$0	$0	$142,104	$144,236	$146,399	$148,595
subtotal	$0	$0	$142,104	$144,236	$146,399	$148,595
GRAND TOTAL	**$1,899,552**	**$1,950,759**	**$2,164,940**	**$2,241,097**	**$2,318,844**	**$2,375,701**

Table 11. Summary Financing of Injection supplies (AD syringe and safety boxes)

	2005	2006	2007	2008	2009	2010
Traditional six antigens	*$1,268,769*	*$1,287,280*	*$1,306,236*	*$1,325,696*	*$1,345,239*	*$1,364,922*
Government	$333,191	338,189	$1,306,236	$1,325,696	$1,345,239	$1,364,922
GAVI	$935,578	949,091	$0	$0	$0	$0
JICA	$0	$0	$0	$0	$0	$0
Underutilized	*$630,783*	*$663,479*	*$716,600*	*$771,165*	*$827,206*	*$862,184*
Government	$298,516	$324,594	$517,678	$771,165	$827,206	$862,184
GAVI (for hepatitis B)	$332,267	$338,885	$198,921	$0	$0	$0
New vaccines	*$0*	*$0*	*$142,104*	*$144,236*	*$146,399*	*$148,595*
Government	$0	$0	$0	$0	$0	$0
GAVI (for MSV2)	$0	$0	$142,104	$144,236	$146,399	$148,595
GRAND TOTAL	**$1,899,552**	**$1,950,759**	**$2,164,940**	**$2,241,097**	**$2,318,844**	**$2,375,701**

3.2.2 Injection supplies during the campaigns

All the cost for injection equipment will be financed from government budget except for the injection supplies for measles SIAs which will be financed by GAVI through UN foundation (table 13).

Table 12: Summary Injection supplies for campaigns

	2005	2006	2007	2008	2009	2010
Measles campaigns in HRAs	$0	$0	$315,697	$113,621	$0	$0
Japanese encephalitis for 2 - 5 years old	$55,703	$64,393	$123,119	$124,922	$127,498	$193,179
Cholera campaign for 2 - 5 years olds in HRA	$113,098	$113,098	$80,784	$80,784	$80,784	$80,784
Typhoid campaign for 3 - 10 years old in HARD	$56,549	$88,862	$24,235	$24,235	$24,235	$24,235
TOTAL	**$225,349**	**$266,353**	**$543,836**	**$343,562**	**$232,517**	**$298,198**

Table 13. Summary Financing of Injection supplies for campaigns

Name of Agency	2005	2006	2007	2008	2009	2010
Total requirement	**$225,349**	**$266,353**	**$543,836**	**$343,562**	**$232,517**	**$298,198**
Government	$225,349	$266,353	$228,138	$229,941	$232,517	$298,198
GAVI through UN foundation	$0	$0	$315,697	$113,621	$0	$0

3.3 Cold chain equipment

The total cost of replacing, supplementing and maintenance of cold chain equipment at all levels (national, regional, district and commune health centers) is estimated to range from $116,160 in 2005 to $2.9 million in 2008 (due to plan to replace cold chain equipment at provincial/district level) to $1.2 million in 2010 (table 14).

JICA has been providing support to set up nine cold rooms at national and regional levels in 2006. In addition, Luxembourg government will provide support to replace cold chain equipment that are more than 10 years old at district and provincial levels in 2008. In addition, the government funds will be used to replace 10% of cold chain equipment each year at provincial and district level. Funds from both government and from Luxemburg government will be used for maintenance cold chain equipment at all levels.

There are plans to provide or replace electric fridges at commune levels beginning from 2008 covering 20% of the 10,000 communes each year. However, the funding for this activity is not yet secured either from government or outside resources as indicated in Table 15.

Table 14. Summary of Total cost of Cold chain replacement and supplementation

Cold chain equipment	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Cold room	$0	$42,026	$0	$0	$0	$0
Cold trucks	0	0	80,100	0	0	0
Electric fridges	$116,160	$53,317	$75,533	$2,191,212	$853,519	$1,084,229
Cold Boxes	0	$17,136	$0	$505,878	$0	$0
Vaccine Carriers	0	$102,000	$166,464	$169,793	$10,824	$11,041
Thermometers		$0	$0	$100,000	$0	$75,000
Freeze-tag		$0	$0	$15,918	$10,824	$13,801
Total	**$116,160**	**$214,479**	**$322,097**	**$2,966,883**	**$927,211**	**$1,234,395**

Table 15. Summary of financing for cold chain equipment

	2005	2006	2007	2008	2009	2010
Total requirement	**$116,160**	**$214,479**	**$322,097**	**$2,966,883**	**$927,211**	**$1,234,395**
Government (%)	100%	29%	56%	4%	10%	7%
Government ($)	$116,160	$61,200	$179,573	$106,121	$89,409	$91,197
JICA (%)	0%	71%	25%	0%	0%	0%
JICA ($)	$0	$153,279	$80,100	$0	$0	$0
LUX (%)	0%	0%	0%	63%	0%	0%
LUX ($)	$0	$0	$0	$1,875,715	$0	$0
Unsecured (%)	0%	0%	19%	33%	90%	93%
Unsecured	$0	$0	$62,424	$985,094	$837,849	$1,143,245

3.4 Operational cost

The items costed under operational costs included IEC and advocacy, training, surveillance, office supplies, program management and operational costs for the campaigns.

Table 16. Estimated budget requirement (US$) for Operational Costs

	2005	2006	2007	2008	2009	2010
IEC						
Mass media	$170,000	$170,000	$200,000	$200,000	$200,000	$200,000
Printing of IEC materials	$50,000	$50,000	$70,000	$80,000	$90,000	$100,000
Printing of EPI cards	$5,000	$5,000	$10,000	$10,000	$10,000	$10,000
Printing of EPI registers	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000
Training						
Training of provincial and district level	$20,000	$30,000	$100,000	$150,000	$100,000	$100,000
Training of commune level health workers	$20,000	$25,000	$150,000	$150,000	$150,000	$200,000
Surveillance						
AFP and measles surveillance	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000
Strengthening of JE surveillance		$65,000	$20,000			
Hib rapid assessment	$0	$15,000	$0	$0	$0	$0
Laboratory training workshop	$0	$3,000	$0	$5,000	$0	$5,000
Laboratory supplies	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000

	2005	2006	2007	2008	2009	2010
Office supplies						
Lab-tops and desktops	$10,000	$20,000	$10,000	$10,000	$10,000	$10,000
Office stionary	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Program Management						
Meetings	$10,000	$10,000	$15,000	$20,000	$20,000	$20,000
Evaluations: Program reviews and assessments	$15,000	$15,000	$15,000	$50,000	$20,000	$20,000
Office supplies	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Maintenance and overhead cost	$100,000	$100,000	$120,000	$120,000	$120,000	$120,000
Operational cost for routine EPI at local level	$1,400,000	$1,437,500	$1,500,000	$1,500,000	$1,500,000	$1,500,000
Operational cost for the campaigns						
Polio	$100,000	$100,000	$0	$0	$0	$0
Measles	$0	$0	$2,334,548	$840,213	$0	$0
Total	**$2,290,000**	**$2,435,500**	**$4,934,548**	**$3,525,213**	**$2,610,000**	**$2,675,000**

Table 17. Summary of financing for operation cost

	2005	2006	2007	2008	2009	2010
Total	**$2,290,000**	**$2,435,500**	**$4,934,548**	**$3,525,213**	**$2,610,000**	**$2,675,000**
Gov	$1,712,200	$1,710,500	$1,855,000	$1,865,000	$1,840,000	$1,855,000
WHO	$167,800	$170,000	$170,000	$170,000	$170,000	$170,000
UNICEF	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
PATH	$110,000	$155,000	$25,000	$0	$0	$0
GAVI through UN foundation for measles campaigns in HRA	$0	$0	$2,334,548	$840,213	$0	$0
Unsecured	$200,000	$300,000	$450,000	$550,000	$500,000	$550,000

3.5 Total budget requirement for 2006 – 2010

Total requirement of budget for EPI in 2006 – 2010 excluding the building/rental and human resources costs is $ 78.6 million, which amounts to $ 6.9 per newborn in 2005 to $ 8.1 in 2010. These budget estimates also do not include funding provided by subnatinal levels (province, district, or commune levels) in the form of transport or per-diem allowance or for the cold chain maintanence. The government EPI budget will increase by 5 – 15% from year to year (Table 18). The cost estimates increase in 2007 and 2008 due to planned measles SIAs and replacement of cold chain at provincial/district level. Most of the budget shortfall in 2008 – 2010 is due to unsecured funding for providing electric fridges at commune levels.

Table 18. Total budget requirement and shortfall (US$)

Component	2005	2006	2007	2008	2009	2010
Vaccines						
Total requirement	$6,147,778	$6,321,533	$7,225,733	$6,776,901	$6,593,682	$7,017,861
Governement	$4,642,609	$4,786,386	$4,464,732	$5,529,887	$5,941,749	$6,264,837
GAVI	$1,505,169	$1,535,148	$2,334,703	$818,135	$469,366	$476,407
JICA	0	0	250000	250000	0	0
Unsecured	$0	$0	$176,298	$178,879	$182,568	$276,618
Injection Supplies						
Total requirement	$2,124,902	$2,217,111	$2,708,776	$2,584,659	$2,551,361	$2,673,899
Governement	$857,057	$929,136	$2,052,053	$2,326,803	$2,404,962	$2,630,324
GAVI	$1,267,845	$1,287,976	$656,723	$257,856	$146,399	$148,595
Cold Chain						
Total Requirement	$116,160	$214,479	$322,097	$2,966,883	$927,211	$1,234,395
Governement	$116,160	$61,200	$179,573	$106,121	$89,409	$91,197
JICA	$0	$153,279	$80,100	$0	$0	$0
Luxembourg government	$0	$0	$0	$1,875,715	$0	$0
Unsecured	$0	$0	$62,424	$985,094	$837,849	$1,143,245
Operational Costs						
Total requirement	$2,190,000	$2,435,500	$4,934,548	$3,525,213	$2,610,000	$2,675,000
Governement	$1,612,200	$1,710,500	$1,855,000	$1,865,000	$1,840,000	$1,855,000
GAVI	0	0	2334548	840213	0	0
JICA	0	0	0	0	0	0
WHO	$167,800	$170,000	$170,000	$170,000	$170,000	$170,000
PATH	$110,000	$155,000	$25,000	0	0	0
UNICEF	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Unsecured	$200000	$300000	$450000	$550000	$500000	$550000
Grand total						
Total requirement	$10,578,840	$11,188,624	$15,191,154	$15,853,656	$12,682,255	$13,601,155
Governement	$7,228,025	$7,487,222	$8,551,358	$9,827,811	$10,276,119	$10,841,357
Government (%)	68%	67%	56%	62%	81%	80%
International donors funds	$3,150,815	$3,401,402	$5,951,074	$4,311,919	$885,765	$895,002
International donor %	30%	31%	39%	27%	7%	7%
Unsecured	$200,000	$300,000	$688,722	$1,713,927	$1,520,370	$1,864,797
EPI budget per new born	$6.85	$7.07	$9.48	$9.75	$7.67	$8.11

Annex 1: The Key socio-demographic indicators for Vietnam

Indicator	Value	Year, and source
Total Population	84,238,231	2005, World Population Prospects: The 2004 Revision, United Nations Population Division
Administrative levels Number of provinces Number of districts Number of communes	 64 669 11,200	 WHO/UNICEF Joint Reporting Form 2006
Crude birth rate (per 1000)	19.553	2005, World Population Prospects: The 2004 Revision, United Nations Population Division
Crude death rate (per 1000)	5.937	--Same as above--
Births	1,647,548	--Same as above--
Population under 1 year	1,545,475	Joint Reporting Form, 2005
Population under 5 years of age	7,968,592	2005, World Population Prospects: The 2004 Revision, United Nations Population Division
Infant mortality rate (per 1000 live births)	27.587	--Same as above--
Under-5 mortality rate	28.50	2004, WPRO Country Health Information Profile, 2006 Revision
GNI per capita (US$)	620	2005, World Development Indicators 2006, The World Bank Group
Per capita public health expenditure (US $)	25.60	2003, WPRO Country Health Information Profile, 2006 Revision
Proportion of GDP allocated to health (%)	5.22	2003, WPRO Country Health Information Profile, 2006 Revision

Annex 2: Immunization Schedule

Vaccine	Ages of administration	Entire country	Only part of the country	Comments
BCG	As soon as after Birth	√		
Hep B	Birth (within 24 hours), 2 months 4 months	√		
DPT	2 months, 3 months, 4 months	√		
Measles	9 months	√		
Measles 2nd dose	6 years	√		Planned to be introduced in 2007 with GAVI support
Japanese encephalitis	Three doses 12 – 24 months,		√	Planned to be expanded nationwide in 2007. Domestically produced mouse-brain derived vaccine is being used.
Cholera	Two doses 2-5 years		√	Only high risk areas
Typhoid	Single dose 3-10 years		√	Only high risk areas
Vitamin A	6 month to 36 months every 6 months	√		