



Expanded Program on Immunization

Multi Year Plan

2012-2016



**Central Expanded Programme on Immunization
Department of Health, Ministry of Health,
The Republic of the Union of Myanmar**

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List of Acronyms

AD	Auto Disable
AEFI	Adverse Events Following Immunization
AERF	Annual EPI Reporting Format
AFP	Acute Flaccid Paralysis
AMW	Auxiliary Midwife
ARI	Acute Respiratory Infection
AusAID	Australian Agency for International Development
BCG	Bacillus Calmette-Guerin
BHS	Basic Health Staff
CBAW	Child Bearing Age Women
CDC	Centers for Disease Control and Prevention
CEPI	Central Expanded Programme of Immunization
CEU	Central Epidemiology Unit
CMSD	Central Medical Stores Depot
cMYP	Comprehensive Multi Year Plan
CSPMC	Comprehensive Strategies Package for Measles Control
DF	Deep Freezer
DMR	Department of Medical Research
DPT	Diphtheria-Pertussis-Tetanus
DUNS	Diseases Under National Surveillance
EH	Emergency Health
EPI	Expanded Programme on Immunization
FT	Full Time
GDP	Gross Domestic Product
GIVS	Global Immunization Vision and Strategy
HA	Health Assistant
Hib	Haemophilus Influenzae b
HMIS	Health Management Information System
HRT	High Risk Township
HSS	Health System Strengthening
HW	Health Worker
ICC	Interagency Coordination Committee
IEC	Information, Education and Communication
IFFIm	International Financing Facility for Immunization
IIP	Immunization In Practice
ILR	Ice- Lined Refrigerator

IVD	Immunizations and Vaccine Development
JCV	Japan Committee Vaccines for the world's children
JE	Japanese Encephalitis
JICA	Japan International Cooperation Agency
JRF	Joint Reporting Form
LHV	Lady Health Visitor
LQA-CS	Lot Quality Assurance-Cluster Survey
MCH	Maternal and Child Health
MCV1	Measles Containing Vaccine –First Dose
MDG	Millennium Development Goals
MICS	Multi Indicator Cluster Survey
MNT	Maternal and Neonatal Tetanus
MNTE	Maternal and Neonatal Tetanus Elimination
MO	Medical Officer
MOH	Ministry of Health
MW	Midwife
Natcom	National Committee
NCCPE	National Certification Committee for Polio Eradication
NCIP	National committee on Immunization Practices
NGO	Non-Governmental Organization
NHP	National Health Plan
NID	National Immunization Day
NRA	National Regulatory Authority
NT	Neonatal Tetanus
OPV	Oral Polio Vaccine
PCR	Programme Component Result
PHP	People Health Plan
PHS	Public Health Supervisor
REC	Reaching Every Community
RED	Reaching Every District
RHC	Rural Health centre
S/R	State/Region
SDCU	Special Diseases Control Unit
SEARO	South East Asia Regional Office
SH	Station Hospital
SIA	Supplementary Immunization Activity
SNID	Sub National Immunization Day

TB	Tuberculosis
TBA	Trained birth Attendant
Td	Tetanus and Diphtheria Vaccine
TMO	Township Medical Officer
TT	Tetanus Toxoid
UHC	Urban Health Centre
UK	United Kingdom
UN	United Nations
UNICEF	United Nations Children Fund
USD	United States Dollar
VDPV	Vaccine Derived Polio Virus
VPD	Vaccine Preventable Disease
VVM	Vaccine Vial Monitor
WCHD	Women and Child Health Department
WHO	World Health Organization

Executive Summary

This important document represents a comprehensive overview of next 5-year plan for the Expanded Program on Immunization in the Republic of the Union of Myanmar covering the period of 2012-2016. This document is a follow up plan to the previous cMYP for the period of 2007 – 2011. This document is in line with Myanmar’s current National Health plan (2012-16) which cover third 5 year period of Myanmar Health Vision 2030(2001-2030).

Preparation was based on desk-review of immunization program review reports, annual evaluation reports, assessment reports of cold chain, integrated AFP surveillance, joint WHO/UNICEF EPI reporting forms, GAVI annual progress reports, Health in Myanmar 2010 (MoH), the previous cMYP, Financial Sustainability Plan (2005), Myanmar Health Statistics 2010 and Statistical Year Book 2009, International Review of EPI in Myanmar, 2008 and 2011 EVM assessment findings. The 5 year cMYP 2012– 2016 has been jointly prepared by the officials from Central EPI, Public Health Division, Planning Division and Finance Section of Department of Health, Department of Health Planning, and UNICEF and WHO through the health system analysis: identifying problems, underlying causes and solutions; prioritizing objectives and milestones; and formulating the strategies and key activities for achieving goals stipulated in the National Health Plan.

The important features of new cMYP is the roll out and implementation of Reaching Every Community (REC) strategy in hard to reach areas, plans to introduce Hib vaccine as pentavalent preparation of DPT-HepB-Hib in 2012, strengthening safe vaccine delivery by a new cold van provided by Immunization Strengthening Support (ISS) fund through WHO in 2012, introduction of school based immunization as Td in phased manner in 2014, strengthening of polio eradication strategies and Measles elimination goals by strengthening both first and second dose of measles vaccination, and activities for the effective vaccine management and cold chain improvement based on the findings of EVM assessment done in July – August 2011. Second dose of measles vaccination will be systematically introduced in 2012 by seeking external financing through GAVI support. Also planned are number of research activities to estimate disease burden, and impact of ongoing programs. All of these above strategies will contribute to the achievement of MDG4. The objectives, milestones and strategies for the next 5 years were set in the context of Global Immunization Vision and Strategies (GIVS) strategic framework:

The c-MYP consists of *5 objectives and 15 strategies* and those will be achieved by key activities and sub-activities for each respective strategy. These activities cover all major immunization system components: service delivery, vaccine supply, quality and logistics; advocacy and communication; surveillance and monitoring; and program management. Moreover, activities for the effective vaccine management and cold chain improvement proposed by the EVM assessment done in July – August 2011 are also included.

CMYP_Costing_Tool_Vs.2.5 was used for the costing for this cMYP. The different EPI system components were cost on the basis of the planned activities and inputs required. Unit prices, quantities required each year along with proportion of time spent by human resources on immunization related activities were used to derive costing of all inputs and operational costs. Current spending (for 2011) was used as a base line cost to project the future expenditure.

Total budget (including shared costs and financing) cost in cMYP 2012 – 2016 for five years is US\$ 173,879,494.00. Out of which 52% is for Vaccine supply and logistics, 6% is for service delivery, 2% is for advocacy and communication, 5% is for Monitoring and disease surveillance, 6%% is for Programme management, 17% is for SIA's , and 11% is Shared Health system cost. Total secured financing from Government, Gov. Co-financing for GAVI vaccine, WHO, UNICEF and GAVI for the five years period from 2012 – 2016 are US\$ 85.14 million and those of Total probable Financing US\$ 33.46 million. The average funding gap (with secured fund only) for the five year (2012 – 2016) is 51% of the total needs and the average funding gap (with secured and probable funds) for the five year is 32% of total needs.

This cMYP formulates strategies for the programme sustainability by creating and strengthening mechanisms for sustainable financing and vaccine supplies.

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We must express our sincere thanks to our colleagues from WHO and UNICEF country, regional and HQ offices that provided technical inputs, for this cMYP 2012 – 2016. We would like to acknowledge the Interagency Coordinating Committee members who kindly review and comment on the cMYP. We also would like to thank to those who are not enlisted in the acknowledgement but contributed immaterially to the comprehensive preparation of the documents by provision of invaluable piece of information.

Section 1: Health care and immunization services in Myanmar

1.1. Background and Policy Context

The Republic of the Union of Myanmar is a developing nation and the largest country in mainland South-East Asia. It is bounded on the north and north-east by the People Republic of China, on the east and south-east by the Lao People's Democratic Republic and the Kingdom of Thailand, on the west and south by the Bay of Bengal and Andaman Sea, on the west by the People's Republic of Bangladesh and the Republic of India. It has an estimated total population of 60.17 million in 2010. Salient socio-demographic and administrative characteristics are as follow:

Table. 1. Demographic characteristics

1	Total population	60.2 million
2	Annual growth rate (%)	1.9%
3	Infant population	1.5 million
4	Under five year population	7.5 million
5	Proportion of rural population	70%
6	Proportion of Urban population	30%
7	0-15 year population	32%
8	15-59 year population	59%
9	60 and above year population	9%
10	Number of States and Regions	14
11	Number of Districts	65
12	Number of Townships	330

13	Number of Sub-townships	64
14	Number of Wards	2891
15	Number of village tracts	13698
16	Number of villages	64817
17	Population density	86/Km ²

The country has a pluralistic mix of public and private system in the provision of services. Health care is organized and provided by both public and private providers. The Ministry of Health is the major provider of comprehensive health care. Department of Health, one of 7 departments under the Ministry of Health plays a major role in providing comprehensive primary health care throughout the country including remote and hard to reach border areas. Some other ministries also provide health care, mainly curative, for their employees and their dependants. They include Ministries of Defense, Railways, Mines, Industry I, Industry II, Energy, Home, Agricultural & Irrigation and Transport. Ministry of Industry I and Union of Myanmar Economic Holding Limited are running Pharmaceutical Factories and producing medicines and therapeutic agents to supplement the domestic needs.

The private sector is mainly providing ambulatory care and some facilities providing institutional care has come up in Yangon, Mandalay and some other large cities in recent years. They are regulated in conformity with the provisions of the Myanmar Medical Council Law & Private Hospital Law. General Practitioners and Specialties Section of the Myanmar Medical Association with its branches in townships give these providers the opportunities to update and exchange their knowledge and experiences by holding seminars, talks and symposia on currently emerging issues and recent advances in diagnosis and treatment. They also participate in social mobilization activities to propagate the message of EPI through their members. The Medical Association and its branches also provide a link between them and their counterparts in public sector so that

private practitioners can also participate in public health activities especially social mobilization for programmes of national importance like EPI.

One important feature of Myanmar health system is the existence of traditional medicine .It is also well accepted and utilized by the people. With encouragement of the State scientific ways of assessing the efficacy of therapeutic agents, preservation and cultivation of medicinal plants, sustaining and propagation of traditional treatises and practices is being undertaken. There are a total of 14 traditional hospitals run by the State in the country.

In line with the current National Health Policy, NGOs such as Myanmar Maternal and Child Welfare Association, Myanmar Red Cross Society and Myanmar Women Affairs Association are also participating in health activities, social mobilization and their roles are also becoming important as the need for collaboration in health become more prominent. The establishment of the National Health Committee in 1989 helped strengthening sectoral collaboration and community participation in the Myanmar health system. Recognizing the growing importance of the need to involve all relevant sectors at all administrative levels and to mobilize the community more effectively in health activities, health committees have been established in various administrative levels down to the wards and village tracts. These committees are headed by the chairman or responsible person from the local authorities concerned and include heads of related government departments and representatives from the social organizations as members. Heads of health departments are designated as secretaries of the committees.

The major sources of finance for health care services are the government, private households, social security system, community contribution and other donors. The government of Myanmar is committed for improving health of its people and has been steadily increasing its investments and funding in the health sector over the years. The Government expenditure on health inclusive of both capital and current costs has increased from kyat 464.1 million in 1988-89 to kyat 51674.9 millions in 2008-2009. The per capita Government Health expenditures at current

prices were estimated at 65 Kyats in 1998 and have increased by 15 times over the last 11 years to 928 Kyats¹ in 2007.

Prevention and Public health accounted for about one fourth of the total expenditure on health. (MoH, Health in Myanmar & Myanmar Health Statistics 2010).

1.2. Structure of Myanmar health system, health system constraints and plans

1.2.1. Structure of Myanmar Health System

The Ministry of Health is the major organization responsible for raising the health status of the people and accomplishes this through provision of comprehensive health services encompassing promotive, preventive, curative and rehabilitative services.

The National Health Plan (2006 – 2011), (NHP) forms an integral part of the National Development Plan and is in tandem with the national economic plan. The current NHP (2012-2016) ensures effective implementation of the National Health Policy. It covers the third 5 year period of Myanmar Health Vision 2030.

The NHP consists of 12 main components, including Community Health Care, Diseases Control and others. The EPI is one of the National Health Projects and under the Diseases Control Program. The Central Medical Supply Depot (CMSD), which is responsible for all medical supplies and logistics including EPI logistics, is a component of the Hospital Care Program.

The Ministry of Health is headed by the Minister who is assisted by two Deputy Ministers. The Ministry has seven functioning departments, each under a Director General. These are 1) Department of Health Planning, 2) Department of Health, 3) Department of Medical Science, 4) Department of Traditional Medicine, 5) Department of Medical Research (Lower Myanmar), 6) Department of Medical

¹ One USD is equivalent to 1000 Myanmar Kyats in 2007

Research (Upper Myanmar) and 7) Department of Medical Research (Central Myanmar).

The Department of Health is responsible for providing health care services. Under the supervision of the Director General and four Deputy Directors General, there are 11 Directors who are leading and managing the following divisions: Administration; Planning; Public Health; Medical Care; Disease Control; Health Education; Food and Drug Administration; Laboratory; Occupational Health, Nursing, and Epidemiology. Among these divisions, the Public Health Division is responsible for primary health care and basic health services, nutrition promotion and research, environmental sanitation, maternal and child health services and school health services. The Medical Care Division is responsible for setting hospital specific goals and management of hospital services. The division also undertakes procurement, storage and distribution of medicines, medical instruments and equipment for all health institutions. The Epidemiology Division covers prevention and control of infectious diseases, disease surveillance, outbreak investigation and response and capacity building. EPI section falls under this. Health Education Division is responsible for widespread dissemination of health information and education.

There are three Department of Medical Research (DMR) one each for Lower, Middle and Upper Myanmar. All of these conduct research aimed at examining the epidemiology of vaccine preventable diseases in Myanmar and operational research on immunization. Some of the ongoing research is on Rotavirus and Haemophilus influenzae b (Hib) disease burden and effectiveness of oral cholera vaccine.

Department of Health is responsible for supervising health departments at state/region and townships including all hospitals and clinics. There are 14 State/Regional health departments responsible for State/Regional planning, training and technical support, coordinating, supervising and monitoring and evaluation of health services.

Myanmar has a well-developed health infrastructure and in 2009-2010 it consisted of 884 government hospitals, 86 Primary and secondary health centers,

80 school health teams and 348 MCH centers taking care for urban population. 1504 rural health centers cater to the needs of the rural population (Health in Myanmar 2010). In recent years, Government has given priority for development of health facilities in the underserved border areas in order to address the special needs of residents there that have arisen due to geographic inaccessibility and socio-economic reasons. The health development and medical care for the border area have been implemented since 1989. As of December 2009, 100 hospitals, 97 dispensaries, 90 rural health centers and 200 sub-rural health centers have been established providing effective health care services to the people in border and remote areas.

At the peripheral level, health services are delivered by the township health departments and each of which serves an average of 100,000 to 200,000 people and it is headed by Township Medical Officer. They consist of a township hospital (TH) which may have 16, 25 or 50 beds depending on the population of the township and there are 1-2 station hospitals (SH), and 4-7 rural health centers (RHC) under its jurisdiction to provide health services to the rural population. The District and Regional capitals have 100-200 bedded Hospitals. Urban Health and MCH centers are taking care for urban population. School health teams cover all schools in rural and urban areas. Each RHC has 4-5 sub-centers on an average covered by a midwife (MW) and public health supervisor-II (PHS-II) at the village level. In addition there are voluntary health workers (community health workers and auxiliary midwives) in outreach villages providing Primary Health Care to the community. Health centers are staffed with health assistants, lady health visitors, midwives and public health supervisors who are trained mainly in public health and primary health care and are providing promotive, preventive, curative and rehabilitative services. Each sub-rural health centre serves 2-10 villages. Cadres of Auxiliary Midwives (AMWs) who are uniformed and trained to attend to deliveries have also been deployed at the village level; they are but not authorized to give injections or vaccination and are not salaried. Community health workers are trained for community health especially for preventive aspects.

1.2.2. Health system constraints

Based on Health system research activities carried out by the Research and Development division of Department of Health Planning since 1995, the Health managers and planners identified and classified three main constraints and barriers in health systems. These barriers also impacts the Immunization programme in equal measure with other programmes. These are:

Service delivery barriers: On the demand side, service delivery barriers to immunization and maternal child health services in Myanmar are varied and in many instances locally defined by cultural, geographic, socioeconomic and security factors. Financial barriers to access are cited in most assessments. On the supply side, there are some common themes, including limitations in infrastructure, logistics, and transport and supply systems. Population living in hard to reach area has limited access to health services.

Organizational, management and coordination barriers: There is fragmentation of health organization along vertical program lines and underperformance in the area of health management, which is resulting in inefficiencies and inequities in health services provision. Planning, supervision, management and information systems at State/Region and Township level are very limited in quality and effectiveness, which is negatively impact health service performance, particularly in terms of the overburdening of work and insufficient support for midwives at the peripheral level (sub rural health centre). There is also management underperformance in the areas of financing and financial management, integrated Township and State/Region planning and NGO coordination.

Human resource barriers: Inequities in distribution, numbers, mix and motivational factors of the health workforce, particularly at the most peripheral level of the system, is the major identified constraint on reaching the hard to reach or un-reached populations.

1.2.3 Plans for improvement

The Government of Myanmar has launched a Health System Strengthening Program in Myanmar in view of the above barrier and constraints to improve

service coverage for essential PHC components such as immunization and maternal and child health, through strengthening programme coordination, improving health planning systems and strengthening of human resources management.

This program directly addresses the 3 main health system barriers outlined above, and responds to National Health Policy of Myanmar, the main goals of which include health for all using a primary health care approach, production of sufficient as well as efficient human resources for health, and the expansion of health services to rural and to border areas so as to meet overall health needs of the population.

The expected outcomes of the program include increase and sustain all antigens coverage as measured by DPT3 coverage to 90% and above (Nationally) and increases in deliveries by skilled birth attendance from 67.5% to 80% (in HSS targeted Townships) between 2011 and 2014. These outcomes will be achieved through management strengthening, and resourcing, implementation and monitoring of 180 Township Coordinated Health Plans, (55% of all townships), and the staffing of Rural Health Centers in 90 townships (28% of all Townships) to national standards. Coordinated Township Health Planning will focus on the delivery of essential and targeted components of PHC (namely MCH, immunization, nutrition and environmental health services) with a focus on hard to reach areas. In addition to these investments in systems capacity building and service planning and implementation, it is proposed that by 2011 there will be 540 Rural Health centers renovated and 324 Sub Rural Health centers constructed across the country in the same hard to reach populations. Additionally, these targeted facilities will be adequately provided with staff, transport logistics and life saving drugs and equipment. It is proposed that by 2014, based on findings of operational research and health services evaluation, National Frameworks and Systems for Human Resource Development, Health Planning and Health Financing will be formulated for national scale up in the next strategic health planning cycle.

One of the highlights of HSS is that Myanmar would implement a variant of the RED (Reaching every District) approaches amplified to address Myanmar context

based on its experiences of the Crash programme. This strategy would act as the service delivery component of the overall Health system strengthening programme and will use EPI as the platform to deliver a wider package of schedule-able services (including EPI, MCH, EH, Nutrition, Communicable Disease Control and Social mobilization) to the hard to reach populations. The strategy has been named as Reaching Every Community (REC) in Myanmar.

1.3. Progress against key Health Indicators

The reported infant mortality rate in 2007 was 43.4 for urban and 46.3 for rural per 1000 live births and it has been a declining trend, and maternal mortality ratio in 2007 was 0.94 for urban and 1.36 for rural areas per 1000, live births. The trend since 2003 is given below (Health in Myanmar, 2010).

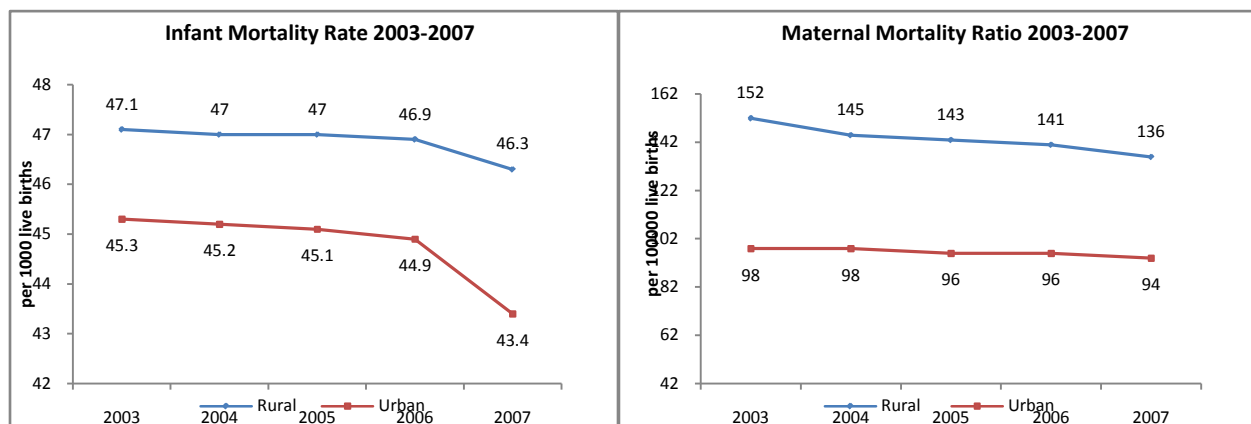


Figure 1 IMR through 2003 - 2007

Figure 2 MMR through 2003 - 2007

As of provisional figures for 2009-10; 19,051 midwives and 31,787 AMWs are providing maternal care throughout the nation (Health in Myanmar, 2010). Now the ratio of midwifery skilled providers (including AMWs) to village is 1:1.3 while the national target is at least one midwifery skilled person to every village (Health in Myanmar, 2010).

On the National level the Antenatal Care coverage was 64.6% with Mon State having the highest coverage and Shan East the lowest. Sagaing, Ayeyarawady, Yangon, Shan (South), Bago (West), Chin, Shan (East) and Shan (North) had lower antenatal care coverage than the Union level, see graph below;

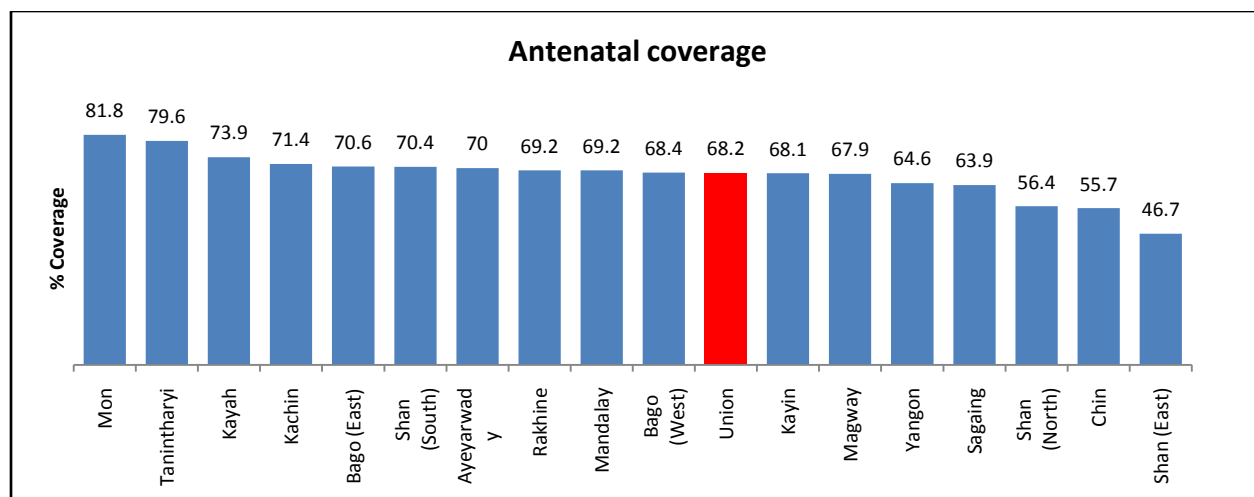


Figure 3 Antenatal coverage in states and regions in 2008

Midwives attended to 47% of all deliveries , 13.7% of deliveries were attended by AMWs and 8% by Trained Traditional Birth Attendants.1.3% of all deliveries were conducted in the RHC delivery room.(MOH Annual Statistics report 2007 ,Published Aug 2009)

The Under Five mortality rate estimated 2003 ranged from 58.7, 59.0, 66.3 and 76.8 in different regions of the country (Coastal, Delta, Hilly and Central plain) and it was 66.1 for the Union. Although there were very large variations, it is clear that three quarters of the deaths occur within the first year of life since the corresponding infant mortality rates were 39.6, 45.6, 46.1 and 61.1 respectively and it was 49.7 for the Union. Of the infant deaths, approximately one-third occurred in the first month of life (Overall and Cause Specific under Five Mortality Survey, MoH/UNICEF, 2002-2003). However, under five mortality was 71 and infant mortality was 54 in the State of World Children 2009.

Within Myanmar, there are significant geographic disparities. All data sources estimate the rural mortality to be at least 25% higher than urban mortality (National Mortality Survey of 1999). There are also wide regional and state variations with the highest mortality in the “Hilly Areas” and “Central Plains”. (Under 5 mortality survey, 2002-2003, DOH).

For children who die between 2 months and 5 months, the leading causes of deaths are acute respiratory infection (ARI), septicemia, brain infection, Beriberi,

diarrhea and malaria. For children ages 6-11 months, the leading causes of death are also due to ARI followed by diarrhea. For children ages 1-4 years, the leading causes of death are diarrhea followed by ARI and brain infection. (Cause Specific under 5 mortality survey, 2002-2003, DOH)

1.4. National immunization program

1.4.1. Structure and Function

The EPI in Myanmar was launched in 1978 in 104 townships, along with the commencement of the First Peoples Health Plan (PHP, 1978-1982) when BCG, DPT and TT vaccines were introduced. BCG vaccine had been in use in the country since 1950's. Children under one year of age were protected against Diphtheria, Pertussis, Tetanus and TB. In order to prevent neonatal tetanus, pregnant women were given two doses of tetanus toxoid.

In 1990, there were 211 townships implementing EPI, by 1995, 305 townships were covered and by 1997 almost all areas of all townships were covered. From 1998 onwards strategies like expansion of cold chain by using solar powered refrigerators, conducting outreach immunization sessions during the dry season (Crash programme) were initiated for hard to reach and remote border areas to make EPI operationally cover the whole country.

Measles and polio vaccines were introduced into routine EPI program for infants in 1987. Hepatitis B vaccine was introduced in phases from 2003 and could cover the whole country in 2005. A combination of fixed, outreach and crash immunization delivery systems were used to achieve the nation-wide coverage.

The National Immunization schedule being implemented in Myanmar is given below:

Table 1 National Immunization Schedule in Myanmar

Target Groups	Time of immunization	Antigen
----------------------	-----------------------------	----------------

Child	Birth	Hep B birth*
	6 Weeks	BCG,DPT1,OPV1,HepB1 *
	10 Weeks	DPT2,OPV2,HepB2
	14 Weeks	DPT3,OPV3,HepB3*
	9 Months	Measles 1
	18 months	Measles 2 nd dose
Pregnant woman	1st Antenatal contact	Tetanus Toxoid 1 st dose (TT1)
	4 Weeks after first dose	Tetanus Toxoid 2nd dose (TT2)
*Birth dose of Hepatitis B is given only in big hospitals with a Pediatric ward. In these instances, The child is given Hep B 2 nd dose at 6 weeks and 3 rd dose at 14 weeks of age.		

In addition to routine immunization activities outlined above, supplementary immunization activities such as National Immunization Days and Mop-Up for polio eradication, mass campaigns for measles control and maternal and neonatal tetanus elimination have been undertaken since 1996.

The Central EPI (CEPI) and Central Epidemiology Unit (CEU) of the Department of Health are responsible for formulation and development for planning, management of vaccine and cold chain, supplies and logistics, surveillance and outbreak management of vaccine preventable and other emerging diseases, training, supervision, monitoring and evaluation.

CEPI and CEU of DOH, WHO and UNICEF collaborate closely in implementing priority vaccine preventable disease control activities. While immunization is an important strategy for disease control and mortality reduction in its own right, it is also a proven cost effective intervention yielding broad benefits to both mother and children. Completing a child's immunization series in a timely manner requires that the child and most often, the mother be seen by a health care provider usually midwife in Myanmar at least 4-5 times during the first year of life. This repeated contact with the health care system provides opportunities for general health screening and provision of timely health information and advice.

The EPI is administered by central level staff assigned for EPI program and working through state/regional counterparts and Township Medical Officers and other public health staff at township, RHC and Sub-RHC levels. The Special Disease control units (SDCU's) provide supervisory, monitoring and technical support to the Central EPI unit at State/Regional level. Vaccination is delivered

through a combination of approaches like fixed, outreach, mobile and crash. The challenges to immunizing infants on a monthly basis are mostly systemic in nature and described below. Routine immunizations are delivered at fixed sites at Maternal and Child Health Center (MCH), Urban Health Centers and township hospitals in Urban and at RHCs and sub centers in the rural areas. Majority of Immunization services are provided through outreach activities in wards and villages. In 2009-2010, there were 1,845 health assistants, 3,305 Lady Health Visitor (LHVs), 19,051 midwives, 529 Public health supervisor-I (PHS I) and 1,645 Public health supervisor-II (PHS II) constituting the workforce for EPI program.

In some townships, a special program called crash program is implemented where immunization services are provided to less than 3 years children three to four times a year during “open” or in other words “favorable” season in some part of the township or in entire township where the accessibility is an issue. During 2009, 93 townships from 12 States/Regions carried out crash program in hard to reach areas within the townships.

Expanded Programme on Immunization is monitored at all levels through field visits, desk reviews of the data reported in the reporting formats and in the HMIS at each level using standardized monitoring indicators like coverage rates, drop-out rates and vaccine wastage. The former two are disaggregated till the RHC and sub centre level and the latter aggregated at the state/region and national levels. This is an ongoing activity and helps the managers take decisions about the reach and quality of services offered and also ensures that the issues of access and equity are being adequately addressed. WHO and UNICEF staff also support the Government by monitoring the programme during field visits using standardized tools.

Supervision of the programme is carried out by a dedicated cadre of supervisors at all levels. At the RHC and sub centre levels, they are the Lady Health Visitor (LHV) and the Health Assistant (HA). They use standardized supervisory checklists and formats to record their findings and provide feedback. The Central EPI visits and supervises at State/Regional and township levels, Visitors’ registers are used

to record the findings and suggestions if any for follow-up in subsequent visits. The Township managers supervise the Rural and urban health centers.

Programme evaluation is carried out by the EPI managers at the townships (TMO's) in monthly meetings, State/regional (S/R Director and SDCU) and National levels (Central EPI and CEU) through annual meetings using standardized monitoring indicators. These meetings form the basis for the determination of coverage by different antigens. Independent programme evaluations are few and far between, two Multiple Indicator Cluster Surveys (MICS) have been conducted in 1990 and 2002. Another round of MICS is underway and results may be available by end of 2010.

1.4.2. National Immunization Programme Key Achievements

During the period 2007 -11 the national EPI programme has gained in strength and has seen increases in reported coverage and subsequent drop in incidence of Vaccine preventable diseases. Some of the key programme achievements are:

- By 2010, reported DPT 3 and Hep B coverage had reached 90% and Measles first dose to 88% nationally.
- In 2007, Comprehensive Strategies Package for Measles Control (CSPMC) including measles catch-up campaign.
- MNT elimination status validated by WHO in 2010.
- Cold chain expanded, New Central cold room made functional in 2008 to address issues of cold chain storage. Expansion of Solar cold chain in hard to reach rural Health Centers and Townships with electricity supply <8 hours started.
- Integration of other MCH preventive services using EPI as the platform started with EPI plus in the Post Margi's cyclone period in Nargis affected townships.
- Fully integrated intervention namely "Reaching every community" (REC) conceptualized to reach geographically, economically and socio-culturally hard to reach populations with predefined package of interventions.
- Significant reduction in incidence of Vaccine preventable diseases.

1.4.3. Immunization Program – Strengths, Constraints and the Way forward

The immunization programme in Myanmar is reaching more than 85% of all beneficiaries with all antigens leading to an overall reduction of the burden of diseases as seen by the surveillance data. The cold chain backbone is gradually being expanded to the RHC level. The Staff is well trained and experienced with both routine and various NIDs (Polio), TT and Measles SIA's. The programme is supported by the Policy makers and the public at large. It is adequately funded with logistics like cold chain equipment, Vaccines and injection safety equipment being provided by international partners and the human resources and facilities provided by the Government. Awareness within the population about the programme is good and it enjoys the support of the communities and its leaders due to sustained social mobilization activities and obvious impact of the programme in reducing disease load within the community.

The challenges to the programme are in the form of systemic barriers such as:

- (1) Accessibility to services is variable across the country, and is related to mobility of the population, geographic, socioeconomic access and security and 70 townships are identified as both physically and socioeconomically hard to reach, especially mountainous areas in the States and border areas and peri urban communities in major cities;
- (2) Health infrastructure is limited in some townships, particularly in relation to transport and logistics.
- (3) Health workforce motivation is limited at times due to inadequate means of transport for mobility, operational costs, incentives and large workload.
- (4) Integration of immunization occurs at the delivery level, but more opportunities or mechanisms exist for improving other health interventions in partnership with immunization.

Although senior managers identify that existing service delivery strategies are appropriate for the conditions in Myanmar, they also observe that there are some inequities, under served pockets in coverage between townships.

So as a consequence the way forward would require a large emphasis on Integration of services, strengthening micro-planning, vaccine wastage reduction and enhanced communication strategies in order to reach un-reached populations along with audits for data quality assurance. Immunization quality indicators like AEFI surveillance and VPD surveillance will be strengthened. New interventions will require developments of more accurate assessments of burden of disease. Similarly, disease eradication, elimination and control over VPD will require strengthening of surveillance systems. The need to secure sustainable sources of finance for vaccines will require a focus on advocacy strategy and exploration of innovative mechanisms to generate adequate resources within the country from donors and the government for reliable financial planning to ensure that the EPI program grows both qualitatively and quantitatively.

Section 2: Multi year strategic plan 2012 - 2016

This MYP is a continuation of previous five year plan 2007 – 2011 MYP, during which period, Myanmar was able to reach high coverage of most antigens: DTP3 and HepB coverage reached around 90% in the country. There was significant improvement in programme management, injection safety, cold chain and vaccine management. The country was able to reduce outbreaks and incidence of vaccine preventable diseases and maternal and neonatal tetanus elimination was validated.

2.1. Goals of the multi year plan

The vision of the immunization program during the next five years is to contribute towards achieving the MDG 4 goals by 2015 by reducing the under five morbidity and mortality caused by vaccine preventable diseases.

The overall objectives are to achieve the routine immunization coverage of 95% nationally with minimum 80% coverage in every township for all antigens by 2016 and to accelerate disease control.

2.2. The specific objectives as aligned to the GIVS Strategic areas

2.2.1. Protecting more people in a changing world

(1) To achieve the routine immunization coverage of 95% nationally with at least 80% coverage in every township for all antigens by 2016

(2) To accelerate disease control activities: Polio eradication, Measles elimination and Maternal and Neonatal Tetanus eliminated status maintenance

2.2.2. Introducing new vaccines and technologies

(3) To reduce burden of diseases for which sufficient disease burden data is now available in the country, efficacious and safe vaccines are available and which are economically beneficial to immunize such as of Haemophilus Influenza type B, and Rotavirus.

2.2.3. Integrating immunization, other linked interventions and surveillance in the health system context

(4) To increase coverage of other primary health care interventions through improved linkages with immunization

2.2.4. Immunization in a context of global interdependence (Financing and International cooperation)

(5) To align national policies and programmes to the regional and global priorities and to ensure sustainability of the National immunization programme

This cMYP and its consequent annual plans would help accelerate the rate of decline of childhood morbidity and mortality due to vaccine preventable diseases

The focus strategies to be used are:

- (1) Strengthening routine immunization
- (2) Rolling out reaching the Unreached through “Reaching every community (REC)” strategy
- (3) Accelerating Measles elimination activities by systematic introduction of Measles second dose
- (4) Strengthening ongoing Polio eradication activities
- (5) Maintaining MNT elimination status and introducing Td through school based immunization program
- (6) Introduction of Haemophilus Influenzae b vaccine in 2013
- (7) Estimating of disease burden for other diseases for which vaccines are available
- (8) Developing mechanisms for sustainable funding

2.3. Situational Analysis

2.3.1. Routine Immunization

2.3.1.1. Immunization Coverage & Wastage

Coverage for all antigens have been consistently rising over the years except for a small period in 2005-06 when there was a drop seen consequent to AEFI events in the country. Although the immunization rates are generally high, coverage needs to be maintained at or above 90% nationally and 80% in all significant geographic sub regions i.e. State/Regions and Townships to maximize population-wide benefits. The trends in immunization coverage from 2006-2010 is given below;

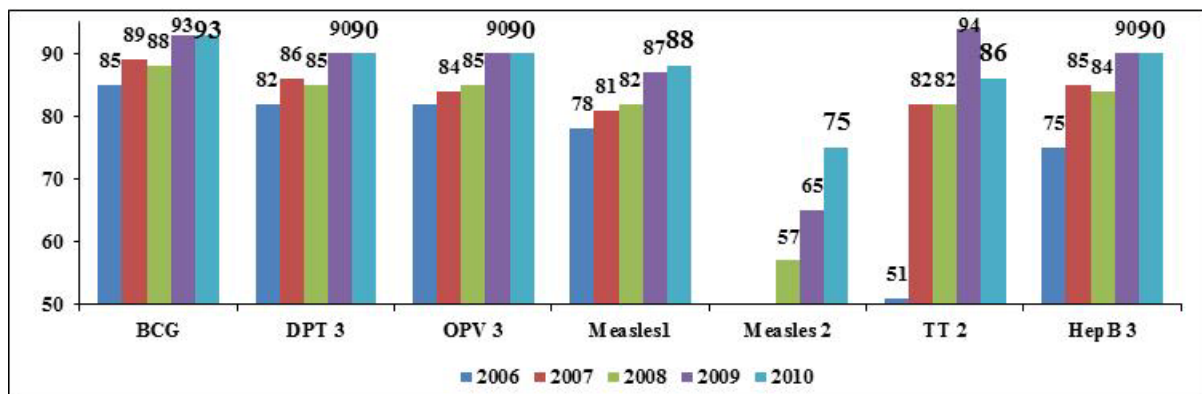


Figure 4 Immunization Coverage Myanmar 2006 to 2010

Official country estimates of immunization coverage for the year 2010 based on reports available from 319 out of the 325 townships in the country were 93% for BCG, 90% for DPT3,OPV3 and HepB 3, 88% for Measles first and 65% for the second dose and 94% for TT2+ for pregnant women. In 2010, EPI coverage across all primary antigens is more than 87%.

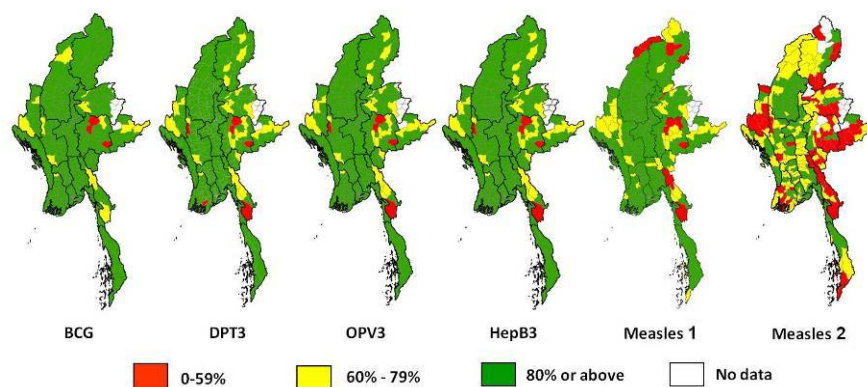


Figure 5 Coverage across townships (2010)

The 325 townships of 2010 when stratified according to the coverage of DPT3 and MCV1 show the following picture:

Table 2 Stratification of townships by coverage of DPT3 and MCV1

Antigen \ Coverage	Coverage					Townships not reporting
	<50%	50-79%	80-89%	90-94%	>=95%	
DPT3	3(1%)	32 (10%)	73(22%)	108(33%)	103(32%)	6(2%)
MCV1	6(2%)	44(14%)	94(29%)	94(29%)	81(25%)	6(2%)

This stratification clearly shows that in 2010, 65% of 325 townships were having more than 90% DPT3 coverage and 54% of townships had more than 90% MCV1 coverage.

The estimated vaccine wastage rates for all antigens in Myanmar are: BCG 80%, DPT 45%, Hepatitis B 21%, Oral Polio vaccine 41%, Measles 45% and Tetanus toxoid 50%. (WHO/UNICEF Joint Reporting Form, 2010)

Wastage was high especially in rural areas where population density is sparse resulting in requirement more outreach immunization session. At the same time birth rate is reducing that lead to decrease number of eligible children in each session. Moreover, due to limited cold chain reach at the immunization sites and rural health centers, multi-dose vial policy is still not in practice

2.3.1.2. Hepatitis B introduction

GAVI New and Underutilized vaccine support along with UNICEF and WHO has been instrumental in facilitating strengthening of the EPI helping initiate introduction of new and underutilized vaccine i.e. Hepatitis B. The outcomes have been a steady rise in antigen coverage nationally since 2005-6.

Introduction of Hepatitis B vaccine throughout the entire country was accomplished in three phases beginning in 2003 to 2005 with GAVI support. Hospital birth dose was introduced at the major hospitals (200 bedded and above) and in the hospitals where there are at least 30 births per month. In 2007 after a Hepatitis B review this was expanded to all health facilities with cold chain capacity. This plan was accompanied with the implementation of a Plan to achieve Safe Injections (including plans for transition to AD syringes) and Safe Management of Sharps Waste. Consequently, there was much improvement in terms of injection safety and waste disposal, programme management, AEFI surveillance, systematic micro planning, and Vaccine management along with the introduction of Hepatitis B immunization.

Hepatitis B coverage has been steadily growing and by 2009 90% of beneficiaries were being covered with three doses of Hepatitis B vaccine. The birth dose administration for all institutional deliveries is still lagging behind and efforts need to be made to ensure universal coverage for all births in the facilities offering the service. Efforts needed are: advocacy and coordination to arrange services at the hospitals along with provision of cold chain equipment; proper and regular information exchange and reporting; instruction to provide birth dose at the hospital both public and private with cold chain facilities; and strengthening the vaccine delivery system.

2.3.2. Accelerated Disease Control Activities

2.3.2.1. Measles

The Objective of Measles Control Programme in Myanmar was to reduce the estimated number of measles deaths by 90% in 2010 relative to 2000 estimates. The strategies were:

- (1) Provide every child with a dose of Measles vaccine by 9 months of age.
- (2) Give all children at the age of 18 months a second opportunity for Measles immunization;
- (3) Establish case-based surveillance; and
- (4) Improve clinical management of complicated cases, including vitamin A supplementation.

Routine measles immunization for 9-month old children in EPI has been started since 1987. Currently, EPI of Myanmar is immunizing around 1.5 million of children under 1 year of age with measles vaccine every year. At present, it is planned to conduct follow-up measles immunization for under 5- year-old children in periodic manner i.e.; every 3 to 4 years and the simultaneous introduction of two-dose strategy for measles immunization in routine EPI.

In 2007, Comprehensive Strategies Package for Measles Control (CSPMC) including measles catch-up campaign targeting 6 million children was conducted throughout the country and 5.7 million of the children at the age of 9 months to 5 years could be immunized against measles. In 2010, out of the 325 townships the coverage with first dose of Measles vaccine were, 6(2%) below 50%, 44(14%) between 50-79%, 94(29%) between 80-89%, 94 (29%) between 90-94% and 81(25%) more than or equal to 95%, 6(2%) of townships did not report. This stratification clearly shows us that in 2010, 144 i.e. 45% of townships had less than 90% MCV1 coverage. The latter is important as for measles elimination every township should have 90% coverage with the first dose of measles vaccine.

There were 286 cases of febrile rashes illness in 2010 and laboratory investigations were done in all outbreaks. 85 were confirmed as Measles and 11

as Rubella. Age distribution of the reported cases in 2009 and 2010 in percentage is as follows (WHO-SEARO IVD Annual EPI Reporting Form (AERF) for the Period January-December, 2009, and 2010): In 2010, 12 outbreaks occurred and 9 were confirmed as measles outbreaks. 35 cases were laboratory confirmed cases.

Table 3 Distribution of Measles cases by age groups in 2009 and 2010

Year	10-14 years	1-4 yrs	5-9 yr	15+	<1 year
2009	41%	24%	16%	9%	8%
2010	(36%)	15%	22%	19%	8%

Strategies suggested accelerating Measles elimination

Myanmar has reached the goal of 90% Measles mortality reduction, however, to sustain these gains and progress towards elimination there are many challenges for Myanmar. Main challenge is to reach higher coverage's of MCV1 95% & 90% MCV2 from the current level of coverage of 88% and 75% in 2010. As Measles second dose coverage is not nationwide, systematic introduction of measles second dose to all 18 months old children needs to be implemented along with strengthening of routine immunization and rolling out of reaching every community strategy to ensure to reach unreached children in both urban and rural areas. In addition, follow up campaigns at regular interval will be implemented. And one is planned for 2011.

2.3.2.2. Maternal and Neonatal Tetanus

A mix of strategies has been adopted to protect women and newborns against tetanus. Strategies included immunizing women with tetanus vaccine through routine immunization services and supplementary immunization activities in select high risk area, improving the coverage of "clean" deliveries, and conducting surveillance for neonatal tetanus case detection and response.

Based on National Plan of Action for Maternal and Neonatal Tetanus Elimination, the Supplementary Immunization Activities for women of child-bearing age (15-45 years) was conducted since 1999. In 1999 a district risk assessment was conducted as a part of the National plan for MNT elimination which identified 132 of the total 325 townships as high risk. All women of child bearing age in these

townships were targeted with three rounds of SIA's over a period of two years. In the following years high risk assessments were made by data review and TT SIA rounds were implemented in identified high risk townships from 2003 to up 2009, when Myanmar was in a position to claim the elimination status and prepared for validation.

Table 4 Coverage of TT SIAs in 1999 and 2009

Year	No of townships	CBAW targeted	Percentage coverage		
			Round1	Round2	Round3
1999	54	1,669,560	92	90	88
2000	37	706,890	92	90	83
2003	12	651,920	93	87	85
2004	19	687,480	79	73	71
2005	32	853,040	93	86	83
2006	25	526,920	76	63	71
2008	27	870,970	90	82	87
2008	60	1,675,800	92	-	-
2009	7	115,600	96	-	-

In its efforts to validate the elimination of maternal and neonatal tetanus in Myanmar government requested WHO assisted by UNICEF to conduct validation of MNTE elimination by a Lot quality assurance- cluster survey (LQA-CS) in 2010. The survey was planned and conducted in three high risk townships of Saw (Magway Region), Singaing (Mandalay Region) and South Okalappa (Yangon Region). Based on the findings, Myanmar was considered of having eliminated NT in 2010.

In 2010, out of the 319 townships reporting to the central level, the coverage's with Tetanus Toxoid 2+ doses were , 10(3%) below 50%, 63(19%) between 50-79%, 108(33%) between 80-89%, 87(27%) between 90-94% and 51(16%) more than or equal to 95%. This stratification clearly shows us that in 2010, 181 i.e. 56% of townships had less than 90% TT2+ coverage. Understanding the dynamics of the latter is important for maintenance of Maternal and Neonatal Tetanus elimination, as it may in fact reflect a growing number of women who are fully protected against tetanus and no longer eligible to receive TT immunization.

In 2010, total 19 cases were diagnosed as Neonatal Tetanus. However, the number of cases reported by townships did not exceed the elimination threshold of less than 1 per 1000 live births per townships

Strategies suggested maintaining MNT elimination status

These include maintaining high clean delivery rates and proper cord care practices; maintaining >80% routine tetanus toxoid (TT) immunization for target women, introduction of school based Td immunization and implementing quality surveillance for neonatal tetanus (NT) as needed. Accordingly, Myanmar plans to introduce school based vaccination program taking the advantage of high school enrolment to provide additional Td dose to all children in class 1 in primary school (5 to 6 years) in order to boost their immunity against tetanus and diphtheria.

2.3.2.3. Poliomyelitis

Myanmar is conducting four strategies for Polio Eradication with very strong political commitment and tremendous community involvement. These strategies are:

- (1) Routine Immunization to achieve high OPV coverage throughout the country.
- (2) Conducting Supplementary Immunization Activities (SIA's): Myanmar has conducted 10 National Immunization Days (NID's) and 9 Sub-National Immunization Days (SNIDs).
- (3) Conducting Mopping up Immunization in areas with wild polio virus transmission and preemptively in high risk areas to boost immunity
- (4) Sensitive Acute Flaccid Paralysis (AFP) surveillance.

Myanmar was free from Polio in the period of 2003-2005, In April 2006, of a case of vaccine-derived poliomyelitis (VDPV) from Pyin Oo Lwin township of Mandalay Region and the evidence of circulation of VDPV was also shown among its seven contacts. In 2007, AFP surveillance system detected 11 wild poliovirus cases in Maungdaw and Buthidaung townships of Rakhine state in the months of March, April and May. In the same year, cases of vaccine-derived poliomyelitis virus were

detected in one township each of Yangon, Kayin, Bago East and Mon States and Regions and the virus was related to VDPV detected in Mandalay Region.

The Government of the Union of Myanmar concerned with the importation of WPV in Rakhine state and took immediate action to contain and stop transmission in the surrounding areas where the outbreak had occurred. Immediate response was to conduct a house to house mop up campaign with monovalent oral polio vaccine type 1 (OPV 1) offered to all children from birth to 5 years of age in Rakhine state and its adjoining Paletwa township of Chin State.

On account of the outbreaks of wild polio viruses and vaccine derived polioviruses, National Immunization Days were organized for all under 5-year children of Myanmar in November-December 2007 and January-February 2009. These NIDs were able to immunize 98.13%, 97.83%, and 99.99%, 99.92% of the targeted 7.23 million children respectively. The onset of the last case of wild virus in Myanmar was May 31, 2007.

As a continuation of NIDs in 2007 and 2009, in 2010, two rounds of Sub-National Immunization Days (SNIDs) were implemented in 81 townships from 7 states/regions on the 3rd & 4th of April 2010 and 1st & 2nd of May 2010. Both these rounds of SNIDs reached 98.10% and 99.72% of targeted eligible children respectively.

In December 6, 2010, a single case of VDPV (Type2) case was reported in Myanmar in a 7 months old child in Yamethin Township from Mandalay Region: 2 rounds of large scale vaccination with OPV (SNID) were carried out in May and June 2011 to prevent spread of VDPV and build immunity of 2.9 million children under five year age group in 126 townships in 9 states and regions.

In addition to this AFP surveillance is being strengthened in all silent areas and orientation of clinicians and reporting units is being done. Myanmar being a large country with diverse geographical setting and limited human resources for surveillance there may be areas of poor reporting even though reported non-polio acute flaccid paralysis rates is above 2 cases per 100,000 populations under

the age of 15 years. The adequate stool collection rates must have also been above minimum targets of 80%.

An additional tool that is being used to monitor risk is immunity gaps among non-polio AFP cases from 6 months to 5 years. Myanmar has shown an increasing immunity gap. This trend indicates susceptible pockets of under vaccinated children. To improve these gaps supplementary immunization activities will be planned for high risk areas in next three years from 2012 to 2015 and as necessary after that.

2.3.2.4. Laboratory surveillance of vaccine-preventable diseases: Polio, Measles/Rubella and Japanese Encephalitis (JE)

Laboratory surveillance for VPDs is well supported by National Health Laboratory in Yangon which in turn is supported by reference laboratories. Myanmar has a WHO-accredited laboratory. SEARO/WHO in 2009 has introduced new and more sensitive real time PCR intratypic differentiation test (ITD). Myanmar now has full ITD capacity. While the capacity of the country polio laboratory network is adequate, challenges include sustaining the high accreditation standards and high operational costs. Myanmar also has laboratories capacity for serological confirmation and virus detection. However Genotyping is performed by the regional reference laboratories.

2.3.3. Immunization, injection safety and waste management

GAVI Immunization services Support (ISS) along with UNICEF and WHO has been instrumental in facilitating strengthening of the Immunization delivery systems by helping initiate introduction of safe injection technologies, establishment of a policy for safe disposal of immunization related waste and introduction of Immunization waste disposal technologies. The outcomes have been a steady rise in antigen coverage nationally since 2005-6.

The government took the opportunity provided by GAVI and the Vaccine Fund to improve injection safety along with the introduction of Hepatitis B Vaccine. The

plan was to offer immunization using AD syringes to 25% of children by 2002, 72% by 2003, and universalize thereafter.

A national policy guideline for immunization injection safety was developed. The BHS were trained in a phased manner in line with the HBV introduction. Immunization waste disposal was also addressed and guidelines developed for each level. Incinerators (DeMontfort) were built as pilot project in a few townships. The BHS were instructed to burn and bury the waste after immunization session in a pit.

A review of the Immunization injection safety and waste disposal needs to be carried out during the period of this plan.

2.3.4. Adverse Events Following Immunization (AEFI)

Adverse events following immunization surveillance system was established in 2003 in Myanmar as a benchmark of immunization safety. Surveillance is done for these events and they are reported nationally. The Immunization programme has in the past suffered reversed due to the negative publicity in the media of these events. Efforts are being made and will have to be strengthened to have effective advocacy and communication strategies with appropriate technical responses to maintain the confidence of the community on Immunization.

In Myanmar a total of 15 adverse events following immunization (AEFI) were reported and investigated in 2010. Most of the cases were classified as coincidental. AEFI surveillance needs to be strengthened in coming years.

2.3.5. Vaccine preventable disease surveillance 2006 – 2010

Seven vaccine preventable diseases are included in 17 Diseases under National Surveillance (DUNS). Surveillance of 3 vaccine preventable disease under accelerated control namely Poliomyelitis, Measles and Neonatal tetanus has been strengthened using the following strategies.

(1) Integrating other vaccine preventable diseases surveillance into AFP surveillance

- (2) Strengthening Measles case based investigation,
- (3) Strengthening Lab network to support surveillance
- (4) Supporting SDCU capacity along with RSOs for rapid response to outbreaks of communicable diseases, emerging diseases and rumor verification

In the last 5 years, important improvements have been made in the program performance resulting in reduction of mortality and morbidity caused by vaccine preventable diseases among children. Routine immunization coverage in infants and pregnant women has improved, and the incidence of vaccine preventable diseases – measles, neonatal tetanus, and pertussis has declined, whereas diphtheria shows fluctuating.

Table 5 Reported cases of Vaccine Preventable diseases, 2006-2010 (WHO/UNICEF JRF 2006-2010)

Year	2005	2006	2007	2008	2009	2010
Polio (wild & VDPV)	0	1	15	0	0	1
Diphtheria	5	3	5	3	19	4
Pertussis	11	13	13	5	3	0
Measles(Clinical+ virological)	314	735	1088	333	217	190
Neonatal Tetanus	35	41	49	25	34	19
Rubella	-	0	2	5	13	11
Japanese Encephalitis	-	0	28	5	8	18

Concerning other VPD, Japanese encephalitis occurred in sporadic outbreaks in recent years. Outbreaks were serologically confirmed. Sentinel surveillance in one major children hospital showed that rotavirus infection reached the proportion of 70% of admitted diarrhoea cases in peak winter season .

2.3.6. Immunization Cold Chain and Logistics System

In Myanmar most of the relevant supplies required by the immunization programme are supplied by UNICEF and WHO. The logistics of these supplies are

maintained by the Government of Myanmar with support from UNICEF, WHO and GAVI funds.

The vaccines are received in the central vaccine store in Yangon which was established in 2008. This new store with three 30 cubic meter walk in cooler and four 20 cubic meter walk in freezer has become fully functional in 2008. Vaccine is distributed from this store to the 2 other regional stores in Magway and Mandalay. The 3 Main Stores then distribute vaccine to 22 sub-depots located all over the country at 1- 3 month's interval by air and/or road whichever is feasible.

The townships collect the vaccines from these sub depots and from there it is distributed to the RHCs/station hospitals once every month to carry out the immunization activities. Each of the townships has been provided with both Electrical or Solar refrigerator and non electrical cold chain equipment based on the availability of electricity there.

At the RHC/Station hospital level the midwives make arrangements for provision of wet ice either through private ice manufacturers or the township health department.

Country wide there are 6 walk in coolers and 7 Walk in freezers which support 297 Ice lined Refrigerators, 282 Deep Freezers, 194 Twinsets (ILR/DF), and 254 Ice pack freezers in different locations by June 2010. EVSM assessment was done in 2004. Computerized data base system for cold chain inventory was prepared in 2004.

Newer Solar powered refrigerators are being installed in townships, station hospital & RHC where there is erratic supply of electricity and which are very remote and geographically inaccessible. The central EPI division has a fixed criterion for selection of townships for installation of this equipment. Around 621 solar refrigerators have been installed in 472 locations countrywide. New generation temperature monitoring tools like 'freeze tags' and "fridge tags" have been introduced in the program. Also new technology cold chain solar equipments i.e. solar chill is being installed in some places to strengthen cold chain in very remote areas.

The other supplies like cold chain equipment, AD syringes, reporting monitoring and supervision tools are stored in the Central Medical Supply Depot in Yangon and supplied countrywide from there.

AD syringes are distributed by the CMSD along with reconstitution syringes and stored at sub depot level for further redistribution to townships in a bundled approach along with vaccines. Along with these safety boxes are also distributed.

The logistics operations are manned and maintained by a dedicated staff at each level of storage and distribution. Stock management is computerized at the central cold room but manually done at regions and townships levels. Vaccine indent forms at all level starting from midwife level and stock registers were kept at townships and region level.

The cost of the supply transport and storage up to the township level is borne by the government, but below the township level the BHS have to bear substantial out of pocket costs. But despite this a sense of pride and professionalism among health staff, especially the midwives, is the major reason for the success of immunization program.

Myanmar in the recent past has shifted from a 6 dose Hepatitis B vial to a 10 dose vial to ensure availability and also to optimize on the cold chain space.

In July – August 2011, EVM assessment was done in Myanmar and the assessment points out that vaccine storage capacity is adequate for current requirements as well as for the introduction of pentavalent (DPT-HepB-Hib) and second dose measles vaccines – at all levels. Introduction of further new vaccines such as Pneumo and Rota will require a dedicated capacity analysis at all levels. The assessment also recommends conducting a national temperature monitoring study to establish temperature profiles at all levels and during distribution, introducing increased cold chain supervision at all levels to strengthen temperature management, reconciliation of distribution documentation and the monitoring of cold chain indicators, introduction of freeze indicators, installation of electronic continuous temperature monitoring recordings and alarms in all cold/freezer rooms, introduce contingency plans to protect vaccines at all

facilities in the event of disaster such as rain floods, storms and earthquakes (not limited to power failure), introduce a national system for the monitoring of vaccine wastage in unopened vials and include these results in vaccine forecasting procedures, establishing a dedicated Guidance document and Standard Operating Procedures for cold chain management in the Republic of the Union of Myanmar (Cold Chain Manual), establish written standard operation procedure (SOP) between CEPI, CMSD and Customs to control and secure the arrival of vaccines at Yangon International Airport and a national Guidance document on the Disposal of Immunization Related Waste including vaccines, syringes, needles and safety boxes, and introducing the use of a computerized stock control system at the Central Cold Store.

2.3.7. National regularity authority (NRA)

NRA is important to ensure quality of vaccines. In Myanmar, for the quality assurance and regulatory oversight of vaccines from other sources are assured by Myanmar Food and Drug Administration (National Regulatory Authority). The country uses procurement services through UN and all vaccines used in EPI program are WHO are prequalified.

2.3.8. Financing

The programme is led and run by the Ministry of Health with the support of international agencies.

The Government of Myanmar funding to the programme is in the terms of Human resources, their salaries, the facilities and its establishment and operational costs. The support to EPI from the international agencies came from UNICEF, WHO, GAVI etc. External donors coming through UNICEF as other resources were AusAID, Government of Japan, and Japan Committee for Vaccines, GAVI, CDC, Japan, UK and NatCom

UNICEF, GAVI and WHO support the Government of Myanmar with logistics and operational costs. All Vaccines are procured by UNICEF or through UN

procurement system. WHO also supports some operational costs for program along with technical support through a team of surveillance officers.

2.3.9. Stakeholder's Function in EPI

There are 3 main stake holders in the Immunization programme in the country and these are the Government, Non Governmental and international partners and the community. The Government of Myanmar provides overall leadership and stewardship to the programme through policy and programme decisions, the infrastructure for programme delivery both physical and human resources are provided by the Government of Myanmar.

The main actors are UNICEF, WHO, and JCV. National NGO's and professional associations help in the advocacy and social mobilization activities.

The community which receives this programme facilitates it by providing the necessary support through the local structures like Village health committee etc to the basic health staff in terms of space and community mobilization.

2.3.10. National Committee on Immunization Practices (NCIP)

A National Committee on Immunization practices was established in 2008 to provide technical guidance to the National EPI programme based on the epidemiological trends in the country. The committee consists of experts from various disciplines.

This committee still needs to strengthen and more regular meetings to be conducted.

2.3.11. New Technologies, new vaccine and under used vaccines

With the availability of financing through new mechanisms like GAVI and IFFm it has become easy for countries like Myanmar to offer more protection to its children.

Myanmar has already introduced Hepatitis B in 2003. It was accompanied with the introduction of AD syringes and immunization waste disposal systems. In

2007, after Measles campaign, balance Measles vaccine was utilized to provide second opportunity for children age 18 months in selected townships. This was reported as second dose coverage. However no regular procurement of Measles second dose vaccine has been planned till now. Leftover stock from 2007 campaign has been utilized to boost immunity in children and response to outbreak. UNICEF supported additional measles vaccine to support post disasters emergency needs. Myanmar will apply to GAVI for support of second dose of Measles vaccine in 2011 in order to reach elimination goals and contribute to MDG 4 by 2015

Myanmar with GAVI support also plans introduce conjugate Hib vaccine into the programme as a combination with DPT and Hepatitis B Vaccines in 2012, thereby increasing the protection against morbidity and mortality caused by Haemophilus influenzae b while reducing the injection load on the community.

Some vaccines which are underused and can be considered for introduction, based on the disease burden are Japanese Encephalitis, Rubella, Pneumococcal, Typhoid and Rota virus.

2.3.12. Advocacy and communication

Advocacy for immunization is done by Central EPI division assisted by the partners. The tools used for the same are formal and informal meetings, presentations, and information sheets etc. The inputs used for preparing these come from local sources like the disease burden, coverage etc. and from any internationally published reports and studies which are epidemiologically and programmatically in line with the Myanmar situation.

Messages for the population and Basic health staff are developed by the Department of Health with support from the development partners.

2.4. Objectives, milestones, Strategies, and activities

2.4.1. GIVS-1: Protecting more children in the changing world

2.4.1.1. Objective 1: To achieve the routine immunization coverage 95% nationally with at least 80% coverage in every township for all antigens by 2016

2.4.1.1. A. Major programme milestones

The following table describes the intended major programme milestones in the next five years.

Table 6 Major programme milestones

Milestones	2012	2013	2014	2015	2016
<i>Townships stratified by coverage with Measles first dose</i>					
<50% coverage	55%	60%	65%	75%	80%
50-59% coverage	55-65%	60-70%	65-75%	70-80%	75-85%
60-69% coverage	65-75%	70-80%	75-85%	80-90%	>=95%
70-79% coverage	75-85%	80-90%	85-95%	95%	>=95%
80-89% coverage	85-95%	95%	>=95%	>=95%	>=95%
90-100% coverage	95%	>=95%	>=95%	>=95%	>=95%
<i>Nationally</i>					
BCG	93%	93%	95%	95%	95%
DPT3	47%	-	-	-	-
DTP-HepB-Hib3	45%	93%	94%	94%	95%
OPV3	93%	93%	94%	94%	95%
Hep B Birth Dose	10%	11%	12%	13%	15%
Measles 1	90%	91%	92%	93%	94%
Measles 2	75%	78%	80%	82%	85%
Td			Pilot (60%)	70%	80%
TT2+ Pregnant Women	90%	91%	92%	93%	94%

Type of Vaccine	Wastage Targets				
	2012	2013	2014	2015	2016
Routine Immunization	%	%	%	%	%
BCG	70%	70%	65%	65%	60%
OPV	40%	35%	30%	30%	25%
Measles	40%	38%	35%	35%	30%
Hib Penta	25%	20%	18%	15%	15%
TT	40%	40%	35%	30%	25%
Td			25%	20%	20%
DTP	41%				
Hep B Birth Dose		5%	5%	5%	5%

2.4.1.1. B. Strategies & Key activities

Strategy 1: Strengthening of programmatic capacities and capabilities in management, and implementation in immunization.

Key activities:

Service delivery component

1. Implementation of Reaching Every Community strategy to reach the immunization service and other high impact health interventions to un-reached community in selected 70 townships.

- Training on REC strategy including costed-micro plan development to States/Regional and Township levels (for the selected townships)
- Development of REC costed-micro plan and implementation of REC in the selected townships
- Review and improved REC strategy.

2. Implementation of routine immunization by fixed, outreach strategies.

- Immunization with BCG, OPV, DTP, Hep B and Measles 1st dose to under-one year children and Measles 2nd dose for 18 months old children
- Introduction of the Pentavalent vaccine in 2012 in routine immunization together with BCG, OPV and Measles 1st dose to under one year and Measles 2nd dose to 18 months old children.

Surveillance and monitoring

2. Improving data management, supervision, monitoring and evaluation systems at all levels

- Conduct a comprehensive study (EPI review) on all aspects of EPI program to identify issues on both supply (service provider) and demand (beneficiary) end.
- Review and standardize the EPI programme planning tools and monitoring indicators for all levels and introduce Electronic EPI data management systems and online data updating
- Advocate local government authorities for increasing vital registration, and coordinate with Department of Health Planning and local government authorities for increasing vital registration and ensure availability of HMIS data quarterly.

- Census/ consensus to get standard method of population estimation (EPI review recommendation)

Advocacy and communication

3. Demand generation for immunization services

- Development of Advocacy message for community leaders.
- Develop communication strategies and plans including IEC materials for mother and child health care package to the unreached population in collaboration with CHEB. (Development of comprehensive advocacy package for mother and child health)

Programme management

4. Human resource capacity development activities

- Strengthening of training teams' capacity at all levels, updating of all EPI relevant training materials and development of annual training plans
- Strengthening service delivery capacity by conducting capacity building programmes and activities for all EPI related personnel and managers
- Strengthening supportive supervision
- Capacity building of Managers, BHS, Community Based Organizations and NGOs at all levels on social mobilization skills and strategies in the context of EPI.
- Development, printing, and distribution of manuals/field guidelines such as Immunization in Practice for Basic Health Staff, Mid-Level Manager Manual on immunization for Mid-level manager, Management of AEFI, Guidelines for Case-based Measles surveillance and AFP surveillance, etc.

5. Development of human resources and their skill enhancement with Government and partner support including continued deployment of programme support personnel

- Enhance capacity of program delivery at all levels through additional human resource and appoint/continue programme support personnel (e.g. cold chain engineers and logisticians) and explore feasibility of providing performance based incentives.

6. Program monitoring and evaluation

- Strengthen and institutionalize mechanisms like National Committee on Immunization practices, interagency coordination committee etc.
- Regular and scheduled program reviews, evaluations and assessments to provide insights into the programme components and facilitate interventions to increase effectiveness.

7. EPI evaluation workshop annually at National level, Bi-annually at States/Regions level and quarterly at Township level.

- Review on the routine immunization coverage, dropout rate and vaccine wastage rate, surveillance and investigation of VPD outbreak and AEFI, cold chain, supply and logistics, and SWOT analysis on the whole programme.
- Formulation of the recommendations, development of annual plan and micro plans based on the recommendations, re-planning of the micro plans.

8. EPI coverage survey

- Recruitment of National Consultant for EPI coverage survey.
- Formulation of survey design for EPI coverage.
- Conduct the coverage survey.

9. Ensuring immunization safety by making immunization related activities safe for the beneficiary, health care provider and the community

- Strengthen Injection safety, waste disposal and AEFI surveillance

Activity timeline:

Table 7 Activity timeline for Strategy 1

Key Activities for Strategy 1	2012	2013	2014	2015	2016
1. Human resource capacity development activities	X	X	X	X	X
2. Implementation of Reaching Every Community strategy to reach the immunization service and other high impact health interventions to un-reach community.	X	X	X	X	X
3. Improving data management, monitoring and evaluation and supervision systems at all levels	X	X	X	X	X
4. Demand generation for immunization services	X	X	X	X	X
5. Development and deployment of human resources and their skill enhancement with Government and partner support	X	X	X	X	X
6. Program monitoring and evaluation	X	X	X	X	X
7. EPI evaluation workshop annually at National level, Bi-annually at States/Regions level and quarterly at Township level.	X	X	X	X	X
8. EPI coverage survey	X				X
9. Ensuring immunization safety by making immunization related	X	X	X	X	X

activities safe for the beneficiary, health care provider and the community					
10. EPI Review	X				X

Strategy 2: Ensuring the quantity and quality of vaccine by strengthening supply and logistics systems

Key activities:

Vaccine supply, quality and logistics

1. Assurance of quality of vaccine

- Strengthen regulatory agency capacity vis a vis Vaccine quality assurance.
- All vaccines, be procured through UNICEF or its procurement system.
- Periodic monitoring of functional status of Cold chain and devices, and its maintenance activities conducted by cold chain technicians.

2. Strengthening of supply of vaccines and devices

- Conduct a vaccine and supplies distribution/management system assessment
- Implementation of improvement plan based on EVM assessment findings and recommendations
- National reviews of the cold chain and logistics storage capacity as required with all relevant partners.
- Develop Multi Year and annual vaccine and supply distribution plan and cold chain logistics forecasts.
- Phasing in of vaccine stocks monitoring at sub-depot level to monthly intervals and introduction of electronic logistics monitoring and forecasting systems.
- Facilitate bundling by creating a dry storage space in the central cold chain facility.
- Monthly monitoring of vaccine usage and wastage monitoring including unopened vials from sub-center to township level and introducing the use of wastage in unopened vials for forecasting needs
- Improve session plan by systematic micro planning, effective utilization of cold chain equipments (electric & non electric) and demand generation to reduce vaccine wastage
- Expansion of use of new generation temperature monitoring devices

3. Improving the capacity of cold chain key persons at township level.

- Training on “Vaccine, Cold Chain and Logistics” for cold chain key persons at township level.

4. Strengthening of vaccine distribution system

- Replacement of non-repairable and aging cold chain equipments
- Strengthening safe vaccine delivery by provision of a new cold van for Central Cold Room by using Immunization strengthening support (ISS) Fund through WHO

Activity timeline:

Table 8 Activity timeline for Strategy 2

Key Activities for Strategy 2	2012	2013	2014	2015	2016
1. Assurance of quality of vaccine	X	X	X	X	X
2. Strengthening of supply of vaccines and devices	X	X	X	X	X
3. Improving the capacity cold chain key persons at township level and sub-depot level		X		X	
4. Implementation of EVM improvement plan	X	X			
5. Cold chain assessment		X		X	
6. Periodic Replacement of non-repairable and aging cold chain equipments	X	X	X	X	X
7. Utilization of insulated vehicles	X				
8. Expansion of use of new generation temperature monitoring devices	X	X	X	X	X

Strategy 3: Strengthening of cold chain based on the immunization service delivery micro plans at all levels

Key activities:

Vaccine supply, quality and logistics

1. Strengthening of cold chain system at all levels

- External/internal cold chain review to be conducted in 2012 to assess adequacy of cold chain system including utilization of solar cold chain equipment and its impact on immunization service delivery.
- Develop and redesign the criteria for cold chain expansion (both solar and traditional), based on the review findings, to support township, S/R and central levels service delivery plans.

- Develop SOP with CMSD on the arrival procedures and customs clearance for vaccines and dry stores which confirms the respective responsibilities between CMSD, CEPI and UNICEF.
- Develop contingency plan for delays in arrival of vaccine to ensure maintenance of the cold chain
- Establish contingency plans for all stores including power supply, rain flooding, environmental storms and earth quakes for storage and distribution.
- Training of custom staff in the maintenance of the cold chain for vaccine
- Conduct a national temperature monitoring study to determine the temperature profiles of storage and distribution of vaccines in Myanmar and Conduct temperature mapping studies of all cold rooms and freezer rooms at central and sub-depot levels
- Install functional continuous temperature traces at Mandalay and Magway Sub-depots and use of freeze indicators at all stores

2. Capacity building of the cold chain engineers from central cold room and sub-depots and all staff handling vaccine vials

- Assessment of training needs for cold chain engineers from central cold room and sub-depots.
- Trainings for cold chain engineers from all levels including training for working in cold/freezer rooms for Mandalay and Magway sub-depots, and training of vaccine temperature management for all level
- Development of Cold Chain Manual and SOP for all health facilities and display of how to read VVM Poster in all cold room and health facilities
- Adjust the responsibilities of all cold chain supervisors to include the EVM Assessment criteria and indicators
- Study tour for cold chain engineer for cold chain management system
- Outsourcing for cold chain equipments maintenance

Programme management

3. Strengthening cold chain stock management system

- Update current cold chain equipment inventory and ensure their use and serviceability
- Physical counts of stock should be conducted at least four times a year
- Arrival vouchers (receipts) should be obtained from all lower level facilities after delivery/collection and including adequate quality checks such as VVM status and freeze indicator status
- A clear stock level policy for each level should be communicated with stores and reviewed monthly against indicators
- Implement computerized stock management system
- A reporting system to monitor actual deliveries/collections against planned deliveries/collections should be implemented at all stores

4. Ensuring proper maintenance of building and equipments

- Establish preventative maintenance plans for buildings and equipment at all levels

Activity timeline:

Table 9 Activity timeline for Strategy 3

Key Activities for Strategy 3	2012	2013	2014	2015	2016
1. Strengthening of cold chain system at all levels	X	X	X	X	X
2. Capacity building of the cold chain engineers from central cold room and sub-depots and all staff handling vaccine vials	X	X	X		
3. Strengthening cold chain stock management system	X	X	X		
4. Ensuring proper maintenance of building and equipments	X	X	X		

Strategy 4: Development of a country specific immunization policy & guidelines

Key activities:

Programme Management

1. Formulation of the immunization policy by National Committee on Immunization Practice
 - Preparatory workshop/meeting for policy development.
 - Situation analysis in the context of immunization.
 - Development of the immunization policy.

2. Endorsement of the developed policy by Government

- Submission of the policy document to Government

2. Implementation of endorsed policy nation wide

Activity timeline:

Table 10 Activity timeline for Strategy 4

Key Activities for Strategy 4	2012	2013	2014	2015	2016
1. Formulation of the immunization policy by National Committee on Immunization Practice	X				
2. Endorsement of the developed policy by Government	X				
3. Implementation of new policy	X	X	X	X	X

Strategy 5: Effective collaboration with professional organizations and non government associations for the demand generation

Key activities:

Advocacy and communication

1. Collaboration with professional organizations and non government organizations to contribute to social mobilization of communities

- sensitize and train on National EPI programme policies and routine immunization (inclusive of VPD and AEFI reporting) to local authorities and NGOs

2. Community mobilization by these organizations for routine immunization

- Mobilization of community by these organizations for better access to routine immunization

Activity timeline:

Table 11 Activity timeline for Strategy 5

Key Activities for Strategy 5	2012	2013	2014	2015	2016
1. Social mobilization to professional organizations and non government organizations	X	X	X	X	X
2. Community mobilization by these organizations for routine immunization	X	X	X	X	X

2.4.1.2. Objective 2: To accelerate disease control activities to decrease morbidity and mortality due to Vaccine preventable diseases by 2015 and contribute towards achieving the MDG4 goals

2.4.1.2. I. A. Major programme milestones for Measles elimination

The following table describes the intended major programme milestones in the next five years.

Table 12 Major programme mile stones for Measles elimination

Milestones	2012	2013	2014	2015	2016
Update and development of National Plan and Strategies for measles elimination.	Update				
Maintain $\geq 90\%$ coverage of measles first dose in routine EPI	61% Of townships	75% Of townships	90% Of townships	100% Of townships	100% Of townships
Increase coverage of second dose of measles immunization through routine immunization at the age of 18 months to 90% by 2015	80%	80%	85%	90%	90%
Measles campaigns				X	
Active case-based surveillance and case management training of Health Workers.	X	X	X	X	X
Township Reporting rate/100000 population of non measles suspected (discarded) cases increased to ≥ 2 nationally with $\geq 80\%$ of Townships reporting.	50%	60%	70%	80%	90%
Percentage samples with laboratory results within 14 days of receiving at lab (Target 80%)	80%	80%	80%	90%	90%

2.4.1.2. I. B. Strategies & Key activities for Measles elimination

Strategy 6: Strengthening comprehensive Measles elimination program.

Key activities:

Service delivery component

1. Increasing and sustaining coverage of Measles immunization first dose to > 95% nationally and 90 %in every township by 2015

- Stratification of townships for activity planning based on level of coverage
- Improve township planning and supportive supervision in townships with less than 90% coverage
- Update social mobilization materials: poster, pamphlets for measles second dose

2. Ensuring second dose by routine immunization reaching >90% and by SIAs reach coverage of more than 95%

- Providing 2 doses of measles vaccination to all children by 18 months of age through routine and Reaching Every Community (REC) approach to get at least 90% coverage in all townships.
- Monitor and supervise townships with less than 90% coverage
- Provide follow up campaign by 2015.

3. Improvement of case based management and treatment with Vitamin A and supportive treatment.

- Update standard case management protocols
- Training of TMOs and Basic health staff in case management.

Vaccine supply, quality and logistics

4. Forecast and procurement of vaccines and logistics following bundling strategy through UNICEF

- Forecast and procurement of Measles vaccine for routine immunization (Measles 1st dose for 9 months old children and Measles 2nd dose for 18 months children) and SIAs according to determined target age group.

Surveillance and monitoring

5. Strengthening case based measles surveillance and achievement of target indicators by 2012 by integrated disease surveillance with focus on rapid investigations of all suspected outbreaks, active case based surveillance of Measles in all townships.

- To assure high quality surveillance, the surveillance system must be monitored regularly and systematically using a set of formal indicators.
- Annual incidence of measles cases (laboratory confirmed and epidemiologically linked) and deaths
- Annual national incidence of (non measles) suspected measles cases (Target more than 2 per 100,000 populations)
- Percentage of townships annually reporting at least 2 (non measles) suspected measles case per 100,000 population (Target at least 80% townships)
- Annual number of reported rubella cases
- Percentage of reported suspected measles outbreaks fully investigated (Target 100%)
- Completeness of monthly VPD surveillance reports (Target 100%)
- Timeliness of monthly VPD surveillance reports (Target 80%)
- Percentage of suspected measles cases tested in a proficient laboratory (Target 80%)
- Percentage samples with laboratory results within 14 days of receiving at lab (Target 80%)
- Monitoring Case fatality rates.
- Support measles surveillance through advocacy, training, and supervision.
- Monitoring Measles elimination indicators during biannual meetings at States/Regions, quarterly meeting at townships.
- Maintain the accreditation of measles lab and its networks.
- Strengthen lab capacity to support disease surveillance

Advocacy and communication

6. Strengthening case based measles surveillance and achievement of target indicators by 2012 by development and implementation of social mobilization and advocacy strategy integrated in routine immunization, SIAs.

- Develop and implement social mobilization and communication plan to support measles elimination activities
- Advocating and collaborating with the local governments and health related departments to strengthen Measles elimination activities
- Regional mass media/ communication using local NGOs
- VPD Newsletter including news of measles surveillance to provide feedback.
- Support measles surveillance through advocacy, training, and supervision.

Activity timeline:

Table 13 Activity timeline for Strategy 6

Key Activities for Strategy 6	2012	2013	2014	2015	2016
1. Increasing and sustaining coverage of Measles immunization first dose to > 95% nationally and 80% in every township by 2015	X	X	X	X	X
2. Ensuring second opportunity by routine immunization to reach coverage of more than or equal to 90%	X	X	X	X	X
3. Ensuring second opportunity by SIAs to reach coverage of more than or equal to 90%				X	
4. Improvement of case based management and treatment with Vitamin A and supportive treatment.	X	X	X	X	X
5. Forecast and procurement of vaccines and logistics following bundling strategy through UNICEF	X	X	X	X	X
6. Strengthening case based measles surveillance and achieves target indicators by 2012 by integrated disease surveillance with focus on active case based surveillance of Measles in all townships.	X	X	X	X	X
7. Strengthening case based measles surveillance and achieves target indicators by 2012 by development and implementation of Social mobilization and Advocacy strategy, to improve the coverage of Measles 1 st dose and 2 nd dose, integrated in routine immunization, SIAs.	X	X	X	X	X
8. Together with MMC in 2012, one dose of OPV to 0 – 5 years old children around the whole country will also be given	X				

2.4.1.2. II. A. Major programme milestones for Polio eradication

The following table describes the intended major programme milestones in the next five years.

Table 14 Major programme milestones for polio eradication

Milestones	2012	2013	2014	2015	2016
Reach and sustain routine OPV3 coverage of >95%	93%	93%	94%	94%	95%

nationally and 90% in every township					
Strengthening AFP surveillance countrywide with inclusion of private sector	X	X	X	X	X
Monitor progress of polio eradication by NCCPE and NCIP	X		X		
SNID/NID	X	X	X	As needed according to AFP surveillance.	
Maintenance of international certification standards of Surveillance for polio and non-polio AFP rate at the National and S/R level of more than 2/100,000 under 15 years old age.	X	X	X	X	X
Zero case of Wild and Vaccine-Derived polio virus.	X	X	X	X	X
Development of a contingency plans in coordination with neighboring countries for rapid response to any outbreak to interrupt polio transmission	X				
Estimating population immunity to Polio using sero surveys	X	X			

2.4.1.2. II. B. Strategies & Key activities for Polio eradication

Strategy 7: strengthening of routine immunization and sensitive AFP surveillance to bridge any immunity gap by conducting NID/SNID.

Key activities:

Service delivery component

1. Increasing and sustaining coverage of oral polio immunization 3rd dose to > 95% nationally and 90% in every township by 2015 incorporated with other traditional vaccines.

- Improve township planning and supportive supervision in townships with less than 90% coverage incorporate in routine immunization.

2. Implementation of SNIDs in the selected townships

- Advocacy meetings, central/states & regions training for activity planning/micro planning, supervision,
- Township micro planning, training, social mobilization.
- Conducting campaign immunization, supervision and monitoring.
- To boost the immunity against polio among children under-five nation-wide by adding one dose of OPV in Mass Measles Campaign in 2012

3. Outbreak response Immunization

- Immunization with OPV to all under five children according to standard guideline
- Review preparedness of plans for emergency high quality supplementary immunization activities and outbreak response to polio cases in coordination with neighboring countries as and when required.
- Estimating population immunity to Polio using sero surveys

Vaccine supply, quality and logistics

4. Forecast and procurement of vaccines and logistics through UNICEF

- Forecast and procurement of OPV routine immunization and SIAs according to determined target age group population.

Surveillance and monitoring

5. Maintenance of international certification standards of Surveillance for polio and non-polio AFP rate at the National and S/R level of more than 2/100,000 under 15 years old age and strengthening of AFP surveillance together with surveillance of other VPDs, outbreak detection and response.

- Strengthen capacities of health staff in all facilities under the surveillance system to respond to AFP cases
- Monitor performance indicators to ensure surveillance quality
- Expand the surveillance system to include all public and private health facilities in order to progress towards effective AFP surveillance.
- Epidemiological analysis of VPD data to guide and strengthen routine immunization
- Explore feasibility of starting community based surveillance by the BHS

6. Improving the quality and capacity of laboratory services in confirmation of outbreaks.

- Capacity building of laboratory staffs
- Strengthening and expansion of laboratory facilities.

Advocacy and communication

7. Planning and implementation a social mobilization and advocacy plan for all levels to promote polio eradication activities amongst policy makers, programme managers, Local government, NGOs and community

- Development of Advocacy message for policy makers, programme managers, Local government, NGOs, community leaders and community.
- Conduct formative research, and develop and field test disseminate and implement a comprehensive advocacy and communication strategies and plans including IEC materials in collaboration with Health education bureau to reach un-reached populations (Development of comprehensive advocacy package for mother and child health)
- Conduct advocacy and dissemination meetings at all levels to ensure more participation

Programme management

8. Development of a contingency plans in coordination with neighboring countries for rapid response to any outbreak to interrupt polio transmission

- Review preparedness of plans for emergency high quality supplementary immunization activities and outbreak response to polio cases in coordination with neighboring countries as and when required.

Activity timeline:

Table 15 Activity timeline for Strategy 7

Key Activities for Strategy 7	2012	2013	2014	1015	2016
1. Increasing and sustaining coverage of oral polio immunization 3 rd dose to > 95% nationally and 90%in every township by 2015 incorporated with other traditional vaccines.	X	X	X	X	X
2. Implementation of SNIDs in the selected townships	X	X	X.	As needed	
3. Outbreak response Immunization in response to AFP case	X	X	X	X	X

4. Forecast and procurement of vaccines and logistics through UNICEF	X	X	X	X	X
5. Maintenance of international certification standards of Surveillance for polio and non-polio AFP rate at the National and S/R level of more than 2/100,000 under 15 years old age. And strengthening of AFP surveillance together with surveillance of other VPDs, outbreak detection and response.	X	X	X	X	X
6. Improving the quality and capacity of laboratory services in confirmation of outbreaks.	X	X	X	X	X
7. Planning and implementation a social mobilization and advocacy plan for all levels to promote polio eradication activities amongst policy makers, programme managers, Local government, NGOs and community	X	X	X	X	X
8. Development of a contingency plans in coordination with neighboring countries for rapid response to any outbreak to interrupt polio transmission	X				
9. One dose of OPV to 0 – 5 years old children around the whole country to boost the immunity against Polio to be given together with MMC in 2012	X				

2.4.1.2. III. A. Major programme milestones for maintenance of Maternal and Neonatal Tetanus elimination status

The following table describes the intended major programme milestones in the next five years.

Table 16 Major programme milestones for maintenance of MNTE status

Milestones	2012	2013	2014	2015	2016
Development & Implementation of National Plan and Strategies for MNT elimination maintenance.	X	X	X	X	X
Strengthening of Active case based surveillance	X	X	X	X	X
Data Review to identify High Risk Townships	X	X	X	X	X
Introduction of school based immunization			X	X	X
TT SIAs from 20 selected townships	X		X		X
Review of the MNTE elimination strategies by the national	X			X	

committee on Immunization practices					
Improve clean delivery coverage in townships and nationally	X	X	X	X	X

2.4.1.2. III. B. Strategies & Key activities for maintenance of MNT elimination status

Strategy 8: Strengthening routine immunization, and NT surveillance

Key activities:

Service delivery component

1. Strengthening routine immunization so that coverage of DPT3 for under-one children and TT2+ for pregnant women achieves 95% by 2016.

- Improve township planning and supportive supervision in townships with less than 90% coverage incorporate in routine immunization.

2. Improve clean delivery coverage in townships and nationally

- Distribution of CDKs in townships as well as national wide.

Vaccine supply, quality and logistics

3. Forecast and procurement of vaccines and logistics following bundling strategy through UNICEF

- Forecast and procurement of TT vaccine, and also for focal SIAs.

Surveillance and monitoring

4. Strengthening of Active case based surveillance and response to NT case.

- Regular review of the Maternal and neonatal tetanus surveillance and analysis of township data at all levels
- Capacity building of staff in surveillance activity.
- Strengthening active surveillance, outbreak detection and response by monitoring and supportive supervision.

Advocacy and communication

5. Planning and implementation a social mobilization and advocacy plan for all levels as a part of routine immunization amongst policy makers, programme managers, Local government, NGOs and community for the sustain participation in the maintenance of MNTE status.

- Development of Advocacy message for policy makers, programme managers, Local government, NGOs, community leaders and community.
- Conduct formative research, and develop and field test disseminate and implement a comprehensive advocacy and communication strategies and plans including IEC materials in collaboration with Health education bureau to reach un-reached populations (Development of comprehensive advocacy package for mother and child health)
- Conduct advocacy and dissemination meetings at all levels to ensure more participation

Programme management

6. Development and National MNT elimination maintenance plan.

- Development of the MNTE elimination maintenance strategies and status by the National committee on Immunization practices.
- Introduction of Td through school based immunization
- Focal TT SIA's in 20 selected townships based on maintenance plan criteria

8. Coordination with WCHD and HIV projects (through WHO, UNFPA, UNICEF) to improve the CDK coverage in townships and nationally while avoiding the overlapping of the distribution of CDK to the townships.

- Development of distribution plans.
- Coordination and information sharing with WCHD and HIV projects.

Activity timeline:

Table 17 Activity timeline for Strategy 8

Key Activities for Strategy 8	2012	2013	2014	1015	2016
1. Strengthening routine immunization so that coverage of DPT3 for under-one children and TT2+ for pregnant women achieves 95% by 2016.	X	X	X	X	X
2. Development of National MNT elimination maintenance plan based on the recommendation by WHO _	X				

i. Routine TT Coverage in pregnant women by 80%					
ii. Focal TT SIA in hard to reach area where routine immunization coverage is less than 80%					
iii. School based Td introduction					
iv. Improve and maintain CDK coverage					
v. High quality NT surveillance.					
3. Improve and sustain clean delivery coverage nation wide	X	X	X	X	X
4. TT SIAs in 20 selected townships	X		X		X
5. Introduction of school based Td immunization			X	X	X
6. Forecast and procurement of vaccines and logistics following bundling strategy through UNICEF	X	X	X	X	X
7. Strengthening of Active case based surveillance and response to NT case.	X	X	X	X	X
9. Planning and implementation a social mobilization and advocacy plan for all levels as a part of routine immunization amongst policy makers, programme managers, Local government, NGOs and community for the sustain participation in the maintenance of MNTE status.	X	X	X	X	X
10. Coordination with WCHD and HIV projects (through WHO, UNFPA, UNICEF) to improve the CDK coverage in townships and nationally while avoiding the overlapping of the distribution of CDK to the townships.	X	X	X	X	X

2.4.2. GIVS-2: Introduction New Vaccines and Technology

2.4.2.1. Objective 3: Reduction in Under five mortality and morbidity by 2016 by introduction of new and underused vaccines based on disease burden and cost effectiveness

2.4.2.1. A. Major programme milestones

The following table describes the intended major programme milestones in the next five years.

Table 18 Major programme milestones for introduction of NUV

Milestones	2012	2013	2014	2015	2016
1. Penta-valent vaccine with DPT-HepB-Hib is introduced in EPI Programme	93%	93%	94%	94%	95%
2. Strengthening and expansion of existing surveillance with setting up of surveillance for other diseases for which affordable vaccines are available or likely to be available in near future	X	X	X	X	X

2.4.2.1. B. Strategies & Key activities

Strategy 9: Introduction of Haemophilus Influenzae type b (Hib) vaccine as a pentavalent combination with DPT and Hepatitis B vaccines in the EPI programme.

Key activities:

Service delivery component

1. Immunization with the pentavalent vaccine (DPT-HepB-Hib) to under-one children throughout the country

- Training for BHS on introduction of the pentavalent vaccine
- Micro plan development at township level
- Ensuring adequate cold chain equipments as and where required

Vaccine supply, quality and logistics

2. Forecast and procurement of vaccines and logistics following bundling strategy through UNICEF

- Forecast and procurement of the pentavalent vaccine and logistics to end user points
- Submit application to GAVI for NUVS grant for Pentavalent introduction

Advocacy and communication

3. To increase coverage through demand generation and social mobilization

- Pentavalent official National launch along with sustained media campaign
- Development of Advocacy message for policy makers, programme managers, Local government, NGOs, community leaders and community.
- Conduct formative research, and develop and field test disseminate and implement a comprehensive advocacy and communication strategies and plans including IEC materials in collaboration with Health education bureau to reach un-reached populations (Development of comprehensive advocacy package for mother and child health)
- Conduct advocacy and dissemination meetings at all levels to ensure more participation

Programme management

4. Formulation of the vaccine introduction plan

- Vaccine introduction plan to be formulated inclusive of micro planning, training, monitoring & supervision, Reporting, social mobilization etc for all levels and implemented
- Determination of phased introduction or the whole country introduction of the vaccines at the same time.

Activity timeline:

Table 19 Activity timeline for Strategy 9

Key Activities for Strategy 9	2012	2013	2014	1015	2016
1. Formulation of the vaccine introduction plan for pentavalent	X				
2. Immunization with the pentavalent vaccine (DPT-HepB-Hib) to under-one children through out the country	X	X	X	X	X
3. Forecast and procurement of vaccines and logistics following bundling strategy through UNICEF	X	X	X	X	X
4. Increasing coverage through demand generation and social mobilization		X	X	X	X

Strategy 10: Reducing transmission of Hepatitis B by increasing coverage with Hepatitis B birth dose and 3 doses of DTP-HepB-HiB (Penta valent) vaccine delivered in Routine both in public and private sectors.

Key activities:

Service delivery component

1. Increasing and sustaining coverage of 3rd dose of Penta-valent (as HepB 3rd dose) to > 95% nationally and 90% in every township by 2016 incorporated with other traditional vaccines in routine immunization.

- Improve township planning and supportive supervision in townships with less than 90% coverage incorporate in routine immunization.

2. Promoting birth dose of HepB immunization.

- Encouraging birth dose of HepB in institutional delivery where functioning cold chain with electrical or solar refrigerator is available.

Vaccine supply, quality and logistics

3. Forecast and procurement of vaccines and logistics following bundling strategy through UNICEF

- Forecast and procurement of the HepB vaccine and logistics to end user points

Activity timeline:

Table 20 Activity timeline for Strategy 10

Key Activities for Strategy 10	2012	2013	2014	1015	2016
1. Increasing and sustaining coverage of HepB 3 rd dose to > 90% nationally and 90% in every township by 2015 incorporated with other traditional vaccines in routine	X	X	X	X	X

immunization. (continuation as Penta third dose after introduction in 2013)					
2. Strengthening birth dose for HepB	X	X	X	X	X
3. Forecast and procurement of vaccines and logistics following bundling strategy through UNICEF	X	X	X	X	X

Strategy 11: Getting information on diseases for which affordable vaccines are available or likely to be available in near future (disease burden and cost effectiveness) to enable evidence based decision making – Hib, JE, Rubella, Rotavirus, Cholera, Typhoid, Meningococcal meningitis, Influenza like illnesses (H5N1, H1N1, and seasonal Influenza)

Key activities:

Programme management

1. Continuing existing surveillance, expansion of surveillance as per requirement after establishment and then integration of sentinel sites (for only new vaccines) with the national surveillance.

- Strengthening of existing surveillance by capacity building of the laboratory staff and expansion of the laboratory facilities.
- Establishment of new sentinel sites and regular provision of the surveillance data to immunization programme and Epidemiology Department of DoH.

2. Continuing surveillance for *H.influenzae* infections, rotavirus, Cholera, Typhoid, Meningococcal meningitis, Influenza like illnesses (H5N1, H1N1, and seasonal Influenza) etc

- Expert group of Researchers, Epidemiologists, programme managers and policy makers to be formed to identify and build consensus on priority diseases and New and underused vaccines

- Active typhoid surveillance at sentinel hospitals
- Integrated surveillance of rotavirus and Hib surveillance at major hospitals

- Incorporate the existing sentinel surveillance system and sites for surveillance of priority diseases. Community based surveys will be carried out
- Plan for introduction of new Vaccine in Routine EPI program.

Activity timeline:

Table 21 Activity timeline for Strategy 11

Key Activities for Strategy 11	2012	2013	2014	1015	2016
1. Continuing existing surveillance, expansion of surveillance as per requirement after establishment and then integration of sentinel sites with the national surveillance.	X	X	X	X	X
2. Continuing surveillance for H.influenzae infections, Cholera, Typhoid, Meningococcal meningitis, Influenza like illnesses (H5N1, HINI, and seasonal Influenza) etc	X	X	X	X	X
Estimating population immunity for Measles using sero surveys	X	X			

Strategy 12: Sustaining measles second dose immunization by external resource mobilization

Key activities:

Programme management

1. Achieving 80% coverage with Measles second dose in every township and 90% at national by routine immunization

- Preparing and Submission of Measles 2nd dose proposal to GAVI (Already done in 2011)
- Immunization with Measles second dose by routine immunization to the children of 18 months by proper micro planning for routine immunization, supportive supervision, advocacy to community leaders and communication to community, procurement of WHO prequalified vaccine through UNICEF supply division.

Activity timeline:

Table 22 Activity timeline for Strategy 12

Key Activities for Strategy 12	2012	2013	2014	1015	2016
1. Preparing and Submission of Measles 2 nd dose proposal to GAVI (Already done in 2011)					
2. Achieving 80% coverage with Measles second dose in every township and 90% at national by routine immunization	X	X	X	X	X

2.4.3. GIVS-3: INTEGRATING IMMUNIZATION, OTHER LINKED INTERVENTIONS AND SURVEILLANCE IN THE HEALTH SYSTEM CONTEXT

2.4.3.1. Objective 4: To increase coverage of other primary health care interventions through improved linkages with immunization

2.4.3.1. A. Major programme milestones

The following table describes the intended major programme milestones in the next five years.

Table 23 Major programme milestones for REC

Milestones	2012	2013	2014	2015	2016
1. REC strategy implementation	70 townships	70 townships	70 townships	70 townships	70 townships

2.4.3.1. B. Strategies & Key activities

Strategy 13: Implement a package of integrated primary health care interventions using Immunization as a platform to reach in Hard to reach areas and populations by Reaching Every Community (REC) using GAVI HSS and others

Key activities:

Service delivery component

1. Implementation of REC strategy to reach the hard to reach areas and populations

- Training for BHS on REC strategy and costed micro plan development in REC townships
- Micro plan development for REC implementation
- Immunization with 7 antigens for under five children and TT for pregnant women
- Delivery of nutrition, maternal and child health care, disease control, IEC and environmental health services to the reach areas and populations

Vaccine supply, quality and logistics

2. Ensuring timely arrival of adequate vaccines and other required supplies required to implement REC in the REC townships.

- Timely submission of REC costed micro plans by the respective townships to CEPI
- Coordination with CEPI and CMSD to ensure timely arrival of adequate vaccines and other required supplies to the respective townships.

Advocacy and communication

3. Planning and implementation a social mobilization and advocacy plan for all levels amongst policy makers, programme managers, Local government, NGOs and community to attain the support and participation in the REC.

- Development of Advocacy message for policy makers, programme managers, Local government, NGOs, community leaders and community.
- Conduct advocacy meetings at all levels to ensure participation

Programme management

4. Managing REC strategy to be effective and efficient.

- Monitor and evaluate the incremental efficiency, effectiveness and impact of combined interventions and their means of delivery.
- Review of the REC strategy by independent expert/s.

Activity timeline:

Table 24 Activity timeline for Strategy 13

Key Activities for Strategy 13	2012	2013	2014	2015	2016
1. Implementation of REC strategy to reach the hard to reach areas and populations	X	X	X	X	X
2. Ensuring timely arrival of adequate vaccines and other required supplies required to implement REC in the REC townships.	X	X	X	X	X
3. Planning and implementation a social mobilization and advocacy plan for all levels amongst policy makers, programme managers, Local government, NGOs and community to attain the support and participation in the REC.	X	X	X	X	X
4. Managing REC strategy to be effective and efficient.	X	X	X	X	X

2.4.4. GIVS-4: IMMUNIZATION IN A CONTEXT OF GLOBAL INTERDEPENDENCE (FINANCING AND INTERNATIONAL COOPERATION)

2.4.4.1. Objective 5: To align National immunization policies & programme to the regional and global priorities and to ensure sustainability of the EPI programme

2.4.4.1. A. Major programme milestones

The following table describes the intended major programme milestones in the next five years.

Table 25 Major programme milestones for alignment of National immunization policies and programme to the regional and global priorities and ensure programme sustainability

Milestones	2012	2013	2014	2015	2016
Review and align EPI programme priorities to achieve MDG 4 goals by 2015	X				
Develop and implement advocacy strategy for policy makers and business persons to ensure financial sustainability of EPI programme	X				
Vaccine self sufficiency initiative (e.g. Tetanus toxoid and Hepatitis B vaccine Production).			X	X	X

2.4.4.1. B. Strategies & Key activities

Strategy 14: National immunization policies and programme priorities outcomes aligned to regional and global recommendations

Key activities:

Programme management

1. Review of the EPI programme together with key stakeholders on its activity performance and impact in the context of the country

- Desk review/International review on EPI programme schedules and immunization strategies including school based immunization, coverage, immunization system performance indicators and incidence of VPDs, and support formulation of the strategies which address the prioritized issues based on the review findings so that to meet the MDG4

2. Development of the National immunization policy to support the implementation of the strategies formulated as required

- Formulation of the immunization policy by National Committee on Immunization Practice

- Endorsement of the developed policy by Government

Activity timeline:

Table 26 Activity timeline for Strategy 14

Key Activities for Strategy 14	2012	2013	2014	1015	2016
1. Review of the EPI programme together with key stakeholders on its activity performance and impact in the context of the country	X				X
2. Development of the National immunization policy to support the implementation of the strategies formulated as required		X	X	X	X

Strategy 15: Attaining operational, financial and technical efficiencies and self sufficiency in program management.

Key activities:

Advocacy and communication

1. Develop and implement plans for attaining operational efficiencies

- Advocacy with donors for sustained funding
- Capacity building of program managers on donor engagement strategy including meetings and conferences, etc.

Programme management

2. Development of financial sustainability plan by attaining financial efficiencies and self sufficiency in the programme management

- Conduct financial review to assess the needs of the evolving programme in the present and the future
- Recommending the requirements, mechanisms and modalities for resource mobilization and achieve financial efficiency and self sufficiency.

3. Develop and implement vaccine self sufficiency initiative

- Strengthening production of TT and HepB vaccines locally
- Attaining NRA approval for selected locally produced vaccines

Activity timeline:

Table 27 Activity timeline for Strategy 15

Key Activities for Strategy 15	2012	2013	2014	1015	2016
1. Develop and implement plans for attaining operational efficiencies	X	X	X	X	X
2. Attaining financial efficiencies and self sufficiency in the programme management	X	X	X	X	X
3. Develop and implement vaccine self sufficiency initiative			X	X	X

2.5. Immunization costing and Financing

2.5.1. Macroeconomic information

The macroeconomic information was included in the costing and financing estimation. The estimated 2011 GDP per capita is 671,920 Kyats² (781.3 US\$) and it is projected to increase by average 8.6% annually.

Table 28 Macro-economic information of the country from 2011 to 2016

	2011	2012	2013	2014	2015	2016
GDP per capita ¹	781.30	848.57	921.63	1000.98	1087.16	1195.88
Total health expenditures per capita (THE per capita) ²	19.02	21.21	23.65	26.37	29.40	33.94
Government health expenditures (GHE as a % THE)	10%	10%	10%	10%	10%	10%

Figure 6 Macroeconomic information, current and projected, Myanmar in USD (Calculated from GDP information in Statistical Yearbook 2009, Central statistical Organization, Govt of the Union of Myanmar and at the UN exchange rate of 860 Kyats for 1 US\$)

2.5.2. Costing Methodology for the cMYP 2012-2016

For implementing the planned strategies and activities successfully during the cMYP period it is essential to have adequate financing available for them. It is the responsibility of the Ministry of Health and the central EPI program supported by the ICC to ensure that the financing for the programme is secured from both local and international sources. The cost implications of the proposed programme strategies and activities and how they relate to the available financing for them is highlighted in this section. Strategies are proposed to improve the operational and economic efficiency and the programmatic impact along with its financial viability.

The costing for effective vaccine management and improvement of cold chain maintenance along the distribution chain proposed by the EVM assessment done in July – August 2011 is also included in costing of cMYP 2012 – 2016.

Implementing this multi-year plan will require increasing costs over the 2012-2016 periods. The major increases in programme cost are driven mainly by:

- New vaccines introduction
- Supplementary Immunization activities

² Estimated exchange rate – 860 kyats/US\$

- Increases in population of children to be vaccinated due to coverage improvements and overall increase in the annual birth cohort.
- Expanding and supporting the immunization related health systems
- Introduction of integrated delivery strategies using immunization as a platform to reach the hard to reach populations and areas countrywide
- Increased Human Resource and immunization infrastructure funding

The following Figure describes this increasing trend of the costs.

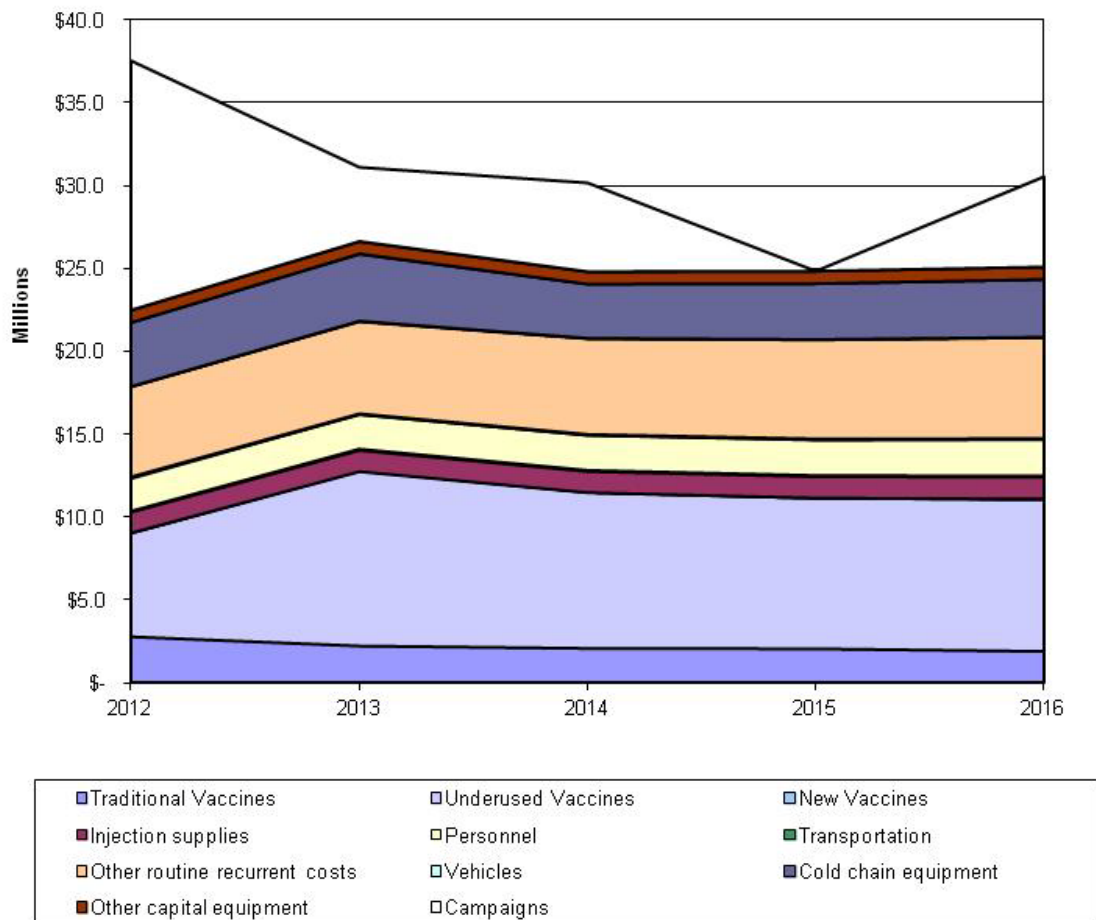


Figure 7 Projection of Future Resource Requirements FROM 2012 - 2016

The different EPI system components were costed on the basis of the planned activities and the inputs required. The costs were derived on the basis of the planned interventions and activities. Considering the product of unit prices, quantities required each year along with proportion of time spent by human resources on immunization related activities was used to derive costing of all inputs and operational costs. Past spending was used as a basis to project the estimated future expenditure. All these different approaches are brought together in the cMYP Excel costing tool (cMYP_Costing_Tool_Vs.2.5_En.xls

downloaded from the WHO Immunization financing website). This was used to derive costs from the following components:

- Vaccines and injection supplies
- Personnel costs (EPI specific and shared)
- Vehicles, and transport cost
- Cold chain equipment, maintenance and overheads
- Operation cost for campaigns
- Program activities, other recurrent costs and surveillance

The cost profile of routine immunization was analyzed for 2011 as a baseline: 27.86% on Traditional vaccines, 7.82% on Underused vaccines (HepB), 10.45% on Injection supplies, 11.06% on personnel, 0.45% on transport, 22.49% for cold chain equipment, 19.60% on other routine recurrent cost, 0.18% on vehicles and 0.08% other capital equipment. See the following figure.

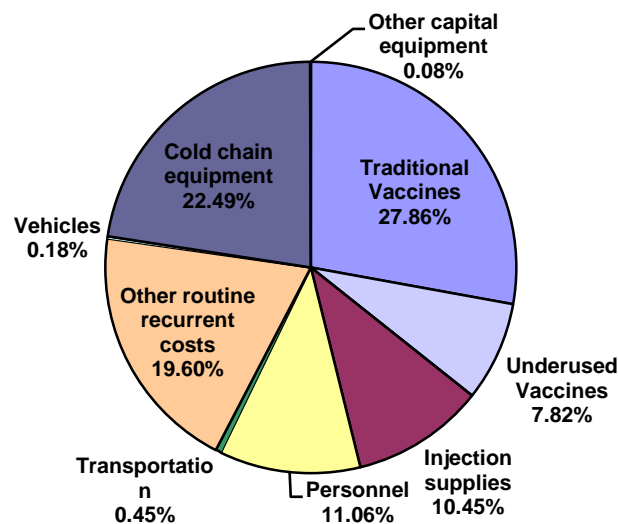


Figure 8 Baseline cost profile for 2011 (Routine Immunization)

2.5.3. Costing of cMYP

1. Vaccines and injection equipment: the costs are function of the unit prices for individual vaccines, with quantities determined by the target population, which is adjusted for by coverage and wastage objectives. The prices are based on information from UNICEF supply division and vaccine prices sheet of cMYP costing tool. For the period of five years a total of 62.07 million USD will be needed for the traditional, under used and new vaccines and injection materials, the majority of this will be for new pentavalent vaccine. The introduction of Penta-valent vaccines in 2012 also contributes high budget requirement in 2012 and it will be secured by Myanmar Government's contribution for co-financing and GAVI's co-financing.

2. Personnel costs: Over the period of 2012-2016, the total personnel cost (minus shared costs) is 10.66 million USD. The average cost (Routine only) for total resource requirement per DTP targeted child is 20.9 USD for the five years. The cost estimates are based on unit expenditure on different personnel cadres of Department of health working in EPI at the different levels of the system and the proportion of time adjusted for time spent on EPI related activities. The cost and time spent on supervision, and outreach activities were included for the different cadres of staff at the different level of the system. The unit expenditures are based on prevailing government gross wages, salary and travelling allowance. The quantities available and needed for the duration of the cMYP were included. Time spent on EPI was estimated by input of the different level of staff at different levels.

3. Cold chain equipment procurement and maintenance: Myanmar has been investing over the last cMYP period to develop a robust backbone of cold chain over the country so as to maintain vaccine quality right up to the beneficiary. One central cold chain store, 24 sub depots have been established to support the 330 townships. The townships have capacity to store vaccine up to one month as some town ships with electricity supplies of less than 8 hours per day have been provided with solar cold chain equipment. In this plan, procuring a cold van as a cold chain improvement by Immunization Strengthening Support (ISS), to establish new sub depot, replace old equipment, furnish new health facilities, fill the current gap and procure spare parts and cover the maintenance, a total of 21.06 million USD will be needed for the period of five years. 372,500 US\$ of cost for the effective vaccine management and cold chain maintenance improvement proposed by the EVM assessment done in July – August 2011 is also included in this cMYP.

4. Operational costs for campaigns: Myanmar is one of the priority countries for Measles elimination by global measles elimination initiative and is implementing a plan to achieve this goal by 2015. Measles follow up campaigns are planned in the next 5 years along with strengthening of surveillance and treatment of cases. The country has already interrupted the transmission of wild polio viruses; however, with the outbreak of VDPV in Mandalay Region in December 2010, will be conducting supplementary immunization activities to regain transmission interrupted status. Wild Polio

Virus outbreak in China, a neighboring country, makes nation wide Polio immunization joint with Mass measles campaign in the 2012 leads to a high budget requirement in 2012. Myanmar Maternal and Neonatal tetanus is validated to have been eliminated in Myanmar by an international survey team in 2010. Myanmar needs to maintain this status and will have to formulate and implement a plan to do so in the next five years. These plans may include conducting SIA's in high risk areas and town ships. The total cost estimated to conduct the planned supplemental immunization activities over five year period for three more sNIDs and one measles campaign in 2015 and three focal SIA for tetanus toxoid is 30.26 million USD.

5. Program activities, other recurrent costs and surveillance: The costs for program activities like building overheads (electricity, water), training, social mobilization, surveillance of vaccine preventable diseases, data management, laboratory and other similar activities were also derived based on the past trends in expenditure. The total cost of these activities over a period of five years is 49.83 million USD.

Table 29 Costing for 5 years of cMYP by categories

Cost Category	Future Cost Projections					Total 2012 - 2016
	2012	2013	2014	2015	2016	
	US\$	US\$	US\$	US\$	US\$	US\$
Routine Recurrent Costs						
Vaccines (routine vaccines only)	\$9,041,011	\$12,778,051	\$11,499,326	\$11,118,602	\$11,112,598	\$55,699,587
Traditional	\$2,787,216	\$2,236,124	\$2,089,501	\$2,063,540	\$1,905,079	\$11,081,460
Underused	\$6,253,795	\$10,541,926	\$9,393,607	\$9,072,155	\$9,147,387	\$44,408,527
New			\$15,218	\$32,908	\$60,131	\$109,258
Injection supplies	\$1,269,276	\$1,290,124	\$1,285,331	\$1,299,269	\$1,330,280	\$6,474,261
Personnel	\$2,048,276	\$2,089,242	\$2,131,026	\$2,173,647	\$2,217,120	\$10,659,311
Salaries of full-time NIP health workers (immunization specific)	\$65,214	\$66,518	\$67,848	\$69,205	\$70,589	\$339,374
Per-diem for outreach vaccinators/mobile teams	\$1,432,460	\$1,461,109	\$1,490,331	\$1,520,138	\$1,550,541	\$7,454,579
Per-diem for supervision and monitoring	\$559,602	\$571,615	\$572,847	\$584,304	\$596,990	\$2,865,357
Transportation	\$75,589	\$77,154	\$78,757	\$80,305	\$81,889	\$395,695
Fix site strategy (incl. vaccine distribution)	\$41,994	\$42,963	\$43,754	\$44,614	\$45,494	\$218,719
Outreach strategy	\$25,195	\$25,718	\$26,252	\$26,768	\$27,296	\$131,232
Mobile strategy	\$9,399	\$9,573	\$9,751	\$9,923	\$10,099	\$43,744
Maintenance and overhead	\$2,243,040	\$2,317,522	\$2,382,701	\$2,524,006	\$2,594,074	\$12,061,343
Cold chain maintenance and overheads	\$538,503	\$560,636	\$590,677	\$621,724	\$653,747	\$2,965,288
Maintenance of other capital equipment	\$476,656	\$504,448	\$514,537	\$599,245	\$611,230	\$2,706,117
Building overheads (electricity, water...)	\$1,227,880	\$1,252,438	\$1,277,496	\$1,303,036	\$1,329,097	\$6,389,937
Short-term training	\$616,384	\$632,280	\$648,234	\$665,677	\$683,381	\$3,223,915
IEC/social mobilization	\$770,480	\$790,351	\$810,367	\$823,221	\$835,476	\$4,029,894
Disease surveillance	\$1,540,960	\$1,580,701	\$1,620,734	\$1,646,442	\$1,670,952	\$8,059,789
Programme management	\$255,000	\$260,100	\$318,362	\$324,730	\$331,224	\$1,489,416
Other routine recurrent costs						
Subtotal	\$17,860,015	\$21,815,525	\$20,774,898	\$20,698,798	\$20,841,974	\$101,991,211
Routine Capital Costs						
Vehicles	\$30,896	\$31,732	\$32,590	\$33,241	\$33,906	\$162,366
Cold chain equipment	\$3,875,495	\$4,056,865	\$3,281,354	\$3,385,449	\$3,492,334	\$18,091,497
Other capital equipment	\$742,295	\$742,295	\$742,295	\$742,295	\$742,295	\$3,711,474
Subtotal	\$4,648,686	\$4,830,892	\$4,056,238	\$4,160,985	\$4,268,536	\$21,965,336
Campaign Costs						
Polio campaign	\$10,053,450	\$4,465,589	\$4,618,084			\$19,137,123
Vaccines and Injection Supplies	\$2,112,248	\$923,633	\$940,259			\$3,976,140
Operational costs	\$7,941,242	\$3,541,956	\$3,677,825			\$15,161,022
Measles follow up campaign	\$4,267,718				\$4,687,814	\$8,955,531
Vaccines and Injection Supplies	\$2,412,529				\$2,558,334	\$4,970,863
Operational costs	\$1,855,189				\$2,129,480	\$3,984,669
TT campaign	\$693,812		\$720,598		\$748,474	\$2,162,884
Vaccines and Injection Supplies	\$340,292		\$355,643		\$361,993	\$1,062,928
Operational costs	\$344,520		\$364,956		\$386,480	\$1,095,956
Specify Campaign in Table 0.0						
Vaccines and Injection Supplies						
Operational costs						
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Vaccines and Injection Supplies						
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Operational costs						
Specify Campaign in Table 0.0						
Vaccines and Injection Supplies						
Operational costs						
Subtotal	\$15,015,019	\$4,465,589	\$5,338,682		\$5,436,287	\$30,255,577
Shared Health Systems Costs						
Shared personnel costs	\$3,741,557	\$3,816,388	\$3,892,715	\$3,970,570	\$4,049,981	\$19,471,210
Shared transportation costs	\$37,694	\$38,447	\$39,216	\$40,001	\$40,801	\$196,159
Construction of new buildings						
Subtotal	\$3,779,250	\$3,854,835	\$3,931,932	\$4,010,570	\$4,090,782	\$19,667,369
GRAND TOTAL	\$41,392,971	\$34,965,841	\$34,101,759	\$28,870,354	\$34,637,578	\$173,879,494
Routine Immunization	\$26,257,851	\$30,591,252	\$28,763,068	\$28,870,354	\$29,291,291	\$143,823,916
Supplemental Immunization Activities	\$15,015,019	\$4,465,589	\$5,338,682		\$5,436,287	\$30,255,577

These costs are again analyzed by different cMYP components as in the following table. The total program cost for the five years period is 173.88 million. 52% (US\$89.71) is Vaccine supply and logistics, 6% (US\$11.05) is service delivery, 2% (US\$4.03%) is advocacy and communication, 5% (US\$ 8.06)is Monitoring and disease surveillance, 6% (US\$11.1) is Programme management, 17% (US\$30.26%) is SIA's , and 11% (US\$19.67) of this is Shared Health system cost.

Table 30 Costs for different cMYP components in US\$ for 2012 - 2016

cMYP Component	Future Cost Projections					Total 2012 - 2016
	2012 US\$	2013 US\$	2014 US\$	2015 US\$	2016 US\$	
Vaccine Supply and Logistics	\$15,974,132	\$19,964,152	\$17,946,109	\$17,849,826	\$17,976,371	\$89,710,590
Service Delivery	\$2,123,865	\$2,166,396	\$2,209,784	\$2,253,952	\$2,299,009	\$11,053,005
Advocacy and Communication	\$770,480	\$790,351	\$810,367	\$823,221	\$835,476	\$4,029,894
Monitoring and Disease Surveillance	\$1,540,960	\$1,580,701	\$1,620,734	\$1,646,442	\$1,670,952	\$8,059,789
Programme Management	\$2,099,264	\$2,144,818	\$2,244,143	\$2,286,343	\$2,328,702	\$11,103,269
Supplemental Immunization Activities	\$15,015,019	\$4,465,589	\$5,338,682		\$5,436,287	\$30,255,577
Shared Health Systems Costs	\$3,779,250	\$3,854,835	\$3,931,932	\$4,010,570	\$4,090,782	\$19,667,369
GRAND TOTAL	\$41,302,971	\$34,966,841	\$34,101,750	\$28,870,354	\$34,637,578	\$173,879,494

5.3.5. Financing of the program in 2011 (baseline year) and 2012 - 2016

Based on the program cost categories, the past and future financing available for the respective cost areas were derived from partners. The base financing profile for 2011 excluding the Campaign and Shared costs shows that the Government of Myanmar share to be 20%, UNICEF 58%,WHO 15%, GAVI 6% and Potential donors 2%.

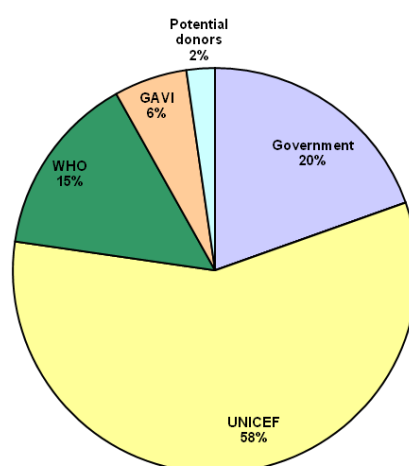


Figure 9 Proportion of contribution by different donors and government in 2011

Total secured financing from Government, Gov. Co-financing for GAVI vaccine, WHO, UNICEF and GAVI for the five years period from 2012 – 2016 are US\$ 85.14 million and those of Total probable Financing US\$ 33.46 million.

Therefore, the funding gap with the secured funds only is 51% and the gap with the secured and probable funds is 32% for the five year period.

5.3.6. Interventions to improve financial viability of the program

The funding gap of 51% with secured funds only for 5 years implies that the programme has to seek innovative means to raise required resources. The routine traditional vaccines, supplemental immunization activities, cold chain equipment and the operational costs for maintenance and outreach activities all have only probable funding after 2012. The following figure show secure financing and funding gaps for 2012 – 2016.

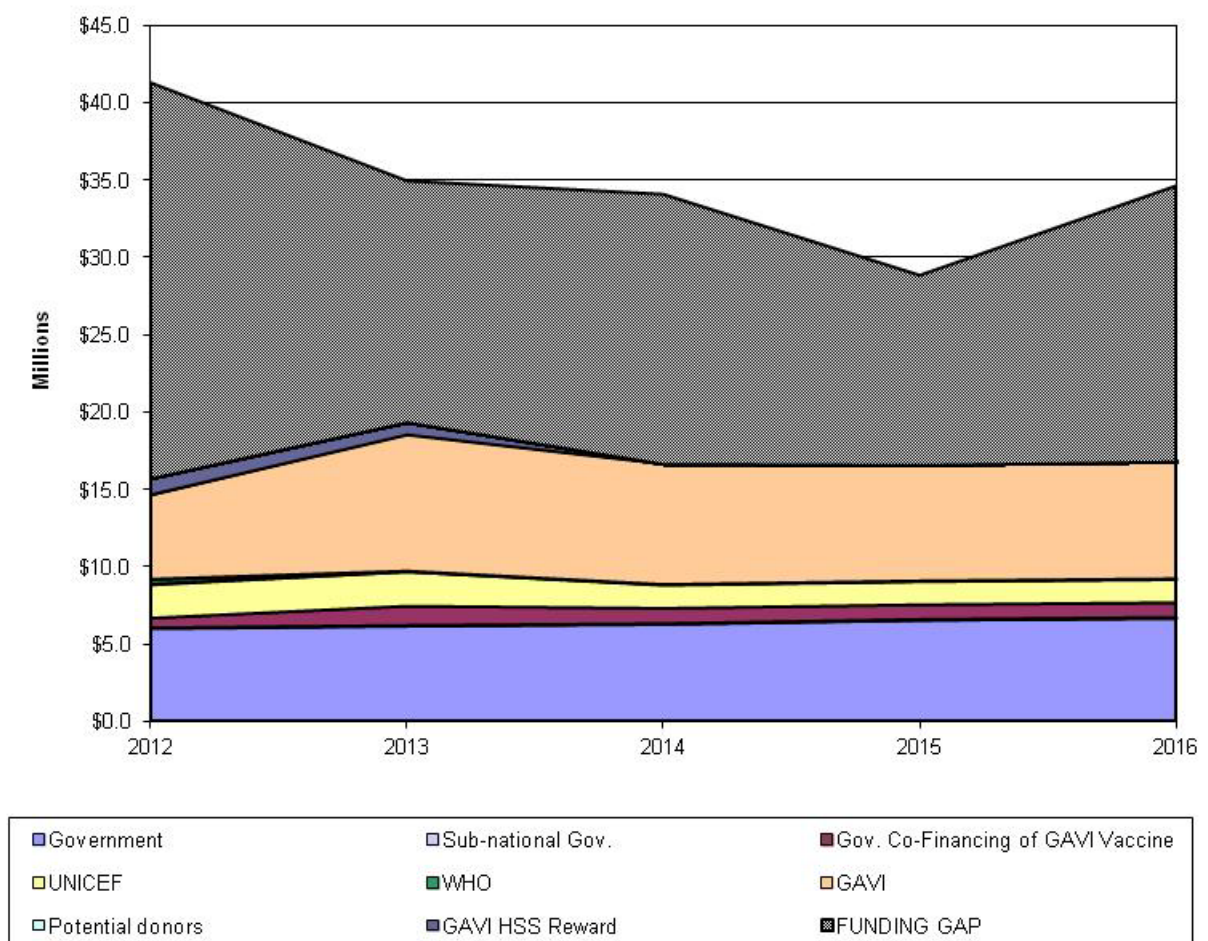


Figure 10 Secure Financing and Funding Gaps for the period from 2012 – 2016

The following figure also shows secure financing, probable financing and funding gap for 2012 and 2016.

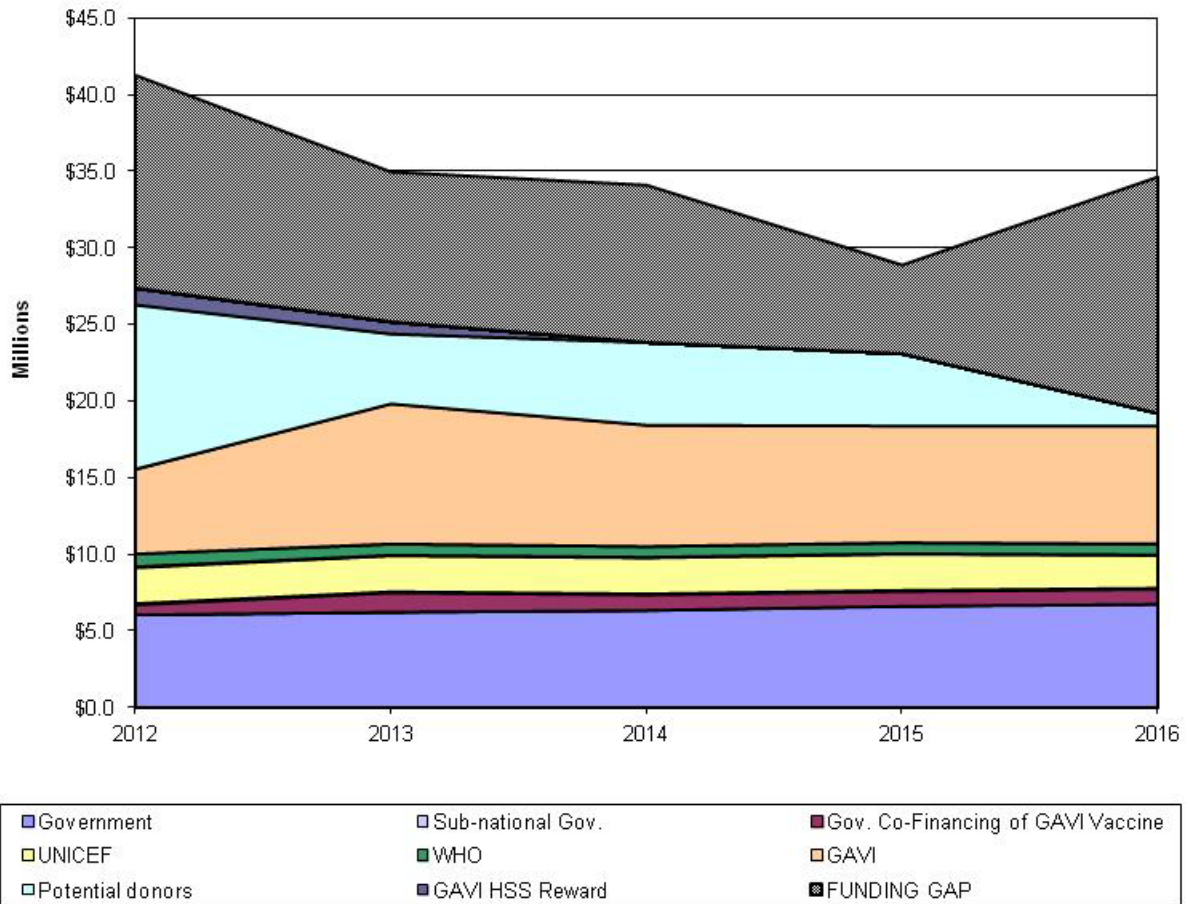


Figure 11 Future Secure and probable financing, and Funding gap

5.3.7. Programme sustainability

To ensure sustainability of the programme, the Government means to focus its attention on creating /strengthening mechanisms for sustainable financing and vaccine supplies. Mobilizing of the fund for the country programme in the next multiyear plan period will be made through traditional and new partners. All efforts will be made to leverage GAVI resources to facilitate introduction of new and underused vaccines like Measles second dose, Hib, Pneumococcal, and Rotavirus in the country programme. These activities would focus on mobilizing resources to close the identified gap. As Myanmar has manufacturing capacities for TT and Hepatitis B vaccines there would be a need to start a “vaccine sufficiency initiative” so that over a period of time the country can try to become self-reliant in a few traditional vaccines so that the resources saved could be used to support or co-finance other high value vaccines.

The program as part of its regular monitoring process, will monitor the trends in financing, to ensure it is moving towards improved financial sustainability by reducing its financing gaps, and converting more probable financing to secure financing. Indicators for financial sustainability that the program will use include:

- % of funding gaps to total program needs for the period of cMYP
- % total program costs financed by in country sources of financing
- % of total program costs financed by Government

Section 3:Annexes

Annex 1: Recommendations of the EPI Desk Review 2007

Desk Review 2007 recommendations:

- Provision of the hepatitis B vaccine birth dose should be expanded to children born in all hospitals where adequate cold chain exists to store vaccine.
- Revision of immunization card and reporting formats to include Hepatitis B schedule.
- The Ministry should develop a coverage goal for the hepatitis B vaccine birth dose.
- To reach infants born at home with a birth dose, a pilot project of the feasibility of using hepatitis B vaccine outside the cold chain should be considered.
- The Ministry of Health should consider applying to GAVI for HSS funding.
- Discussions on sustainability of Hepatitis B immunization after GAVI funding ends in 2008 to be initiated. The government should consider applying to GAVI for pentavalent vaccine.
- Standardize guidelines for Hepatitis B immunization, including for the birth dose.
- Consider EPI survey to validate coverage, especially the birth dose coverage
- The system for AEFI surveillance should be strengthened and communication efforts should be enhanced so that misconceptions among providers and the public regarding AEFIs are reduced.
- Sero-surveys of children for HBsAg should be considered in the future to document the impact of hepatitis B.
- The cMYP and 2006 annual progress report to GAVI should be completed.
- Improve vaccine management through a reduction of wastage : All vaccines should have a VVM, Change EPI service delivery strategy to more fixed site delivery, Evaluation the use of different vial size in relation to wastage and cost, Fully implementation of the multi-dose vial policy, Expansion of cold chain to health centre level
- Improving planning and management at all levels including financial management.

- To develop a transparent and efficient financial management system. Studies on costs, trend analyses and projections on a regular basis and adjust the programme accordingly.
- Improving coverage by introducing the RED elements, provide Refresher training of health staff in EPI, include Mobile strategies as well as integrate other services with immunization activities (SOS).
- Long-term vaccine savings could be achievable after certification of global polio eradication. Savings could be then invested into either other vaccines or injection supplies.
- Vaccine self sufficiency initiative (Hepatitis B Vaccine Production).

Annex 2: International Review of the Expanded Programme on Immunization (EPI) in Myanmar 2008; Synopsis of the recommendations:

Immunization service delivery and coverage

1. The immediate priority in improving the immunization services is to identify the areas and the numbers of children to be served rather than fixing the denominator. The following could be the critical immediate steps to improve immunization coverage:

- a. Identify the townships/parts of the townships that can be reached by fixed/outreach/mobile clinics/crash programmes.
- b. Motivate midwives to develop rapport with all ANMs and TBAs to identify pregnant mothers.
- c. Follow-up the pregnancies and include all births in the immunization register and follow the infants until they are fully immunized.
- d. Standardize the reporting system to obtain information and monitor the number of children immunized every month.

2. To reach every child it is necessary to:

- a. Develop realistic micro-plans from the sub-centre level up considering local needs that include sustainable mobile clinics, outreach clinics and crash programmes according to the geographical extent of the area and the population size.
- b. Inform the communities well in advance about the date and timing of the clinics.
- c. Involve the local authorities, NGOs and communities to mobilize children and pregnant women for immunization.
- d. Collaborate with the private sector and non-governmental organizations to reach all communities.

3. On a long-term basis, to identify standard method for population estimates and percentage of under-one-year children, services of expert demographers and statisticians need to be obtained to identify methods to conduct yearly systematic head counts, to accommodate migrant populations in estimates and to conduct surveys to find age distribution of population etc.

4. Midwives require adequate resources and essential support like, transport allowance to go to clinics, delivery of vaccines to closer points (e.g. to RHC) and supply of adequate numbers of essential forms and charts etc.

Supervision

5. To ensure supportive supervision, supervisors at all levels should be provided resources for mobility. They should be motivated to use existing supervisory check lists and use data to initiate early action.

AEFI management

6. A national meeting could be organized to understand the realities of AEFI management with the participation of policy makers, AEFI committee members, academics, national and state/region managers. The expected outcome of this meeting would be developing a standard policy document/national guideline addressing all current concerns and a simple information note to midwives and other basic health workers.

7. There is a need for capacity building of state/ regional staff for AEFI management.

Training

8. Ensure ongoing RED (reaching every district) training is provided to all EPI staff up to midwives and follow up to motivate that they practice what they learned in micro-planning, implementation of the micro plans and monitoring.

Vaccine management

9. Keep safety vaccine stocks for three months in sub-depots and at least one month's supply in townships where electric power can be ensured for eight hours a day or where there are effective solar refrigerators. This would enable the vaccines to be provided systematically according to micro-plans and to keep diluents in the refrigerator for 24 hours before the sessions.

Advocacy and communications

10. Develop a comprehensive communication strategy that includes closer partnership with local authorities and NGOs in all areas, inform the public about the date and time of immunization clinics and update IEC materials for immunization.

Surveillance

11. Review disease surveillance indicators periodically to identify silent areas, reasons for under reporting and address the issues.

12. Sensitize all reporting units and raise awareness among staff about the importance of reporting Vaccine Preventable Diseases (VPDs) including how to do it correctly and consistently.
13. Initiate case-based measles surveillance with laboratory confirmation.