National Immunization Program, Nepal

Comprehensive Multi-Year Plan 2073-2077 B.S. (2017 - 2021)

Immunize Every Child and Declare Nepal a Fully Immunized Country

Child Health Division

Department of Health Services

Ministry of Health

Kathmandu, Nepal

September 2016

Comprehensive Multi-Year Plan of NIP, Nepal 2073-2077 B.S. (2017 - 2021)

Child Health Division
Department of Health Services
Ministry of Health
Kathmandu, Nepal
September 2016

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Date : 24 March 2017

Preface

It gives me a great pleasure to write few words on "Comprehensive Multi-year Plan 2017-21" (cMYP 2017-21) of National Immunization Program (NIP) of Nepal. The cMYP streamlines the immunization planning process at national level into a single comprehensive and costed plan. In 2005, in conjunction with Gavi, the Vaccine Alliance and partners, WHO and UNICEF, guidelines for developing cMYP was developed. Aligned with this guideline, Nepal developed cMYP for National Immunization Program for 2006- 2011, and 2012 -2016. This cMYP has been developed for the upcoming 5 years 2017-2021and will help in identifying the activities which will prevent and reduce moratlity, disability and morbidity occurring from the disease which are preventable through vaccination.

Currently the National Immunization Program offers 11 antigens to all children across the country completely free of cost. In the past 10 years, we have been able to introduce four new vaccines in the country. Nepal has fulfilled the recommendation of global and regional vaccicne action plan and envisions to meet the targets of SDG. We have also started an Immunization Trust Fund to garner public-private philanthropic partnership to procuring vaccines.

This Comprehensive Multi-year Plan (cMYP) for Immunization foresees introduction of new vaccines like rotavirus vaccine, and Human Papilloma Virus (HPV) vaccines in routine immunization.

The Government of Nepal is committed to implement this cMYP and be able to declare Nepal as a fully-immunized country, and protect children of Nepal from vaccine-preventable diseases.

.....
(Gagan Kumar Thapa)
Minister

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Foreword

It is my pleasure to write foreword for the comprehensive Multi-Year Plan of the National Immunization Program of Nepal. The National Immunization Program of Nepal has established itself a strong program and has reached to every corner of the country.

Significant reduction in Child mortality has been due to the national immunization program which is running for more than 35 years. The success of NIP has contributed significantly to Nepal's success in achieving and surpassing the child mortality targets of the Millennium Development Goals (MDG). We are now polio free since 2010 and eliminated neonatal tetanus and this has been validated by WHO. Measles and rubella are at a low level over the years and targeted for elimination.

This cMYP takes into consideration the past achievements and builds on the current context. Though somewhat ambitious, it tries to ensure that every infant in the country is vaccinated, which will be a milestone in itself. Besides, introduction of new vaccines like rotavirus, HPV, Cholera and Typhoid demand for more resources and efforts. Besides, securing the quality life of children through the vision "a country free of vaccine preventable diseases" is laudable. Ministry of Health will support the stated in the cMYP strategies and activities to ensure the constitutional provisions enshrined in the Immunization Act are implemented and the objectives met.

I would like to thank the Department of Health Services, Child Health Division for bringing this important document and cordially thank all those involved in developing the cMYP.

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(Dr. S. R. Upreti)

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Few Words

It is my privilege to write few words for the multi-year plan of action of National immunization program 2017- 2021. Nepal initiated vaccination in the late seventies with smallpox vaccine. After the eradication of small pox, the national immunization program started in 1979 with inclusion of few vaccines. The program coverage expanded over last 35 years and now reaches every settlement. The number of vaccine provided has reached eleven. There is a national immunization schedule and the vaccines are delivered free of cost to all children and the targeted population.

It is good to highlight the past performance of the national immunization program which has achieved the coverage exceeding 90 percent. The result of this has been tremendous decline in morbidity and mortality associated with vaccine preventable diseases. The scope of immunization has increased over last few years with availability of more funding and innovations and Nepal is incorporating these new opportunities which will ultimately help in the good health outcomes especially for children.

As the technology is advancing and more vaccines are available, incorporating them into plan of action is desirable. This plan of action has included few vaccines to be introduced in due course of time. However, international support is needed to purchase these costly vaccines. Besides, revamping the vaccine logistics system is very important.

Securing funding for immunization program is a challenge and appropriate measures will be taken to address this issue. Coordination and collaboration with partners will be important in this respect.

I would like to thank the Child Health Division and persons involved in developing the multi-year plan of action for their tireless effort and innovative ideas.

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(Dr. Rajendra Prasad Pant)
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Acknowledgement

National Immunization Program (NIP) of Nepal carries a history of more than 35 years. It has developed over the years and expanded its scope tremendously with significant achievements. It is one of the important pillar of the national health system and every child has benefitted from it over the last three and half decades.

This comprehensive Multi Year Plan (cMYP) is fourth in its series and will be a guiding document for the five years to come. It is a product of tremendous many people and partners who have worked tirelessly for almost six months. It takes into account the global vaccine plan (GVAP) and the South-east Asia Regional Vaccine Action Plan (SEARVAP) along with the Sustainable Development Goals.

More efforts are needed in the future days to ensure vaccine availability and quality services as the cMYP plans to vaccinate every infant. Besides, introduction of new and under-used vaccines will need more resources and programmatic effort as the skills and technology might demand more vigilance and quality services. Child Health Division will do its best to ensure quality service with the help of partner organizations.

I would like to thank all my colleagues and friends at CHD and DOHS for their active participation in developing this cMYP. The support of WHO- IPD, especially Dr. J. N. Giri in the whole process of developing and finalizing the document is noteworthy and I would like to acknowledge the contribution of IPD family. Similarly, I would also appreciate the support of Dr. B. K. Suvedi in developing the cMYP and costing the document.

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(Dr. Bikash Lamichhane)
Director
Child Health Division

List of Abbreviations

ACSM	Advocacy, Communication and Social Mobilization
ADS	Auto-Disable Syringe
AEFI	Adverse Events Following Immunization
AES	Acute Encephalitis Syndrome
AFP	Acute Flaccid Paralysis
ANC	Ante- Natal Care
BCC	Behavior Change Communication
BCG	Bacilli Calmette Guerin (vaccine)
bOPV	Bi-valent Oral Polio Vaccine
CBR	Crude Birth Rate
CB-NCP	Community Based New Born Care Program
CCE	Cold Chain equipment's
CDR	Crude Death Rate
CFC	Chloro-Fluoro-Carbon
CHD	Child Health Division
cMYP	Comprehensive Multi-Year Plan
CRS	Congenital Rubella Syndrome
CVS	Central Vaccine Store
DBS	Dried Blood Spot
DDA	Department of Drug Administration
DOHS	Department of Health Services
DPT	Diphtheria, Pertussis and Tetanus (a vaccine)
DVS	District Vaccine Store
DHIS	District Health Information System
D(P)HO	District (Public) Health Office
EPI	Expanded Program on Immunization
EVM	Effective Vaccine Management
EWARS	Early Warning and Reporting System
FCHV	Female Community Health Volunteers
FHD	Family Health Division
FIV	Fully Immunized Village Development Committee
FY	Fiscal Year
GAVI	Global Alliance for Vaccine and Immunizations
GDP	Gross Domestic Product
GIVS	Global Immunization and Vaccine Strategy
GVAP	Global Vaccine Action Plan
HMG	Health Mothers' Group
HPV	Human Papilloma Virus (Vaccine)
HTR	Hard to reach
HW	Health Workers
IBD	Invasive Bacterial Diseases

ICC	Inter-agency Coordination Committee
IEC	Information, Education and Communication
IMNCI	Integrated Management of Newborn and Childhood illnesses
IMR	Infant Mortality Rate
IMS	Inventory Management System
IPC	Inter- Personal Communication
IPD	Program for Immunization Preventable Diseases
IPV	Inactivated Polio Vaccine
JE	Japanese Encephalitis (vaccine)
LMD	Logistics Management Division
M&E	Monitoring and Evaluation
MCV	Measles Containing Vaccine
MDG	Millennium Development Goal (s)
MDVP	Multi-Dose Vaccine Policy
MICS	Multiple Indicator Cluster Survey
MMR	Maternal Mortality Ratio
MNT	Maternal and Neonatal Tetanus
MOFALD	Ministry of Federal Affairs and Local Development
MOH	Ministry of Health
MR	Measles and Rubella (vaccine)
NCIP	National Committee on Immunization Practices
NDHS	Nepal Demographic and Health Survey
NGO	Non- Governmental Organization
NHSS	Nepal Health Sector Strategy
NID	National Immunization Days
NIP	National Immunization Program
NMR	Neonatal Mortality Rate
NRA	National Regulatory Authority
NRCS	Nepal Red Cross Society
ODF	Open Defecation Free
OPV	Oral Polio Vaccine
PCV	Pneumococcal Conjugated Vaccine
PNC	Post natal Care
PHC-RD	Primary Health Care Revitalization Division
RMS	Regional Medical Store
RV	Rotavirus Vaccine
RVS	Regional Vaccine Store
SDG	Sustainable Development Goals
SMS	Short Message Service
SOP	Standard Operating Procedure
SEAR	South- East Asia Region
SEAR-VAP	South East Asia Regional Vaccine Action Plan
SIA	Supplemental Immunization Activities

Td	Tetanus-diphtheria (vaccine)
TT	Tetanus toxoid (vaccine)
U5MR	Under Five Mortality Rate
UHC	Universal Health Coverage
VAR	Vaccine Arrival Report
VDC	Village Development Committee
VDPV	Vaccine Derived Polio Virus
VPD	Vaccine Preventable Diseases
VSS	Vaccine Sub- Store
VVM	Vaccine Vial Monitor
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization
WIC	Walk-In Cooler
WIF	Walk-In Freezer
WPV	Wild Polio Virus

Table of Contents

Executive Summary

The comprehensive Multi-Year Plan (cMYP) of National Immunization Program (NIP) 2017-2021 is linked to the National Health Sector Strategy (NHSS) in the context that the NHSS also aims at achieving the Sustainable Development Goals (SDG). This cMYP elaborates strategies and activities along with costs that will contribute to the achievement of the NHSS and SDG- 3. The NHSS- III sets out an ambitious agenda for the next five years (2015-2020). It builds on the progress over the last two decades in establishing the health system and in health outcomes for the population. The country has made great strides towards achieving its targets for the MDGs and substantial reductions in maternal and child mortality have occurred. At the same time progress has been made in the area of family planning and this is having the effect of bringing the country closer to a stable population size. NHSS-III builds on the National Health Policy 2071 (NHP) that was endorsed by the Council of Ministers in June 2014. The NHSS-III is currently under implementation.

As per Nepal's constitution 2015, health is considered as a fundamental right of the people. Along with the constitution, the Immunization Act endorsed in 2072 B.S. states that every child has the right to access quality vaccines. This context gives the national immunization program a solid ground to move into more concrete action in the next few years. The immunization program is one of the government's highest priority programs which has contributed in achieving Millennium Development Goals (MDG) 4 and 5 through reduction in morbidity and mortality among children and mothers from vaccine preventable diseases.
In line with the Global Vaccine Action Plan (GVAP), NIP envisions delivery of immunization services throughout the country regardless of where they are born, who they are and where they live. The Government of Nepal is determined to provide all required vaccines to eligible children and Nepal is considered a pioneer in the introduction of new and underutilized vaccines. In this regard it is essential to have a long term immunization plan with priority activities identified and as well as a financial sustainability plan.

The comprehensive multi-year plan 2011-2016 provides a plan for the next five years to achieve the immunization related goals expressed by the Government in various policy documents. The objectives, strategies and activities set forth in the plan provide the framework required to meet the goal of “reducing infant and child mortality and morbidity associated with vaccine-preventable diseases (VPDs).” Furthermore, this plan addresses new challenges and expands the previous plan by providing guidelines for the introduction of new vaccines, eradication, elimination and control of targeted VPDs and strengthening of routine immunization.

The salient features of the cMYP are:

- Immunize every eligible child and declare Nepal as a country having full immunization
- Implement SBI (Search, Bring and Immunize) approach for missed and unvaccinated children
- Include new and under-used vaccine
- Move the program beyond infancy
- Ensue financial sustainability for immunization

With these features, the vision of the cMYP is to make Nepal a country free of vaccine-preventable diseases
The mission of the cMYP is to provide every child and mother with high-quality, safe, and affordable vaccines and immunization services from the National Immunization Programme in an equitable manner.
The goal of the cMYP is to reduce morbidity, mortality and disability associated with vaccine preventable diseases.
Following Strategic Objectives are the core of the cMYP:

- Reach every child for full immunization;
- Accelerate, achieve and sustain vaccine preventable disease control, elimination and eradication;
- Strengthen immunization supply chain and vaccine management system for quality immunization services;
- Ensure financial sustainability for immunization program;
- Promote innovation, research and social mobilization activities to enhance best practices

Various strategic approaches have been developed to ensure that every child gets vaccine, the vaccine services are regular, the quality of services are up-to-date keeping in mind partnership, innovation and equity.
The estimated cost of the cMYP is about 289 million Nepalese Rupees for five years. Of this amount about 50 percent has been secured. The rest "funding gap" remains to be obtained especially for construction of vaccine stores and vaccine logistics as well as introduction of new vaccines. It is expected that the international community and partners will support in this effort.

Chapter 1

1.1 Introduction

1.1.1 Country profile

The Federal Democratic Republic of Nepal is a country located in South Asia with an area of 147,181 square kilometers (56,827 sq. miles). Nepal is the world's 93rd largest country by area and the 41st most populous country. It is a landlocked country located along the Himalayas and bordered to the north by China and to the east, west and south by India. Kathmandu is the nation's capital city.

Nepal has a rich geography. The mountainous north has eight of the world's ten tallest mountains, including the highest point on Earth, Mount Everest, called Sagarmatha in Nepali. It contains more than 240 peaks over 20,000 ft. (6,096 m) above sea level. The fertile and humid south is heavily urbanized. (Source: We Care Nepal)

1.1.2 Demographics

The population of Nepal is estimated to be 26.5 million people based on the 2011 census, with a population growth rate of 1.596% per year and a median age of 21.6 years. Female median age is estimated to be 22.5 years, and male median age to be 20.7 years. Only 4.4% of the population is estimated to be more than 65 years old, 61% of the population is between 15 and 64 years old, and 34.6% is younger than 14 years. Life expectancy at birth for the census year 2011 was estimated at 66.6 years.

In Nepal, every year some 650,000 children are estimated to be born and some 750,000 women become pregnant.

Overall literacy rates have increased to 67% in 2011 from 54% in 2001. Female literacy has increased from 43% in 2001 to 58% in 2011, which places Nepal in fourth position among SAARC countries. About 90% of adolescents can read and write. Similarly, 69% of the populations are attending school. Literacy rates of urban and rural areas stand at 82.3% and 62.5% respectively.

Mortality has overall a declining trend. The crude death rate (CDR), which shows the number of deaths per thousand populations, is estimated to be around 7.3 per thousand populations in 2011 against 10.3 in 2001.

1.1.3 Economic status

Despite the decade-long (1996-2006) civil conflict and the complex political transition, Nepal has made notable economic and social progress. Annual real gross domestic product (GDP) growth averaged 4.4% during 2008-2013 periods.

Nominal per capita GDP grew from $498 in 2009 to $713 in 2013. Poverty has declined sharply from 42% in 1996 to 31.0% in 2004, and 25.2% in 2011 (based on the national poverty line) (Source: Nepal A partnership for Inclusive development, ADB)

1.1.4 Earthquake and its impacts

The 2015 earthquake affected all 75 districts, 14 of them severely, in the hills and mountainous areas of Central Nepal, causing more than 9,000 deaths, 23,000 injuries and displacing approximately 100,000 people. All health facilities and almost all health workers were directly or indirectly affected by the earthquake. However, no vaccine and cold chain equipments were damaged except for the cold chain and vaccine stores in one of the district- Rasuwa, which was completely collapsed. All the severely affected 14 districts resumed their regular immunization program immediately after the earthquake except for a few health facilities that could not resume outreach sessions.

Immediately after the earthquake, cold chain and vaccine assessment was done in all the 14 severely affected districts and measles outbreak immunization response was conducted for the displaced population in Kathmandu, Bhaktapur, Lalitpur and Dhading districts, vaccinating one dose of MR to 3,500 children from 6 months to 5 years old. Cold chain equipment's were added or replaced, as required, in these districts based on the replacement plan.

1.2 Situation analysis

Nepal has made great strides towards achieving the Millennium Development Goals (MDGs) - substantial reductions in maternal and child mortality have been accomplished. The target set for MDG 4 was to reduce the under-5 mortality rate by two-thirds between 1990 and 2015 with an average annual decline of 4.4%. Between the period of 1990 and 2013, there has been an unprecedented decline in under-five mortality in Nepal; the infant mortality rate (IMR) declined from 108 to 46 and the under-five child mortality rate (U5MR) from 162 to 54 per 1,000 live births. The rates of decline of both were significant, 57.4 and 66.6 per cent for the IMR and U5MR respectively. However, one in every 22 Nepali children dies before reaching 1 year of age and in every 19 before turning 5.

Despite best efforts, neonatal mortality rate (NMR) still remains intractable. Between 2001 and 2006, NMR did drop considerably from 43 to 33 per 1,000 live births; however, it did not decline much between 2006 and 2013. The IMR rate did not progress in the latter phase due to the stagnant NMR. Nonetheless, Nepal has achieved MDGs 4. In fact, the target for the U5MR, 54 per 1,000 live births, was achieved in 2011 and a new target, of 38 per 1000 live births was reset. Similarly, the IMR target was also lowered, to 32, although just reaching the original target of 36 requires expediting more intense activities for fast rate of

decline. It is a matter of concern that the NMR did not decrease between 2006 and 2010 and that the IMR, in part because of the levelling off of the NMR, which decreased only marginally. In the coming years, it is the NMR that needs the utmost priority.

As proposed in the national neonatal health strategy of 2004, the Community-Based New Born Care Program (CB-NCP) was implemented in one-third of the total districts in 2010/11. The CB-NCP aims to reduce NMR through the sustained high coverage of effective community-based interventions, including the treatment of sick new-borns (aged 0-28 days) at health facilities and in the community.

1.2.1 Where does NIP stand against the objectives of cMYP 2012-2016

The cMYP 2012-16 had stated the broad goal to reduce child mortality, morbidity, and disability associated with vaccine preventable diseases. The goal has been achieved and is evident through the different surveys and independent assessments conducted throughout the years. Early childhood mortality as shown in the Multiple Indicator Cluster Survey (MICS) survey 2014 illustrates that the under 5 mortality has significantly been reduced. Under 5 mortality reductions through immunization is a proven fact and is evident through the high coverage of all antigens through SIA in 2004, 2008, 2012.

Table 1: Current status of childhood mortality in Nepal

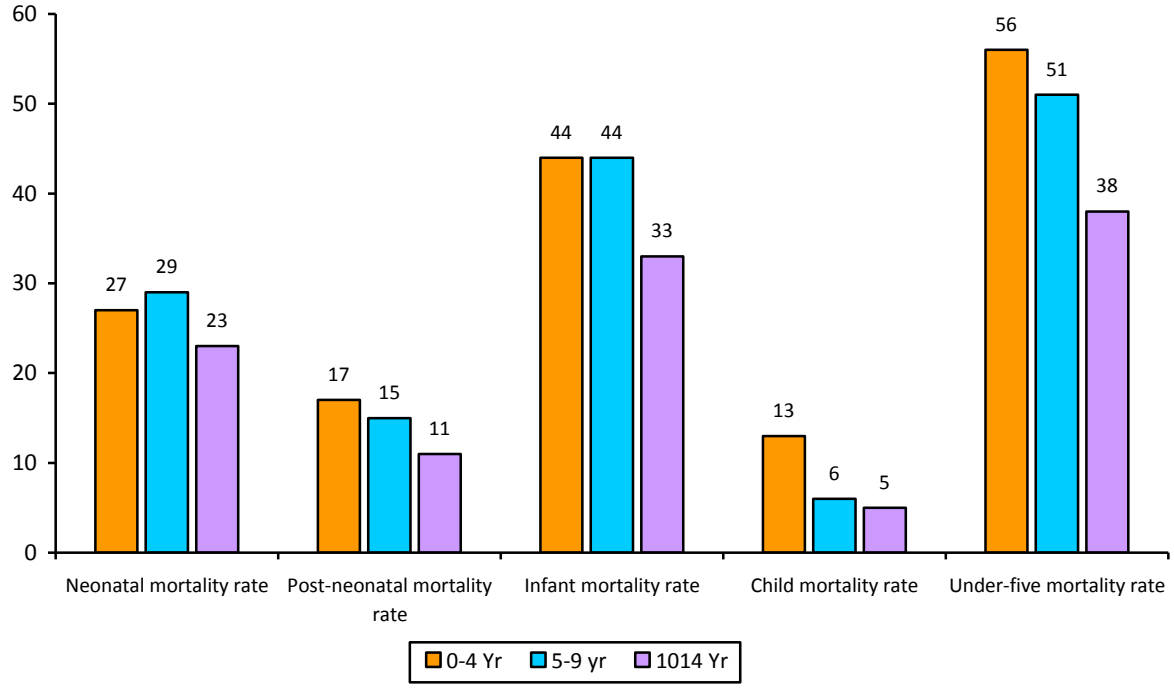
Indicator	Description	Value
Neonatal mortality rate	Probability of dying within the first month of life	23
Infant mortality rate	Probability of dying between birth and first birthday	33
Post neonatal mortality rate	Difference between infant and neonatal mortality rate	11
Child mortality rate	Probability of dying between the first and fifth birthday	5
Under five mortality	Probability of dying between birth and fifth birthday	38

Note: Indicator value are per 1000 live births and refer to the five years period before the survey

Source: MICS, 2015

These figures are also reflected in the graph 1 as shown below:

Graph 1: Current status of mortality among children



Source: MICS, 2015

Though the achievements are noteworthy, there are wide variations in health services availability, utilization and health status across different socio-economic and geographical population groups, indicating towards the challenge of access and equity. For example, in under-five mortality, the gap between the poorest and wealthiest has increased since 2001; in 2011 the under-five mortality rate for the poorest income quintile was 75 – more than double the rate of 36 for the wealthiest. Infant mortality rate of 69 among Muslims and 65 for Dalits, as compared to 45 for Brahmin/Chhetri, also typifies the variation in health status between different caste/ethnic groups

1.2.2 Review of performance of the cMYP 2012-2016

There were altogether eight objectives in the previous cMYP (2012-2016). A brief description of the objectives and their status is given below.

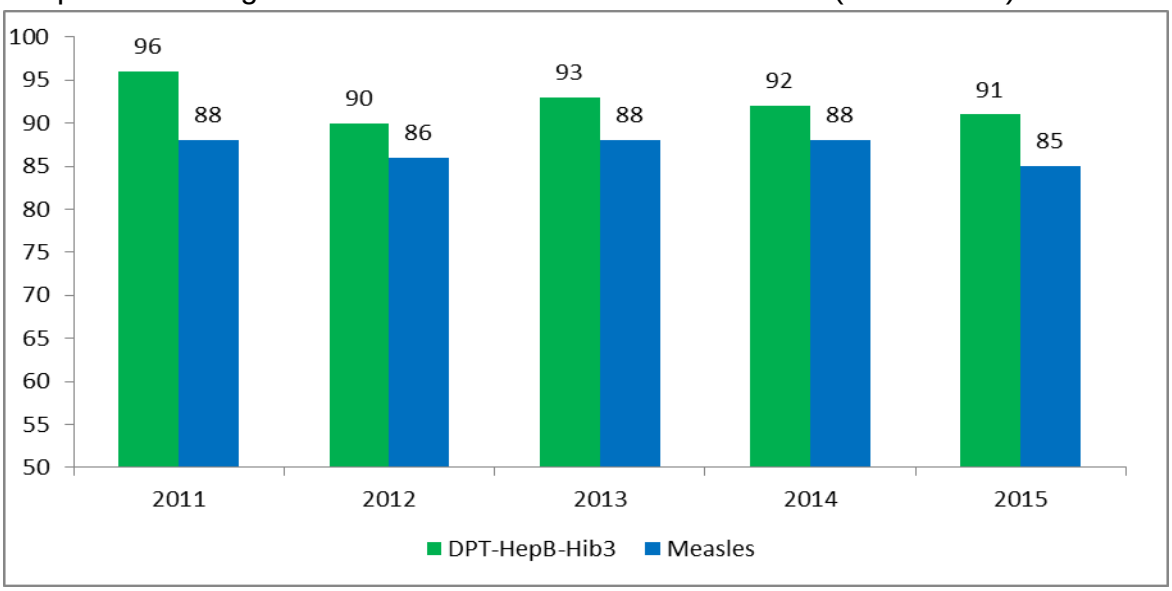
Objective 1: Achieve and maintain at least 90% vaccination coverage for all antigens at national and district level by 2016

The immunization coverage during the last five years has consistently remained above 90% for DPT3 and Polio3 and for measles, it has hovered around 88%. Over the last decade, the 2011 NDHS survey has revealed that 10% did not receive full immunization and 3% of the children never receive any vaccine.

The MICS survey 2014 shows that at the age of 12 months, the coverage of the first contact vaccines - BCG, DPT-HepB-Hib and OPV is 96%, whereas DPTHepBHib3 as well as OPV3 coverage is 88 and 92% respectively. Measles coverage has been recorded to be 92%. The fully vaccinated children account for 85% and non-vaccination rate is 3%. The percentage of women aged 15-49 years with live births in the last 2 years who were given at least two doses of tetanus toxoid vaccine within the appropriate interval prior to the most recent birth is 77.3% termed as protection at birth (PAB).

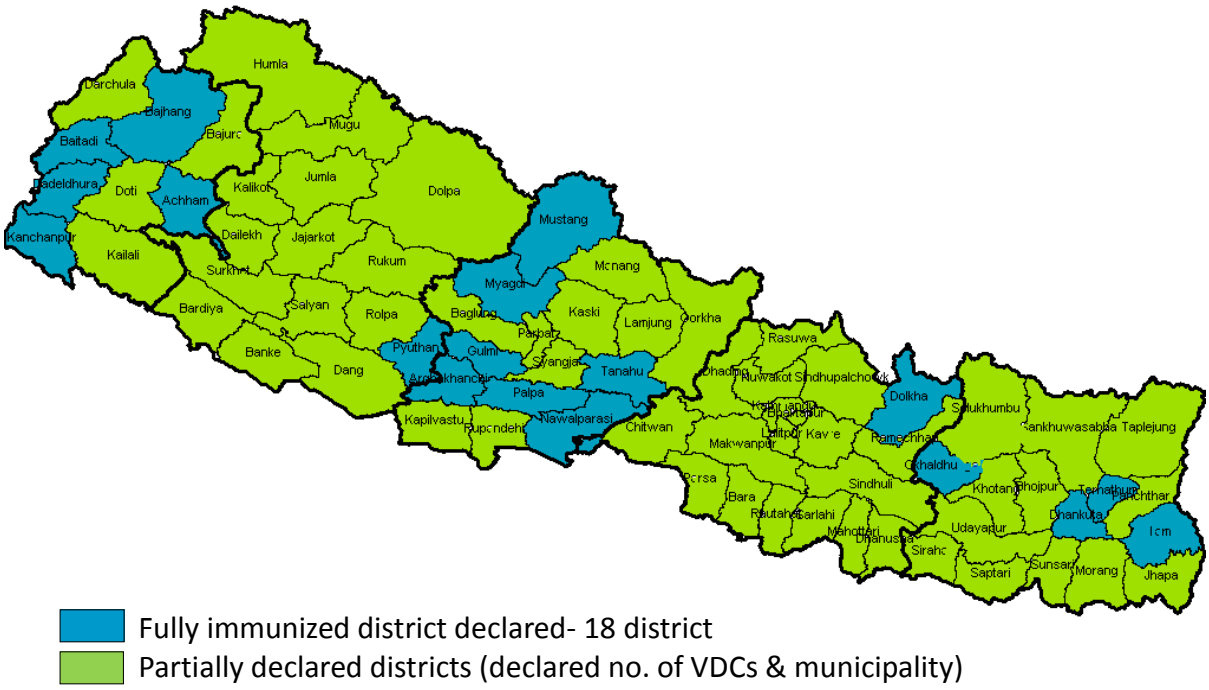
The administrative coverage since last 5 years has been stagnant around the coverage shown in the surveys (See graph 2). Realizing the fact that for the years these 12% dropout and 3% never vaccinated children need to be identified and their scheduled doses is completed. Local government and health facilities understanding has been strengthened through Appreciative Inquiry Approach for the declaration and sustenance of fully immunized VDC/municipality/ districts and thus to reach every child declaring country as fully immunized by 2017.

Graph 2: Coverage of Penta-valent and Measles vaccines (2011- 2015)



Source: Annual Report, DOHS, HMIS

Figure 2: Map of Nepal showing the fully immunized districts



Fully immunized district declared- 18 district

Partially declared districts (declared no. of VDCs & municipality)

Objective 2: Ensure access to vaccines of assured quality and with appropriate waste management

National immunization program procures all the primary vaccines and cold chain equipment's prequalified by WHO for all eligible children and pregnant women in adequate quantity and service is delivered through fixed and outreach sessions in the communities, mobile clinics in remote geographically areas. Nepal is one of the GAVI eligible countries. The new and underutilized vaccines are co-financed by GAVI and are all prequalified. VVM attached in the vaccine vials is a must and a minimum of 18 months of expiry date of vaccine. National regulatory authority (NRA) for vaccines is functional and is involved in various committees. Injection safety policy is in place and only AD syringes are used. Additionally, all Adverse Events Following Immunization (AEFIs) are investigated and causality assessment is established by a functional AEFI committee members.

Besides these good practices, assessment of Effective Vaccine Management (EVM) 2014 revealed that only criteria E3 and E8 crossed over 80% score. The EVM recommendation implementation plan is in progress. Standard operating procedure has been developed and training to the health workers and focal persons of vaccine and cold chain managers is in progress.

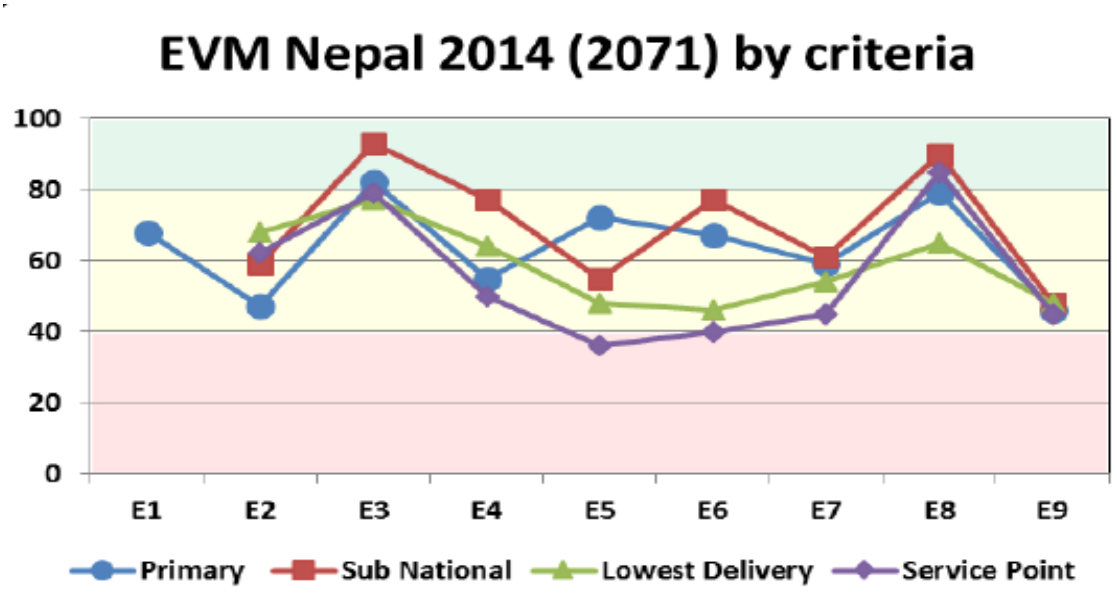
A workshop was conducted for airport authority, custom officers, and security officers to expedite the release of vaccines, whenever they arrive at the international airport. The status of Vaccine Arrival Report (VAR) is up to date.

To improve other under scored criteria, multi log has been installed in central vaccine store and 30 days loggers have been provided to all the district vaccine store. The manual temperature log has been adequately placed in the districts. Cold chain replacement plan has been developed and its implementation is in progress.

Vaccine wastage is one of the key indicators of immunization performance and a study was done last year (2015) to identify the factors associated with vaccine wastage at both the storage level and session levels. Despite several interventions made at storage level and session levels, the wastage rate of vaccines is higher than the expected rate. Vaccine wastage can be reduced by implementing the MDVP, by better managing the cold chain, by better estimating the target populations and following the immunization micro-plan, and by increasing community awareness. High vaccine wastage rate found to be less than the optimum wastage level in the Central Vaccine Store. The study also revealed that the level of wastage was significantly higher than the acceptable optimum wastage for all vaccines in all the six selected districts over the past three years. The study also revealed higher vaccine wastage at the immunization session level. The study indicated that there was poor documentation of vaccine wastage at all levels.

The following graph shows the result of the study regarding vaccine management.

Graph 3: EVM criteria scores, Nepal, 2015 (by level)



Source: GON, WHO, Unicef- Nepal EVM Assessment, 2015

Note: E1: Pre-shipment and arrival procedures. Applies to primary store level only

E2: Storage within recommended temperature ranges.
E3: Cold storage, dry storage and transport capacity
E4: Buildings, cold chain equipment and transport system
E5: Maintenance
E6: Stock Management
E7: Distribution
E8: Appropriate vaccine management policies
E9: Information systems and supportive management functions

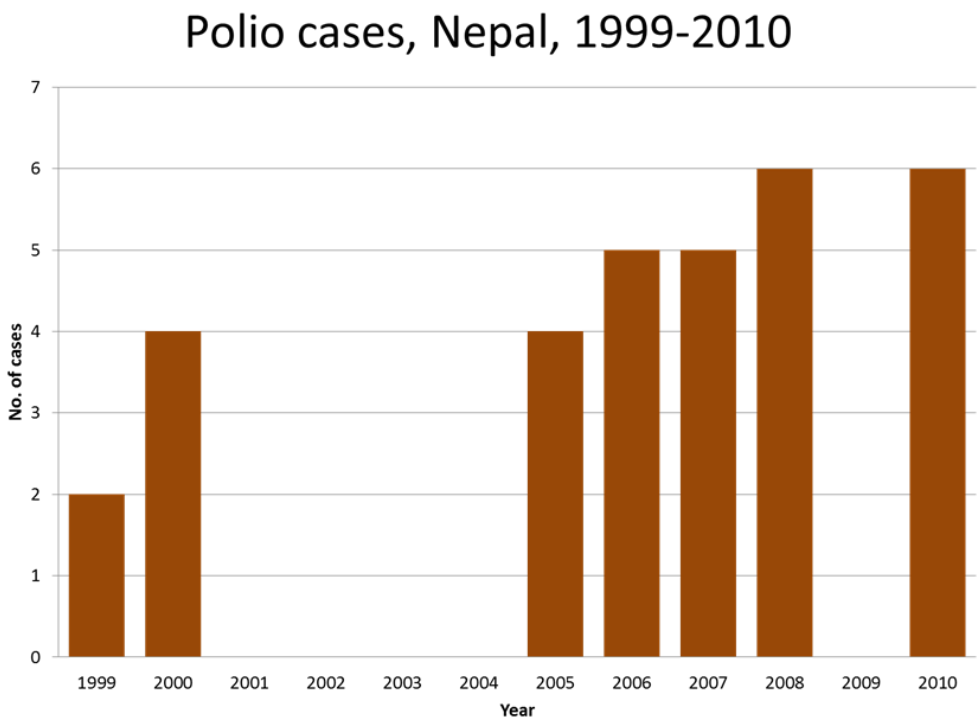
Objective 3: Achieve and Maintain polio free status.

Nepal has been maintaining polio free status since August 2010. The first supplementary immunization activity (SIA) was conducted in FY 1995/1996. AFP surveillance was initiated in June 1998. From 1998 to 2010, a total of 32 wild polio cases were detected in 13 districts, most of them were imported cases. Most of the cases were detected in few highly populated Terai districts bordering with India. Nepal received polio free certification in 2014 but country is free of polio since 2010 and has been able to sustain it, adopting and introducing global strategies in local context.

Nepal has recently developed polio endgame strategy, polio outbreak response strategy and has introduced IPV (2015) and also has switched to bOPV from tOPV from 17th April 2016. The national strategy has been to provide /integrate OPV additional doses whenever MR or other campaigns are conducted.

Graph 4 shows the number of wild polio cases by year and graph 5 the number of AFP cases by year.

Graph 4: Wild Polio Cases in Nepal



There is no wild polio case in Nepal since 2010. Consequently, Nepal has been declared polio-free in 2014.

The table below shows details of polio types and the districts affected by year.

Table 2: Name of districts reporting wild polio cases and type of WPV by year

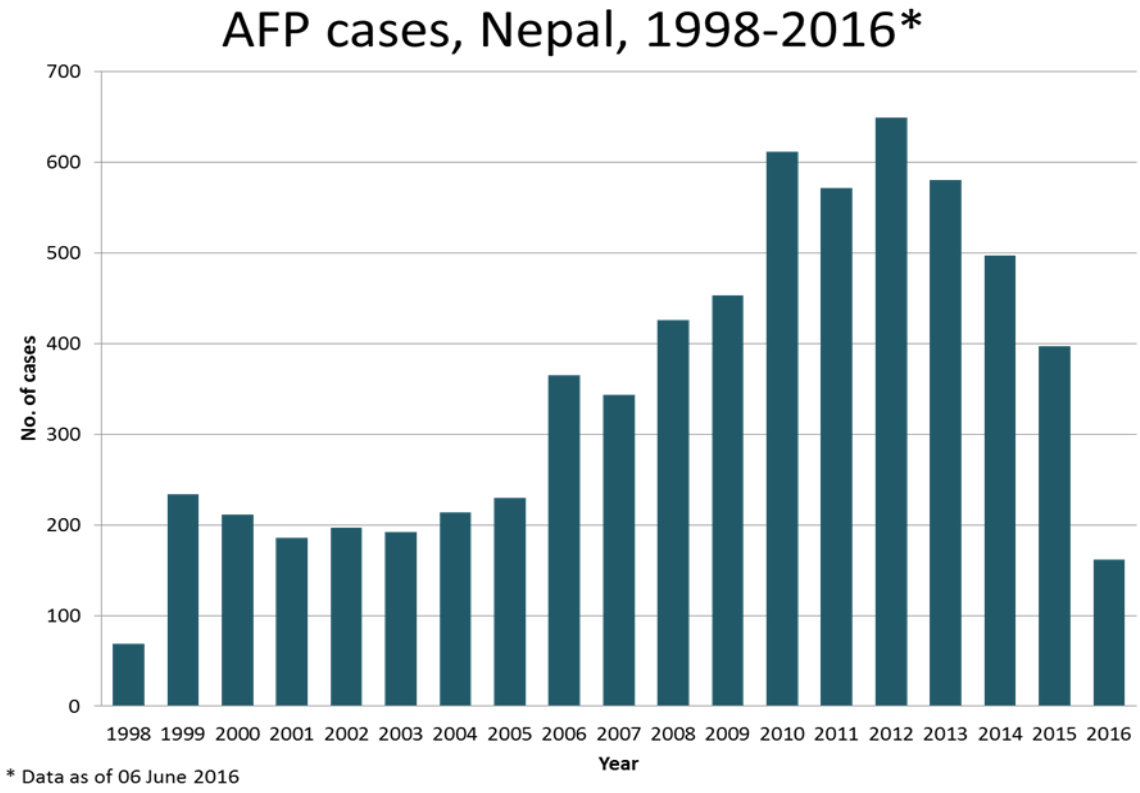
Year	Type of WPV	Districts
1999	2 (P1)	Banke-1, Saptari-1
2000	4 (P3)	Siraha-1, Mahottari-1, Dhanusa-1, Rauthaut-1
2005	4 (P1)	Sarlahi-2, Rauthaut-2
2006	5 (P1)	Dailekh-1, Kapilbastu-1, Parsa-2, Rauthaut-1
2007	5 (P3)	Siraha-1, Dhanusa-4
2008	6 (P3)	Rauthaut-1, Sarlahi-1, Dhanusa-1, Bajura-1, Bardiya-1, Rupendehi-1
2010	6 (P1)	Mahottari-1, Rauthaut-5
Total	32	13 districts

Source: WHO-IPD 2016

Continuous vigilance is being taken to detect any wild or vaccine derived polio cases. All acute flaccid paralysis cases are investigated and followed up along with laboratory investigation and is up to the standard.

Following graph shows trend of AFP cases over last 18 years

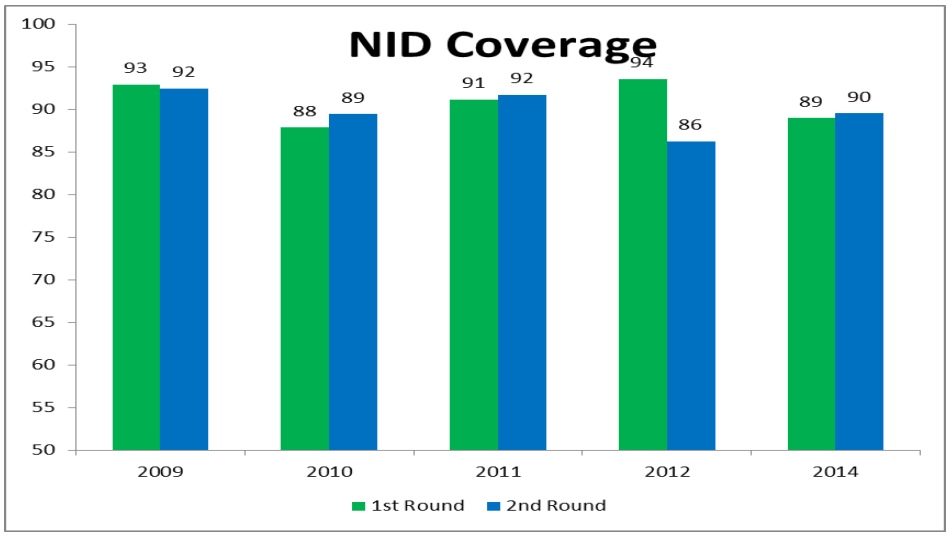
Graph 5: Reported AFP cases



Several rounds of national immunization days have been observed over last 2 decades to supplement children with additional doses of polio vaccine.

Following graph shows the achievement of the NID.

Graph 6: NID Coverage over last 5 years



Source: WHO-IPD 2016

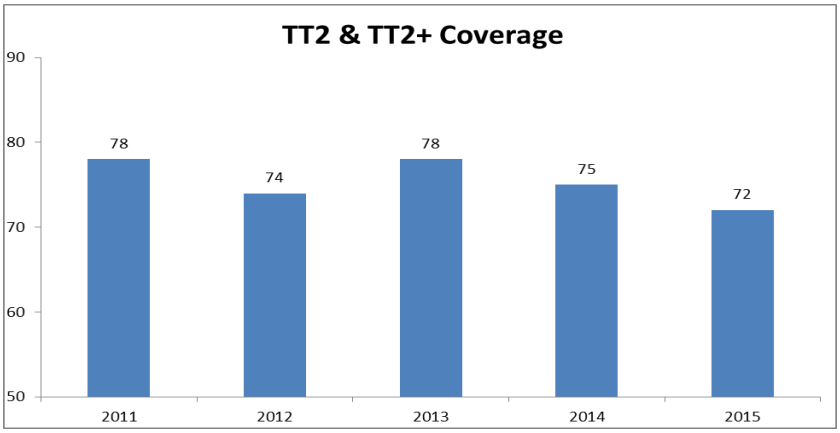
Objective 4: Maintain maternal and neonatal elimination status

Nepal obtained the MNT elimination status in 2005. Built on AFP surveillance structure, NT surveillance had been integrated in 2004. All reported cases are verified and continuously analyzed for each district. The reports show sustenance of the elimination status.

The TT2+ administrative coverage has been around 70% and the percentage of women aged 15-49 years with live births in the last 2 years who were given at least two doses of tetanus toxoid vaccine within the appropriate interval prior to the most recent birth is 77.3% (MICS 2014)

Reported coverage data for TT2 vaccination over last five years is shown on graph 7 below.

Graph 7: Administrative coverage of TT2+ vaccination



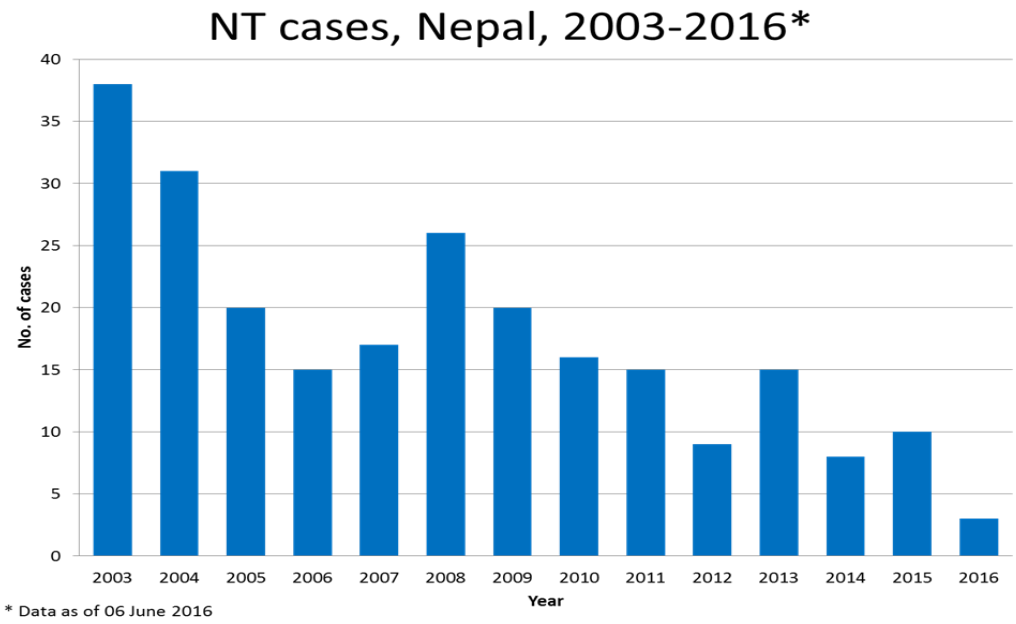
Source: WHO-IPD 2016

The National immunization schedule is intended to protect child at birth by providing 2 doses of TT containing vaccine to pregnant mothers and completing towards 5 doses throughout her reproductive age.

Existing schedule of tetanus toxoid vaccine is to provide 2 doses when the pregnant woman has never received TT containing vaccine in the past. In case if she has received more than 2 doses during her last pregnancy or has completed her child hood doses of DPT3 plus in her last pregnancy (checked against card) will receive 1 dose. Thus 5 doses of TT have been promoted for life-long protection.

Surveillance is ongoing for detection and documentation of neonatal tetanus. The following graph shows the reported number of neonatal cases over last 14 years.

Graph 8: Reported and surveillance detected NT cases.



Source: WHO-IPD 2016

On May 19, 2016, WHO South-East Asia Region certified elimination of maternal and neonatal tetanus in all districts of the 11 member countries having reduced the cases to less than one per 1 000 live births.

Objective 5: Achieve measles elimination status by 2016

Measles elimination has always been a priority of the national immunization program as it has always received high commitment. Prior to adoption of measles control strategy it was estimated that approximately 5000 children died due to complication of measles. Built on the base of AFP surveillance, measles surveillance was initiated in 2003. Surveillance data as well as the Cape Town declaration of measles control in 2002 evidenced and compelled to conduct its first measles catch-up campaign in 2004, Follow up campaign in 2008 and MR catch up campaign in 2012. More recently, MR follow up campaign was conducted in 2015/16 coupled with 1 dose of OPV. The morbidity, mortality, and disability associated with measles diseases have been drastically reduced.

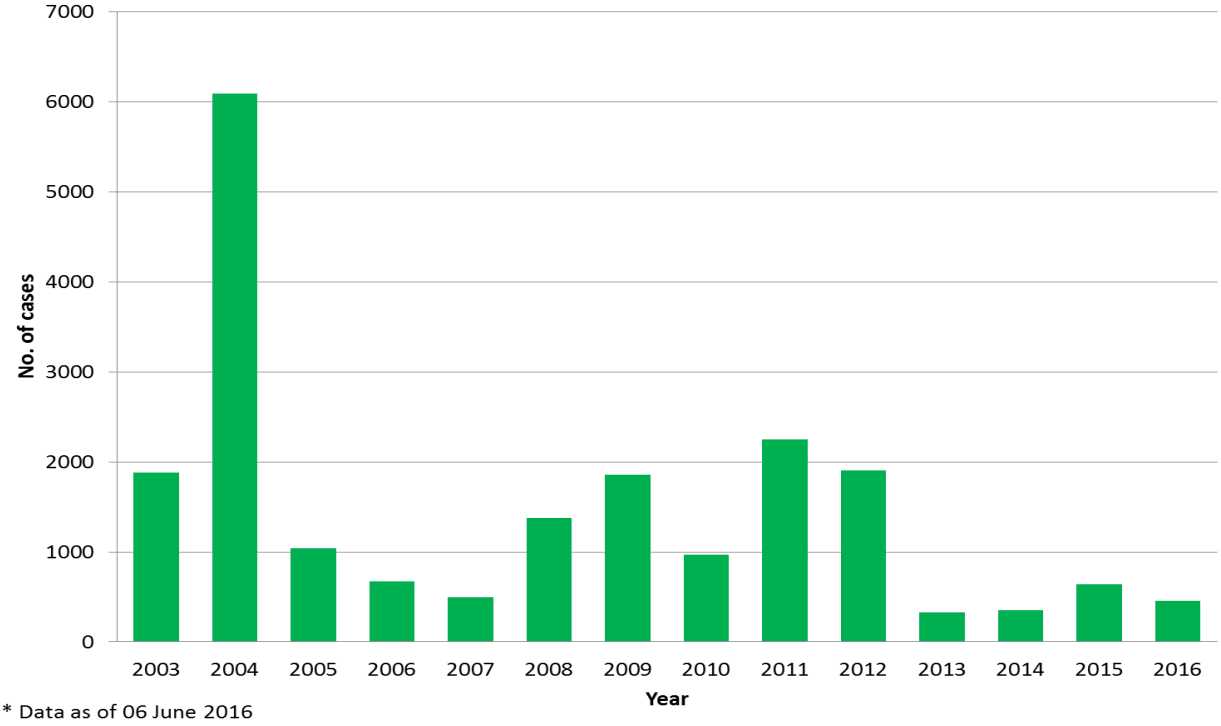
Nepal has initiated measles case based surveillance. Control of Rubella and congenital rubella syndrome are integrated into one and the country has committed to eliminate measles and control rubella and CRS by 2019, a year prior to SEAR goal. Measles case based surveillance sites have been expanded and immunity gap research, MR coverage survey has also been initiated.

Measles elimination and Rubella and CRS control strategy has been developed and endorsed by ministry of health. A strong partnership between stakeholders

shows that said target will meet. Further expansion of measles case based surveillance throughout and at each health facilities, NIP is piloting Dried Blood Spot sample collection in five districts and will be expanded in all health facilities.

Following graph 9 shows the number of measles cases over last 12 years.

Graph 9: Reported Measles cases



Source: WHO-IPD 2016

Objective 6: Accelerate control of vaccine-preventable diseases through introduction of new and underused vaccines

The number of antigens in routine national immunization has increased from 6 traditional vaccines to 11 with addition of few underused and new vaccines, based on the evidence generated through several in-country researches and demand of the academia and people. Some vaccines like IPV are the global call while Rubella, Haemophilus influenza b, PCV, JE vaccines were introduced based on the evidences of the disease- load in the country. To adjust the timing of vaccines, the NIP has changed the national immunization schedule. With the introduction of MR second dose and other newer vaccine like PCV were the reasons of changes in RI schedule.

National Immunization Programme has adopted the PCV schedule at 6 and 10 weeks and 3rd dose at 9 months based on the study carried out in the country.

National Immunization Schedule

The national immunization schedule was revised and updated in 2015 as per the recommendation of the NCIP to include new vaccines (like IPV and PCV) and adjust the timing of vaccination (JE and second dose of measles and rubella).
The following table shows the currently used national immunization schedule in Nepal.

Table 3: National Immunization Schedule, Nepal, 2016

SN	Age	Antigen	Disease it protects from
1	At birth	BCG	Tuberculosis
2	6 weeks	DPT-HepB-Hib1,OPV1 PCV1✦	Diphtheria, Whooping cough, Tetanus, Hepatitis B, Pneumonia, Poliomyelitis
3	10 weeks	DPT-HepB-Hib2,OPV2 PCV 2✦	Diphtheria, Whooping cough, Tetanus, Hepatitis B, Pneumonia, Poliomyelitis
4	14 weeks	DPT-HepB-Hib 3,OPV3 IPV	Diphtheria, Whooping cough, Tetanus, Hepatitis B, Pneumonia, Poliomyelitis
5	9 months	PCV3✦ MR1	Pneumonia, Measles, Rubella
6	12 months	JE	Japanese Encephalitis
7	15 months	MRSD	Measles, Rubella

Note: 1, 2 and 3✦ indicates the doses of vaccines.
Source: WHO-IPD 2016

Objective 7: Strengthen and expand VPD surveillance

Surveillance of vaccine preventable disease was initially started with the introduction of EWARS in 1996/97. However to provide evidence for polio eradication, AFP surveillance network was developed in 1998 which was supported by WHO. In 2003, the surveillance network included measles, neonatal tetanus and acute encephalitis syndrome in the surveillance system. Besides, passive surveillance system exists under the HMIS section of the management division of DoHS. Investigation of other diseases like influenza, dysentery and cholera has also been supported through this system. Pediatric in-patient Sentinel Surveillance for Invasive Bacterial Vaccine Preventable Diseases (IB-VPD) is being done at Patan Academy of Health Sciences (PAHS). Surveillance on rotavirus gastroenteritis is being done at Kanti Children's Hospital, a national referral hospital.

Objective 8: Continue to expand immunization beyond infancy

National immunization program recommends to vaccinate all children under the age of 1 year child. Recently it has added MR second dose at the age of 15

months. Those children who miss their doses as per the schedule can get the vaccines within 23 months of age (especially for MR and JE). Children above 1 year of age and others receive vaccine also during the supplementary immunization activities. Injection Td is given to the pregnant women and HPV vaccination has been undertaken as a pilot program for grade 6 and 10 year old girls in 2 districts, namely, Kaski & Chitwan.

1.3 Organization and management structure of national immunization program

National immunization program, a section under the Child Health Division has the overall responsibility of vaccine and cold chain need of the country as well identifies activities and does costing to execute these activities. This section also coordinates among the various partners, committees like ICC, NCIP, AEFI and committees formed during the supplementary activities for the successful implementation of annual planned activities. Also conducts capacity building activities of the health workers, evaluate the programs and shares information to the ministry and partners.

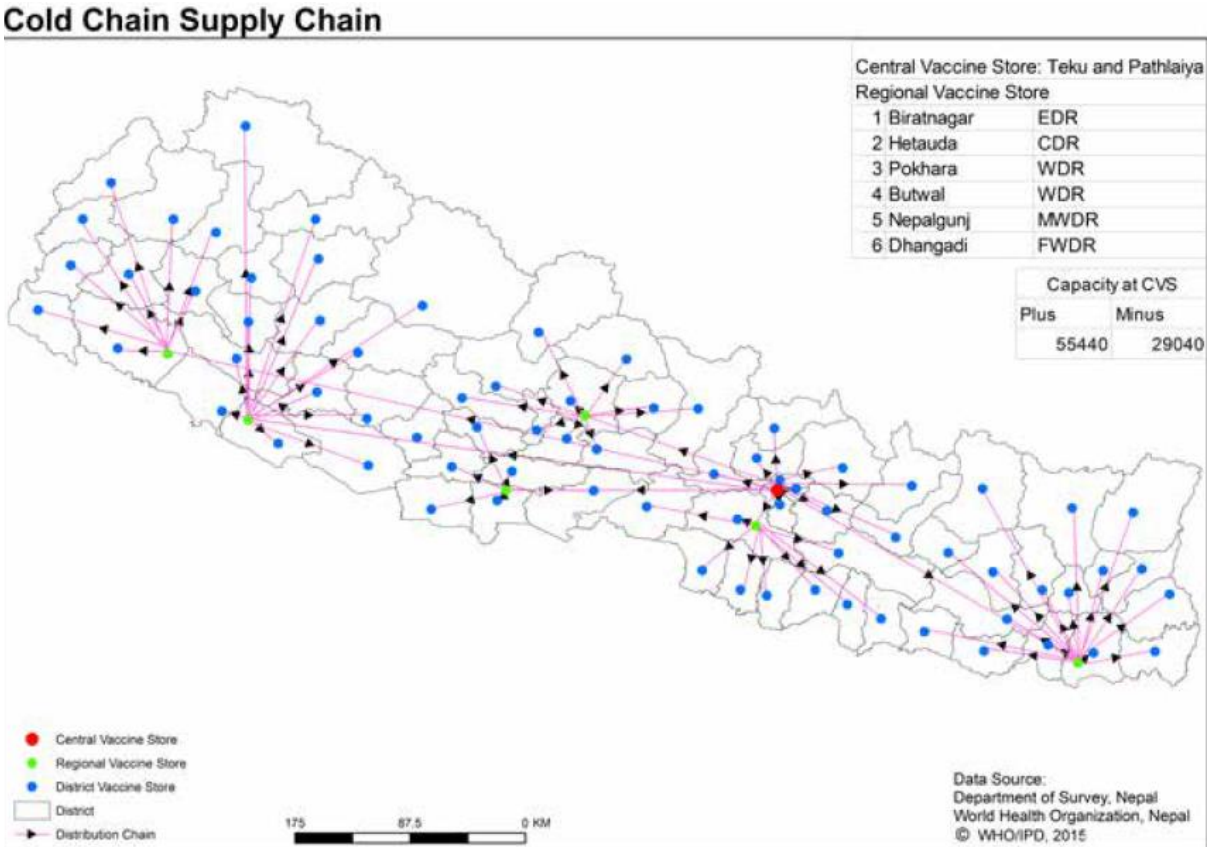
Logistic Management Division (LMD) under DoHS, is responsible for the procurement of vaccine and cold chain equipments. The division has a Cold Chain Section, which handles the vaccine and cold chain. Under this division there are regional and district vaccine stores, reporting the status of vaccine and cold chain.

Management division under the DoHS is responsible to collect information on administrative coverage, data quality, analysis and interpretation closely works with immunization section.

National health education, information and communication center (NHEICC) is responsible for the creation of awareness on immunization.

1.4 Supply Chain System of Nepal

There is one central vaccine store (CVS) located in Kathmandu and under the LMD. There are six regional vaccine stores (RVS) and 75 district Vaccine stores (DVS) in the country. Supply of vaccines and related logistics are channeled through these structures. The figure below shows the distribution system of vaccine and related logistics.



1.5 Committees for national Immunization program

There are several committees working for the monitoring, advising, advocating for the improvement and sustenance of national immunization program. Each of the committee has identified roles and responsibilities and is independent in function but interdependent in collaboration.

- National Committee for immunization Practices (NCIP)
- Interagency coordination committee (ICC)
- Adverse events Following Immunization Committee (AEFI committee)
- Committees for polio Eradication and Measles elimination
  - National committee for certification of polio eradication (NCCPE)
  - Polio eradication expert review committee
  - Laboratory containment task force
  - National measles verification committee

1.6 Immunization service delivery system of Nepal

Immunization services aim to reach all the beneficiaries in the community through three approaches: fixed clinics, outreach sessions and mobile clinics. Additionally immunization services are also delivered through some private hospitals in urban areas. There are more than 16,000 service delivery points (sessions) per month that run throughout the year totaling around 192,000 sessions in country. In an average, some 4-5 children are served in each session in rural setup. However, there are higher number of children in the urban and densely populated districts.

Chapter 2: Guiding Documents for the Comprehensive Multiyear Plan of Nepal 2017-2021

2.1 Guiding Policies, Strategies and Guidelines for the cMYP 2017-2021

2.1.1 Constitutional Provision

The constitution of Nepal, 2015 guarantees the basic health services to all Nepali citizens free of cost as a fundamental right. Besides, it also endorses the reproductive right of women and rights of children to receive health services. These provisions make immunization an important component of the basic health services.

2.1.2 National Health Policy 2071

The vision of national health policy, 2071 is that al Nepali citizens have the physical, mental, social and spiritual health to lead productive and quality lives. Further to it, the policy states its mission as ensuring citizens' fundamental right to stay healthy by optimally utilizing the available resources and fostering strategic cooperation between health service providers, service users and other stakeholders

The goal mentioned by the national health policy is to provide health services through equitable and accountable health system while increasing access of every citizen to quality health services to ensure health as a fundamental right of every citizen.

The policy states its objectives, which are also relevant for immunization program are as follows:

1. Provide free of cost the basic health services that remain a fundamental right of every citizen
2. Establish effective and accountable health services that are easily accessible and are equipped with essential drugs, diagnostics, and skilled human resources
3. Promote participation of people in health services provision. Promote ownership while increasing involvement/partnership of private sectors and NGOs in health services effectively manage partnership to build ownership within government and private sector

The policies relevant to immunization are as follows:

1. Provide access to quality health services (universal health coverage) to every citizen in an effective way and provide basic health services free of cost

2. Plan, produce, retain and develop skilled human resources to deliver affordable and effective health services

2.1.3 Nepal Health Sector Strategy (NHSS) 2016-2020

The mission of the Nepal health sector strategy is stated to ensure citizens' fundamental rights to stay healthy by utilizing available resources optimally and through strategic cooperation between service providers, service users and other stakeholders.

As the Constitution of Nepal (2015) recognizes the citizens' right to stay healthy as a fundamental human right, it also aims to progressively realize this right by actively engaging the communities and nurturing the notion of individual responsibility towards one's health. For this, the government seeks concerted and coordinated efforts of public and private service providers and other relevant stakeholders. The citizen's right to health is achieved through exploring suitable options to effectively and efficiently manage the available health resources and this also demands strategic cooperation amongst all stakeholders including the service users themselves.
For the next five years, NHSS propels Nepal's health sector towards UHC through four key strategic directions:

- Equitable Access to Health Services
- Quality Health Services
- Health Systems Reform
- Multi-Sectoral Approach

The following points mentioned in the Health Sector Strategy (2016- 2020) are very much relevant to immunization services:

Output 1b1:	Improved availability of human resources at all levels with focus on rural retention and enrolment
Output 1c1:	Improved procurement system
Output 1c2:	Improved supply chain management
Output 2.1:	Quality health services delivered as per the protocols/ standards
Output 2.2:	Quality Assurance system strengthened
Output 2.3:	Improved infection prevention and health care waste management practices
Output 3.1:	Improved access to health services, especially to unreached population

2.1.4 Immunization Act

The Immunization Act was enacted in 2072 B.S (2015 AD). It widens the scope to provide more vaccines for all children in Nepal and puts the responsibility of immunization on the shoulders of health care providers as well as caregivers.
Provisions Relating to Immunization Service include:

1. Target group shall have right to take vaccine included into immunization program, free of costs and the Ministry [of health] shall make arrangement for administration of vaccine in any hospital, health facility, vaccination center, mobile vaccination clinic or other place by prescribing special date and time to that effect.
2. Ministry shall make some vaccines compulsory for the sake of prevention, control and alleviation of vaccine preventable diseases and the concerned person shall be obliged to take such vaccine.
3. Caregiver/ guardian shall be responsible to make arrangement of providing vaccine included in immunization program to the infant, children or other person who are living under his guardianship.
4. Vaccinator shall not administer vaccine to those who are not found fit to take it due to his/her health.
5. Prior to vaccine administration, the vaccinator shall give information concerning the nature of vaccine, advantages of vaccine and possible risk associated with vaccine to the vaccine receiver.
6. Vaccine to be administered shall meet the prescribed standards.
7. Involvement of the concerned doctors and health workers shall be mandatory to provide immunization service under this Act.
8. Nobody shall create obstruction to conduct immunization program.
9. Private, non-governmental, community hospital or health institution wishing to conduct immunization service shall obtain prescribed license from designated body.
10. Vaccinator shall maintain up to date records of vaccine receiver and shall issue vaccination card to vaccine receiver and guardian of the vaccine receiver will keep vaccination card safely.

2.1.5 Global Vaccine Action Plan 2011-2020

The GVAP was endorsed by all the 194 Member States of the World Health Assembly in May 2012. It is a framework to prevent millions of deaths by 2020 through more equitable access to existing vaccines for people in all communities.
GVAP aims to strengthen routine immunization to meet vaccination coverage targets; accelerate control of vaccine-preventable diseases with polio eradication as the first milestone; introduce new and improved vaccines and drive research

and development for the next generation of vaccines and technologies. Nepal has accepted the guidance as stated in the six guiding principles of GVAP.

1. Country ownership: Countries have primary ownership and responsibility for establishing good governance and for providing effective and quality immunization services for all.
2. Shared responsibility and partnership: Immunization against vaccine preventable diseases is an individual, community and governmental responsibility that transcend borders and sectors.
3. Equity: Equitable access to immunization is a core component of the right to health.
4. Integration: Strong immunization systems, as part of broader health systems and closely coordinated with other primary health care delivery programmes, are essential for achieving immunization goals.
5. Sustainability: Informed decisions and implementation strategies, appropriate levels of financial investment, and improved financial management and oversight are critical to ensuring the sustainability of immunization programmes.
6. Innovation: Country, regional and global research and development innovation maximize the benefits of immunization. The full potential of immunization can only be realized through learning, continuous improvement and innovation in research and development, as well as innovation and quality improvement across all aspects of immunization.

As per the Global Vaccine Action Plan, full potential of immunization can only be realized through learning, innovation & quality improvement across all aspects of immunization and that is what Nepal is striving for.

2.1.6 SEARVAP (2016- 2020)

South East Asia Region has prepared an action plan for immunization for the region based on the global vaccine action plan and named it South-East Asia Regional Vaccine Action Plan (SEARVAP). It covers a period of five years (2016- 2020). It has eight goals, of which five are intensification of current status (Polio-free status, elimination of maternal and neonatal tetanus and measles, control of rubella/CRS, Japanese encephalitis and Hepatitis B), one is system strengthening, another is use of new vaccines and technologies and the last one is production and availability of vaccines.

This cMYP of Nepal takes into account the goals mentioned in the SEARVAP except the last one (as Nepal is not a vaccine producing country). Keeping in view diversity of approaches for higher coverage for vaccines, Nepal has moved ahead with full immunization concept.

2.1.7 Sustainable Development Goals (SDG) 2016-2030

The vision of the Sustainable Development Goal (SDG) 3, “ensure healthy lives and promote wellbeing” is associated with 13 targets, including four means of implementation targets labeled “3.a” to “3.d.” Target 3.8[1] (vaccines for all) and target 3.b. (Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines)[2] have association with immunization program.

To perform to the level of benchmark set by Sustainable Development Goal and following the framework of Global Vaccine Action Plan (2011- 2020), the national Immunization program sets a vision of providing quality vaccines for all, so that mortality and morbidity related to vaccine preventable disease will be no longer concerns of public health.

2.1.8 Full Immunization Declaration Guideline

Nepal has instigated a very unique and innovative tool to **reach every child** through strengthening community mobilization. With the aim "to reach every eligible child with vaccine" through community ownership and local resource mobilization an "appreciative inquiry and transformational technology" approach was used. The journey of full immunization was started in 2012 from Bhageshwor Village Development Committee (VDC) of Achham district. This VDC was the first VDC to declare that all infants in the VDC were vaccinated with recommended vaccines and the district immunization coordination committee has given it a certificate of "fully immunized VDC". This move has now expanded to more than 1500 VDCs, 62 municipalities and 17 districts. The guideline states that with shared goal of reaching every child with all vaccines, it helps to build a healthy nation. This guideline makes reiterates that an active image of the future can be created through full immunization collectively, if everybody is committed to make it happen. Nepal is set to declare the whole country fully immunized by 2017.

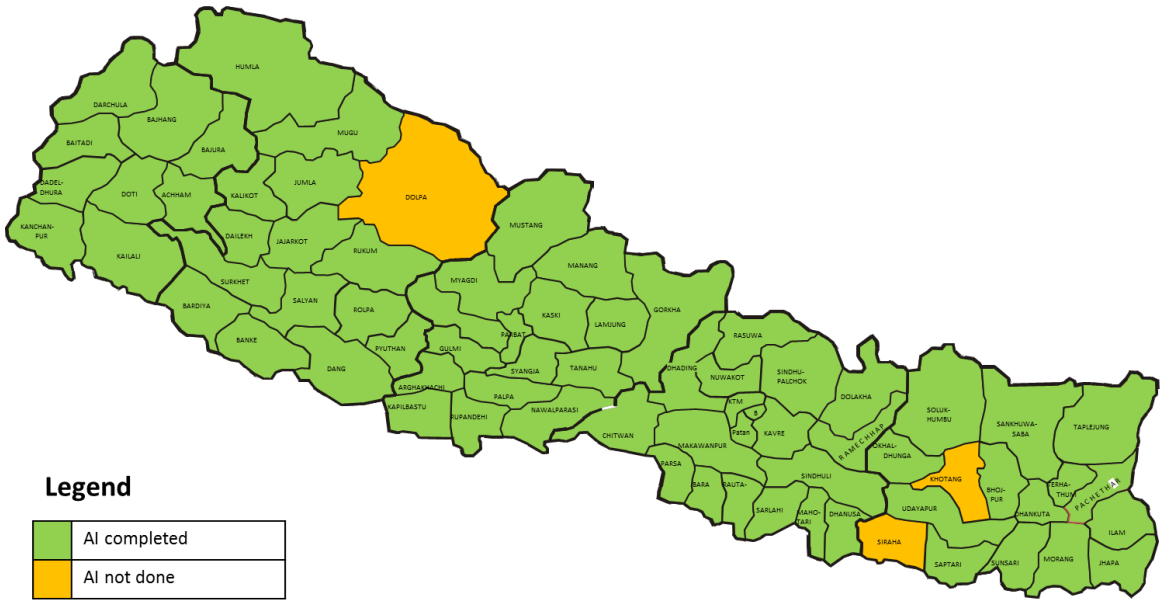
Continuation of commitment and coordination at national authorities and political parties will support the achievement of the vision. Development of localized strategies and guidelines, orientation to all districts through AI workshops along with annual review meetings at the district to the grass root level to discuss the

[1] Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.

[2] Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.

progress will have a positive scenario. Formation and mobilization of local and active monitoring committee, assurance of provision of quality vaccines and other logistics for full immunization along with advocacy are key concepts. This will be supported by integration of immunization with other national campaigns like "Open Defecation Free" district, full literacy campaign, promotion of institutional delivery, and mobilization of school teachers, students, female community health volunteers, health mothers' groups etc. For this purpose, appreciative Inquiry (AI) approach was carried out in almost all districts as shown in the figure below:

Status of Appreciative Inquiry



Every child has the right to a healthy life and immunization ensures that. Nepal is set to build a nation of healthier children and achieve full immunization by the year 2017.

2.2 Context for the cMYP 2017-2021

This sub-chapter basically deals with the strengths, weaknesses, opportunities and threats for the national immunization program to carry out the comprehensive multi-year plan. The performances have been already detailed in the situation analysis and so will be mentioned only if they need stress.

2.2.1 Strengths

- The NIP of Nepal is well established in the structure of the ministry of health.

- It receives significant resources from the government as a priority program (P1)
- Task- specific human resources are allocated up to the grass-root level
- Most of the immunization sessions are conducted in an outreach basis
- Vaccine logistics and cold chain capacity (for traditional vaccines) are well established
- NIP has a track record of conducting supplementary immunization activities successfully (more than 90% coverage)
- Recently, an Immunization Act along with establishment of Immunization Fund has been enacted by the parliament to ensure the right of child to get vaccine
- Many districts have a record of achieving more than 90 percent coverage for vaccination

2.2.2 Weaknesses

- Being a developing country, and with low GDP, purchase of vaccine with its own fund is a major challenge for the NIP
- The procedures for purchasing vaccine and related materials have faced frequent challenges
- Retirement and frequent transfer of human resources has affected the performance
- Keeping up the motivational level of health workers and volunteers for immunization
- Cold chain capacity for new vaccines is very limited from center to district level vaccine stores
- Campaigns are being more costlier than in the past
- Immunization in urban areas is a major challenge where services, tracking and tracing unimmunized children is very tough
- Finding out unvaccinated and missed-out children is weak
- Inadequate number of front-line health workers in urban areas is a major challenge
- Weak and inadequate skill-mix for the vaccinator challenges the quality issues

2.2.3 Opportunities

- Nepal has imparted for federalization and there will be administrative reform and NIP needs to grab this opportunity
- Immunization Act along with establishment of Immunization Fund gives opportunity to ensure adequate funding

- Improved road access and establishment of more vaccine stores near the community will lead to securing round-the-year supply of vaccine
- Involvement of communities will have a positive impact
- Support from international partners in health system strengthening and support for new vaccines are in the pipeline
- Construction of vaccine stores at various levels

2.2.4 Threats

- Transition from Unitary form of government to Federal form of government might have unforeseen threats
- Economic stability is a major threat for ensuring sufficient support for NIP
- Rapid urbanization and inadequate mechanism to deal with this situation will put the cMYP into a vulnerable state
- Achieving a high coverage (>95%) for second dose of measles and rubella needs
- Timely purchase of the vaccine is a major threat for the NIP
- Securing sufficient financial support from international partners, especially for new vaccines and SIAs is a challenge
- Maintaining high quality surveillance standards and incorporating "other VPD" into a "integrated" surveillance system is a major challenge
- Involvement of private sector in providing immunization services in the light of immunization act is an uncertain issue
- Competing priorities of the government will be there during the political transition

Chapter 3: Comprehensive Multiyear Plan of Nepal 2017-2021

3.1 Vision

Nepal: a country free of vaccine-preventable diseases.

3.2 Mission

To provide every child and mother high-quality, safe and affordable vaccines and immunization services from the National Immunization Programme in an equitable manner.

3.3 Goal

Reduction of morbidity, mortality and disability associated with vaccine preventable diseases.

3.4 Strategic Objectives

3.4.1 Reach every child for full immunization;
3.4.2 Accelerate, achieve and sustain vaccine preventable disease control, elimination and eradication;
3.4.3 Strengthen immunization supply chain and vaccine management system for quality immunization services;
3.4.4 Ensure financial sustainability for immunization program;
3.4.5 Promote innovation, research and social mobilization activities to enhance best practices

3.5 Major Strategic approaches

3.5.1 Reach every child for full immunization

3.5.1.1 Implement Immunization Act 2072 to fulfill the aspiration of the Constitution of Nepal
3.5.1.2 Improve partnership among federal, Province, and local governments and inter-sectoral collaboration among line ministries and other stake holders for full immunization
3.5.1.3 Improve the district and below district performance through periodic review
3.5.1.4 Increase immunization coverage to reach 100% children
3.5.1.5 Achieve and sustain full immunization status across the country

3.5.1.6 Initiate introduction of new vaccines
3.5.1.7 Continue use of traditional vaccines

3.5.2 Accelerate, achieve and sustain vaccine preventable diseases control, elimination and eradication

3.5.2.1 Sustain polio-free status for the global eradication of the disease
3.5.2.2 Achieve measles elimination and rubella and CRS control by 2019
3.5.2.3 Accelerate JE Control
3.5.2.4 Sustain MNT elimination status
3.5.2.5 Accelerate hepatitis B vaccination
3.5.2.6 Expand surveillance of other vaccine preventable diseases

3.5.3 Strengthen immunization supply chain and vaccine management system for quality immunization services

3.5.3.1 Strengthen pre-shipment and arrival procedures for vaccine supplies and cold chain equipment
3.5.3.2 Strengthen vaccine storage, stock management and distribution system at all levels
3.5.3.3 Construct disaster resilient physical infrastructure with adequate dry space, cold chain volume, equipment and transport capacity
3.5.3.4 Regular maintenance of vaccine storage, building and cold chain equipment
3.5.3.5 Update immunization related policies, strategies, guidelines on vaccine and cold chain management
3.5.3.6 Improve information management on vaccine and cold chain system
3.5.3.7 Strengthen vaccine pharmaco-vigilance to ensure vaccine safety and quality

3.5.4 Ensure financial sustainability for immunization program

3.5.4.1 Strengthen immunization financing
3.5.4.2 Strengthen immunization fund

3.5.5 Promote innovation, research and social mobilization activities to enhance best practices

3.5.5.1 Promote innovation and adapt new technologies
3.5.5.2 Promote research and expand innovation in immunization services

3.5.5.3 Explore areas of research which can have impact on policies and strategies on immunization

3.5.5.4 Strengthen communication, social mobilization and advocacy activities

3.6 Salient Features of the current cMYP

1. Immunize every eligible child
2. Declare Nepal as a country having full immunization
3. Ensue financial sustainability for immunization
4. Include new and under-used vaccine
5. Implement SBI (Search, Bring and Immunize) Approach for missed and unvaccinated children
6. Move the program beyond infancy

Above mentioned objectives will be achieved through implementing various and targeted activities as mentioned in the chapter 3.

Chapter 4: Detailed list of activities

Detailed list of activities have been based on the broad strategic approaches and is reflected in implementation framework by year and target.

Major Activities

4.1 Reach every child for full immunization

4.1.1 Implement Immunization Act 2072 to fulfill the aspiration of the Constitution of Nepal

4.1.1.1 Orient health workers on the Immunization Act to ensure vaccination as the right of every child
4.1.1.2 Sensitize the general public on Immunization Act and Regulation, and immunization program through various media
4.1.1.3 Advocate the Immunization Act with legislative body to ensure successful implementation of the Act
4.1.1.4 Redefine and enforce job description of health workers related to immunization and cold chain to deliver effective immunization services
4.1.1.5 Redistribute/right size and hire human resource for immunization
4.1.1.6 Build strong links between ministries of health, finance, education, federal affairs and local development for sustainability
4.1.1.7 Advocate to include lessons on vaccines and immunization in basic school health education curriculum
4.1.1.8 Advocate to update the course content on vaccines and immunization in vocational and pre-service training
4.1.1.9 Orient elected members and local government officials on immunization program
4.1.1.10 Improve health workers' performance to ensure quality and equitable immunization services to all
4.1.1.11 Build capacity of health workers on standard immunization practices
4.1.1.12 Strengthen health workers' capacity on updating micro-plan in every health facility and district to identify unreached and hard to reach (HTR) children
4.1.1.13 Enhance health workers' capacity to review routine information system for identifying low performing areas and hard to reach population
4.1.1.14 Produce IEC materials to conduct social mobilization activities to address hard to reach population

4.1.1.15 Hold review meetings to address hard to reach population

4.1.2 Improve partnership among federal, province and local governments and inter-sectorial collaboration among line ministries and other stake holders for full immunization

4.1.2.1 Orient various tiers of government for full immunization
4.1.2.2 Coordinate with federal and provincial governments to increase resources to achieve and sustain full immunization initiative
4.1.2.3 Enhance partnership for full immunization across various tiers of government
4.1.2.4 Explore new fiscal space to mobilize resource at local government level
4.1.2.5 Support for retention of immunization card
4.1.2.6 Organize joint planning workshop at district level with partners and social mobilizers (like NRCS, Rotary, Lions, Cooperatives and Ward Citizen Forums etc.)

4.1.3 Improve district and below district performance through periodic review

4.1.3.1 Carry out review of all health facilities to ensure high immunization coverage
4.1.3.2 Conduct supportive supervision and monitoring from central, regional and district health authority
4.1.3.3 Conduct periodic joint supervision with special focus on category 3 and 4 districts, districts reporting outbreak of VPD and AEFIs
4.1.3.4 Use immunization data for validation of coverage and equity through surveys

4.1.4 Increase immunization coverage to reach 100% children

4.1.4.1 Orient FCHV and HMG on searching partially immunized children and bringing them for immunization
4.1.4.2 Search and identify missing children and bring them to immunization services
4.1.4.3 Implement Search, Bring and Immunize (SBI) approach for missing and partially immunized children in the month of Baisakh (immunization month)
4.1.4.4 Maintain current coverage status in all districts, VDCs and municipalities
4.1.4.5 Encourage municipalities to own immunization services as their integral part of their services

4.1.5 Achieve and sustain the full immunization status across the country

4.1.5.1 Promote all VDCs and municipalities have fully immunization status and declare "fully immunized"
4.1.5.2 Encourage the local government to allocate resources for full immunization in their work plan
4.1.5.3 Collaborate with MoFALD for inclusion of full immunization as a requirement for Minimum Condition for Performance Measurement (MCPM)
4.1.5.4 Utilize the platform of local government for enhancing vital registration through FCHV (to promote VR and full immunization and health facilities to ensure no one is left behind)
4.1.5.5 Mobilize health mother's group to ensure full immunization of every child and ensure sustainability of "full immunization initiative"
4.1.5.6 Promote and integrate full immunization with other public health activities
4.1.5.7 Develop and implement "Guidelines for validation of full immunization"

4.1.6 Initiate introduction of new vaccines

4.1.6.1 Introduce Rotavirus vaccine in routine immunization
4.1.6.2 Introduce HPV vaccine in routine immunization
4.1.6.3 Vaccinate people in selected areas with typhoid vaccine
4.1.6.4 Vaccinate people in selected areas with cholera vaccine
4.1.6.5 Introduce new or underutilized vaccines as per recommendation of NCIP depending on disease burden and public health priority
4.1.6.6 Respond to outbreaks, pandemics/epidemics, and emerging new infectious diseases with vaccine as necessary
4.1.6.7 Use vaccines in high-risk areas to control disease burden

4.1.7 Continue use of traditional vaccines through purchase of vaccines

4.2 Accelerate, achieve and sustain vaccine preventable diseases control, elimination and eradication

4.2.1 Sustain polio-free status for the global eradication of the disease

4.2.1.1 Implement National Polio End game Strategic Plan through detection and interruption of poliovirus

4.2.1.1.1 Maintain certification standards AFP surveillance
4.2.1.1.2 Initiate environmental (sewage) sampling surveillance for detection of WPV, VDPV
4.2.1.1.3 Implement National Plan for Polio Outbreak Preparedness and Response
4.2.1.1.4 Respond to any vaccine derived poliovirus or wild polio virus events or outbreaks

4.2.1.2 Strengthen immunization systems, surveillance and withdraw OPV

4.2.1.2.1 Ensure adequate supply of IPV and bOPV
4.2.1.2.2 Achieve high coverage for IPV and bOPV
4.2.1.2.3 Conduct SIAs (NID) specific to polio virus outbreak
4.2.1.2.4 Withdraw Oral Polio Vaccine as per Global Polio End Game Strategy

4.2.1.3 Contain poliovirus and certify polio eradication

4.2.1.3.1 Continue Laboratory survey and update inventory until Global Polio Eradication is achieved
4.2.1.3.2 Ensure safe handling and disposal of samples possibly containing potential Polio Virus Materials
4.2.1.3.3 Adopt non-retention for samples with WPV, VDPV and destroy unneeded material containing polio virus

4.2.1.4 Formation of Polio Legacy Committee and conduct regular meeting

4.2.1.4.1 Develop and implement Polio Transitioning Plan
4.2.1.4.2 Develop Polio Legacy Plan through multi stakeholder consultation and engagement and implement it
4.2.1.4.3 Integrate disease surveillance
4.2.1.4.4 Set time frame for transferring assets and knowledge

4.2.2 Achieve Measles and Rubella elimination and control of CRS by 2019

4.2.2.1 Achieve and maintain high level of population immunity in all districts

4.2.2.1.1 Achieve and maintain greater than or equal to 95% coverage with 2 doses of MR

4.2.2.1.2 Achieve and maintain high vaccination coverage in MR campaign

4.2.2.2 Monitor measles, rubella and CRS activities using sensitive surveillance system with accredited laboratory support

4.2.2.2.1 Achieve and maintain elimination standard surveillance performance indicators of measles and rubella

4.2.2.2.2 Expand CRS sentinel surveillance sites (Central and Regional)

4.2.2.2.3 Establish sub-national/regional accredited measles and rubella laboratories

4.2.2.2.4 Develop and strengthen diagnostic capacity of measles and rubella laboratories including human resources

4.2.2.2.5 Develop capacity of health workers on measles and rubella surveillance and outbreak response, including Dry Blood Sample, Point of care testing/OF

4.2.2.3 Outbreak preparedness and response for MR

4.2.2.3.1 Identify and respond timely to all suspected measles and rubella outbreaks

4.2.2.3.2 Vaccinate high risk population and contacts residing in the area of outbreak with MR

4.2.2.4 Develop and implement effective advocacy, communication and social mobilization (ACSM) activities for immunization

4.2.2.4.1 Conduct advocacy meeting at district, regional and central level to achieve and sustain measles elimination and rubella control

4.2.2.4.2 Mobilize civil society organization for measles elimination

4.2.2.4.3 Develop IEC materials and conduct BCC to achieve and sustain high immunization coverage

4.2.2.4.4 Establish Electronic Display Board in places of mass gathering

4.2.2.4.5 Develop and conduct innovative/cost-effective activities, operational researches to improve immunization and surveillance

4.2.2.4.6 Conduct studies/activities to support immunization, surveillance, and diagnosis of measles and rubella

4.2.2 Accelerate JE control

4.2.3.1 Achieve high coverage (>90%) of JE vaccination through routine immunization
4.2.3.2 Achieve surveillance standards for AES
4.2.3.3 Conduct SIA based on lab-confirmed JE data
4.2.3.4 Conduct studies to identify non-JE etiologies of AES

4.2.3 Sustain MNT elimination status

4.2.4.1 Achieve 90% coverage with at least 2 doses of Td to pregnant women through routine immunization
4.2.4.2 Include status of protection at birth in the HMIS reports
4.2.4.3 Assess and introduce school-based Td immunization
4.2.4.4 Continue NNT surveillance
4.2.4.5 Adopt strategy to implement 5 dose-Td vaccinations through routine immunization
4.2.4.6 Conduct annual review on NNT status and take corrective actions in high risk districts
4.2.4.7 Strengthen neonatal tetanus prevention activities including promotion of institutional and clean delivery practices
4.2.4.8 Expand Td vaccination to grade 2 students
4.2.4.9 Expand Td vaccination to grade 8 students

4.2.4 Accelerate Hepatitis B Vaccination

4.2.5.1 Review Hepatitis B vaccination program
4.2.5.2 Conduct Hepatitis B vaccination to health care workers and other risk groups
4.2.5.3 Purchase Hepatitis B vaccine to vaccinate health workers
4.2.5.4 Conduct sero-prevalence surveys to determine the burden of perinatal transmission

4.2.5 Expand surveillance of other vaccine preventable diseases

4.2.6.1 Expand surveillance system based on need for vaccine-preventable diseases such as typhoid and cholera
4.2.6.2 Continue/expand sentinel surveillance sites for Rotavirus and invasive bacterial diseases (IBD) for vaccine introductions and impact studies
4.2.6.3 Develop contingency plan and respond effectively to vaccine-preventable diseases outbreaks

4.3 Strengthen immunization supply chain and vaccine management system for quality immunization services

4.3.1 Strengthen pre-shipment and arrival procedures for vaccine supplies and cold chain equipment

4.3.1.1 Conduct periodic orientation on 'sensitivity of vaccines and importance of timely release of vaccine and supplies' to various officials
4.3.1.2 Forecast and quantify requirement of vaccines, syringes, safety boxes and cold chain equipment
4.3.1.3 Procure syringes, safety boxes
4.3.1.4 Purchase cold chain equipment to ensure adequate cold chain volume
4.3.1.5 Allocate sufficient budget to procure adequate vaccines, syringes and safety boxes
4.3.1.6 Enhance capacity of staff for SOP on EVM
4.3.1.7 Modernize Cold Chain Section of LMD with adequate computers, printers and accessories
4.3.1.8 Add feeder line to ensure regular electricity supply and purchase fire safety equipment
4.3.1.9 Purchase protective equipment for working in WIC/WIF

4.3.2 Strengthen vaccine storage, stock management and distribution system at all levels

4.3.2.1 Training on vaccine storage, store management and distribution
4.3.2.2 Enhance the use of electronic data logger at CVS, RVS and DVS and vaccine sub-store
4.3.2.3 Update inventory periodically to ensure adequate stock
4.3.2.4 Enhance the practice of bundling of vaccines and supplies
4.3.2.5 Maintain appropriate temperature during vaccine distribution and transport
4.3.2.6 Supply needle cutter to all health facilities
4.3.2.7 Implement use of cool pack in immunization
4.3.2.8 4.3.2.8 Ensure vaccine wastage rate does not exceed 1% at store level and 10% at session level
4.3.2.9 4.3.2.9 Supply Vaccination bag to Outreach Health Workers

4.3.3 Construct disaster resilient physical infrastructure with adequate dry space, cold chain volume, equipments and transport capacity

4.3.3.1 Construct CVS building as per standard with adequate space for dry and cold storage
4.3.3.2 Establish/revamp at least one state-level/provincial level vaccine store in each state
4.3.3.3 Improve and expand capacity of RVS, DVS and VSS with adequate space for dry and cold storage considering temperature zones
4.3.3.4 Procure high performing cold chain equipments
4.3.3.5 Procure vaccine transportation van/refrigerated vehicle for each province
4.3.3.6 Implement contingency plan at all storage level to prevent vaccine damage
4.3.3.7 Phase out remaining CFC equipment, dispose all non-functional and replace 10+ years old equipment as per Cold-Chain Replacement Plan, 2072/73
4.3.3.8 Guidelines development for auction of Old CCE

4.3.4 Carry out regular maintenance of vaccine storage building and cold-chain equipment

4.3.4.1 Outsourcing off maintenance of CCE
4.3.4.2 Conduct regular maintenance of building and vehicles
4.3.4.3 Update national cold chain equipment inventory every four month
4.3.4.4 Develop plan with allocation of adequate resources for regular, preventive and emergency maintenance and supervision
4.3.4.5 Carry out periodic district and sub district level visit for cold chain equipment maintenance
4.3.4.6 Conduct minor preventative and emergency maintenance of the equipment and infrastructure/building

4.3.5 Update immunization related policies, strategy, guidelines on vaccine and cold chain management

4.3.5.1 Update immunization related guidelines, policies and strategy
4.3.5.2 Revise Injection Safety Policy to include newer approaches for sharp and waste management
4.3.5.3 Revise Multi-dose Vial Policy Document to include newly introduced vaccines with MDVP

4.3.5.4 Update guideline on maintenance of cold chain equipment

4.3.6 Improve information management on vaccine and cold chain system

4.3.6.1 Purchase equipment to implement and expand Online Inventory Management System at all vaccine store level
4.3.6.2 Develop current manual based vaccine and cold chain information system into web-based platform
4.3.6.3 Integrate the online IMS system and cold chain information management system into DHIS-2
4.3.6.4 Conduct immunization and EVM regional/sub-national review annually
4.3.6.5 Conduct EVM assessment (internal and external) every two years
4.3.6.6 Develop and implement district-wide EVM improvement plan
4.3.6.7 Build capacity for cold chain and immunization staff on standard operating procedure for EVM
4.3.6.8 Integrate EVM component in basic EPI training manual
4.3.6.9 Review/revise immunization monitoring tools

4.3.7 Strengthen vaccine pharmacovigilence to ensure vaccine safety and quality

4.3.7.1 Training on lot release
4.3.7.2 Capacity development of laboratories
4.3.7.3 AEFI causality Assessment
4.3.7.4 NRA Meeting
4.3.7.5 AEFI Committee meeting

4.4 Ensure financial sustainability for immunization program

4.4.1 Strengthen Immunization financing

4.4.1.1 Allocate adequate amount of budget in immunization in line with constitutional provision and Immunization Act, 2072
4.4.1.2 Develop resource tracking system to estimate total budget allocation, disbursement and spending on routine immunization program
4.4.1.3 Sensitize legislators and elected members to closely monitor immunization financing

4.4.2 Strengthen Immunization Fund

4.4.2.1 Initiate high level policy dialogue to develop tax exemption policy for those who pledge donation for immunization fund
4.4.2.2 Engage domestic private partners including business/corporate houses and civil societies for exploring innovative source of financing
4.4.2.3 Interaction Program with other agencies (like Rotary, Lions etc) to explore additional funding
4.4.2.4 Develop Guidelines (Operational Manual) to utilize the Immunization Fund

4.5 Promote innovation, research and social mobilization activities to enhance best practices

4.5.1 Promote innovation and adapt new technologies

4.5.1.1 Use higher performing technology for cold chain equipment's
4.5.1.2 Use electronic registry and monitoring technology in immunization
4.5.1.3 Review promotion of eHealth including mHealth initiatives in immunization (e-Immunization)
4.5.1.4 Conduct evaluation and surveys on immunization
4.5.1.5 Establish healthy baby clinics
4.5.1.6 Capture every birth, link it with eHealth initiatives and coordinate with local government
4.5.1.7 Address missed opportunities by integration with other programs (like WASH, IMNCI, PNC etc)

4.5.2 Promote research and expand innovation in immunization services

4.5.2.1 Promote Best practices in immunization through exchange visits
4.5.2.2 Expand Number of district fully immunized
4.5.2.3 Construct immunization hut

4.5.3 Explore areas of research which can have impact on policies and strategies on immunization

4.5.3.1 Conduct Sero-Prevalence Survey to determine the burden of perinatal Hep B transmission
4.5.3.2 Carry out study on causes of non- JE (included under JE control)

4.5.4 Strengthen communication, social mobilization and advocacy activities

4.5.4.1 Encourage female community health volunteers and health mothers' group to hold regular meeting focusing to track unreached and dropout children

4.5.4.2 Develop discussion tools and print it for the use by FCHV and health mothers' group

4.5.4.3 Use SMS and other social network for reminder and dissemination of immunization message for reaching every child

4.5.4.4 Develop advocacy materials (appropriate for the geography and language) for the full immunization and periodic intensification of routine immunization

4.5.4.5 Document the success stories in immunization

Chapter 5: Monitoring the program

This CMYP has set few milestones and other achievements will be monitored using various indicators as given below

5.1 Milestones

The following milestones are set for the next five years:

2017 - Revamp the cold chain system
2018 - Declare Nepal a “Fully immunized country”
- Introduce Rotavirus in the national immunization program
2019 - Introduce new vaccines like Cholera and typhoid
2020 - Declare Polio Eradication
- Initiate using HPV through NIP
- Declare elimination of Measles, Rubella and CRS

5.2 Indicators

As mentioned in various documents of ministry of health, few indicators will be taken into consideration to gauze the progress of NIP and cMYP. Tools like HMIS, DHS, and MICS will serve as the compass for the direction of the NIP. Basically, the following indicators will be used to gauze the progress of the cMYP:

- U5MR
- Vaccination Coverage (by antigen and doses)
- Percentage of fully immunized children
- Percentage not- immunized for pentavalent vaccine
- Dropout rate
- Dropout rate for Pentavalent and measles vaccines
- Vaccine wastage rate (by antigen)
- Percentage of AEFI cases reported (by antigen)
- Percentage of VDC and districts with >90% coverage
- Budget allocated for immunization program
- Incidence rate (for AFP, NT, AES, MLI, RLI)

Chapter 6: Strategic framework for action

Objective 1: Reach every child with completed vaccine doses

Strategic Objective and Major Activities	Target	MOV	2017	2018	2019	2020	2021	Total Cost (in US$)
1. Reach every child for full immunization								
1.1 Implement Immunization Act 2072 to fulfill the aspiration of the Constitution of Nepal								
1.1.1 Orient health workers on the Immunization Act to ensure vaccination as the right of every child	75 district	Report	√	√				525701
1.1.2 Sensitize general public on Immunization Act and Regulation, and immunization program through various media								
1.1.2 a) IEC Activities (Material development and print)	10,000,000 print	Materials	√	√	√	√	√	934579
1.1.2. b) Broadcast/ telecast (2 episodes)	365		√	√	√	√	√	56285
1.1.2 c) FM Broadcast	75 districts		√	√	√	√	√	204673
1.1.3 Advocate the Immunization Act with legislative body to ensure successful implementation of the Act	5	Report	√	√				11215
1.1.4 Redefine and enforce job description of health workers related to immunization and cold chain to deliver effective immunization services	2	Report	√	√				8972
1.1.5 Redistribute/right size and hire human resource for immunization	2	Report	√		√			22430
1.1.6 Build strong links between ministries of health, finance, education, federal affairs and local development for sustainability	2	Report	√	√	√			10093
1.1.7 Advocate to include lessons on vaccines and immunization in Basic school health education curriculum	2	Report		√				2243
1.1.8 Advocate to update the course content on vaccines and immunization in vocational and pre-service training	2	Report		√				1869

1.1.9 Orient elected members and local government officials on immunization program	75 districts	Report		√	√	√		126168
1.1.10 Improve health workers' performance to ensure quality and equitable immunization service to all	75 districts	Report	√	√				168224
1.1.11 Build capacity of health workers on standard immunization practices	75 districts	Report		√				560748
1.1.12 Strengthen health workers' capacity on updating micro plan in every health facility and district to identify unreached and hard-to-reach children	75 districts	Report	√	√	√	√	√	280374
1.1.13 Enhance health workers' capacity to review routine information system for identifying low performing areas and hard-to-reach population	75 districts	Report	√	√	√	√	√	42056
1.1.14 Produce IEC materials to conduct social mobilization activities to address hard-to-reach population	5 messages		√					4673
1.1.15 Hold review meeting to address HTR population	4 meeting		√	√	√	√	√	140187
1.2 Improve partnership among federal, province and local governments, and inter-sectoral collaboration among line ministries and other stakeholders for full immunization								
1.2.1 Orient various tiers of government for full immunization	7 Province	Report		√	√			26168
1.2.2 Coordinate with federal and provincial governments to increase resources to achieve and sustain full immunization initiative	7 Provinces	Report		√	√	√	√	20935
1.2.3 Enhance partnership for full immunization across various tiers of government	7 Provinces	Report						26168
1.2.4 Explore new fiscal space to mobilize resource at local government level	7 Provinces	Report			√		√	261682
1.2.5 Support for retention of immunization card	All VDCs	Report		√	√			1495327
1.2.6 Organize joint planning workshop at district level with partners and social mobilizers (like NRCS, Rotary, Lions, Cooperatives, Ward Citizen Forum etc)	75 districts	Plan	√	√	√	√	√	876168

1.3 Improve district and below district performance through periodic review								
1.3.1 Carry out review of all facilities to ensure high immunization coverage	All VDCs	Report	√	√	√	√	√	2990654
1.3.2 Conduct supportive supervision and monitoring from central, regional, and district health authority	All VDCs	Report	√	√	√	√	√	4672897
1.3.3 Conduct periodic joint supervision with special focus on Category 3 & 4 districts, districts reporting outbreak of VPDs and AEFIs)	1000 VDCs	Report	√	√	√	√	√	1168224
1.3.4 Use immunization data for validation of coverage and equity through surveys.	13 cluster survey	Report		√				30374
1.4 Increase immunization coverage to reach 100% children								
1.4.1 Orient FCHV and HMG on searching partially immunized children and bringing them for immunization	54000 FCHVs	Report	√					504673
1.4.2 Search and identify missing children and bring them to immunization services (SBI)	3% missing children	coverage	√	√	√	√	√	364486
1.4.3 Implement Search, Bring and Immunize (SBI) approach for missing and partially immunized children in the month of Baisakh (immunization month)	10% of infants	coverage	√	√	√	√	√	7289720
1.4.4 Maintain current coverage status in all districts and VDC and municipalities	75 districts	Report	√	√	√	√	√	1927570
1.4.5 Encourage municipalities to own immunization services as integral part of their services	217 Municipality	Report	√					324486
1.4.5.1 Help to increase accessibility in municipalities through developing micro-plan	217	Report	√		√			1622430
1.4.5.2 a) Support in hiring and updating health workers' knowledge and skills in municipalities	217	Report	√	√				4806449
1.4.5.2 b) Training of newly recruited health workers	217	Report		√		√		336449
1.4.5.3 Develop collaboration among municipal clinics, private hospitals and urban clinics (PHC-RD supported) to deliver services as per micro-plan	217	Report	√	√	√	√	√	507009

1.4.5.4 Ensure DPHO provides vaccine and consumables as per micro plan in municipal/urban/private clinics	217	Report	√	√	√	√	√	121682
1.5 Achieve and sustain full immunization status across the country								
1.5.1 Promote all VDCs and municipalities have full immunization status and declare "fully immunized"	4000 VDCs and Municipalities	Report		√				1869159
1.5.2 Encourage the local government to allocate resources for full immunization in their work plan	500 Local units	Report			√			934579
1.5.3 Collaborate with MoFALD for inclusion of full immunization as a requirement for Minimum Condition Performance Measurement (MCPM)	1 Workshop	Report	√					18692
1.5.4 Utilize the platform of local government for enhancing vital registration through FCHV (to promote VR and full immunization and health facilities to ensure no one is left behind)	52000 FCHV	Report	√	√				1943925
1.5.5 Mobilize health mothers' group (HMG) to ensure full immunization of every child and ensure sustainability of "full immunization initiative".	52000 FCHV	Report	√	√	√			2915888
1.5.6 Promote and integrate full immunization with other public health activities	75 districts	Report		√	√	√	√	7477
1.5.7 Develop and implement "Guidelines for validation of full immunization".	75 districts	Report		√				9346
1.6 Initiate introduction of new vaccines								
1.6.1 Introduce Rotavirus vaccine in routine immunization								
1.6.1 a) Purchase of Rotavirus Vaccine	All infants	Report		√	√	√	√	13084112
1.6.1 b) Develop Guidelines for Rotavirus vaccination	1 Workshop		√					18692
1.6.1 c) Training on Rotavirus Vaccination	75 districts		√					1542056
1.6.2 Introduce HPV vaccine in routine immunization								

1.6.2 a) Purchase HPV vaccine	Class 6 girls			√	√	√	√	11887850
1.6.2 b) Guidelines development for HPV Vaccine	1 Workshop		√					14019
1.6.2 c) Training on HPV Vaccination	75 districts		√					1542056
1.6.2 d) Provide Operational Costs for HPV Vaccination	75 districts			√	√	√	√	280374
1.6.3 Vaccinate people in selected areas with typhoid vaccine								
1.6.3 a) Purchase of typhoid vaccine	1000000 dose					√	√	24299065
1.6.3 b) Guidelines development for typhoid vaccine	1 Workshop				√			14019
1.6.3 c) Training on typhoid vaccination	75 districts				√			20561
1.6.3 d) Provide Operational Costs for typhoid vaccination	75 districts					√	√	140187
1.6.4 Vaccinate people in selected area with cholera vaccine								
1.6.4 a) Purchase of Cholera Vaccine	1000000					√	√	3738318
1.6.4 b) Guidelines development for cholera vaccination	1 Workshop				√			14019
1.6.4 c) Training on cholera vaccination	75 districts				√			1542056
1.6.4 d) Operational Costs for cholera vaccination	75 districts					√	√	140187
1.6.5 Introduce new or underutilized vaccines as per recommendation of NCIP depending on disease burden and public health priority								
1.6.5 a) Purchase of New or underutilized vaccine								
1.6.5 b) Guidelines development	1 Workshop							14019
1.6.5 c) Training on vaccination for new or underutilized vaccine	75 districts							1542056
1.6.6 Respond to outbreaks, pandemics/ epidemics, and emerging new infectious diseases with vaccine as necessary	10		√	√	√	√	√	1168224
1.6.7 Use vaccines in high-risk areas to control disease burden	50		√	√	√	√	√	934579
1.7 Continue use of Traditional Vaccines								
1.7.1 Purchase and Continue use of traditional vaccines in routine immunization	All infants							

1.7.1.1 BCG Vaccine	All infants		√	√	√	√	√	724206
1.7.1.2 Pentavalent	All infants		√	√	√	√	√	9008411
1.7.1.3 bOPV	All infants		√	√	√	√	√	2013645
1.7.1.4 MR	All infants		√	√	√	√	√	4988187
1.7.1.5 JE	All infants		√	√	√	√	√	1829944
1.7.1.6 PCV	infants		√	√	√	√	√	37093458
1.7.1.7 Td	Pregnant women		√	√	√	√	√	1733551
1.7.1.8 Td	School age children			√	√	√	√	2218946
1.7.1.9 IPV	Infants		√	√	√	√	√	3931907

Objective 2: Accelerate, achieve and sustain vaccine preventable disease control, elimination and eradication

Strategic Objective and Major Activities	Target	MOV	2017	2018	2019	2020	2021	Total Cost
2. Accelerate, achieve and sustain vaccine preventable disease control, elimination and eradication								
2.1 Sustain polio free status for the global eradication of the diseases								
2.1.1 Implement National Polio End-Game Strategic Plan through detection and interruption of poliovirus	75 districts	Report	√	√	√	√	√	350467
2.1.1.1 Maintain certification standard AFP surveillance in all districts	75 district	Report	√	√	√	√	√	3504673
2.1.1.2 Initiate environmental (sewage) sampling surveillance for detection of WPV, VDPV	5 Places	Report	√	√	√	√	√	65421
2.1.1.3 Implement National Plan for Polio Outbreak Preparedness and Response	75 districts	Report	√	√	√	√	√	7885514
2.1.1.4 Respond to any vaccine-derived poliovirus or wild polio virus events or outbreaks	5 Region	Report	√	√	√	√	√	140187
2.1.2 Strengthen immunization systems, surveillance and withdraw OPV	4000 VDCs		√	√				747664
2.1.2.1 Ensure adequate supply of IPV and bOPV			√	√	√			Integrate
2.1.2.2 Achieve high coverage for IPV and bOPV		Report	√	√	√	√	√	Integrate
2.1.2.3 Conduct SIAs (NID) specific to Polio Virus outbreak	75 district	Report		√				5046729
2.1.2.4 Withdraw Oral Polio Vaccine as per Global Polio End Game Strategy								
2.1.2.4 a) Decide withdrawal of oral polio vaccine	5 Region	Report	√					14019
2.1.2.4 b) Field Visit to ensure withdrawal	5 Region	Report						70093
2.1.3 Contain poliovirus and Certify polio eradication	5 Regions	Report		√				14019
2.1.3.1 Continue Laboratory survey and update inventory until Global Polio Eradication is achieved	Survey	Report	√	√	√			56075

2.1.3.2 Ensure safe handling and disposal of samples possibly containing potential Polio Virus Materials	10 districts lab	Report	√	√				280374
2.1.3.3 Adopt non-retention for samples with WPV, VDPV and destroy unneeded material containing polio virus	75 district							14019
2.1.4 Formation of Polio Legacy Committee and conduct regular meetings	5	TOR	√					9346
2.1.4.1 Develop and implement Polio Transitioning Plan	1	Plan	√					5607
2.1.4.2 Develop Polio Legacy Plan through multi stakeholder consultation and engagement and implement it	2	Plan			√	√	√	67290
2.1.4.3 Integrate disease surveillance	4	Report	√	√	√	√	√	56075
2.1.4.4 Set time frame for transferring assets and knowledge								Integrated
2.2 Achieve measles and rubella elimination and CRS control by 2019								
2.2.1 Achieve and maintain high level of population immunity in all districts								0
2.2.1.1 Achieve and maintain greater than or equal 95% coverage with both first and second dose of MR	>=95 % coverage	Report	√	√	√	√	√	Integrated
2.2.1.2 Achieve and maintain high vaccination coverage in MR campaign	>=95 % coverage	Report			√			2803738
2.2.2 Monitor measles, rubella and CRS using sensitive surveillance system with accredited laboratory support	Exceed indicator	Report	√	√	√	√	√	2803738
2.2.2.1 Achieve and maintain elimination standard surveillance performance indicators of measles and rubella	Exceed indicator	Report	√	√	√			integrated
2.2.2.1 a) Monitor case-based sites for measles and rubella surveillance	50 sites	Report	√					46729
2.2.2.1 b) Conduct training on MR surveillance	50 sites	Rep	√					37383
2.2.2.2 Expand CRS sentinel surveillance sites (Central and Regional)	10 sites	Report	√					14019

2.2.2.3 Establish sub-national/ regional accredited measles and rubella laboratories	7 Provinces	Report	√		√			32710
2.2.2.4 Develop and strengthen diagnostic capacity of measles and rubella laboratories including human resources	7 Provinces	Report						96168
2.2.2.5 Develop capacity of health workers on measles and rubella surveillance and outbreak response, including DBS, POCT/OF	75 districts	Report	√	√	√			56075
2.2.3 Outbreak preparedness and response on measles/ rubella outbreaks	25 (estimated)	Report	√	√	√	√	√	292056
2.2.3.1 Identify and respond timely to all suspected measles and rubella outbreaks	100%	Report	√	√	√	√	√	Integrated
2.2.3.2 Vaccinate high risk population and contacts residing in the area of outbreak	100%	Report	√	√	√	√	√	Integrated
2.2.4 Develop and implement effective advocacy, communication and social mobilization (ACSM) activities for immunization		IEC Material	√	√	√	√	√	Integrated
2.2.4.1 Conduct advocacy meeting at district, regional and central level to achieve and sustain measles elimination and rubella control	85	Report	√	√	√	√	√	476636
2.2.4.2 Mobilize civil society organizations for measles elimination			√	√	√	√	√	Integrated
2.2.4.3 Develop IEC materials and conduct BCC to achieve and sustain high immunization coverage								
2.2.4.3 a) Print IEC materials (Material development, print)	200,000 print	IEC material	√	√	√	√	√	186916
2.2.4.3 b) Audio IEC Activities (Material development, broadcast)	400 stations	report	√	√	√	√	√	204673
2.2.4.3 c) Video IEC Activities (Material development, Telecast)			√	√	√	√	√	1407126
2.2.4.3 d) Develop and supply Inter-personal communication (IPC) materials for FCHV	50000		√	√	√	√	√	700935
2.2.4.3 e) Use hotline Services and use of social networks	1		√	√	√	√	√	34112
2.2.4.4 Establish Electronic Display Board in places of mass gathering	75 place		√	√	√	√	√	350467

2.2.4.5 Develop and conduct innovative/ cost-effective activities, operational researches to improve immunization and surveillance	1	Report	√					11215
2.2.4.6 Conduct studies/activities to support immunization, surveillance, and diagnosis of measles and rubella	1	Report			√			11215
2.3 Accelerate JE control								
2.3.1 Achieve high coverage (>90%) of JE vaccination through routine immunization	>= 95 % coverage	Report	√	√	√	√	√	Integrated
2.3.2 Achieve surveillance standards for AES	integrated	Report	√	√	√	√	√	Integrated
2.3.3 Conduct SIA based on lab-confirmed JE data	20 districts	Report		√		√		1121495
2.3.4 Conduct studies to identify non-JE etiologies of AES	1	Report	√					56075
2.4 Sustain MNT elimination status								
2.4.1 Achieve 90% coverage with at least 2 doses of Td to pregnant women through routine immunization	integrated		√	√	√	√		Integrated
2.4.2 Include status of protection at birth in HMIS reports	2 WS	Report	√	√	√	√		9346
2.4.3 Assess and introduce school-based Td immunization	75 districts	Report		√				2313084
2.4.4 Continue NNT surveillance	integrated	Report	√	√	√	√		Integrated
2.4.5 Adopt strategy to implement 5 dose-Td vaccination through routine immunization	integrated	Strategy	√					Integrated
2.4.6 Conduct annual review on NNT status and take corrective actions in high risk districts	75 districts	Report	√	√	√	√	√	7710280
2.4.7 Strengthen neonatal tetanus prevention activities including promotion of institutional and clean delivery practices	75 districts	Report	√	√				3084112
2.4.8 Expand Td vaccination to grade 2 students				√	√	√	√	Integrated
2.4.8.1 Provide operational cost for expanded Td vaccination service	75 districts	Report	√	√	√	√	√	1233645
2.4.9 Expand Td vaccination to grade 8 students			√	√	√	√	√	Integrated

2.4.9.1 Provide operational cost for expanded Td vaccination service	75 districts	Report	√	√	√	√	√	1233645
2.5 Accelerate Hepatitis B vaccination								
2.5.1 Review Hep B Vaccination program	75 districts							Integrated
2.5.2 Conduct Hepatitis B vaccine to health care workers and other risk groups	24000 HW	Report		√				336449
2.5.3 Purchase Hepatitis B vaccine to vaccinate health workers and other high risk groups	25000 doses	Report		√				7570
2.5.4 Conduct sero-prevalence survey to determine burden of peri-natal transmission	survey	Report						Integrated
2.6 Expand surveillance of other vaccine preventable diseases								
2.6.1 Expand surveillance system based on need for vaccine-preventable diseases such as typhoid and cholera	75 districts	Report	√					105140
2.6.2 Continue/expand sentinel surveillance sites for Rotavirus and invasive bacterial diseases (IBD) for vaccine introductions and impact studies	75 districts	Report	√					112150
2.6.3 Develop contingency plan and respond effectively to vaccine-preventable diseases outbreaks	2	Plan	√					29907

Objective 3: Strengthen immunization supply chain and vaccine management system for quality immunization services

Strategic Objective and Major Activities	Target	MOV	2017	2018	2019	2020	2021	**Total Cost (in US$)**
3. Strengthen immunization supply chain and vaccine management system for quality immunization services								
3.1 Strengthen pre-shipment and arrival procedures for vaccine supplies and cold chain equipment	2	guideline	√					4673
3.1.1 Conduct periodic orientation on "sensitivity of vaccines and importance of timely release of vaccine and supplies" to various officials	2	Report	√		√		√	16822
3.1.2 Forecast and quantify requirements of vaccines, syringes, safety boxes and cold chain equipment	1	Report	√	√	√	√	√	84112
3.1.3 Procure vaccine, syringes, safety boxes and cold chain equipment in time	Integrated	Vaccines	√	√	√	√	√	Integrated
3.1.4 Purchase sufficient cold chain equipments to ensure adequate cold chain volume		CCE	√	√	√	√	√	28037383
3.1.5 Allocate sufficient budget to procure adequate vaccines, syringes and safety boxes	Integrated	Report	√	√	√	√	√	Integrated
3.1.6 Enhance capacity of staff for SOP on EVM	75	Report	√					315421
3.1.7 Modernize Cold Chain Section of LMD with adequate computers, printers and accessories	10		√					11215
3.1.8 Add feeder line to ensure regular electricity supply and purchase fire safety equipments	82		√					15327
3.1.9 Purchase protective equipment for working in WIC/WIF	7	Report	√			√		9421
3.2 Strengthen vaccine storage, stock management and distribution system								
3.2.1 Training on vaccine storage, stock management and distribution	75	Report	√					210280

3.2.2 Enhance the use of electronic data logger at CVS, RVS and DVS and vaccine sub-store	200	Report	√					149533
3.2.3 Update inventory periodically to ensure adequate stock		Report	√	√	√	√	√	Integrated
3.2.4 Enhance the practice of Bundling of vaccines and supplies	500	Report	√	√	√	√	√	186916
3.2.5 Maintain appropriate temperature during vaccine distribution and transport		Report	√	√	√	√	√	Integrated
3.2.6 Supply Needle cutter to all health facilities	4000		√					186916
3.2.7 Implement use of cool pack in immunization		Report	√					Integrated
3.2.8 Ensure vaccine wastage rate does not exceed 1% at store level and 10% at session level.		Report	√	√	√	√	√	Integrated
3.2.9 Supply Vaccination Bag to Outreach Health Workers	10000	Report	√					93458
3.3 Construct disaster resilient physical infrastructure with adequate dry space, cold chain volume, equipments and transport capacity								
3.3.1 Construct CVS building as per standard with adequate space for dry and cold storage	1	Report	√	√	√			2803738
3.3.2 Establish/revamp at least one state-level/provincial level vaccine store in each province	7	Report		√	√	√		15700935
3.3.3 Improve and expand capacity of RVS, DVS and VSS with adequate space for dry and cold storage considering temperature zones	150 sites	Report		√	√	√		2102804
3.3.4 Procure high performing cold chain equipment's for all districts	75	Report	√	√				3738318
3.3.5 Procure vaccine transportation van/refrigerated vehicle for 7 provinces	7	Report		√				588785
3.3.6 Implement contingency plan at all storage level to prevent vaccine damage.		Report		√	√	√	√	integrated
3.3.7 Phase out remaining CFC equipment, dispose all non-functional and replace 10+ years old equipment as per Cold-Chain Replacement Plan, 2072/73	75	Report			√			350467
3.3.8 Guidelines development for auction of Old CCE	2			√				7477

3.4 Carry out regular maintenance of vaccine storage building and cold chain equipment's								
3.4.1 Outsourcing of maintenance of CCE	1			√	√	√	√	747664
3.4.2 Conduct regular Maintenance of Building and Vehicles	75	Report						140187
3.4.3 Update national cold chain equipment inventory every four month		Report	√	√	√	√	√	Integrated
3.4.4 Develop plan with allocation of adequate resources for regular, preventive and emergency maintenance and supervision	2	Plan	√					44860
3.4.5 Carry out periodic district and sub district level visit for cold chain equipment maintenance by refrigerator technician	e	Report	√	√	√	√	√	Integrated
3.4.5 Conduct minor preventative and emergency maintenance of the equipment and infrastructure/building	75	Report	√	√	√	√	√	350467
3.5 Update immunization related policies, strategies, guidelines on vaccine and cold chain management								
3.5.1 Update immunization related guidelines, policy and strategy	3	Report	√					42056
3.5.2 Revise Injection Safety Policy to include newer approaches for sharp and waste management	3	Report	√					42056
3.5.3 Revise Multi-dose Vial Policy Document to include newly introduced vaccines with MDVP	3	Report	√					42056
3.5.4 Update guideline on maintenance of cold chain equipment	3	Report	√					42056
3.6 Improve Information Management on vaccine and cold chain system								
3.6.1 Purchase equipment to implement and expand Online Inventory Management System at all vaccine store level	500 VS	Equipment's	√	√	√			28037
3.6.2 Develop current manual based vaccine and cold chain information system into web-based platform	3	Report	√					42056

3.6.3 Integrate the online IMS system and cold chain information management system into DHIS-2	3	Report	√					42056
3.6.4 Conduct immunization and EVM regional/sub-national review annually	5 regions	Report	√	√	√	√	√	175234
3.6.5 Conduct EVM assessment (internal and external) every two years	75 district	Report		√		√		28037
3.6.6 Develop and implement district wise EVM improvement plan on the basis of assessment	2	Plan		√				28037
3.6.7 Build capacity for cold chain and immunization staff on standard operating procedure for EVM	75	Report		√				84112
3.6.8 Integrate EVM component in basic EPI training manual	2	Report	√					28037
3.6.9 Review/revise immunization monitoring tools	2	Tools		√			√	56075
3.7 Strengthen vaccine pharmacovigilence to ensure vaccine safety and quality								
3.7.1 Training on lot release	6		√		√		√	28037
3.7.2 Capacity development of laboratories	7		√	√				23551
3.7.3 AEFI Causality Assessment	4 episodes		√	√	√	√	√	22430
3.7.4 NRA Meeting			√	√	√	√	√	7009
3.7.5 AEFI Committee Meeting			√	√	√	√	√	37383

Objective 4: Ensure financial sustainability for immunization program

Strategic Objective and Major Activities	Target	MOV	2017	2018	2019	2020	2021	**Total Cost**
4. Ensure financial sustainability for immunization program								
4.1 Strengthen Immunization financing								
4.1.1 Allocate adequate amount of budget in immunization in line with constitutional provision and Immunization Act, 2072	3 Meeting	budget	√	√	√	√		56075
4.1.2 Develop resource tracking system to estimate total budget allocation, disbursement and spending on routine immunization program	3 workshops	Report	√					42056
4.1.3 Sensitize legislators and elected members to closely monitor immunization financing	6 Meeting	Minutes		√		√		56075
4.2 Strengthen Immunization Fund								
4.2.1 Initiate high level policy dialogue to develop tax exemption policy for those who pledge donation for immunization fund	3	Report	√	√				84112
4.2.2 Engage domestic private partners including business/ corporate houses and civil societies for exploring innovative source of financing	3	Report	√	√	√	√		168224
4.2.3 Interaction Program with other agencies (like Rotary, Lions etc) to explore additional funding	2	Report		√		√		3738
4.2.4 Develop Guidelines (Operational Manual) to utilize the Immunization Fund	2	Guideline	√					9346

Objective 5: Promote innovation, research and social mobilization activities to enhance best practices on immunization

Strategic Objective and Major Activities	Target	MOV	2017	2018	2019	2020	2021	**Total Cost**
5. Promote innovation, research and social mobilization activities to enhance best practices								
5.1 Promote innovation and adapt new technologies								
5.1.1 Use higher performing technology for cold chain equipment's	Training	Report	√					224299
5.1.2 Use electronic registry and monitoring technology in immunization								
5.1.2 a) Purchase 7 vaccine loggers for 7 regional medical stores	7	Report		√		√		2617
5.1.2 b) Purchase 500 vaccine loggers for 500 vaccine stores	500 VS		√					12617
5.1.3 Review promotion of eHealth including mHealth initiatives in immunization (e-Immunization)	5	Report			√			2336
5.1.4 Conduct evaluations and surveys on immunization	1	Report		√				28037
5.1.5 Establish healthy baby clinics	25 Hospitals	Report		√	√			23364
5.1.6 Capture every birth, link it with eHealth initiatives and coordinate with local government		Report	√	√	√	√	√	Integrated
5.1.7 Address missed opportunities by integration with other programs (like WASH, IMNCI, PNC etc.)				√	√	√	√	Integrated
5.2 Promote Research and expand innovation in immunization services								
5.2.1 Promote Best practices in immunization through exchange visits	30 pers			√		√		42056
5.2.2 Expand Number of district fully immunized		Report	60	65	75			Integrated
5.2.3 Construct immunization hut	700	report	√	√	√	√	√	1962617

5.3 Explore areas of research which can have impact on policies and strategies on immunization								
5.3.1 Conduct sero-prevalence surveys to determine the burden of perinatal HepB transmission	1	Report			√			14019
5.4 Strengthen communication, social mobilization and advocacy activities								
5.4.1 Encourage female community health volunteers and health mothers group to hold regular meeting focusing to track unreached and dropout children	4000 VDC	Report		√	√			448598
5.4.2 Develop discussion tools and print it for the use by FCHV and health mothers group	1000000	IEC material		√				9346
5.4.3 Use SMS and other social network for reminder and dissemination of immunization message for reaching every child	100000 SMS	IEC material			√			935
5.4.4 Develop advocacy materials (appropriate for the geography and language) for the full immunization and periodic intensification of routine immunization	30000	IEC material			√			1402
5.4.5 Document the success stories in immunization for mass and electronic media airing and printing		IEC material				√		Integrated

Chapter 7: Financial scenario

7.1 Introduction

As a priority program, the government of Nepal has allocated a significant amount of resources for the immunization program. At least two persons are involved in each VDC to conduct immunization sessions regularly. Every district allotted one Immunization supervisor/Officer and a cold chain assistant/officer to look after the immunization services and maintain vaccines in appropriate conditions. Resources allocated over the past ten years for immunization program is incremental. In the past, the cost of purchase of "traditional vaccines" and program management cost carried a significant proportion.

7.2 Supporting Agencies

Various agencies are supporting the immunization program. WHO and Unicef have been traditional partners. GAVI has come into the scenario in 2003 (verify), which has helped to revamp the immunization program, introduce new and under-utilized vaccines and health sector support. Besides partners like World Bank, DFID, KFW supported through the pooled fund mechanism or, “SWAP” approach. Besides, agencies like USAID and JICA have also supported at various times.

7.3 The Immunization Act, 2015

The immunization Act of Nepal makes a provision to ensure sustainability of the immunization program through establishment of the immunization fund. Certain provisions are made in the Act that will ensure the financing of immunization program including involvement of private sector in financing the NIP.

7.4 Financial Resource envelope in the health sector

There is no document available projecting the resource need for the health sector for future years though "health sector strategy" and "National Health Policy" are in place. So, considerable uncertainty exists over the resource need and expenditure on health. However, as a priority program of the government, Immunization Act in Place and establishment of immunization fund indicate towards more commitment towards funding of the immunization program.

7.5 Target

For the purpose of program, the following target has been taken into consideration. However, keeping in view the vaccine wastage, buffer stock requirement etc. rounding has been done close to 10000 in the costing sheet. It should be noted that there might be age difference in the single grade school enrollment and some fluctuation might occur. For the purpose of Hepatitis B vaccination, number of health workers is taken to be around 24000. For typhoid and cholera vaccination, high risk approach will be taken into account.

Table 6.1 Target of National Immunization Program for cMYP

	2017	2018	2019	2020	2021
Births	641601	656999	672767	688914	705448
Surviving Infants	620428	635318	650566	666179	682168
Pregnant women	757089	775259	793865	812918	832428
Single grade school age children (for Td, both sex)	600000	600000	600000	600000	600000
Grade 6 girls (HPV)	300000	300000	300000	300000	300000

7.6 Costing of the cMYP

The costing of the current cMYP 2017- 2020 is made in a situation of various uncertainties. Change in overall structure of the governance (from unitary to federal structure), political instability and insecure external funding are major factors besides the purchase of vaccine, cold chain equipment's, buildings and other factors internally. However, the projections are made rather ambitiously to reflect the need of the country to declare it as "fully immunized" along with implementation of constitutional provision.

The current cMYP has taken various assumptions in preparing the budget scenario (based on 2015 expenditure scenario)

Unit costs:

SIA Cost for Measles Campaign: NRs 153.33

SIA Cost for Polio Campaign: NRs 180.00

Workshop: Local level at district: NRs 10,000/day/ participant (includes facilitators)

Workshop at Central level: NRs 15,000/ day/ participant (includes the cost of facilitators)

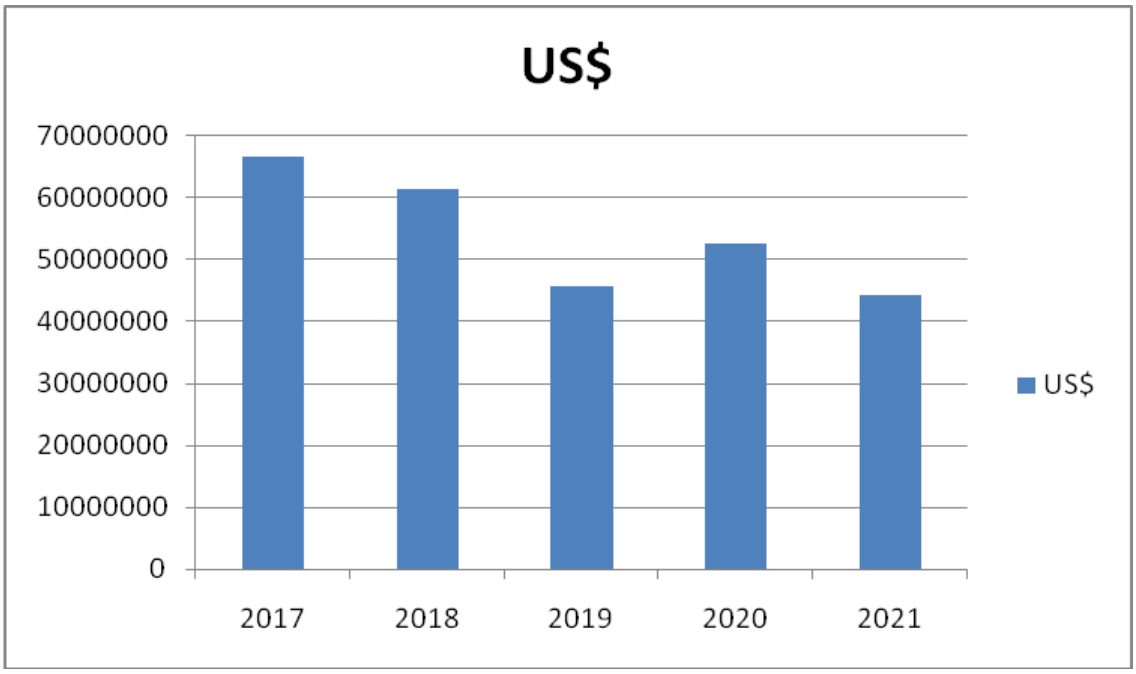
7.6.1 Projected Resource Requirements

The following table shows the projected resource need to roll out the proposed cMYP (in NRs).

Table 6.2. Projected Resource Need for cMYP (in NRs) over next 5 years.

Year	2017	2018	2019	2020	2021	Total
Resource Needed	7128778860	6870951665	4600676675	5632370600	4739876600	28972654400

The following figure shows the resource need in US$.



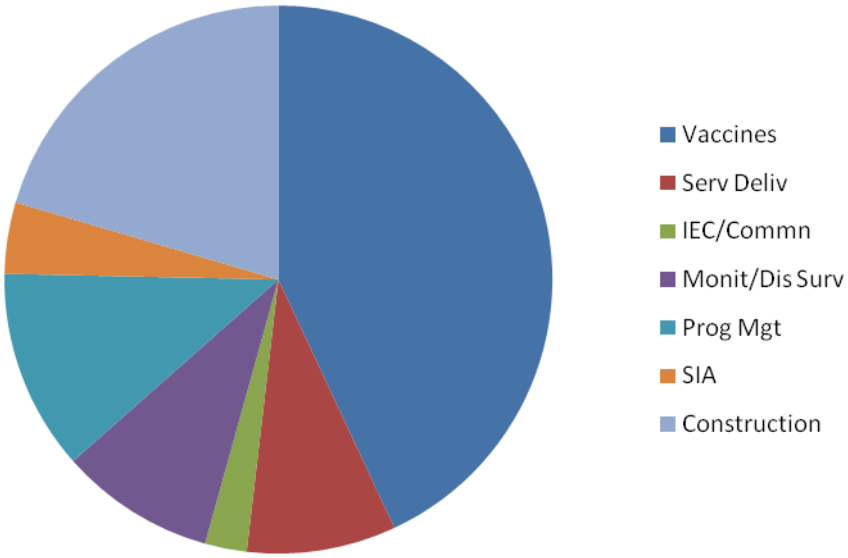
The average resource requirement fluctuates between 45 million to 67 million.

The figure below shows the resource requirement for the cMYP over next 5 years by various categories.

Table 6.3: Resources needed for next five years in various categories

SN	Category	Resource Need (in NRs)	%
1	Vaccines	12473451200	43.1
2	Service Delivery	2547545200	8.8
3	IEC/Social Mobilization	713285000	2.5
4	Monitoring and Disease Surveillance	2652965000	9.2
5	Program Management	3441550000	11.9
6	Supplemental Immunization Activities (SIA)	1221000000	4.2
7	Construction and Cold Chain Equipment's	5922858000	20.4
	Total	28972654400	100.0

This table is also reflected in the figure (piegraph) below:



As seen from the figure above, a significant proportion (43%) of the cMYP goes on purchase of essential commodities (vaccine and injecting equipments).Introduction of new vaccines (HPV, Rota) and underused vaccines (typhoid, cholera) account for a significant proportion of the purchase. Constructtion and cold chain equipments share for another chunk (20%) of the cMYP. This cMYP foresees the construction of central, regional and district vaccine store along with revamp of cold chain equipments.

Program management, which includes Review and planning and training/Orientation is another important cost driver with 11.9% share. Disease surveillance including outbreak response and monitoring/supervision share for 9.2% of the projected resource requirements. Another important cost driver is service delivery with 8.8% share. Supplemental immuinization activities take the share of 4.2% where as information, education and communication and social mobilization activities carries 2.4 % share in the projected resources requirements.

7.6.2 Resource Gap

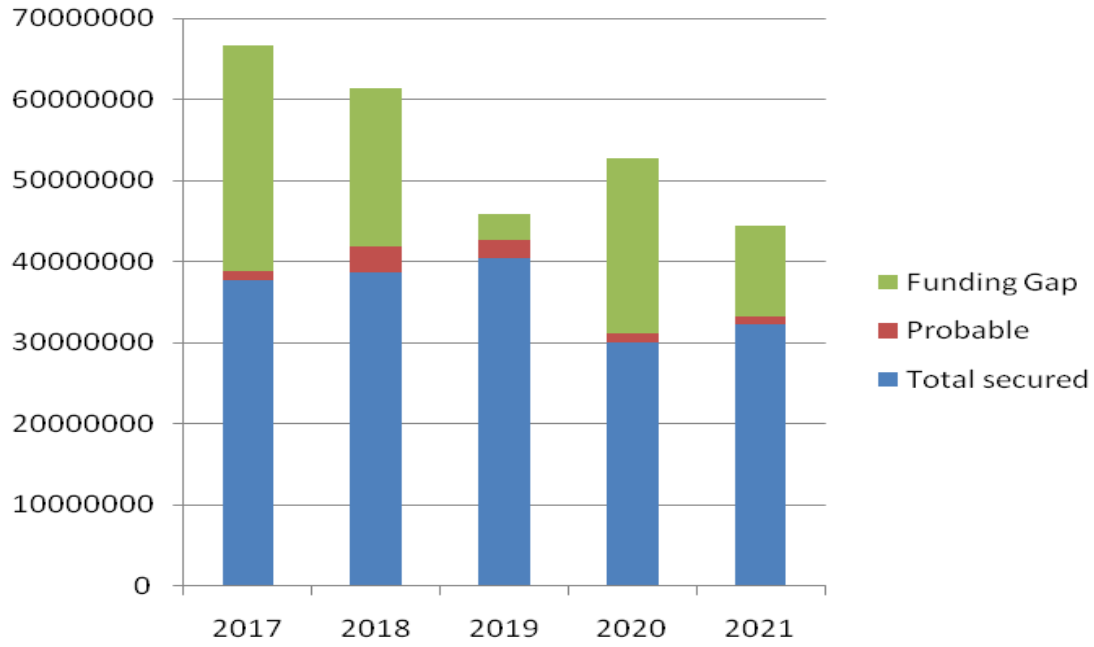
This cMYP foresees a resource gap while costing the planned activities. There are secured sources of funding for traditional vaccines and approaches. However, as the cMYP is rather ambitious in its vision, approach and content, including introduction of new vaccines (HPV, Rotavirus, Cholera, typhoid etc) as well as construction of vaccine stores and vehicles for the program, the resource gaps have been a visible part of the cMYP. Following table shows the projected funding gap.

Table 6.4: Projected Resource Needs and Funding by Year (US$)

	2017	2018	2019	2020	2021
Total Resources Needed	66624101	61410763	45800717	52638978	44297912
Total Secured	37636995	38633145	40332509	29903810	32124951
Probably Secured	1192323	3145503	2309391	1143749	1020327
Funding Gap	27794783	19632115	3158816	21591419	11152634
% of Funding Gap	41.7	32.0	6.9	41.0	25.2

From the table, it is seen that 38 percent of the resource requirement is secured and some 62% is a resource gap. Of this gap, some 16% will probably funded bringing down the funding gap to 47%. It should be noted that resources for various cost drivers are calculated in isolation and few very important activities can be integrated bringing down the resource requirement to lees than the projected one.

Following figure shows the proportion of funding gap for next 5 years



The resources gap are more pronounced in the year 2017, 2018, 2020 and 2021. Resource gap in the first two years (2017 and 2018) are basically due to construction and cold chain equipment and SIA, whereas the last two years (2020 and 2021) are due to introduction of new vaccines.

7.6.3 Contribution in securing the resources for Immunization

The contribution of government and other partners in the securing of fund is given below:

Table 6.5: Contribution of various partner agencies in secured Fund (US$)

Source of fund	2017	2018	2019	2020	2021	Total	%
Government	16821495	18503645	20354009	22389410	24628351	102696911	57.5
GAVI	17615500	16929500	16778500	4314400	4296600	59934500	33.6
UNICEF	3000000	3000000	3000000	3000000	3000000	15000000	6.4
WHO	200000	200000	200000	200000	200000	1000000	0.6
Total secured	37636995	38633145	40332509	29903810	32124951	178631411	100

About three fifth of the secured source of funding comes from the government showing its high commitment to immunization program. GAVI contributes for one third of the resource requirements, Unicef and WHO are other partners in securing fund for the cMYP.

The following table shows the committed contribution of GAVI (till August 2016) and has been reflected in the table above.

Table 6.6: Projected Secured Support of GAVI over next 5 years (in US$)

Vaccine/ Support	2017	2018	2019	2020	2021	Total
MR	543500	547500	554500			1645500
Penta (GAVI)	3420500	2850500	2805500	2751500	2740500	14568500
PCV (GAVI)	5837500	5741000	5641500	1140400	1135600	19496000
HSS Support	6960000	6960000	6960000			20880000
Total	17615500	16929500	16778500	4314400	4296600	59934500

7.6.4 Projected Expenditure

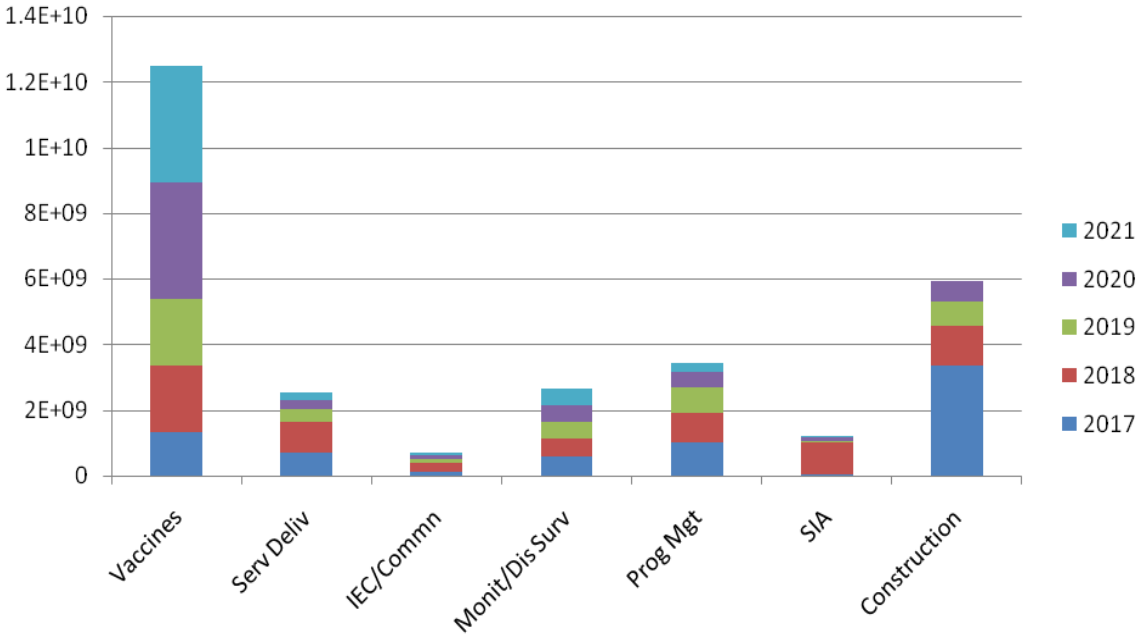
Following table depicts the projected expenditure for the cMYP by various categories and by year

Table 6.7. Categories of expenditure by year (in NRs)

Year	Vaccines	Service Delivery	IEC/ Communi-cation	Monitoring and Disease Surveillance	Program Management	SIA	Construction and CCE	Total
2017	1312318800	707159060	102807000	582900000	1024900000	45000000	3353694000	7128778860
2018	2042105600	928454065	303307000	548615000	869950000	981000000	1197520000	6870951665
2019	2039675600	385294075	102557000	507150000	785000000	45000000	736000000	4600676675
2020	3539675600	261294000	102307000	507150000	481300000	105000000	635644000	5632370600
2021	3539675600	265344000	102307000	507150000	280400000	45000000		4739876600
Total	12473451200	2547545200	713285000	2652965000	3441550000	1221000000	5922858000	28972654400

As elaborated in the table above Vaccines, Construction and cold chain equipment take almost two thirds of the total expenditure.

The figure below elaborates more clearly the above table:



As can be seen major cost drivers are vaccines and construction/ cold chain equipment. Vaccines will continue to be major cost drivers, however, construction and cold chain equipment are major cost drivers for 2017 and 2018. SIA is a major cost driver for year 2018 as three SIA is being planned: NID for Polio eradication, Measles and Rubella Campaign to achieve elimination and Hepatitis B for health workers. Monitoring and diseases surveillance will remain almost same each year. Program management and service delivery will fluctuate depending on various activities to be undertaken.

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Appendix 1

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राष्ट्रिय खोप-तालिका

पटक	कुन उमेरमा	कुन खोप	कुन रोगबाट बचाउँछ
१	 जन्मने बित्तिकै	बि. सि. जी	क्षयरोग
२	 ६ हप्तामा	डि.पि.टी.-हेप बी-हिब पोलियो पि. सि. भी. (पहिलो मात्रा)	भ्याग्रुते रोग, लहरे खोकी, घनुष्टंकार, हेपाटाइटिस-बी, हेमोफिलस इन्फलुइन्जा-बी र पोलियो
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