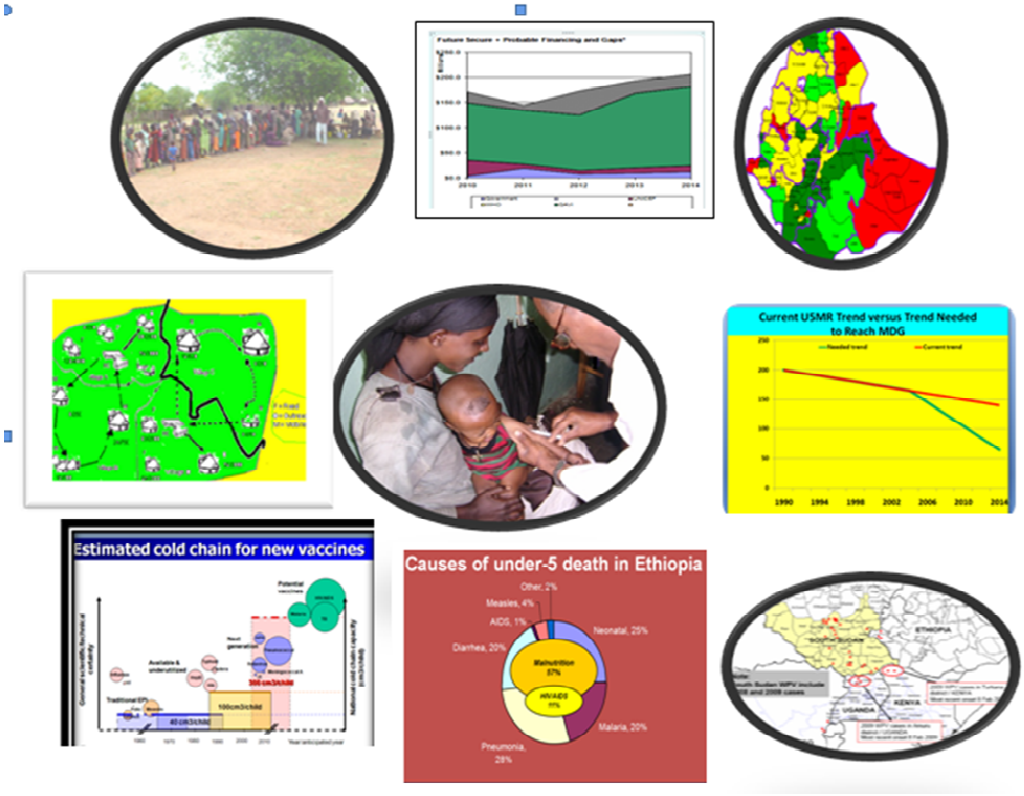
ETHIOPIA NATIONAL EXPANDED PROGRAMME ON IMMUNIZATION



COMPREHENSIVE MULTI-YEAR PLAN 2011 - 2015

Federal Ministry of Health

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Acknowledgment

Immunization cMYP is a key strategic and management document for National immunization programs that provide national goals, objectives and strategic directions that address all components of immunization system relevant to the country. The new cMYP (2011-2015) is the result of the collaborative work of the Federal Ministry of Health and partners working in health.

The Federal Ministry of Health would therefore like to express its special thanks for the tireless efforts of the technical team supporting the national immunization program for the successful preparation of the document in the shortest possible time. Our appreciation goes also to WHO, UNICEF for their financial as well as technical support without which it would have not been possible to prepare this document. The General directorate would also like to acknowledgement the ICC members and the cMYP review team for their active participation and constructive comments.

LIST OF ACRONYMS

AD	Auto Disabled Syringes
AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
BCC	Behavioural Change communication
BCG	Tuberculosis Vaccine (Bacillus-Calmette-Guerin)
BPR	Business Process Re-engineering
CDC	Centers For Disease Control and Prevention
CMYP	Comprehensive Multi Year Plan
CSO	Civil Society Organization
DCI	Development Cooperation of Ireland
DHS	Demographic and Health Survey
DPT	Diphtheria-Pertussis-Tetanus Vaccine
DQA	Data Quality Audit
EHNRI	Ethiopian Health and Nutrition Research Institute
EOS	Enhanced Outreach Strategies
EPI	Expanded Programme on Immunization
ESARO	Eastern and Southern African Regional Office for UNICEF
FMOH	Federal Ministry of Health
GAVI	Global Alliance for Vaccine and Immunization
GIVS	Global Immunization Vision and Strategies
HAPCO	HIV/AIDS Prevention and Control Office
Hep.B	Hepatitis B
HEW	Health Extension Workers
HF	Health Facility
Hib	Haemophilus influenza type B.
HMIS	Health Management Information System
HPN	Health, Population and Nutrition group
HSDP	Health Sector Development Program
HSEP	Health Service Extension Program
HSS	Health Service Support
HW	Health Worker
ICC	Inter-Agency Coordinating Committee
ICST	Inter-country Support Team
IDS	Integrated Disease Surveillance
IEC	Information Education Communication
IIP	Immunization in Practice
IMR	Infant Mortality Rate
IPC	Inter Personal Communication
ISS	Immunization Service Support
ITN	Insecticide Treated Bed Net

JRF	Joint Reporting Form
KABP	Knowledge, Attitude Behaviour and practice
MDG	Millennium Development Goal
MDVP	Multi-Dose Vial Policy
MLM	Mid-Level Management
MNT	Maternal and Neo-natal Tetanus
MOH	Ministry of Health
NGO	Non-Governmental Organization
NIDs	National Immunization Days
NIP	National immunization Program
NNT	Neo-Natal Tetanus
OPV	Oral Polio Vaccine
PAB	Protection At Birth
PCV	Pneumococcal Conjugated Vaccine
PFSA	Pharmaceuticals Fund Supply Agency
RED	Reaching Every District
SIAs	Supplemental Immunization Activities
SNIDs	Sub-National Immunization Days
SNNPR	Southern Nations and Nationalities Peoples Region
SOS	Sustainable Outreach Services
TFI	Task force on Immunization
TOT	Training of Trainers
TT	Tetanus Toxoid
UCI	Universal Child Immunization
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
VMA	Vaccine Management Assessment
VPD	Vaccine Preventable Diseases
VVM	Vaccine Vial Monitor
WFP	World Food Program
WHO	World Health Organization
WPV	Wild Polio Virus
WRRT	Woreda Rapid Response Team

EXECUTIVE SUMMARY

The Federal Democratic Republic of Ethiopia is the second most populous country in sub Saharan Africa with an estimated population of approximately 79.2 million people and the tenth largest by area with its 1.1 million square kilometres, . The IMR is 77/1,000 in 2005, it is still among the highest in the world (DHS 2005). The health status of Ethiopian children is very poor as attested by the death of an estimated 472,000 under five children each year. Of every 100 children in Ethiopia, 14 do not live to celebrate their fifth birthday mostly due to preventable causes.

The health service currently reaches about 89% of the population. There are feasible child survival (strategies) interventions taken up by the MOH to help attain the MDGs. These strategies provide a conducive environment for the enhancement of immunization program.

The expanded programme on immunization was launched in 1980 with the objective of increasing the coverage by 10% annually. However, the coverage in the first 20 years was very low although during the 1990's good progress was observed through Universal Child Immunization (UCI). The reaching every district (RED) approach has been implemented in Ethiopia since 2004 in districts with poor immunization coverage and high dropout rates. As a result, the coverage showed marked improvement. DPT3 coverage increased from 52% in 2003 to 81% in 2008. The variations in coverage among regions however, is large.

Ethiopia joined the polio eradication initiative in 1996 and the first mass vaccination campaign was conducted within one year. The AFP surveillance system was established in 1997 and global targets for surveillance were first achieved in 2004. Ethiopia was polio-free for nearly four years from January 2001 to December 2004. Since that time 43 cases of wild poliovirus have been confirmed in the country. The outbreaks originated from five separate importations (two from northern Sudan, two from Somalia and one from south Sudan). The last wild polio virus in Ethiopia is in April 2008 from Gambella (total 3 cases detected). It is now more than 27 months since the country is polio free.
The Advisory Committee on Polio Eradication recommends that at least two rounds of high-quality supplemental immunization campaigns be conducted after the identification of the last confirmed case. The recommendation has been implemented for every out break (A series of sub-national immunization days were conducted in various locations with special emphasis on Somali, Gambella Region and zone around Gambella bordering south.

Measles mortality reduction and MNT elimination activities are also being conducted. Case-based measles and NNT surveillance is integrated with AFP surveillance. The morbidity and mortality due to measles has been reduced dramatically. Many districts have become MNT-free. The follow up measles SIAs will continue in the coming years and corrective TT campaigns will be conducted in 2010 and TT elimination validation is expected by 2011.

This cMYP (2011 to 2015) provides a framework to plan activities to achieve the major objectives of the immunization program as endorsed in the MOH Policy. Through the situation analysis key issues/barriers that impede the progress were identified.

The previous immunization cMYP now in its last year of implementation, covered the period from 2006-2010 and the two main priority areas indicated in the document were improving routine immunization coverage and introduction of pentavalent vaccine into the national immunization program in the country. Regarding the mile stones, a DPT3 coverage of 81 % by 2008 was set in the cMYP and the actual coverage for 2008 was as planned (81%), showing that the EPI program has been performing as planned in the cMYP document and the targets set in the cMYP were realistic. Similarly the introduction of pentavalent vaccine was realised as per the cMYP plan.

However, lack of regularly updating and mid-term review of the plan were identified as weaknesses of the previous cMYP. The new cMYP ensures that the strategies in the plan are sufficiently comprehensive using GIVS frame work and organized by immunization system component rather than disease initiatives. Moreover, based on the cMYP the first year annual plan is prepared. The priority areas indicated in the new cMYP are increasing immunization coverage in all populations particularly hard to reach areas, introduction of pneumo and rota virus vaccine and improvement of vaccine supply management and cold chain capacity at all levels and strengthening VPD surveillance at sub-national level.

The primary objective of the plan is to achieve 80% DTP-HepB+Hib3/OPV3 coverage in all districts by 2015. The plan aims to reduce vaccine preventable diseases through integrated interventions that would strengthen the overall health system. To this effect Pneumoccocal vaccine and Rota vaccines will be introduced by 2011 and 2012 respectively.

The cMYP will be implemented within the framework of the GIVS four main strategic areas. The plan encompasses all components of immunization services: service delivery, vaccine supply, quality and logistics, disease surveillance and accelerated disease control, advocacy, social mobilization and communication and programme management.

The main implementers of the plan will be the FMOH and regional governments with material, technical and financial support from international and local development partners. The framework of the cMYP should therefore form the foundation for all regions planning and implementation of immunization activities in order to support implementation efforts that lead to sustainability, equity, the desired high coverage and impact.

The total estimated budget of the cMYP is 893 million USD out of 667 million USD is immunization specific and the remaining 196 million USD is shared cost (building, personnel, and transport). Approximately 96% of the immunization-specific cost is "secured". The main partners financing the immunization program are GAVI (61%), National and sub national Government 30%, UNICEF (6%) and WHO (4%). The contribution of the government for the immunization specific financing is 12%.

Monitoring and evaluation of the cMYP will be done regularly by regional health bureaus, FMOH and partners. An annual operational plan will be prepared at the national level. Woredas will develop detailed micro plans based on the national strategic plan and regions will aggregate the district micro plans to develop regional immunization plans.

1 INTRODUCTION

1.1 Geography and Climate

Ethiopia is situated in the Horn of Africa. The total area of the country is around 1.1 million square kilometres, and it shares borders with Djibouti, Eritrea, Sudan, Kenya and Somalia. Ethiopia is a country with great geographical diversity, with topographic features ranging from 4,550m above sea level to 110m below sea level. Most of the roads in rural areas are not all weather roads, and delivery of health services is interrupted during the rainy season in some parts of the country.

1.2 Socio-Demographic and economic Situation

The total population of the country is 79 million in 2009, (according to the census 2007). The average household size is 4.8[1]. About 84% of the total population is rural, making Ethiopia one of the least urbanized countries in the world. The annual population growth rate is 2.5%. Rapid population growth exacerbates critical gaps in basic health services, especially when growth of the economy is low or per capita incomes are declining.

According to the census 2007, surviving infants constitute about 3.64% of the total population. 17.5% of the population is aged less than 5 years, and 24% of the total population are women in the reproductive age group (15-49 years).

Ethiopia is one of the least developed countries in the world, with an estimated Gross Domestic Product (GDP) per capita of $390 per year (2009 estimate) and with per capita health expenditure of USD 16.1 (NHA, April 2010). Forty-seven percent of the total population lives below the poverty line. The 2007 UNDP Human Development Index (HDI) for Ethiopia stands at 0.414; it is ranked at 171 out of 182 countries listed (source: UNDP report 2009).

Table 1: Demographic and health indicators in Ethiopia

Statistic	Indicator in 2007	Source of data
Population	73,918,505	Census 2007
Annual Growth Rate	2.5%	Census 2007
Crude Birth Rate	39.9/1,000	DHS 2005
Crude Death Rate	12.6/1,000	DHS 2005
Total Fertility Rate	5.4	DHS 2005
Infant Mortality Rate	77/1,000	DHS 2005
Under-five Mortality Rate	123/1,000	DHS 2005
Life Expectancy at Birth (Male)	53.4	H.H-realted I*

[1] EDHS 2000, *ibid*

Life Expectancy at Birth (Female)	55.4	H.H-realted I*

* Source: Health and Health Related Indicators, FMOH Ethiopia December 2005 (use the recent indicator)

1.3 Administrative Structure

Ethiopia is a federal country and administratively divided into nine Regional States and two City Administrations. The National Regional States and City Administrations are further divided into 103 zones, 800 woredas(Districts), and approximately 15,000 kebeles.

There is extensive decentralization of service delivery, with relatively autonomous regions largely responsible for implementation.

The woreda is the basic administrative unit and it is further divided into kebeles, representing urban dwellers associations in towns and peasant associations in rural villages.

1.4 Health Services Delivery

For administration of public health care, there is a Regional Health Bureau (RHB) at the Regional level, and a Zonal Health Department (ZHD) at the Zonal level and woreda health office at woreda level. At each kebele level (5,000 population on average) there is health post staffed with two female health extension workers. Therefore, decentralization has brought an opportunity for the EPI programme as the implementing bodies (woredas) are becoming more capable both politically and economically to play a role in resource mobilization and allocation for immunization programmes in their respective areas. Some regions and woredas have already started allocating budgets for operational costs, and a few have started contributing for capital costs by procuring refrigerators. However, contributions for purchase of vaccines and injection materials by the regions and woredas have yet to be started.

1.5 Ethiopian National Health Policy and the Health System

Ethiopia developed a revised health policy in 1993. The Health Sector Development Plan (HSDP) was launched in 1997 as the implementation frame-work of the health policy. Both are the outcomes of the critical assessment and analysis of the nature and causes of the country's health problems. The HSDP III is in its final year and HSDP IV is developed. And this document (cMYP) is aligned with the HSDP IV. The major foci of the health policy are decentralization of the health care system, development of the preventive, promotive, curative components of health care,

assurance of accessibility of health care for all segments of the population, and the promotion of participation of the private sector and NGOs in the health sector.

In an effort to scale up coverage and equity of essential health services in line with the PHC approach the country has Formulated integrated delivery modes at all levels, taking into account the referral system and nature of the services (promotive, preventive, curative and rehabilitative).

HSDPIII has revealed an achievement, as part of its objective of universal coverage, to ensuring service access, quality, and reforming of the pharmaceutical and supply systems and improving organization and management of health services. Availability of primary health care units increased from 20% to 100% for health posts.

Since 2004, the country has introduced a new community based health care system using lady health extension workers that cater services at the door-steps of households and through schedulable outreach programs. To this effect, the country has trained and deployed a total of 30,000 lady health extension workers across the country, covering 2 HEWs per 5, 000 population in all of the 16,000 villages or kebeles, as locally are called. The health extension workers are currently providing a package of integrated essential health services of which immunization services is a major component.

1.6 Health Care Financing

The health services in Ethiopia are financed from four main sources;

- Government (both federal and regional) accounts for 21%
- Bilateral and multilateral donors (both grants and loans) – 39%
- Private contributions, both from out-of-pocket payments accounts for 37%, and
- Non-governmental organizations, and other private sector investment in health services accounts for 3%.

The latest NHA, April 2010 for Ethiopia revealed that priority health services such as maternal, child health, and nutrition remained underfunded and donor dependent. The high Out-of-pocket (OOPs) spending (37%) presents a major obstacle for accessing basic services particularly by the poor. Though, according to the latest NHA, 2010, the overall country's spending on health has improved to 16.1 USD per capita, is still far from the recommended 15% of government allocation to the health sector (Abuja agreement) as well as the 34 USD per capita expenditure required to achieve essential health services coverage, including immunization services that has been recommended by the Commission for Macro Economics and Health expenditure needed to make essential health interventions (**WHO, 2001**).

1.7 Human resources

To respond to the health workforce crisis, a number of new training institutions established and capacity enhanced. Curriculum reviewed with prime focus for the community based and mid-level health professionals, such as health extension

workers, nurses, and health officers. Accelerated Health Officers Training Program (AHOTP) initiated. The number of HO has increased from 683 in 2004 to about 3768 in 2009, and there are more 'in the pipeline' pursuing their AHOTP training. MSC program on Integrated Emergency Obstetrics and Surgery (IEOS), including a task shifting. Health workforce density has grown from 0.25 per 1,000 population in 2003/04 to the current 0.84 in 2008/09, ranging (2.8) in Harari to 0.47 Somali region (WHO Country Office Ethiopia, 2009).

The number of Health Officers and HEWs has reached 3,500 and 30,000 respectively, while there are currently enough nurses to meet a nurse to population ratio of 1:5,000 recommended by WHO.

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1.8 Justification for the development of new cMYP

The cMYP 2006 -2010 will continue as indicated till the end of 2010 and a new one has to be developed for the next five years, 2011-2015 that has to be aligned with the HSDP IV this is in line with the recommendation of WHO/UNICEF guideline of updating the cMYPs within 1 year prior to the end of the current cMYP.

2 SITUATIONAL ANALYSIS

2.1 The Expanded Programme on Immunization in Ethiopia

The Expanded Programme on Immunization (EPI) was established by the World Health Organization in 1974 to control vaccine preventable diseases. The Ethiopian EPI programme was launched in 1980, with the objective of achieving 100% immunization coverage of all children under two by 1990. However, in 1986, the coverage target was reviewed to 75% and the target age group was changed to under ones but progress in increasing coverage has been slow. With the introduction of new approaches known as Reaching Every Districts (RED) and Sustainable Outreach Services (SOS) for immunization in 2003, improvement has been documented. However, system-wide barriers related to geographical coverage still remain, requiring bridging approaches such as the Enhanced Outreach Strategy[2], even as the country moves towards a more equitable geographical coverage with construction and staffing of 15,000 additional peripheral health facilities.

The routine immunization programme is funded primarily by partners and Government. The partners largely channel their funds through UNICEF and WHO. Whilst the bulk of vaccine costs are financed by GAVI for the new vaccine and UNICEF for some traditional vaccines, the government has also mobilized resources to cover the cost of vaccines for BCG, TT and 50% of OPV and injection materials for traditional vaccines for 2009, in addition to the salaries of staff. Funding for a number of other components such as technical support, cold chain equipment,

[2] The Enhanced outreach strategy covers 7 millions children with High Impact Child Survival interventions incl. Vitamin A supplementation, De-worming , Nutritional Screening and Targeted Supplementary Feeding.

transport equipment, social mobilization and some operational costs have been made available by WHO, UNICEF and other development partners (donor agencies). In terms of health financing and budget provisions, the government has taken steps to reallocate resources from urban hospital-based curative services towards more preventive and promotive care, targeting the rural population. The overall focus has been on communicable diseases, common nutritional disorders, environmental health and hygiene, safe and adequate water supply.

2.2 National Immunization Policy

The Ethiopian immunization policy was updated in 2007. Children of under-one year of age and women of reproductive age group (15-49 years age) are the targets for the EPI vaccines (BCG, Measles, DPT-HepB-Hib or penta-valent vaccine, OPV and TT vaccine in Ethiopia respectively). The immunization schedule for the Eight EPI vaccines for children and tetanus immunization for women of reproductive age in Ethiopia strictly follows the WHO recommendations for developing countries. There are no booster doses recommended in routine EPI for childhood immunization, however, there are periodical supplemental doses for measles and polio. Vitamin A supplementation is integrated also both with routine EPI and SIAs in Ethiopia, see table 2.

Table 2: Immunization Schedule

AGE	VACCINE/Antigen	VITAMIN A	WCBA (15-49 yrs and pregnant women)	Age group 15-44, as of 15 years
Birth	BCG, OPV0		TT1	1st contact
6 week	DPT-HepB-Hib1, OPV1		TT2	4 weeks after TT1
10 weeks	DPT-HepB-Hib2, OPV2,		TT3	6 months after TT2
14 weeks	DPT-HepB-Hib3, OPV3,		TT4	One year after TT3
9 months	Measles	1st dose of Vitamin A	TT5	One year after TT4
		Within 2 weeks of delivery (post natal mothers)		

The policy recommends the use of static sites, outreach sites and mobile teams as appropriate strategies for delivering immunization services. About 40% of the immunization services are given in outreach sites and the remainder is from static sites (EPI coverage survey 2006, MOH). Global goals and strategies related to specific disease control initiatives such as polio eradication, measles mortality reduction, and maternal and neonatal tetanus elimination have been adopted in the national immunization policy.

The multi dose open vial policy (MDVP) and the exclusive use of only AD syringes for delivering all immunization injections was adopted in 2002. Safety boxes are used to dispose of AD syringes and mixing syringes. In 2001, National Guidelines on safe injection practices and safe disposal of injection equipment for EPI services were developed. In these guidelines, it is stated that the national policy for injection safety recommends the use of safety boxes for collection of used equipment and incinerators for their destruction. When incinerators do not exist, pit burning and burying of residue can be used.

2.3 Immunization Service Delivery

2.3.1 Implementation of cMYP 2006 -2010

The previous immunization cMYP cover the period from 2006-2010 and the two main priority areas indicated in the document were improving routine immunization coverage and introduction of pentavalent vaccine into the national immunization program in the country. This plan is in its last year of implementation. The performance, regarding the mile stones set are as follows: DPT3 coverage of 81 % to be attained by 2008 was in the cMYP and the actual coverage for 2008 was as planned (81%) which shows the EPI program has been doing as planned in the cMYP document and the targets set in the cMYP were realistic. Similarly the introduction of pentavalent vaccine was realised as per the cMYP plan.

However, lack of regularly updating and mid-term review were identified as weaknesses of the previous cMYP. The new cMYP ensures that the strategies in the plan are sufficiently comprehensive, using GIVS frame work and organized by immunization system components rather than disease initiatives. Moreover, based on the cMYP the annual plans are prepared. The priority areas indicated in the new cMYP are increasing immunization coverage in all populations particularly those in hard to reach areas, introduction of pneumo and rota virus vaccine and improvement of vaccine supply management and cold chain capacity at all levels.

2.3.2 Routine Immunization

Immunization services are provided in most of the health facilities and in outreach services for communities residing beyond 5km from the static health facilities. Currently, almost all of the public health facilities provide immunization services, except some health facilities in emerging regions. A few private hospitals in Addis Ababa also provide immunization services. Immunization services are provided free of charge in public health facilities and facilities supported by NGOs. Service charges

and vaccine fees are charged at private health facilities, but these function primarily in major urban centres. The traditional six and the two recently introduced vaccines (Hepatitis B and Hib) vaccines are administered in both the public and private health facilities. .

Table 3: Immunization Coverage in Ethiopia 2004-2009

Antigen	2004	2005	2006	2007	2008	2009
DPT1	75	78	80	81	87	87
DPT3	66	69	72	73	81	79
OPV3	65	66	69	71	75	75
Measles	56	59	63	65	74	75
TT2+ PW	41	44.6	52.5	62	64	60

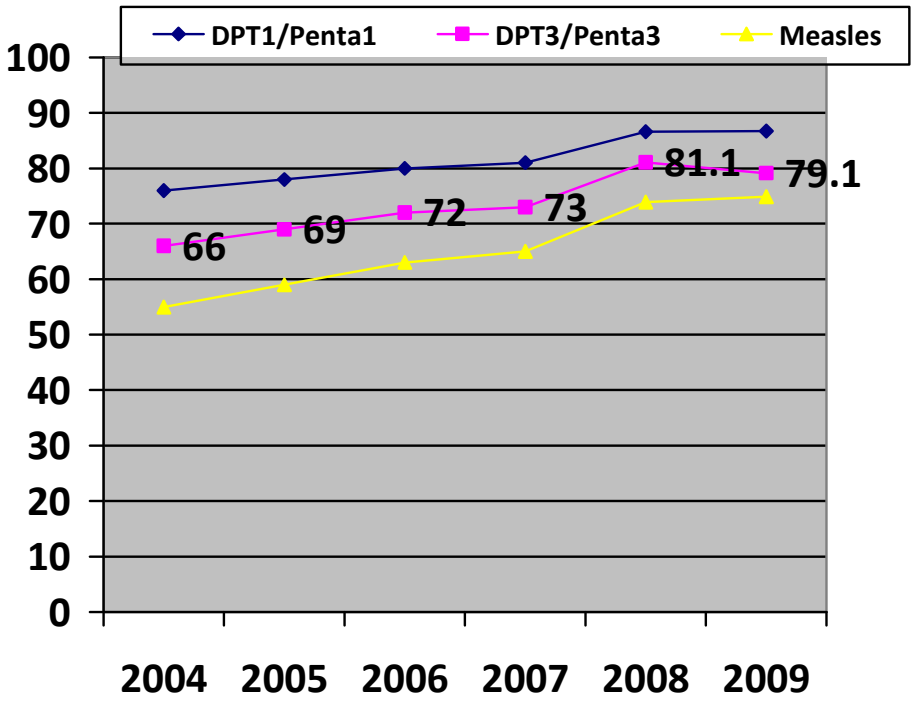

Figure 1: Immunization Coverage in Ethiopia 2004-2009:

Source: FMOH, Department of Family health Ethiopia (JRF)

The improvement noted in EPI performance in the highly populated regions has made a positive contribution to the improvement in the national DPT-HepB–Hib$_3$ coverage, which reached the target of 81% as indicated in the cMYP 2006 -2010 (see table 3). Implementation of the RED approach, continued GAVI ISS support, technical and

financial support from all partners in health and deployment of the health extension workers are factors that contributed towards the improvement of immunization coverage.

Table 4: Immunization Coverage (DPT3) by Region in Ethiopia, 2004-2009

Year	2004	2005	2006	2007	2008	2009
Tigray	93	86	*85*	*80*	*81*	*81*
Afar	31	43	*39*	*45*	*38*	*47*
Amhara	71	71	*76*	*72*	*80*	*80*
Oromia	62	64	*72*	*77*	*86*	*84*
Somali	7	11	*4*	*18*	*28*	*35*
Ben/Gumz	45	32	*56*	*73*	*60*	*78*
SNNPR	84	89	*88*	*87*	*92*	*83*
Gambella	3	15	*19*	*34*	*48*	*49*
Harari	72	82	*83*	*70*	*81*	*89*
Addis Ababa	78	73	*74*	*63*	*74*	*84*
Dire Dawa	51	47	*59*	*63*	*47*	*64*
National	**66**	**69**	***72***	***73***	***81***	***79***

As with other health services, immunization coverage varies significantly by region. Over 90% of children in SNNPR (Southern Nations Nationalities Peoples' Region) region are immunized with DPT3 by the age of one, while the figure dramatically drops to less than 50% in Somali, Afar, and Gambella regions. Immunization coverage rates in the two most populous regions, Oromia and Amhara, have picked up, and the national coverage is also improving, table 3.

In 2004, Ethiopia received an award from the Task Force on Immunization (TFI) for showing one of the best improvements in EPI coverage compared to other priority countries, and Ethiopia also has received a GAVI financial reward in 2005, 2006, and 2007 as a result of continuing to reach more children and improved performance. The national DPT1 coverage in 2008 was 87% and DPT3 and measles coverage were 81% and 74%, respectively. The dropout rate (DPT1 – DPT3) at national level was less than 10%, but remained high in some regions.

EPI coverage survey conducted in 2006 among 12-23 months old children showed a DPT3 coverage of 66%, which was consistent with the 2005 administrative DPT3 coverage (69%). The survey indicated that access to immunization services to fairly good (DPT1> 84%), where as the dropout rate was unacceptably high (DPT1-Measles 35%). Reasons for defaulting were lack of knowledge for need of immunization or subsequent doses in most of the cases. Ethiopia also had a successful DQA completed in 2002 with a verification factor of 80%. And conducted a national

data quality self assessment in Nov 2008 and the verification factor was 89%. RED evaluation was conducted in June 2005 and showed that RED implementation has resulted in improving coverage in implementing zones**.**

2.3.3 Reaching Every District (RED) Approach

The RED approach was first introduced in Ethiopia in 2003. Implementation of the RED Approach was done in phases from 2004 and currently it is being implemented in all of the zones. To strengthen the implementation of RED, guidelines have been developed and distributed to the regions**.**

Evaluation of the RED approach was done in October 2004 by a joint team of WHO/AFRO, WHO/HQ, WHO/ICP and UNICEF/ESARO to review the impact of RED in zones and woredas where it was implemented. In general, improvement in DPT3 coverage was observed in most of the implementation areas, and it was recommended that the approach be rolled out to other areas.
In June 2005, another RED assessment was conducted. The review team was comprised of members from CDC, Immunization Basics, UNICEF/ESARO, and WHO/EPI Ethiopia. The team visited four RED zones and conducted field assessments.

The following findings were documented in first round RED zones:
In 2004, during its first full year of operation, health workers in the 13 RED zones reported a 47% DPT3 increase over 2003. As a result, average DPT3 coverage in the first round RED zones rose from 42% in 2003 to 60% by the end of 2004.
In non-RED zones, the number of DPT3 doses also rose, but because DPT3 coverage was already high, the proportional increase was smaller (29%).
A similar pattern was seen with the total number of measles doses given, which increased by 56% in the first-round RED zones and by only 27% in the non-RED zones between 2003 and 2004.

Figure 2 depicts the progressively increasing proportion of zones with DPT3 coverage of 80% and more during the last five years (2004-2008).

The following were the recommendations of the 2007 RED assessment team:

- Lower levels (health facility and health post) need to be involved in RED micro planning activities and receive more comprehensive training.
- High quality and frequent supportive supervision is key to achieving high coverage and is needed to counteract the effects of high staff turnover.
- National norms are needed to assist district health authorities in choosing the sites, locations and frequencies of outreach sessions and health facilities should use their data and maps to improve the planning of the number, frequency and location of outreach sessions to make outreach as efficient as possible.

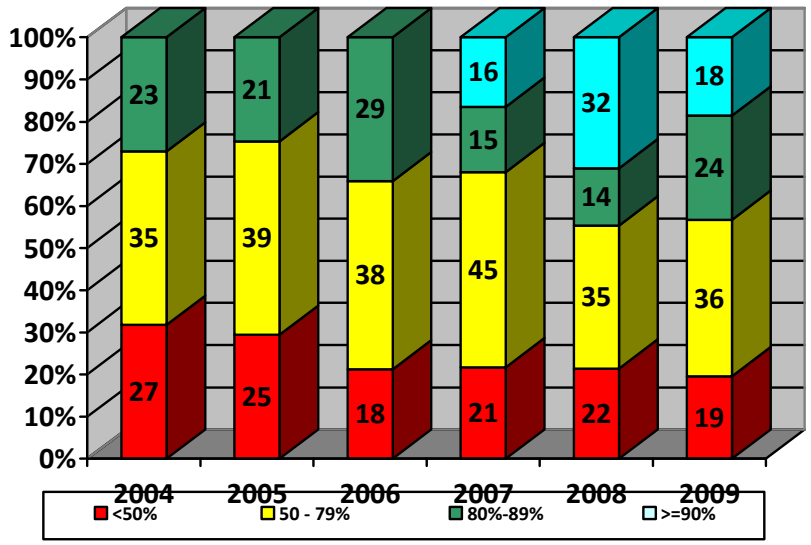

Figure 2. Number of zones with coverage <50%, 50-79%, 80-89% and >=90%, 2004-2009.

Integration is needed among health and nutrition initiatives, combining, non-EPI interventions with immunization outreach sessions, wherever possible.

Increased community participation be enhanced through targeted demand creation by families and parents . Increased communication and social mobilization is needed to increase demand for immunization.

Peripheral health workers need additional training and practical tools for planning, and monitoring immunization services progress with and mobilizing the community, including, but not limited to IEC materials.

The use of the Immunization Diploma and Family Health Card as a means to mobilize communities to complete the immunization schedule should be evaluated, and if found effective, promoted.

The sustainability of RED and other similar approaches requires more careful comparative quantification of unit costs of service with different models of service delivery.

2.3.4 Populations at risk of missing immunization services

The pastoralist communities in Somali, Afar, Gambella and other areas have very low routine immunization coverage and the traditional static and outreach strategies are not working well in these regions. Thus, there is a need to design specific immunization service delivering strategies for these regions. Use of enhanced routine

immunization and mobile immunization teams reaching to each village four times a year with registration of eligible children and adequate mobilization can be a doable option as short term strategy to reach unreached children in mobile and hard to reach communities.

Some woredas in Somali regions had conducted enhanced routine immunization (ERI) in 2007 with good results. In Jijga zone two woredas conducted ERI and the coverage of Penta 3 increased from an average of 24% to 74% after two rounds of ERI. Besides mobile health teams were established in Somali and Afar regional states and were providing mobile health services among which EPI is one. Enhanced routine immunization is also being implemented in all the four emerging regions since June, 2009. In this strategy, all under-one year old children at kebele level are registered by HEWs and community volunteers and those unimmunized children are immunized at specific immunization sites and dates in their respective kebeles. Those children who do not appear are identified, followed up and vaccinated.

2.4 Supplemental Immunization Activities

2.4.1 Polio SIAs:

The first polio supplemental immunization activity was conducted in 1996 in nine selected cities followed by full NIDs and SNIDs annually from 1997 to 2005. During this time, the number of children immunized with OPV increased from about 7.5 million in 1997 to 15.5 million during the 2005 NIDs. Ethiopia had been polio-free for close to 18 months (November 2006 to April 2008) and AFP surveillance achieved certification level since 2004. Unfortunately, in April 2008, the country was re-infected and the wild polio virus type one was detected in Gambella and two more cases were detected. An emergency response SIAs was conducted in Gambella and surrounding zones targeting more than half a million children under the age of five years in 52 woredas, from May to June. Additional campaigns were conducted which involved wider geographic areas bordering the Ethio- Sudan and Ethio-Kenyan borders targeting a population of 2.2 million under five children. A total of seven polio SIAs were conducted with coverage above 90%. The administrative coverage was 102% and RCS? Post campaign survey coverage survey showed 96%. The percent of zero doses was 20.5% and 1.2 % by Admin and RCS respectively.

Table 5.SIAs conducted in 2008 in response to Gambella polio importation

Round	Month	Involved areas	Targeted population	children vaccinated	Administrative coverage	RCS Coverage
1st	May-08	Gambella +	**541,780**	**552,661**	**102%**	**96%**
2nd	Jun-08	Gambella+	**541,780**		**101%**	**96.9%**
3rd	Aug-08	Gambella all woredas and Somali 35 woredas	**769977**	**763225**	**99.1%**	
4th	Oct-08	Oromia (E/Wollega , Kelem-Wollega, W/Wollega, Ilubabor, Jima R,Jima town,Nekemte town SNNP(Kefa, Sheka, Bench-Maji ,S. Omo) B/Gumuz(Assosa,Metekel ,Kamashi ,Mao-Komo ,Pawi) Gambella (All woredas)	**2,081,673**	**2,082,619**	**100.0%**	**95.8%**
5th	Nov-08	Oromia, SNNPR, B/Gumuz, and Gambella (the same target areas as above)	**2,081,673**	**2,131,272**	**102.4%**	**96.8%**
6th	Oct – Nov,08	Oromyia (9 zones and 6 towns),B/Gumz (all woredas),Tigray(all woredas),Gambella(all woredas Amhara all woredas) + Measles	**5,585,657**	**5,139,969**	**92.0%**	**94.7**

Gambella+=(Gambella Region, B/Gumz(Assossa Zone & Maokomo Sp Woreda) ,Oromyia (Kelem Wollega Zone), SNNPR(South Omo Zone, Bench Maji)

2.4.2 Measles SIAs:

Between 2002 and 2005, a series of emergency and catch up measles immunization and vitamin A supplementation campaigns were conducted to accelerate the control of measles and reduce morbidity and mortality, associated with vit A. These campaigns were done in phases in different regions of the country (Table 6). The campaigns were conducted under the guidance of the national ICC, with technical support from the central facilitators. These campaigns were facilitated through intensive social mobilization, continuous training, and supervision. Detailed micro plans were developed addressing logistics, fund and material requirements. The catch up campaigns carried out during 2002-2005 reached 28.3 million children (6 months-15 years) and 23.4 million received Vitamin A supplementation. The average coverage for measles supplementary vaccinations was 91.6%. The coverage data were validated by measles coverage surveys.

In Gambella region, where measles SIAs had not been conducted in previous years due to insecurity, the catch up campaign conducted in May 2005 reached 69% of the targeted 199,582 children 6 months to 14 years of age. The low coverage reflects the difficulties to provide immunization services in an area where security is far from optimal. Vitamin A supplementation and de-worming were done concomitantly.

Measles follow-up campaigns were conducted in Afar region and in East and West Hararghe zones of Oromia region, which had the catch-up campaign in 2002. A total of 1,177,978 children aged 6-59 months were reached in the two regions. The follow up campaign in East and West Haraghe was integrated in the six monthly Enhanced outreach Strategy (EOS); Ethiopia's bridging strategy to provide children in drought prone districts with high impact child survival interventions (Vitamin A supplementation, de-worming, nutrition screening, and targeted supplementary feeding by WFP, ITN distribution).

Following the 2002-2005 measles catch up, follow up measles SIAs were conducted in a phased manner targeting 6-59 months children.
The first phase was conducted between 2000- 2007 which targeted 12.9 million children and achieved 89% coverage (Table 6).

Table 6: Measles Supplemental Immunization Coverage, Ethiopia 2002-2005

Emergency and Catch up Measles SIAs 2002-2005				
	Target population 6 months to 15 years	**Areas covered**	**Immunized children**	**Coverage%**
2002	2,316,214	7 Zones	2,277,988	98%
2003	19,922,338	34 Zones/SWs	18,326,113	92%
2004	8,629,336	31 Zones/SWs	7,686,831	89%
2005	199,582	2 Zones	136,935	68%
Follow up Measles SIAs in 2005				
Year	**Target population 6 months to 5 years**	**Areas covered**	**Immunized children**	**Coverage%**
2005	1,075,053	7 zones	1,010,549	94%

Table 7. Measles 1st Follow up SIAs Coverage by Region, 2005 -2007

Region	**Target pop.**	**Children vaccinated**	**%**
Amhara	**3,193,450**	**2,731,292**	**86%**
Oromiya	**4,740,220**	**4,406,830**	**93%**
SNNPR	**2,588,631**	**2,250,248**	**87%**
Addis Ababa	**248,537**	**183,310**	**74%**

Dire Dawa	**55,716**	**37,486**	**67%**
Harari	**25,046**	**21,848**	**87%**
Ben/Gumuz	**101,029**	**101,801**	**101%**
Tigray	**731,214**	**605,819**	**83%**
Somali	**777,894**	**775,933**	**100%**
Gambella*	**157,745**	**112,791**	**72%**
Afar	**286,729**	**278,974**	**97%**
Total/NATIONAL	**12,906,211**	**11,506,332**	**89%**

The second phase of the follow up was conducted in 2008 in phased manner. The measles SIAs was integrated with EOS except in Gambella and Somali regions, and the coverage for measles vitamin A and Albendazole were 93%, 84% and 95% respectively (Table 8)

Table 8. Measles integrated child survival interventions coverage, 2008

Region	Target pop	measles vaccinated	Measles%	Vit. A given	VA coverage	Target pop for de-worming	No of children Albnendazol e given	Coverage (%)
SNNPR	**2,458,331**	**2,372,459**	**97**	**2,420,259**	**99**	**1,803,409**	**1,663,204**	**92**
Somali	**785,386**	**720,273**	**92**	**426,206**	**92**			
Dire-Dawa	**64,323**	**34,532**	**54**	**34,557**	**53**	**39,997**	**27,003**	**68**
Oromia	**4,006,350**	**3,767,818**	**94**	**3,810,258**	**95**	**4,194,272**	**4,079,188**	**97**
A. Ababa	**317,591**	**181,418**	**57**	**175,815**	**55**	**257,764**	**121,010**	**47**
Harar	**30,473**	**26,229**	**86**	**26,807**	**88**	**19440**	**18878**	**97**
Amhara	**3,095,879**	**2,959,772**	**96**	**2,812,281**	**96**	**1,979,967**	**1989867**	**101**
B. Gumuz	**122,059**	**113,494**	**93**	**112,515**	**92**	**77384**	**77181**	**100**
Tigray	**773,910**	**662,168**	**86**	**523,294**	**85**	**404,873**	**371,702**	**92**
Gambella	**62,504**	**57,686**	**92**					
Total	**11,716,806**	**10,895,849**	**93.0%**	**9,818,698**	**84%**	**8,372,233**	**7,976,331**	**95%**

In 2009 measles SIAs was conducted in Tigray and Gambella targeting 773,910 and 62,504 children aged6-59 months and achieved a coverage of 85.6 % and 92.4% respectively. Tigray: Central zone, East zone, South zone and Mekele town attained coverage ranging from 56% to 87% which lowered the regional coverage to 85.6%.
Afar region had measles and polio integerated campaigns in July 2009 where the administrative coverage for Zone 3 and 4 indicated a coverage of 88% and 87% respectively where as the RCS coverage indicated 95 % for Zone 3 and 93% for Zone 4

2.4.3 Maternal and Neonatal Tetanus Elimination

Ethiopia has one of the highest neonatal tetanus morbidity and mortality rate in the world due to low tetanus toxoid immunization coverage coupled with some 90% of deliveries taking place at home in unsanitary conditions. In Ethiopia in 1999 WHO has estimated about 17,875 neonatal tetanus cases and 13406 NT deaths which made the country to contribute to 4.6% of the global NT deaths.

Although a lot has been done to eliminate neonatal tetanus (NNT) in Ethiopia the disease still remains a major cause of infant deaths. NNT is believed to be prevalent in the country due to low routine tetanus toxoid vaccination coverage coupled by the high number of deliveries handled by untrained personnel. The FMOH, in collaboration with EPI partners, started implementing TT supplemental immunization since 1999, by selecting high risk zones, with the aim of eliminating maternal and neonatal Tetanus.

In 1999, in an effort to achieve the national target of less than one case of neonatal tetanus per 1000 live births, the Federal Ministry of Health (FMOH) in collaboration with UNICEF, launched tetanus toxoid (TT) SIAs, in Gedeo zone of the Southern Nations Nationalities and Peoples Regional State (SNNPR), which aimed to administer 3 doses of TT vaccine to all women of child bearing age in this zone. The effectiveness of this pilot campaign was assessed through an evaluation survey in the zone in 2003. Survey results demonstrated that 85.4% of the women 15 - 49 years of age in that zone had received three doses of Tetanus Toxoid.

Based on successful experinec in Gedeo high risk assessment using WHO algorithm was done in 2000 and 2003. Thirty-six high risk Zone were identified. Therefore from 1999 to 2005 these 36 high risk zones implemented three rounds of TT SIAs targeting 11 million women aged 15-49 and 7.3 million women received TT3 doses as shown Table 9.

Table 9: TT SIAs results from 1999 – 2008, Ethiopia (High risk strategy)

Year	No of zones	15-49 yrs Target Population	TT1 vaccinated		TT2 vaccinated		TT3 vaccinated	
			Number	%	Number	%	Number	%
1999	1	152,020	145,939	96%	142,899	94%	123,136	81%
2000	3	1,723,894	1,717,225	100%	1,480,217	86%	1,303,536	76%
2001	5	2,030,778	1,968,673	97%	1,709,201	84%	1,465,284	72%
2002	8	2,582,804	2,418,077	94%		78%		66%

					2,019,461		1,700,294	
2004	9	2842250	2,690,784	95%	2,292,989	81%	1,795,391	63%
2005	10	1,716,714	1,535,196	89%	1,304,760	76%	946,585	55%
Sub Total	**36**	**11,048,460**	**10,475,894**	**95%**	**8,949,527**	**81%**	**7,334,226**	**66%**
2007	**7**	1,246,621	1,204,537	97%	1,147,068	**92%**	1,035,826	**83%**
2008	**11**	1,906,718	1,853,926	97%	1,652,318	**87%**	1,572,181	**82%**
Sub Total	**18**	**3,153,339**	**3,058,463**	**97%**	**2,799,386**	**89%**	**2,608,007**	**83%**
Total	**54**	**14,201,799**	**13,534,357**	**95%**	**11,748,913**	**83%**	**9,942,233**	**70%**

From the remaining 11 high risk zones 3 zones of Gambella region have started TT SIAs in 2008 and have conducted two rounds in 2008 and the third round in 2009. The remaining zones are in Somali region and the status of TT SIAs implementation is as follows;

- Two rounds of TT SIAs have been conducted in Jijiga and Shinelle zones in 2007 and 2009 and the third round conducted in June 2010.
- Micro planning has been conducted for three zones of Somali region; Afder,Godeo, and Liben zones and implemented the first round in June/July 2010 and Liban zone conducted the second round in August 2010. Afder and Gode Zones are expected to conduct the second round in September 2010 and the third round is scheduled for the three zones in 2011.
- The remaining 4 zones do not have plan for implementation yet.

Corrective TT SIAs: MNT status review was conducted in June 2008 to identify areas which need corrective TT SIAs rounds. Based on the available TT SIAs report and routine EPI data, 12 zones were identified for two rounds of corrective TT SIAs in 2009. These are North Gonder, North Shewa Zones in Amhara region, West Arsi, East Showa, West Wellega, Kelem, Borena, and Guji Zones of Oromyia region, Basketo, Bench Maji, Darashe and South Omo zones of SNPR region. These zones are estimated to have 3.3 million women aged 15-49 years. Except the six zones which did not conduct the second corrective round in Oromia region, the rest of the zones have completed the recommended corrective rounds in 2009.

The strategies to achieve MNT elimination are:;

- strengthening of routine immunization through RED approach by improving DPT-HepB-Hib3 coverage
- using the advantage of enhanced routine immunization to improve TT2+ coverage
- using HEWs to reach unreached areas
- Increasing clean delivery practices
- Strengthening of school-based TT- administration as part of routine EPI [School TT is not independent but part of routine EPI activity]
- Implementing the Protected At Birth system for reporting to screen and vaccinate mothers.

In conclusion, Ethiopia is one of the 47 countries globally that has yet to eliminate MNT. The MNTE strategies seem to be working in Ethiopia, despite the few quality issues in previous SIAs. A recent EPI coverage survey done in 2006 revealed 75.6% TT2+ coverage nationally and six regions had coverage above 80%. If the activities in the remaining high risk zones are conducted as planned in 2009 and 2010, it is expected that the country will be ready for final validation of MNT elimination by 2011.

Source: UNICEF 2009 EPI 2009 report.

In 2006 MNTE program review and risk assessment was done by WHO and UNICEF exeperts from HQ and 29 additional high risk zones and special woredas were identified and the team recommended TT SIAs to be conducted with integration to EOS in those zones/special woredas. During 2007 and 2008, 18 zones completed 3 rounds of TT SIAs targeting 3.1 million women, as a result 3 million received TT1, 2.79 million received TT2 and 2.6 million received TT3 doses.

2.5 Disease Surveillance and Accelerated Disease Control

Ethiopia has adopted the IDSR Strategy and has been implementing it since 200, with the most recent update being instituted in 2010. The IDSR package currently include 22 diseases. This list does not include all EPI targeted diseases (diphtheria, pertussis, hepatitis B, *Haemophilus influenzae* type b). The timeliness of monthly zonal reporting has been consistently good. Other VPDs are also reported as part of the HMIS and there may be a need to extract the data to monitor the disease trends.

2.5.1 Surveillance

2.5.1.1 AFP Surveillance

Ethiopia started AFP Surveillance in 1997. Since then Ethiopia has made remarkable progress in achieving the key AFP surveillance targets. Ethiopia interrupted indigenous polio transmission in 2001. Ethiopia was polio-free for almost three years prior to the first importation of a wild poliovirus (WPV) from Sudan in December 2004. In the following years (Dec 2004 to Nov 2006), Ethiopia reported four different importations (from both Somalia and Sudan) totalling forty WPV cases (1 in 2004; 22 in 2005, 17 in 2006) affecting four of the eleven regions of the country (Tigray, Amhara, Oromia and Somali). The last of this series of confirmed WPV importations reported in Nov 2006, was from Korahe zone of Somali region. Following the successful interruption of these importations, the country enjoyed a 17 months polio-free status until April 2008 when 3 cases of WPV were confirmed in Gambella region, neighbouring Southern Sudan where cross-border migration is common. Ethiopia has not reported a case of WPV since April 2008.

There are two areas of particularly high risk for WPV outbreaks in Ethiopia. The first area includes zones and regions bordering southern Sudan, including the Gambella region, where the WPV cases were reported in 2008. Gambella has access issues due to seasonal flooding

and poor health infrastructure, and the population in the region regularly moves back and forth between Sudan and Gambella. The Benshangul Gumuz region and some zones of Oromia region are also included in this first high risk area, where the challenges of frequent cross border movement and flooding also occur.

The second high risk area, the Somali region, has unique challenges with ongoing security and access problems and it is a very large geographic area with weak health infrastructure. The Somali region is populated with a pastoralist population and high migration rates to and from neighbouring Somalia.

The challenges faced the high risk areas contribute to low OPV3 coverage. As per 2008 coverage report, OPV3 in Gambella reached 44% and Benishangul/Gumuz reached 36%. The Somali region had OPV3 coverage of 29%.

Table 10. AFP surveillance indicators Ethiopia Jan 2006 to July 2009

Indicators	Target	2006	2007	2008	2009
NP-AFP rate per 100,000 ≤ 15 Yrs	2.0	2.2	2.4	2.9	2.6
Stool adequacy	80%	88%	87%	86.3%	86.%
T/C including zero reporting	80%	94%	90%	85%	75%
Investigated ≤ 2 days of notification	80%	97%	96%	88%	98%
Specimen arriving at lab ≤ 3 days	80%	98%	98%	99%	99%
Specimen arriving in good condition	90%	99%	100%	99%	100%
Non-polio enterovirus isolation rate	10%	15%	13%	10.2%	10.7 %
Timely Lab result within 14 days of receipt	80%	99%	97%	88.5%	93%

Between October and December 2008, three polio vaccine drived poliomyelitis cases were identified in urban areas of East Hararghe zone in Horoma woreda. Sub-sequently, two rounds of Polio SIAs was conducted 2009 in the areas.

2.5.1.2 Measles surveillance:

In the Ethiopian IDSR guidelines, measles is one of the diseases to be reported immediately if it occurs. Case-based measles surveillance was initiated in 2003 and since 2004, case-based laboratory supported surveillance has been implemented nationwide. Data on reported suspected measles cases are entered into a database, which is analyzed, on a weekly basis. In 2005, the reporting format was standardized so that all surveillance indicators could be monitored on a weekly basis. As of July 2009 report, the national suspected measles case detection rate is 3.9 per 100,000 total population (target ≥ 2.0), with 92 (89.2%) of districts reporting at least one suspected measles case.

Measles surveillance data indicates that the number of measles cases reduced following the implementation of countrywide staggered measles catch-up and follow up vaccination campaigns. But break through outbreaks were identified in almost all regions of the country prior and after the implementation of measles follow up campaigns. In the first six months of 2009, roughly 20% of suspected measles cases were tested positive for measles-specific IgM antibodies.

2.5.1.3 Neonatal tetanus surveillance:

Neonatal tetanus is one of the immediately reportable vaccine preventable diseases in Ethiopia. The neonatal tetanus surveillance is being strengthened through an integrated approach with AFP and measles surveillance. Training of health workers on neonatal tetanus surveillance has been integrated with AFP and measles surveillance training at various levels. In addition, sensitization on neonatal tetanus surveillance has been integrated with sensitization on AFP surveillance. As the surveillance is very weak, the proportion of districts with more than one NNT/1,000 live births is unknown. The number of reported NNT cases over the years is very low; 15 in the year 2006, 19 in 2007, 6 in 2008 and 16 in 2009 up to the end of June.

2.5.1.4 Paediatric Bacterial Meningitis/Hib Surveillance

Hib surveillance was initiated in 2002 at Black Lion Hospital and currently the sentinel sites are three (Black Lion, Yekatit 12 and Gondar University Hospitals). The fourth selected sites, Jimma University hospital could not start the activity because of lack of culture facility. Hib vaccine was introduced in May 2007 as Pentavalent (DTP-Hep B- Hib)). Hib Case-control study is also underway. The new Hib Data management Module developed by CDC was introduced in October 2008.
In 2008, out of 687 suspected paediatric meningitis cases, 22 were positive for Hib and in 2009 as of June 2009, 33 out of 760 suspected paediatric meningitis cases were positive for Hib.

2.5.1.5 Rota surveillance

The FMOH with support of WHO established Rota surveillance in 2007. The Rota surveillance site is in Black lion Hospital Department of Pediatrics, A.A University Medical Faculty, which is a central referral hospital. The purpose is to estimate, from hospital-based surveillance, the burden of rotavirus gastroenteritis in children less than five years of age, , determine the predominant circulating rotavirus strains, assess the importance of introducing new and prospective rotavirus vaccine (s) based on the predominant circulating rotavirus

strains and generate base line data for policy-makers seeking to determine the need for introducing rotavirus vaccination in Ethiopia.

Since the Rota surveillance started in August 2007, to June 2009, there were 391 under five cases hospitalized with acute diarrhea and 106(27%) were EIA rotavirus confirmed cases.

Table 11: Situational analysis by accelerated disease control initiatives, Ethiopia 2005 to 2009

Type of Diseases targeted for accelerated control	**Indicator**	**Achievements**				
		2005	**2006**	**2007**	**2008**	**2009**
Polio Eradication	OPV3 coverage	66%	**69%**	**71%**	**75%**	**75%**
	Non Polio AFP Rate per 100,000 children under 15 yrs of age	2.6	**2.2**	2.4	2.9	2.6
	Stool Adequacy Rate	**78%**	**88.5%**	**87%**	**86.3%**	**86**
	Extent: NID/SNID No. of rounds Coverage range	**5 NIDs & 2 SNIDs**	**1 NID & 7 SNIDs**	**2 NIDs & 2 SNIDs**	**7 SNIDs**	**2SNIDs**
	Wild polio virus (importation*)	22	17	0	3	0
MNT elimination	Routine TT2+ coverage	**45%**	**53%**	**62%**	**64%**	**60%**
	Number of districts reporting > 1case per 1,000 live births	**NA**	**NA**	**NA**	**NA**	**NA**
	Was there any SIA (Y/N)	**Yes**	**No**	**Yes**	**Yes**	**Yes**
Accelerated Measles Control	Routine Immunization Measles coverage	**60%**	**63%**	**65%**	**74%**	**75%**
	No. of outbreaks reported	**27**	**85**	**129**	**76**	**60**
	No of weredas with outbreaks	**24**	**64**	**89**	**59**	**51**
	Zones that conducted Measles SIAs	**12**	**62**	**11**	**62**	**10**

2.5.2 Epidemic Control and Preparedness

Epidemic control and preparedness is one of the components of the IDSR strategy in Ethiopia. There are twenty-four identified priority diseases for the country which includes measles, polio and NNT among the vaccine preventable diseases. Standard case definitions have been developed for all twenty-three priority diseases and health workers have been trained on the IDSR strategy. A Woreda Rapid Response Team (WRRT) has been established in each Woreda, and health facility focal persons are trained to coordinate the WRRT activities at health facility level. The main function of the Woreda Rapid Response Team is to analyze surveillance reports at woreda level and detect outbreaks for necessary intervention. The team prepares epidemic preparedness plans and submit them to woreda epidemic response committee for financial and logistic support. World Health Organization supported the training of focal persons throughout the country on the IDSR strategy.

Epidemic response committees have also been established at zonal, Regional and at Federal Ministry of Health levels and these committees provide necessary support to woreda epidemic response committee and the WRRT.

2.5.2.1 Polio Outbreaks

For Polio, case-based surveillance has been introduced to identify outbreaks in a timely way. Training of health workers on outbreak investigation was conducted by WHO Surveillance Officers. At all levels the epidemic Rapid Response team is also responsible for the Polio Outbreak Response. All the five Wild Polio Virus importations (from 2004 till 2008) were detected timely and Polio SIAs were conducted in high risk areas to prevent transmission particularly in those regions which border countries with active polio transmission.

2.5.2.2 Measles Outbreaks

Case-based surveillance for measles started in 2003. Over the last four years all regions have reported measles outbreaks. Since 2005 (Jan 2005 till Jun 2009) a total of 300 outbreaks were reported from all the regions. In 2009 alone a total of 60 measles outbreaks were reported in the country. The response to measles outbreak is guided by the National measles outbreak response guideline. Outbreak response is implemented by case management with Vitamin A supplementation and prioritising high risk areas for the follow up immunization campaigns.

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2.5.3 Laboratory Services

2.5.3.1 Polio Laboratory

The national polio laboratory is located in the Ethiopian Health and Nutrition Research Institute and was accredited by WHO in 2001. In 2005, the laboratory proficiency test score and score of onsite review evaluation was 100% and 96% respectively, leading to full accreditation of the laboratory. Since its establishment the laboratory has scored an excellent proficiency test and onsite review evaluation scores. In 2009, 93% of the lab reports were timely done within 14 days of receipt of specimens. In 2009(January to July), a total of

1,498 stool specimens were collected and 10.7% of cases were positive for non-polio enterovirus and 4% primary isolates of polio virus were reported.

2.5.5.2 Measles Laboratory

The measles national laboratory is located in the same premise with polio laboratory and all the necessary resources such as equipment, reagents and trained personnel are available. The measles laboratory was accredited in September 2005. In 2009 alone, a total of 3170 suspected measles cases were reported and 223 (19%) of the cases were positive for measles and 50(4.3%) were positive for rubella specific IgM. Rubella tests are done on all cases which are negative for measles specific IgM.

2.6 GAVI Support

The GAVI support has 4 focal areas namely, Immunization service support (ISS) Injection safety support(INS), New vaccine introduction support(NVS) and Health System strengthening support (HSS).

2.6.1 Immunization Service Support

Ethiopia started receiving Immunization Services Support (ISS) from GAVI in 2002. In 2002 and 2003, Ethiopia received USD 964,000 per year as an investment based on the multi-year plan submitted by the country and in 2004, this was increased to USD1.9 million. In 2005, the country was awarded USD 7,115,320 based on the additional number of infants vaccinated in 2004 compared to the baseline in 2002. It also continued to receive around two million USD in 2006 and 2007 for additional children reached as a reward. The fund is being used to strengthen routine immunization based on the decision of the ICC. Action plans are developed annually and funds distributed to the regions for the activities indicated in the plan of action.

Verifying the number of children vaccinated by an independent body was a prerequisite by GAVI before the second instalment of financial contributions could be made. In collaboration with the country team, the independent auditors verified the number of children reported to be vaccinated by reviewing district and health facility reports in sample districts according to DQA procedures established by WHO. Ethiopia successfully passed the DQA with a score of 80.7%. The recommendations made by the DQA are being implemented. A recently conducted national Data quality assessment in November 2008 also showed an accuracy level of reporting 89%.

2.6.2 Injection Safety Support

Ethiopia shifted from reusable syringes and needles to AD syringes in 2002 using GAVI Injection Safety Support (ISS). That support was mainly used for the purchase of injection equipment and safety boxes for EPI program. The injection safety support according to GAVI policy was for only three years and expired in 2004. Since then, funding for these injection supplies, as part of injection safety program, has been from the Development Cooperation of Ireland and UNICEF. The Government of Ethiopia is currently mobilizing resources from partners and devising ways to ensure the sustainability of injection safety supply for the future.

2.6.3 New Vaccines Introduction

With the support that Ethiopia is getting from GAVI and other partners in EPI, DPT3 coverage for the country has risen from the pre-GAVI support level of less than 50% to about 81% in 2008. This was a promising achievement. Introduction of new vaccines and increasing coverage of existing new and existing traditional vaccines are strategies stipulated in the child survival strategies to achieve the reduction in under-five mortality as the millennium development goal. To this effect burden of disease was assessed and series of national consensus building meetings with partners and academicians were held to make decisions for the introduction of the two vaccines (namely Hepatitis B and *Haemophilous influenzae* type b.). Ethiopia introduced theses two new vaccines in the form of pentavalent in March 2007 using the GAVI's New vaccine introduction support window to the national immunization program and maintained good coverage(81% in 2008).

Ethiopia is prepared for the introduction of other newer vaccines such as Rotavirus, Pnuemococcal, and other vaccines when they become available. However, any decision to introduce a new antigen would be guided by the assessment of the disease burden, cost-effectiveness of the intervention and availability of resources. The FMOH would engage partners within the framework of HSDP III and the ICC to critically review these issues before taking any decision.

Pneumonia is the leading cause of under-five mortality in Ethiopia. The Pneumococcal bacteria (Streptococcus Pneumoniae) is the leading cause of pneumonia (in children) globally and bacterial meningitis in under-five in Ethiopia. The government of Ethiopia after discussing with partners, on the need to introduce PCV vaccine, has submitted letter of intent in 2007 to access the support from GAVI, to introduce the PCV 10 Pneumococcal vaccine in its routine immunization schedule by Jan 2010. Introduction of PCV 10 is believed to substantially contribute to the achievements of the MDG4. It will substantially contribute to the achievements of the MDG4. It will also reduce the burden of pneumococcal disease in children and adults by reducing the nasopharyngeal carriage of streptococcal bacteria and hence by reducing the spread of the disease though herd immunity. Cold chain storage space was assed at all levels to ensure that the PCV will be accommodated at all levels.

Similarly to introduce rota vaccine the Federal Ministry of Health has been undertaking a number of activities. In an attempt to document the burden of rotavirus disease through surveillance and monitoring, the Federal Ministry of Health in collaboration with WHO, has established two rotavirus sentinel surveillance sites in two hospitals in the country since September 2007. According to the preliminary data of the ongoing rota virus surveillance study being conducted in Black Lion hospital, out of 375 diarrheal stool specimens collected from children of under 5 years of age from September 2007 up to June 2009, 30%(106) were found to be due to rotavirus[4]. The Federal Ministry of health of the Government of Ethiopia considered the burden of disease and current cold chain storage space, and has decided to introduce rotavirus by 2012. It has also decided to build a building for and procure cold rooms by 2010 and upgrade the central cold chain store in order to accommodate the introduction of rota vaccine by 2012.

2.6.4 GAVI HSS

The country is also one of the first countries to use the GAVI HSS support to strengthen its health system. Ethiopia received 76 million USD from GAVI. The fund was allocated to strengthening human resources for delivery of basic health services; to improving supply, distribution and maintenance systems, and to enhancing the organization and management of health services delivery.

2.7 Immunization Logistics

Ethiopia has stepped up efforts to ensure that EPI vaccines remain potent at all levels of storage and administration throughout the country. This is part of the government's health programme that emphasizes quality vaccination as a key factor in the battle against vaccine preventable diseases for the achievement of child survival and other child development goals.

One of the principal areas of focus is having efficient and effective cold chain storage equipment at all vaccine handling levels of Ethiopia. The principal steps put forward to implementing this program were mainly to know what equipment actually exists, define the gaps where necessary and propose strategies for eliminating other weaknesses or short-comings in vaccine storage management.

2.7.1 National Cold Chain Equipment inventory

National level cold chain equipment inventory was carried out in 2002. The objective was to identify the status of cold chain equipment in the country. The data obtained was considered to be adequate for future planning and action.
Data analysis of the inventory revealed some basic problem in the country's cold chain system. Some of the problems included inadequate and ageing cold chain equipment, lack of

[4] Afro WHO hospital based Rota surveillance update report, Back lion hospital, June, 2009.

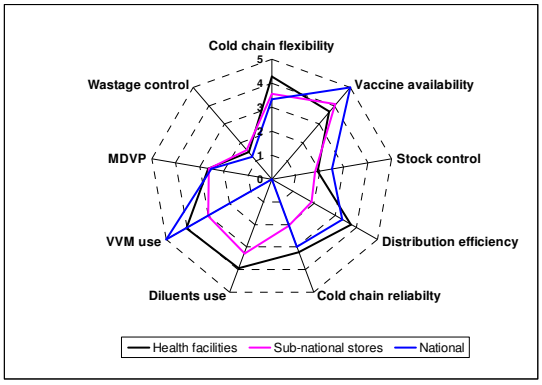
maintenance system at all levels, lack of spare parts and the use of several makes of refrigerators and freezers.
In addition, the analysis showed the functional state of the equipment. 35% of equipment was not functional, 83% of the functional equipment were aged 10 and above 14% of the functional equipments were sub-standard equipment.
The report of the national cold chain equipment inventory recommended the development of a comprehensive rehabilitation plan in which due consideration was to be given to regular maintenance and standardization of cold chain equipment. Following the recommendations of the cold chain inventory a rehabilitation plan was prepared.

2.7.2 Vaccine Management Assessment

With the objectives of analysing the knowledge and practice in vaccine management of health staff at all levels and identifying the gaps and provide possible recommendations, a Vaccine Management Assessment was conducted in 2002**.**

This assessment pointed out possible areas of intervention at various levels. According to the assessment at all levels, vaccine wastage monitoring and stock control were found to be very poor, the cold chain equipment were not adequate and did not comply with the WHO/UNICEF standards. This has also been reflected on the distribution efficiency of the same assessment, see figure 3.

Figure 3. Vaccine Management Assessment, 2002



To address the above vaccine management gaps, effective vaccine and computerized vaccine stock management training was conducted for cold store managers at sub-national levels in 2006. Besides computers with vaccine stock management software's were provided.

2.7.3 The cold chain Rehabilitation Plan

A comprehensive cold chain rehabilitation plan was developed at the end of 2004, which took the following issues into consideration:

- Population growth (which was not matched with the expansion of the cold chain system)
- New initiatives (Plans to increase coverage, introduction of new vaccines etc..)
- Polio, Measles and TT immunization campaigns

- Poor vaccine distribution system, etc
- Failure to stick to the vaccine distribution plan at different levels.

The plan addressed those key issues on the expansion of vaccine storage capacity at all levels, and other vaccine and cold chain management issues, like maintenance, training and standard operating procedures

2.7.3.1 Rehabilitation Plan: Implementation at the National Level

Procurement , renovation, and training

The first step was to carry out the complete renovation of the central vaccine store in Addis Ababa during mid-year 2004.

By the end of 2004, there was only one cold room of about 75 meter cube in internal volume. The logical step was to upgrade the vaccine storage capacity of the cold room. By mid-2006, four more cold rooms have been bought and installed at the central store. Each one is about 30 meter cube in internal volume. Two were bought by WHO and the other two by HAPCO. This brings to about 195 meter cube total internal volume of cold rooms available for storage

A computerised temperature monitoring/ recording system was installed and connected to the central old and new cold rooms and stock management software were installed and being in use since January 2006.

Lack of cold chain maintenance skills at lower level was a persistent problem and it was one of the problems identified and reported in the HSDP III mid-term review(2008). To address the gap three rounds of one month long cold chain technicians training was given; one round in 2008 and two rounds in 2009, and a total of 80 technicians were trained. The training is being cascaded, with the aim of having one mid level technician trained in each district in the country. So far twenty mid-level cold chain technicians training was conducted. 5 in SNNPR and 4 in Amhara, 4 in Owomya, 2 in Tigrayand one each in Addis Ababa, B. Gumuz, Gambella and Somalli regions, with a total 600 mid-level technicians were trained.

2.7.3.2 Rehabilitation Plan: Implementation at the Regional Level

By the end of 2005, there were five regional cold rooms in three regions of the country, with a total 150 meter cube internal volume. By mid-June 2006, nine additional cold rooms were provided at different regions of the country. A cold room was provided in Tigray, Nekemt, Bahir Dar, Awassa, Dukem, Dire Dawa and Afar. Three were bought by WHO, five by HAPCO and one by UNICEF. Each of the cold room is 30 meter cube, thereby increasing the regional storage capacity

Routine maintenance activities were carried out to t various cold rooms throughout the year, additional icepack freezers were provided to the regional cold rooms to cope with the increased demand of ice packs especially during SIAs.

2.7.3.3. Rehabilitation Plan: District and Health Facility Level

A total of 1,500 refrigerators were procured by UNICEF, WHO and USAID and distributed to the regions based on the multi-year plan. Vaccine carriers and cold chain spare-parts were distributed to the regions as the rehabilitation plan is being gradually implemented based on resource availability. Cold chain equipment procurement was standardized.

Under the HSS proposal to GAVI, 35 % of health posts will be equipped with an RCW50EK refrigerator, while the other 65 % will have an RCW 25 Cold Box.

A cost-effective refrigerator clustering was introduced to ensure that, at least, one refrigerator is accessible for vaccine storage to a cluster of three health posts in each woreda. This system of "clustering" is designed to ensure that a number of health posts are easily accessible to a health post where refrigerators are stationed and the distance is not more than 5 kilometres However, any health post that falls outside this maximum distance from the nearest one or in a difficult to access area is usually provided its own refrigerator.

2.7.3.4 Available storage capacity

National level

The recent national cold chain equipment inventory was conducted in 2008. One of the objective of the inventory was to see changes brought about by the implementation of the cold chain rehabilitation plan which was developed in 2004 based on the 2002 national cold chain equipment inventory. The findings of the 2008 inventory showed that, unlike 2002 where there were only 4388 refrigerators, there were 9880 refrigerators and 67% were age less than 5 years. This indicates that the aged cold chain system was replaced by new ones and the refrigerators in the country have more than doubled.

Currently the total gross available positive temperature storage space at national level is 995,000 ltrs. 195000 ltrs at the old central vaccine store **and 800,000 ltrs of the new cold rooms at PFSA compound .** Taking a ratio of 3.5 of grossing factor for cold rooms 284,285 liters net positive storage capacity at central level.

The currently available 284,285litres of positive cold chain storage space at central level, with the assumptions of two shipments will be adequate to accommodate the introduction of pneumococcal vaccine by 2011. However, by 2012 with the introduction of rota vaccine the cold chain requirement will jump to 491,990 litres which will be still accommodated with the existing 284,285litres storage space and with two consignments per year.

The available cold storage at national level is adequate for the Routine immunization including the upcoming new vaccines. But with the introduction of Rota for Supplementary Immunization Activities there is a requirement of additional cold rooms. As a result additional eight positive cold rooms of 100m3 of gross volumes each are being constructed in the PFSA compound. This will increase the net volume by 228.6 m3 (or 228,600 liters). Table 11 depicts the currently available and future cold chain requirements.

Table 12. current available net storage capacity and future requirements for positive cold chain storage at central level (bi annual requirement)

Year	2011	2012	2013	2014	2015
Annual positive volume of vaccines, including new vaccines in liters	349,049 litr	491,990 litr	507,951 litr	526,216 litr	547,301 litrs
available storage capacity	284,285litr	284,285litr	284,285litr	284,285litr	284,285ltr
Number of consignments / shipments per year	2	2	2	2	2
Gap	0	0	0	0	0
Cost					

Regional level.

Similarly, the currently available cold chain stores and requirements from 2010-2015 are computed and the analysis shows that the available cold chain at sub national level is adequate to accommodate the future introduction of Pneumococcal and Rota vaccines Table 13.

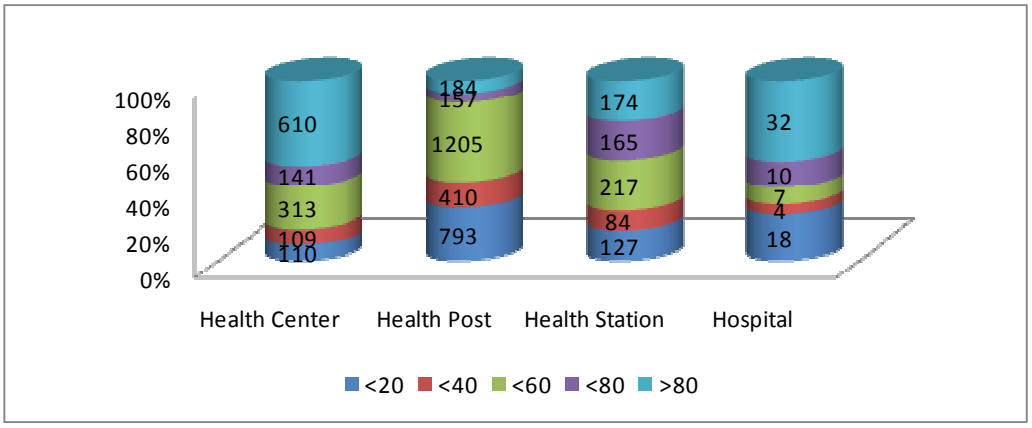
Table 13. current available capacity and future requirements for net positive cold storage at regional level

Region	Currently available per liter	Year					
		2010	2,011	2,012	2,013	2,014	2015
Addis Ababa	32,000	3,856	3,964	4,075	4,181	4,306	4,413
Afar	16,000	1,408	1,447	1,488	1,529	1,572	1,611
Amhara	48,000	24,929	25,627	26,345	27,082	27,841	28,537
B/Gumuz	16,000	804	826	849	873	898	920
DireDawa	16,000	524	539	554	570	586	6007
Gambella	2,000	317	326	335	345	354	362
Harar	32,000	256	263	271	278	285	292
Oromyia	80,000	34,748	35,721	36,343	37,360	38,407	39,367
SNNPR	32,000	19,292	19,832	20,387	20,958	21,545	22,083
Somali	32,000	5,587	5,744	5,905	6,070	6,240	6396
Tigray	32,000	5,652	5,810	8,126	7,645	7,859	8055.5

Health facility level

The assessment of cold chain storage at health facilities from the inventory indicted that the introduction of the pneumococcal Rota vaccines can be accommodated with the exiting type of refrigerators in health facilities. However, refrigerators at district health offices are the same as those in health centres (like Sibir 170 KE), and the introduction of pneumococcal vaccine may require to increase the number of refrigerator in districts health offices and as there are un install more than 3,000 refrigerators in country the gap will address using these refrigerators.

The figure below shows the available storage capacity at the various health institutions from the national inventory report of 2008.



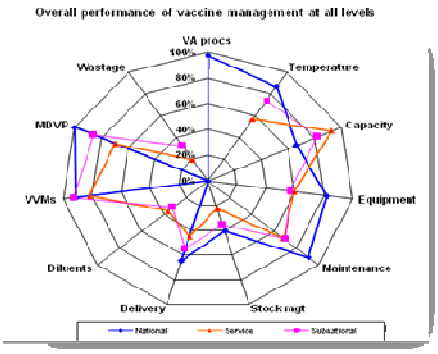
In addition to this in 2009 the government has procured 4600 RCW50EK refrigerators and 2300 TCW3000 refrigerators for EPI program.

2.7.4 Vaccine Management Assessment 2009

In 2009 a vaccine management assessment was conducted with the objective of analysing the knowledge and practice in vaccine management system at all levels and identifying the gaps and provide possible recommendations.

According to the assessment result vaccine arrival process, cold storage capacity, effective VVMs use and implementation of MDVP components are on better performance whereas, use of correct diluents for freeze dried vaccines, vaccine wastage control, stock management, Effective vaccine delivery, Buildings, cold chain equipment and transport, vaccine storage temperature components needs to be improved. The overall assessment of Ethiopia is found to be an achievement of 61%.

Figure 4. Vaccine Management Assessment, 2009



2.7.5 Injection Safety and Waste Disposal

An injection safety assessment was done in 2000. Based on the findings, injection safety guidelines were developed. Ethiopia shifted from re-usable syringes and needles to auto disable syringes and needles in 2002 for all immunization activities.

The recommended waste disposal method is incineration in all health facilities with incinerators. However burning and burial is used in health facilities without incinerators. There are guidelines on constructing incinerators at all newly constructed health facilities. The proportion of health facilities with incinerators is unknown. A second injection safety assessment was planned in 2005, but did not materialise due to overlapping activities.

2.7.6 Vaccine, Supply and Quality

The bulk of vaccine costs which is the cost for penta valent is financed by GAVI, while the cost of traditional vaccines is partly financed by UNICEF. The government is also financing the cost for traditional vaccines (BCG,TT and OPV) and injection materials by mobilizing resources from partners, and in addition the government pays staff salaries . There are no significant problems at national level but weak vaccine stock and inventory management has been noted at regional and service delivery levels. There is a poor distribution system for vaccines and injection materials. This has resulted in overstocking of vaccines at central level while sub national cold rooms were not storing adequate vaccines. As a result changing of VVM status of the DPT-HepB-Hib was noted. Vaccine wastage, particularly that of BCG is high. There is inadequate wastage monitoring at health facility level. In an attempt to address these issues, national and regional in-service training programmes have been conducted to enhance staff capacity in vaccine handling and management with particular focus on the recently introduced DPT-HebB-Hib vaccine.

2.8 AEFI Surveillance and Monitoring

To introduce surveillance for Adverse Events Following Immunization (AEFI) into the immunization programme, AEFI guidelines have been developed. In addition, training on AEFI has been conducted along with Immunization in Practice and new vaccine introduction trainings in preparation for the introduction of AEFI surveillance and monitoring. With plan of introducing new vaccines AEFI assessment and monitoring activities will be strengthened.

2.9 Advocacy, Social Mobilization and Program Communication

Advocacy, social mobilization and program communication are cross cutting communication strategies and priority area of Ethiopian health policy for gaining the commitment of decision makers, building community support and bringing positive behavioural change for immunization services respectively. Thus, Federal MOH has made health structures reform through incorporation of health promotion component in all health program. This will be positively benefiting health communication program for development and dissemination of health education messages using the electronic and print media in Ethiopia context. Regions also have similar units that coordinate all promotion and information dissemination activities in their respective regions. Health facilities provide health education to both in-patients and outpatients. EPI is one of the programmes given priority in all these communication activities.

In this regard communication has been given a central part in the improvement of EPI services and increasing of the demand for immunization by communities. Federal MOH in collaboration with WHO/UNICEF and other partners are working to fill the gaps in communication in EPI by updating communication materials to be used for training such as IIP, and producing job aid material to support interpersonal communication and IEC material for behavioural changes. Moreover, the current restructuring of the MOH has positively benefited the health communication program by integrating health promotion as an element of each programs. In a bid to improve health service delivery including immunization, high level advocacy meetings were conducted at regional level in regions with low immunization coverage (Afar, Gambella, Somali and Benshangul Gumuz). In these advocacy meetings high level ministries of health officials and partners working in health were involved. During the advocacy visits ICC and taskforces were established at regional and woreda level in those mentioned regions. National ICC conducts periodic advocacy visits to regions and to other partners.

However, there still exit gaps in communication such as lack of integration with HEWs activities to access the grass root level of the community, absences of communication focal person at regional /woreda level , shortage of budget, and no operational researches conducted to assess the behavioural aspects of EPI service utilization. Thus, all partners agreed to support surveys that will assess the behavioural determinants of EPI service utilization, identify root causes and devise appropriate strategise of communication, such as Community Conversation, in Ethiopian context, to improve demand for EPI service by the beneficiaries.

2.10 Management and Human Resources

2.10.1 . Management of Health Services

Ethiopia is a federal country and the decision-making powers are decentralized to the sub-national level. The FMOH is responsible for development of policies and guidelines. Service provision is a responsibility of the regional states. Following the new restructuring (BPR), there is a new structure called health promotion and disease prevention general directorate, under this directorate there are urban, rural and pastoralist health promotion and disease prevention directorates, and the directorates are generalists who perform all health promotion and disease prevention program activities including EPI. Thus there is no focal person for EPI at FMOH level. Similarly in the new BPR, the Pharmaceuticals and Fund Supply Agency (PFSA) manages the vaccines and logistics part of EPI. EPI disease surveillance is under IDSR in the public health emergency directorate. Two WHO and one UNICEF officers support programme management of EPI at the federal level.

At regional level, there are focal persons responsible for coordination of programme activities while at zonal and district levels the programmes are integrated and there are two to three officers to coordinate all programmes.

2.10.1 Human Resources

2.10.2.1. Personnel Situation

The Ministry of Health had faced a serious shortage of trained human resources at all levels. Recently, however, the situation is improving though there is still a high attrition rate. The shortage of trained personnel is most acute at health facility level as most health facilities have only one health worker to cover all maternal and child health services. The health promotion and disease prevention directorate is supported by WHO and UNICEF EPI officers while the Ministry of Health takes steps to address the shortage of human resources by developing a Human Resource Development Strategy.

2.10.2.2. Health Management Information System

There is a health information unit under the planning and programme department of the FMOH. In the new HMIS (which operates under the principles of simplification, standardization, and integration of reports), when fully implemented, reports are expected to come though only one channel that is though the HMIS unit of planning and finance general directorate and reporting is quarterly. However, currently this unit does not receive reports regularly from regions, more over the reports do not give sub-regional (province or district) disaggregates, which makes it difficult to comply with international monitoring indicators which are requirements in the JRF and GAVI progress reports to generate indicators like the 90/80 (90% coverage nationally with all districts achieving 80% coverage). Currently only Afar, Somali, Diredawa, Benshangul Gumuz and Gambella are implementing the new HMIS. The other big regions are still reporting monthly with data disaggregated by district level.

2.10.2.3. Supervision, Monitoring and Evaluation

The regional health bureaus are responsible for supportive supervision to lower levels but they do not conduct regular supervision due to limited resources. WHO and UNICEF conduct supportive supervision through surveillance and routine immunization officers

assigned to regions. The immunization programme is monitored monthly (for those big regions reporting monthly), and quarterly for those implementing the new HMIS. Most health facilities in populated regions use immunization monitoring charts. However, there is poor supervision and monitoring of the programme at the peripheral regions. There is late reporting. Only few regions submit monthly EPI report. Currently (Tigray, Oromyia and Addis Ababa) submit reports timely. The report timeliness (last month's report coming within one month period) is less than 40%.

2.10.2.4. The Interagency Coordinating Committee (ICC)

Ethiopia has a strong interagency coordinating committee chaired by the State Minister of the FMOH. The members include UN agencies, NGOs, Departments of FMOH and others Civil Society. There are two sub-committees under the ICC, the technical sub-committee and social mobilization sub-committee. The main ICC meets quarterly and the sub-committees meet monthly. The ICC is the advisory body to the FMOH and also supports the programme in resource mobilization and advocacy visits to regions and other partners. Some regions have also ICC at regional level.

2.11 SUMMARY OF THE SITUATION ANALYSIS

2.11.1. Achievements

Table 14. Situational analysis by accelerated disease control initiatives, based on previous years' data (2007-2009)

System components	**Suggested indicators**	**National**		
		2007	**2008**	**2009**
Polio	*OPV3 coverage*	**71%**	**75%**	**75%**
	Non polio AFP rate per 100,000 children under 15 yrs. of age	**2.5**	2.9	2.6
	Extent: NID/SNID *No. of rounds* *Coverage range*	**4 NIDs >95%**	8 SNIDS>90%	2
MNT	*TT2+ coverage*	**62%**	64%	60%
	Number of districts reporting > 1case per 1,000 live births	**ND**	**ND**	**ND**
	Was there an SIA? (Y/N)	Y	Y	Y
Measles	*Measles coverage*	65%	74%	75%
	No. of outbreaks reported	126	74	60
	Extent: NID/SNID *Age group* *Coverage*	SNID Follow up 6-59m 89%	NID Follow up SIAs 6-59m >93%	SNID Follow up 6-59m 88%

Table 15. : Situational analysis of routine EPI by system components based on previous years' data (2007-2009)

System components	**Suggested indicators**	**National**		
		2007	**2008**	**2009**
Routine Coverage	*National DTP-HepB-Hib3 coverage*	73%	81%	79%
	% of districts with > 80% coverage	32%	48%	43%
	National DTP-HepB-Hib1- DTP-HepB-Hib3 dropout rate	10%	7%	8.7%
	Percentage of districts with dropout rate DTP-HepB-Hib1- DTP-HepB-Hib3>10%	55%	42%	42%
New vaccines	*National DPT-HepB-Hib3 coverage*	73%	81%	79%
Routine Surveillance	*% of surveillance reports received at national level from districts compared to number of reports expected*	90%	92%	95%
Cold chain/Logistics	*Percentage of districts with adequate number of functional cold chain equipment*	85%	90%	90%
Immunization safety and Waste Management	*Percentage of districts supplied with adequate (equal or more) number of AD syringes for all routine immunizations*	100%	100%	100%
Vaccine supply	*Was there a stock-out at national level during last year? (Y/N)*	No	Yes	No
	If yes, specify duration in months		1 month	
	If yes, specify which antigen(s).		BCG	
Communication	*Availability of a plan? (Y/N)*	Yes	Yes	Yes
Financial sustainability	*What percentage of total routine vaccine spending_was financed using Government funds?(including loans and excluding external public financing)*	6%	6%	8%
Linking to other health interventions	Were immunization services systematically linked with delivery of other interventions (malaria, nutrition, child health) established	Yes	Yes	Yes

System components	Suggested indicators		National		
			2007	2008	2009
Human resources availability	No. of health workers / vaccinators per 10,000 population		4	4	4
Management planning	*Are a series of district indicators collected regularly at national level?(Y/N)*		Yes	Yes	Yes
NRA	*Number of functions conducted*		1	1	1
National ICC	*Number of meetings held last year*		5	5	10
Waste Management	*Availability of a waste management plan*		Yes	Yes	Yes
Programme Efficiency	*Timeliness of disbursement of funds to district and service delivery level*		Yes	Yes	Yes
School Immunization Activities	Age	Antigens provided	Coverage 2007	Coverage 2008	Coverage 2009
	13-49	TT	NDA	NDA	NDA

3 THE FIVE YEAR (2011-2015) STRATEGIC EPI PLAN

3.1 Programme Goal

The goal of immunization service is to contribute to the reduction of child and maternal morbidity and mortality due to vaccine preventable diseases by providing quality immunization services to all under one year age children.

3.2 Programme Objectives

- To achieve 96% at national level and at least 80% DTP-HepB-Hib3/OPV3 coverage in all districts by 2015
  - Reduce *DTP-HepB-Hi1b- DTP-HepB-Hib3 dropout rate to 3% nationally and less than 10% in all districts by 2015*
  - *Ensure accessibility of immunization service in all kebeles by 2015*
  - *Integrate child survival intervention provision Vit A and deworming with EPI by 2015*
  - *Reduce number of unimmunized children by 50% every yeart*
- Introduce pneumococcal vaccine by 2011
- To introduce Rota vaccine by 2012
- To achieve measles pre-elimination goal by 2015
  - Achieve measles coverage 90% by 2015
  - Introduce 2nd dose of measles vaccine into routine immunization by 2015
- To achieve MNT elimination status by 2011 and maintain beyond
  - Achieve 90% PAB coverage Nationally by 2015
- To achieve document and maintain polio free status certification standard AFP surveillance at national and regional levels by 2011 and beyond
- To expand cold storage capacity in line with introduction of new vaccines, population growth and coverage expansion plan and campaigns at all levels by 2015
- To improve knowledge and practice of vaccine management among health workers from current score of 61% to 80% as measured by VMA by 2015
- To reduce care takers knowledge gap on EPI program and VPD from 45% to 22% by 2015
- Strengthen program ME through programmatic reviews and EPI performance monitoring system in all districts using HMIS captured data by 2015
- To increase government fund allocation to 10% for traditional vaccines procurement and new vaccine co financing by 2015
- Achieve 90% timeliness, accuracy and completeness of reports by 2015
- Achieve in 80% of districts ML capacity built on evidence based planning and program management on M&E by 2015

3.3 Strategic Areas

The 2011-2015 Comprehensive EPI Plan shall be implemented within the framework of Global Immunization Vision and Strategies (GIVS) in the four main strategic areas namely:

- Protecting more people in a changing world
    - Reaching every children and achieving 80% penta3 coverage in all of districts
- Introducing new vaccines and technologies
    - Introduction of new vaccines (pneumococcal and Rota vaccine)
- Integrating immunization, other linked health interventions, and surveillance in the health systems context
    - Integration of EPI with other maternal and child health interventions like IMCI, malaria control and nutrition
- Immunizing in a context of global interdependence
    - cross border coordination of immunization activities

Activities for the above areas have been outlined within the immunization system components summarized as:

- Service Delivery
- Vaccine supply and quality
- Disease surveillance and accelerated disease control
- Advocacy, Social Mobilization and program Communication
- Programme Management

3.4 Anticipated coverage targets

Table 16. Baseline and coverage targets 2011 to 2015

Number	Base year	Targets				
	2009	2011	2012	2013	2014	2015
Births	2,865,642	3,010,715	3,085,983	3,163,133	3,242,211	3,323,266
Infants' deaths	229,501	241,119	247,147	253,326	259,659	266,150
Surviving infants	2,636,141	2,769,596	2,838,836	2,909,806	2,982,552	3,057,116
Pregnant women	2,865,642	3,010,715	3,085,983	3,163,133	3,242,211	3,323,266
Target population vaccinated with BCG	2,197,238	2,799,965	2,993,404	3,131,502	3,209,789	3,290,034
BCG coverage	77%	93%	97%	99%	99%	99%
Target population vaccinated with OPV3	1,972,281	2,437,244	2,611,729	2,764,316	2,863,250	2,934,831
OPV3 coverage	75%	88%	92%	95%	96%	96%
Target population vaccinated with DTP (DTP3)*	2,083,071	2,437,244	2,611,729	2,764,316	2,863,250	2,934,831
DTP3 coverage*	79%	88%	92%	95%	96%	96%
Target population vaccinated with DTP (DTP1)***	2,282,337	2,575,724	2,753,671	2,880,708	2,952,726	3,026,545
DTP1 coverage*	87%	93%	97%	99%	99%	99%
Target population vaccinated with **3rd dose** of **PCV 10**	NA	2,437,244	2,611,729	2,764,316	2,863,250	2,934,831
3rd dose PCV 10 Coverage	NA	88%	92%	95%	96%	96%
Target population vaccinated with **1st dose** of **PCV 10**	NA	2,575,724	2,753,671	2,880,708	2,952,726	3,026,545
Wastage rate in base-year and planned thereafter	NA			5%	5%	5%

Number	Base year	Targets				
	2009	2011	2012	2013	2014	2015
Wastage factor in base-year and planned thereafter				1.05	1.05	1.05
Target pop vaccinated with 2nd dose of Rota vaccine				2,611,729	2,764,316	2,863,250
Target pop vaccinated with 1st dose of Rota vaccine				2,753,671	2,880,708	2,952,726
3 rd dose Rota vaccine coverage				92%	95%	96%
Target population vaccinated with **1st dose** of Measles	2,108,913	2,271,069	2,441,399	2,589,727	2,684,297	2,751,404
Target population vaccinated with **2nd dose** of Measles						2,751,404
Measles coverage**	80%	82%	84%	86%	88%	90%
Pregnant women vaccinated with TT+	2,149,232	2,559,108	2,684,805	2,846,820	2,917,990	2,990,940
TT+ coverage	75%	85%	87%	90%	90%	90%
NA		NA	NA	NA	NA	NA
Vit A supplement		2,271,069	2,441,399	2,589,727	2,684,297	2,751,404
Annual DTP Dropout rate	9%	5%	5%	4%	3%	3%
Annual Measles Drop out rate	14%	12%	11%	10%	9%	9%

***DPT containing vaccine**

****measles containing vaccine**

Table 17. National problems, priority, objectives and milestones, AFRO regional and global goals

National priorities	NIP Objectives	NIP Milestones	AFRO Regional goals	Order of Priority
Routine Coverage ▪ 58% of districts achieved DTP3/OPV3 coverage < 80% and nationally penta3 is 79%	To achieve 96% Nationally and 80% DTP-HepB-Hib3/OPV3 coverage in all districts by 2015	**80% DTP-HepB-Hib3 coverage:** 2011: 88 % nationally and 70% of districts achieve at least 80% DTP-He pB-Hib3 2012:82% nationally and 80% of districts achieve at least 80% DTP-HepB-Hib3 2013: 85% nationally and 90% of districts achieve at least 89% DTP-HepB-Hib3 2014: 86% nationally and 95% districts achieve at least 80% DTP-HepB-Hib3 2015: 96% nationally and 100% districts achieve at least 80% DTP-HepB-Hib3	By 2013 reach routine immunization coverage of 90% nationally with at least 80% coverage in every district.	**1**
Low coverage in hard to reach areas	No district less than 80% by 2015	**<=80% DTP-HepB-Hib3 coverage:** 2011: 15% of districts achieve DTP-HepB-Hib3 < 50% 2012: 10% of districts achieve DTP-HepB-Hib3<60% 2013: 5% of districts achieve DTP-HepB-Hib3<70% 2014: 3% districts achieve DTP-HepB-Hib3<80% 2015: 0% districts achieve DTP-HepB-Hib3<80%		**1**
High dropout rate in 42% of districts penta3 with 8% national penta dropout rate	Reduce penta1 to penta3 dropout rate to 3% by 2015 at national level	2011: 5% penta dropout rate nationally 2012-: 5% penta dropout rate nationally 2013:- 4% penta dropout rate nationally 2014: 3% penta dropout rate nationally 2015: 3% penta dropout rate nationally and less than 10% in all districts		**3**
Vitamin A Supplementation	Provide Vit A to all under one children at 9 months of	2011: integrate with measles in routine EPI 2012: integrate with measles in routine EPI		**4**

National priorities	NIP Objectives	NIP Milestones	AFRO Regional goals	Order of Priority
Not regularly distributed at age of 9 months in routine immunization	age by 2015 and achieve coverage of 90%	2013: integrate with measles in routine EPI 2014: integrate with measles in routine EPI 2015: fully integrate with routine immunization		
Polio **Risk of importation**	Maintain polio free status by 2015	2011: preventive SNIDs and achieve 88% OPV3 coverage nationally 2012: preventive SNIDs and achieve 92% OPV3 coverage nationally 2013: documentation of polio free status and achieve 95 % OPV3 coverage nationally 2014:: documentation of polio free status and achieve 96% OPV3 coverage nationally 2015: documentation of polio free status and achieve 96% OPV3 coverage nationally	.	**2**
Measles Low measles coverage Measles outbreak in many parts of the country	Achieve measles pre-elimination status by 2015 -measles incidence < 5 cases per million population - achieve >95% SIAs coverage in all districts - Non-measles febrile rash illness rate ≥ 2.0 /100,000 population per year ≥ 80% of districts investigating ≥ 1 suspected measles case with blood specimens per year.	2011: routine measles coverage 82% Follow up SIAs in Afar, Tigray and Gambella with 95% coverage 2012: routine measles coverage 86% Measles SIAs in all regions except Afar, Tigray and Gambella with 95% coverage 2013: routine measles coverage 89% Follow up Follow up SIAs in Afar, Tigray and Gambella with 95% coverage 2014: routine measles coverage 89% Measles SIAs nationally except Afar, Tigray and Gambella with 95% coverage 2015 routine measles coverage 90% -introduce second measles dose and achieve pre-elimination Decrease incidence of measles to < 5 cases per		**2**

National priorities	NIP Objectives	NIP Milestones	AFRO Regional goals	Order of Priority
		million population		
MNT **Elimination status not achieved**	Reach MNT elimination by 2011 and maintain MNT elimination status by 2015 and beyond	2011: certification for MNT elimination, introduce routine school TT And achieve 86% PAB coverage 2012: Achieve 87% PAB coverage 2013: Achieve 88% PAB coverage 2014: Achieve 89% PAB coverage 2015: Achieve 90% PAB coverage		**3**
Pneumo pneumococal vaccine is not yet introduced into routine EPI	Introduction of new pneumococcal vaccine by 2011	2011: introduction 2012: PIE 2013:Coverage same as DPT-HepB-Hib3 2014: Coverage same as DPT-HepB-Hib3 2015: impact assessment		**1**
Rota **Rota virus vaccine** is not yet introduced into routine EPI	Introduction of new Rota virus vaccine by 2012 as package within comprehensive Diarrhea prevention strategy	2011: Burden of disease study and cold chain expansion completed 2012: pre introduction preparation 2013: Introduction 2014-15: PIE		**2**
Immunization Safety and waste management **No assessment done on injection safety and waste management** **-no involvement of NRA in AEFI surveillance**	Ensure injection safety and waste management in all health facilities by 2015 and institutionalize AEFI surveillance at HF level by 2015	2011: conduct immunization safety and waste management assessment Prepare and distribute AEFI guidelines Conduct TOT on AEFI surveillance 2012: training on injection safety and waste management Conduct AEFI training at HF level 2013-2015: ensure safe injection safety practice and waste management, through nation-wide use of AD syringes, collection of waste through safety boxes and incineration	By the end of 2008, all immunization injections are administered safely.	**3**

National priorities	NIP Objectives	NIP Milestones	AFRO Regional goals	Order of Priority
		-well established AEFI surveillance system in place		
Surveillance Weakness in NNT surveillance system	Achieve NNT surveillance standard indicators in all regions by 2015	2011: improve integrated surveillance system of VPDs, 2012-13: improve community based NNT surveillance system 2014-15: Achieve NNT surveillance standard indicators in all regions		**3**
Vaccine Supply weak vaccine stock management and distribution system	Computerized vaccine stock management in all districts and direct delivery of vaccines to HFs by 2015	2011: preparing quarterly zonal vaccine requirements and notifying zones -institute vaccine STM software at PFSA 2012: train and institute vaccine STM at regional cold rooms 2013: train and institute vaccine STM at zonal and district level 2014:institute vaccine direct delivery to district by PFSA 2015: institute vaccine direct delivery to health facilities by PFSA		**2**
Cold Chain / Logistics Inadequate capacity at central level and weak cold chain maintenance at lower level No Freeze monitoring at all levels zone, woreda and cluster HC storage space(with new vaccine introduction)	Expand the central cold room net storage capacity to a net volume of 570 m3 by 2015 and train one mid level cold chain technician in each district by 2015.	2011: freeze tag in all HFs, design and bidding for new cold room and training of 400 mid level cold chain technicians at district level 2012: construction and installation of new cold rooms at central level; training of 570 mid level cold chain technicians at district level Training of 80 high level cold chain equipment technicians Training of 6 specialized maintenance engineers/technicians on vaccine cold room		**2**

National priorities	NIP Objectives	NIP Milestones	AFRO Regional goals	Order of Priority
could be bottle neck		2013: procure additional refrigerators for zone, woreda and cluster HFs 2014: PFSA regional Hubs(cold rooms) will be in place 2015:		
Advocacy and Communications Inadequate IPC skills among health workers. Lack of awareness of importance of immunization leading cause for child being un-immunized.	To train at least one health worker per health facility on interpersonal communication skills in all public health facilities and increase public awareness on immunization by 2015	2011: prepare , distribute communication guideline and provide train on EPI to all HEWs 2012: Conduct national community based behavioural determinant survey on immunization service. caretakers KAP assessment on EPI 2013: conduct community conversation on EPI in each kebele regularly 2014: conduct community conversation on EPI in each kebele regularly 2015: conduct community conversation on EPI in each kebele regularly, Strengthening and use evidence based communication strategies and activity on EPI in each kebele including conduct regular community conversation		**3**
Management and Planning Inadequate financial allocation for EPI by federal and regional governments	Conduct advocacy meeting to increase government fund allocation to 10% for traditional vaccine and procurement and new vaccine co finance by 2015	2011 procure 100% of BCG, and TT, and 50% OPV, government spending on EPI 7% budget line for vaccine procurement will be opened 2012: procure 100% of BCG, and TT, and 50% OPV, government spending on EPI will be 8% , budget line for vaccine procurement will be continued 2013: procure 100% of BCG, and TT, and 50% OPV and co finance Pneumococcal, Rota and Penta vaccines; and government spending on EPI 9% , budget line for vaccine procurement will be continued 2014-2015: procure 100% of BCG, and TT, and 50% OPV and co finance Pneumococcal and Rota virus		**4**

National priorities	NIP Objectives	NIP Milestones	AFRO Regional goals	Order of Priority
		vaccine. and government spending on EPI will be 10% , budget line for vaccine procurement will be continued		
-weak data quality and use: weak completeness, timeliness and accuracy of data and information use -weak leadership and management capacity at district level.	Achieve 100% timeliness, accuracy and completeness of reports by 2015	2011: 50% timeliness and completeness of reports 2012:60% timeliness and completeness of reports 2013: 70% timeliness and completeness of reports 2014: 80% timeliness and completeness of reports 2015: 100% timeliness and completeness of reports		**4**
	Achieve in 100% of districts built ML capacity on evidence based planning and program management on M&E by 2015	2011: 50% of districts trained 2012: 80% of districts trained 2013: 100% of districts trained		

4 PLANNING BY IMMUNIZATION SYSTEM COMPONENT

Table 18. Service delivery

National Objective	Strategy	Key Activities

• To achieve 80% DTP-Hep.B-Hib3 coverage in all districts by 2015 • Ensure accessibility of immunization service in all kebeles by 2015 • Integrate child survival interventions provision with EPI Vit A. and, de-worming, by 2015 • Reduce Penta dropout rate to 3% by 2015 •	• RED approach implementation in every district and kebeles • Plan to reach all kebeles at least four times per year in difficult to reach areas and areas with large number of unvaccinated children using health extension workers. • Capacity building for EPI managers and health workers • Design local strategy and implement for pastoralist areas. • Regular supportive supervision and program monitoring • Add Vitamin A and other child survival interventions with routine immunization • Intensify defaulter tracing mechanism using community based structures. • Learn from experience • incorporation of immunization in the emergency preparedness and response plans	Conduct micro planning workshops in all districts with the involvement of community leaders. Implement enhanced routine immunization in emerging regions and zones with large number of unimmunized children Train health workers and EPI managers on MLM, IIP , and IRT Organize and deploy mobile health teams for pastoralist and other hard to reach populations Conduct defaulter tracing using HEWs Integrate VitA supplementation and de-worming with routine immunization in all kebeles. Provide continued orientation and training on EPI to case teams (according to new BPR) to strengthen immunization program Register target groups house to house using HEW?P and vaccinate Incorporate immunization services in emergency preparedness plans and activities Conduct post PCV AEFI assessment Provide immunization services in populations affected by complex emergencies
Introduction of pneumococcal by 2011 and rota vaccine by 2012	• leadership strengthening for new vaccine introduction • Capacity building on new vaccine introduction at all levels • Advocacy and consensus building • Expansion of Cold chain Storage space • Evaluate vaccine management practices • Revision of monitoring tools	Reapply for Rota vaccine introduction plan Establish new vaccine introduction taskforce Introduce pneumococcal and rota virus vaccine in routine EPI program by 2011 and 2012 respectively Expand PFSA cold rooms by installing additional cooling units and other facilities , and construction and installation of new cold rooms Train EPI managers and health workers from each HF on new vaccines Evaluate programmatic impact of new pneumococcal and rota virus vaccines introduction Conduct national AEFI work shop on PCV

• Achieve, document and maintain polio free status by 2015 • Achieve measles pre-elimination status by 2015 • Reach MNT elimination by 2011 and maintain MNT elimination status by 2015 • Achieve 90% PAB coverage by 2015	• Utilize surveillance data to implement appropriate activities • Improve routine immunization coverage • Conduct SIAs to enhance protection from targeted diseases School based TT immunization	• Conduct polio campaigns in high risk areas synchronized with neighbouring countries • Conduct national measles SIAs in 2010 and 2011 Implement routine school TT immunization in all secondary school and above

Table 19. Advocacy, social mobilization and program communications

National Objective	Strategy	Key Activities
• To reduce care takers knowledge gap on EPI program and VPD from 45% to 22% by 2015	• Improve health workers' interpersonal communication capacity • Improve community awareness on the importance and utilization of immunization services • Promote partnership • Monitor impacts of communication • High level advocacy meetings in poor performing regions • Strengthen regional ICC through advocacy visits/ supportive supervision	Prepare and distribute communication guideline on EPI to all HEWs
		Conduct national community based behavioural determinant survey on immunization service. Conduct regular monitoring of communication activities at all levels
		Train of HWs/HSEWs on IIP including interpersonal communication
		Conduct advocacy and consensus building meeting with regions and stakeholders including funding vaccines
		Conduct caretakers KAP assessment on EPI
		Conduct community conversation on EPI in each kebele regularly
		Identify partners and encourage to contribute to EPI program
		Develop and transmit messages through different medias on immunization Develop and distribute IEC/BCC materials

Table 20. Surveillance

National Objective	Strategy	Key Activities
• To achieve AFP surveillance standards that qualify for polio free certification by 2015 • To achieve measles surveillance standards for pre-elimination status by 2015 • To strengthen NNT surveillance system at all levels by 2015 • Strengthen community surveillance for VPD by 2015 • Establsish pneumococcal disease surveillance system by 2015	• AFP, measles and NNT surveillance integrated with IDSR • Implement activities for polio virus containment • Active surveillance in high risk districts • Strengthen Surveillance deploying National and international and local STOP • Initiate community surveillance system • Partnership with CSO working in community surveillance of VPD • Build sero-typing and disease burden study capacity at national level •	Conduct active surveillance for AFP, measles and MNT in all districts
		Build national capacity for pneumo and rota virus sero-typing and surveillance
		Strengthen cross country and cross regional surveillance
		Provide in-service and pre-service training of HW/HEWs on EPI diseases surveillance
		Conduct regular monitoring of surveillance activities at all levels
		Improve timeliness and completeness of reporting of surveillance data and feedback
		Document of polio free certification
		Support the polio and measles labs to maintain accreditation level
		Deploy international, national and local (in Gambella and Somali) STOP teams for active search
		Include VPDs in integrated surveillance and monitoring systems set up in complex emergencies
		Train HEW on VPD surveillance to promote community based system
		Establish a surveillance system for estimating burden of disease and sero-typing for pneumococcal disease
		Involve CSO and other NGOs in community based VPD surveillance

Table 21. Vaccine supply, quality and logistics

National Objective	Strategy	Key Activities
• To establish effective vaccine management system in all districts by 2015 • To expand cold storage capacity in line with introduction of new vaccines, population growth and coverage expansion plan at all levels by 2015 • To institutionalize AEFI surveillance system at all levels by 2015 • To establish vaccine quality	• Establish national vaccine quality control and AEFI surveillance committee • Capacity building of health workers on AEFI monitoring • Establish cluster of incinerators and waste management system • Monitor Vaccine demand linking with supply • Build the capacity of health workers on vaccine, cold chain and EPI logistics management	Train district managers and health workers on AEFI
		Institutionalize AEFI surveillance
		Include AEFI in national database for district monitoring
		Select and purchase equipment to replace 10% of C.C each year
		Purchase cold chain spare parts and tools
		Purchase and distribute to all levels vaccine temperature monitoring tools
		Train HWs and technicians on cold chain maintenance
		Burning and burial of injection materials in health facilities without incinerator
		Develop a guide line on storage, distribution and administration of vaccines to be used at all levels
		Establish vaccine stock recording, monitoring and reporting system in all districts

control system at national level by 2015 • To maintain cold storage capacity at all levels by 2015 • To directly deliver vaccine and EPI logistics to each HFs by 2015 by PFSA	• Design follow up mechanism for tracking EPI supplies • Ensure availability of sufficient cold chain spare parts • Strengthening the Capacity of the national regulatory authority (DACA) • Construct distribution hubs in appropriate selected sites which will be within reasonable distance to HFs • Strengthen the PFSA's human resource capacity for vaccine, cold chain and logistics management: • Ensure adequate and sustainable financing of national immunization systems • Strengthen transportation capacity of PFSA	Establish wastage monitoring and control system and conduct vaccine inventory regularly
		Establish effective vaccine delivery system in all districts
		Construction of incinerators with all new health facilities
		Procure vaccine quality control lab equipments Training DACA staff on vaccine quality control
		Monitor stock management in every district using the data base Establish national vaccine quality control committee
		Upgrade existing PFSA hubs to be used for routine vaccine storage
		Conduct training on vaccine management and preventive maintenance for regional cold room managers
		Conduct planned preventive and corrective maintenance at all levels
		Train on cold room maintenance, vaccine and logistics management for PFSA staff
		Procure vaccines based on annual vaccine forecast from prequalified suppliers
		Conduct accurate demand forecasting activities
		Procure cold trucks for PFSA vaccine transportation
		Procure cold boxes
		Prepare quarterly target based accurate forecasting of national vaccine requirement
		Encourage local and district level contribution to health services and immunization program
		Coordinate immunization financing through the ICCs

Program management/health system

National Objective	Strategy	Key Activities
Monitoring and evaluation: • Review of EPI policy • Strengthen program ME through programmatic reviews and EPI performance monitoring system in all districts using HMIS captured data by 2015 • Achieve 90% timeliness, accuracy and completeness of reports by 2015 •	• Improve data quality and monitoring system • Strengthen immunization program within health sector reform(BPR) • Regular supportive supervision and program monitoring • periodic assessment of immunization service delivery Conduct DQS assessment integrated with supportive supervision regularly	Establish national database of district indicators
		Train district health management team using the tool
		Training EPI managers and HWs on DQS use
		Conduct review meeting quarterly at district and regional level and annually at national level
		Conduct supportive supervision at all levels quarterly
		Conduct evidence based experience sharing and operational research
		Monitor and evaluate efficiency , effectiveness and impact of combined interventions
		Train district health management team with focus on EPI program implementation

	• Capability building on computerized data monitoring for EPI •	Conduct national EPI coverage survey
		Conduct supportive supervision quarterly at all levels to motivate and improve health workers capacity
		Conduct review meeting quarterly at district and regional level and annually at national level
		Monitor and evaluate the efficiency, effectiveness and impact of combined interventions
Human resource • Achieve in 80% of districts ML capacity built on evidence based planning and program management on M&E by 2015	• Use Integrated District Health Management Training Tool (IDHMT) for improve the capacity of district health team.	Conduct evidence based experience sharing and Operations research
		Provide data quality self assessment and database management training to all districts
Financing: • To increase government fund allocation to 10% for traditional vaccines procurement and new • vaccine co financing by 2015	• Advocacy though ICC for increased government financing for vaccine and device procurement • Advocate for government cabinet to increase local budget allocation	Organize and conduct advocacy workshops on Immunization financing

Table 22. Activity timeline

Key activities	2011	2012	2013	2014	2015
Service delivery and Programme Management					
Conduct micro planning workshops in all districts with the involvement of community leaders annually.	X	X	X	X	X
Implement enhanced routine immunization in emerging regions and zones with large number of unimmunized children	X	X	X	X	X
Conduct MLM, IIP , IRT?? and cold chain maintenance trainings for health workers and EPI managers.	X	X	X	X	X
Provide supportive supervision to Motivate and improve health workers capacity	X	X	X	X	X
Organize and deploy mobile health teams for pastoralist areas	X	X	X	X	X
Conduct defaulter tracing using HEWs	X	X	X	X	X
Conduct national EPI coverage survey in 2011	X				X
Establish national district based performance monitoring indicator	X	X			
Conduct supportive supervision quarterly at all levels	X	X	X	X	X
Conduct review meetings quarterly at district and regional level and annually at national level	X	X	X	X	X
Integrate VitA supplementation and de-worming with routine immunization in all kebeles.	X	X	X	X	X
Monitor and evaluate the efficiency, effectiveness and impact of combined interventions		X	X	X	X
Implement routine school TT immunization in all secondary school and above	X	X	X	X	X
Provide data quality self assessment and database management training to all districts		X	X	X	X
Conduct evidence based experience sharing and Operational research		X		X	
Orient and train case teams on immunization program	X	X	X	X	X
Register target groups house to house using HEP and vaccinate	X	X	X	X	X
Incorporate immunization services in emergency preparedness plans		X	X		

Key activities	2011	2012	2013	2014	2015
and activities					
Provide immunization services in populations affected by complex emergencies	X	X	X	X	X
Establish a surveillance system for estimating burden of disease and sero-typing	X				
Introduce pneumococcal vaccine in routine EPI program by 2011	X				
Build cold store and install cold rooms	X	X			
Train EPI managers and health workers from each HF on new vaccines	X	X			
Evaluation of new pneumococcal vaccine introduction		X			
Conduct national AEFI work shop on PCV	X				
Conduct post PCV AEFI assessment		X			
Monitor new pneumo vaccine introduction	X	X			
Introduce Rota vaccine by 2012		X			

Advocacy and communications	2011	2012	2013	2014	2015
Conduct high level sensitization meeting with political leaders and decision makers for the new vaccine introduction	X				
Develop and distribute IEC/BCC materials	X	X	X	X	X
Conduct regular monitoring of communication activities at all levels	X	X	X	X	X
Train of HWs/HSEWs on IIP	X	X	X	X	X
Conduct advocacy and consensus building meeting with regions and stakeholders on funding vaccines	X		X		X
Conduct caretakers KAP assessment on EPI		X			
conduct community conversation on EPI in each kebele regularly	X	X	X	X	X
Identify partners and encourage to contribute to EPI program	X	X	X	X	X
Develop and transmit radio messages on immunization	X	X	X	X	X
Conduct advocacy session at district and regional level to cabinet members to allocate budget for vaccine and devices	X	X	X	X	X

Surveillance	2011	2012	2013	2014	2015
Conduct active surveillance for AFP, measles and MNT in all districts	X	X	X	X	X
Build national capacity for pneumo and rota virus sero-typing and ensure establishment of their surveillance system	X	X	X		
Conduct and strengthen cross country and cross regional VPD surveillance	X	X	X	X	X
Conduct in-service and pre-service training of HW/HEWs on EPI diseases surveillance	X	X	X	X	X
Conduct regular monitoring of surveillance activities at all levels	X	X	X	X	X
Document of polio free certification	X	X	X	X	X
Support the polio and measles labs to maintain accreditation level	X	X	X	X	X
Deploy international, national and regional STOP for active search	X	X	X	X	X
Include VPDs in integrated surveillance and monitoring systems set up in complex emergencies	X	X	X	X	X
Involve CSO and other NGOs in community based VPD surveillance	X	X	X	X	X
Institutionalize AEFI surveillance		X	X	X	X
Conduct biannual risk assessment on VPD	X	X	X	X	X
Assure the training, equipment , reagents and quality control procedures of polio/measles laboratories	X	X	X	X	X

Vaccine supply, quality and Logistics	2011	2012	2013	2014	2015
Select and purchase equipment to replace 10% of C.C each year	X	X	X	X	X
Purchase cold chain spare parts and tools	X	X	X	X	X
Train HWs and technicians on cold chain maintenance	X	X	X	X	X
Promote Burning and burial of injection materials in health facilities without incinerator	X	X	X	X	X
Construct incinerators with all new health facilities	X	X	X	X	X
Monitor vaccine stocksin every district using the SMT/data base	X	X	X	X	X
Establish national vaccine quality control committee		X			
Upgrade existing PFSA hubs to be used for routine vaccine storage and distribution	X	X	X		
Conduct training on vaccine management and CC preventive maintenance for cold room managers for regional cold room	X		X		X

Train on cold room maintenance, vaccine and logistics management for PFSA staff	X		X		X
Procure vaccines based on annual vaccine forecast from pre-qualified suppliers	X	X	X	X	X
Conduct accurate demand forecasting activities	X	X	X	X	X
Upgrade transportation and communication capacity and improve its management system	X	X	X		
Encourage local and district level contribution to health services and immunization program	X	X	X	X	X
Coordinate immunization financing through the ICCs	X	X	X	X	X
Procure 5 cold trucks for PFSA vaccine transportation	X		X		X
Procure cold boxes	X		X		X
Prepare quarterly target based accurate national vaccine requirement forecasting	X				

Program management/ health system	2011	2012	2013	2014	2015
Establish national database on district EPI performance indicators	X	X			
Train district health management team using the DHMT tool	X	X	X		
Training EPI managers and HWs on DQS use	X	X	X	X	X
Conduct programme performance review meeting quarterly at district and regional level and annually at national level	X	X	X	X	X
Conduct supportive supervision at all levels quarterly	X	X	X	X	X
Conduct evidence based experience sharing	X	X	X	X	X
Monitor and evaluate efficiency , effectiveness and impact of combined interventions	X	X	X	X	X
Train district health management team with focus on EPI program implementation	X	X	X	X	X
Organize and conduct advocacy workshops on Immunization financing	X	X	X		
Conduct evidence based experience sharing and operational research on service delivery		X		X	
Endorse the cMYP and print and distribute to all regions, zones, districts and HFs	X				

Table 23. Table 6: Annual work plan (2011)

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Service delivery and Programme Management																		
Prepare objectives and targets for EPI for each districts in woreda based national planning						X	X	X										
Conduct micro planning workshops in all districts with the involvement of community leaders		Districts and zone							X	X	X	X	X	X		150		WHO,UNICEF
Implement enhanced routine immunization in emerging regions and zones with large number of unimmunized children	ERIA will be conducted in 14 zones and 4 emerging regions where the coverage is low and no.of unvaccinated children are high	Region, District,	X	X	X	X	X	X	X	X	X	X	X	X		450	Govt	UNICEF GAVI

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Improve routine coverage by Strengthening outreach and fixed immunization services	allocate adequate funds for fuel for vaccine distribution and outreach transportation	Region, District, HF	X	X	X	X	X	X	X	X	X	X	X			935		UNICEF
Improve routine coverage by Strengthening outreach and fixed immunization services	perdiem, kerosene	Region, District, HF		X	X	X	X	X	X	X	X	X	X	X		4700		UNICEF/GAVI
Train health workers and EPI managers on MLM, IIP , and IRT	One MLM training for EPI managers and IRT For HEW will be conducted	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		760	Govt.	UNICEF,WHO
Organize and deploy mobile health teams for pastoralist areas	More mobile health teams will be deployed in Somali and Afar regions	Region	X	X	X	X	X	X	X	X	X	X	X	X		125	Govt	UNICEF
Conduct defaulter tracing using HEWs	HEW will have defaulter tracing capacity and means	Districts	X	X	X	X	X	X	X	X	X	X	X	X		0		

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Conduct national EPI coverage survey in 2011	GAVI recommends new national coverage survey	National					X	X	X	X	X	X	X	X		200		WHO
Establish national database of district indicators		National						X	X	X	X	X	X	X		0		
Conduct supportive supervision quarterly at all levels to motivate and improve health workers capacity	Case teams in all directorates will conduct regular supportive supervision to respective regions	National Region, Districts	x			x			x			x				2785	Gov	
Conduct programme review meetings quarterly at district and regional level and annually at national level	The national integrated review meeting is held in October every year	National Region, Districts										x				821	Gov	
Integrate VitA supplementation and de-worming with routine immunization in majority of kebeles with health posts.	EOS will be integrated with routine health care	District	X	X	X	X	X	X	X	X	X	X	X	X				
Implement routine school TT immunization in all secondary school and above	School TT will be included in routine EPI	District							X	X	X	X	X	X				

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Register target groups house to house using HE?W and vaccinate	To reach the un reached children in every house hold	District	X	X	X	X	X	X	X	X	X	X	X	X				
Provide immunization services in populations affected by complex emergencies	Emergencies could lead to out break of VPD and should be properly addressed	Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		50		UNICEF, OCHA
Establish a surveillance system for estimating burden of disease and sero-typing for Rotavirus	Important for the pre-introduction assessment data on new rota vaccine	National	X	X	X	X	X	X	X	X	X	X	X	X		100		WHO
Introduce pneumococcal vaccine in routine EPI program by 2011	Planned to introduced in January 2011	National Region, Districts	X															
Upgrade PFSA cold rooms by installing additional cooling units and other facilities , and construction and installation of new cold rooms	The Cooling units and other facilities of the new PFSA cold room will be upgraded by UNICEF and WHO	National	x	x												21		UNICEF

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Train EPI managers and health workers on new pneumococcal vaccines	Cascades of trainings will be conducted to reach Health workers	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		328		GAVI/UNICEF/WHO
Conduct national AEFI work shop due to PCV			X													25		GAVI,WHO
Conduct post PCV AEFI assessment											X	X	X	X		25		GAVI
Monitor new pneumo vaccine introduction			X	X	X	x	x	x	x	x	x	x	x	x				
Advocacy and communication																		
1. Finalize and distribute communication guideline on EPI to	WHO has prepared the guideline and reviewed by ICC	National			x	X	x									26		WHO

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
all HEWs																		
2. Conduct high level sensitization meeting with political leaders and decision makers on the new vaccine introduction and its launching			X	X												95		GAVI,Rotary
develop and distribute IEC/BCC materials	Communication materials to increase demand for immunization are needed: Pilot their relevance and cultural acceptability	National Region				X	X	X	X	X	X	X	X	X		20	Gov	UNICEF

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Conduct regular monitoring of communication activities at all levels	EPI communication activities will be monitored at all levels	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X				
Train HWs/HSEWs on Interpersonal communication	IPC training will be given utilizing IIP guidelines	District						X	X	X	X	X	X	X				
Conduct Advocacy and consensus building meeting with regions and stakeholders on funding vaccines	Advocacy for resource mobilization for new vaccine co financing	National Region										X	X	X		8		CRDA
4. conduct community conversation on EPI in each kebele regularly	HEW will coordinate community conservation	District	X	X	X	X	X	X	X	X	X	X	X	X				

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Identify partners and encourage to contribute to EPI program	Partners such as CRDA/COREGROUP, is involved in organizing high level advocacy in emerging region	National						X	X	X	X	X						
Develop and transmit radio messages on immunization	WHO supports preparation of radio messages	National Region	X	X	X	X	X	X	X	X	X	X	X	X		200		WHO
Surveillance and ADC																		
Conduct Active surveillance for AFP, measles and MNT in all districts	Community based surveillance will be expanded in collaboration with partners such as core group	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		0		
Build national capacity for pneumo and rota virus sero-typing and	Rota virus ser-typing and surveillance will be conducted	National	X	X	X	X	X	X	X	X	X	X	X	X		15		WHO

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
surveillance																		
Strengthen Cross country and cross regional VPD surveillance	Ethio-Sudan cross border AFP surveillance activities will continue	National Regions	X	X	X	X	X	X	X	X	X	X	X	X		20		WHO
Conduct In-service and pre-service training of HW/HEWs on EPI diseases surveillance (integrated with IIP)	Disease surveillance training will be conducted with IIP	District						X	X	X	X	X	X	X		0		
Conduct Regular monitoring of VPD surveillance activities at all levels	WHO surveillance officers will actively be involved	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		2379	Gov	UNICEF WHO
Under take Documentation of polio free certification		National	X	X	X	X	X	X	X	X	X	X	X	X		0		

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Support the polio and measles labs to maintain accreditation level	The measles and polio lab at EHNRI will be supported	National	X	X	X	X	X	X	X	X	X	X	X	X		20		WHO
Deploy international, national and regional STOP for active search	WHO will deploy international STOP teams	National	X	X	X	X	X	X	X	X	X	X	X	X		0		
Include VPDs in integrated surveillance and monitoring systems set up in complex emergencies		National										X	X	X		0		
Involve CSO and other NGOs in community based VPD surveillance	CORE group is involved in community surveillance	National Region, Districts	X	X	X	X	X	X	X	X	X	X	X	X		0		

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Polio eradication	polio vaccine procurement for supplementary campaign in high risk areas	National, Regional, district,HF				X	X									625		UNICEF
Polio eradication	polio campaign in high risk areas operational cost	National, Regional, district,HF				X	X									2983		WHO
Measles control	Vaccine and injection material procurement for Measles SIAs	National, Regional, district,HF										X	X	X		3955		UNICEF
Measles control	Measles SIAs operational cost	National, Regional, district,HF										X	X	X		9269	Gov	UNICEF
Tetanus elimination	TT vaccine and injection material procurement for corrective campaign	National, Regional, district,HF						X	X	X						140		UNICEF
Tetanus elimination	corrective campaign operational cost	National, Regional, district,HF						X	X	X						2044		UNICEF

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Vaccine supply, quality and Logistics																		
Training of district managers and health workers on AEFI	The training will be cascaded through TOT training	National Region, Districts						X	X	X	X	X	X	X		41		WHO
Include AEFI in national database for district monitoring	AEFI indicators will be included	National							X	X	X	X	X	X				
Select and purchase equipment to replace 10% of C.C each year	It is part of a national plan to replace all refrigerators every 10 years	National												X		2484		UNICEF
Purchase cold chain spare parts and tools	Continuous supply of spare parts and maintenance tools for technicians are available	National										X	X	X		300		UNICEF
Train HWs and technicians on cold chain maintenance	Cascaded cold chain training for technicians (high level, mid level, and users) will be conducted	National Region	X	X	X	X	X	X	X	X	X	X	X	X		137		UNICEF

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Promote burning and burial of injection waste materials in health facilities or to incinerate	Health facilities with out incinerators will be encouraged to have the facility	District	X	X	X	X	X	X	X	X	X	X	X	X				
Monitor stock management in every district using the SMT data base	Computerized district level stock management data base will be in place	National Region, Districts							X	X	X	X	X	X				
Construct additional cold rooms in PFSA hubs to be used for routine vaccine storage	PFSA will implement direct vaccine distribution to HFs through branch hubs in the country	National	X													100		UNICEF,WHO
Train regional cold room managers and PFSA staffs on logistics , vaccine management and preventive maintenance for Cold chain	Cold room managers from 14 cold rooms and PFSA staffs will be trained	National	X													12		UNICEF

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Procure traditional vaccines based on annual vaccine forecast from pre-qualified suppliers through UNICEF	traditional vaccine BCG,TT and OPV, measles procured	National											X	X		3973	Gov	UNICEF
Procurement of under used vaccines	Procurement of penta															32880	Gov	GAVI
Procure new vaccines	Procurement of PCV															74794	Gov	GAVI
Procurement of injection materials	Syringes, safety box															2545	Gov	GAVI
Prepare quarterly forecasts of accurate target based national vaccine requirement	Regional cold rooms will collect vaccines based on their quarterly share	National										X	X			0		

Activities	Consolidated and Integrated activities	Where	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Unit responsible	Cost$ in '000	Funds Available	
																	Gov	Partners
Procure cold trucks for PFSA vaccine transportation	PFSA has to strengthen its transportation capacity to handle direct vaccine distribution to HFs	National	X	X	X	X	X	X	X	X	X	X	X	X		250		UNICEF
Procure cold boxes	PFSA will purchase additional cold boxes for vaccine distribution	National										x	x	x		200		UNICEF
Coordinate immunization financing through the ICCs	ICC will work on Resource mobilization	National	X	X	X	X	X	X	X	X	X	X	X	X				

5 MONITORING AND EVALUATION

The FMOH with the support of partners will monitor the plan regularly and monitoring will be done at all levels. There is an annual EPI Review Meeting conducted with regions. The ICC members will be involved in the monitoring of the plan. A mid-term review will be conducted after two years and at the end of the plan year a programme review will be conducted. The cMYP will be updated to in order to be aligned with the background information of the health system, targets and time frame of the next health sector plan (HSDP IV). Both routine administrative reports and coverage survey reports will be used as source of data to verify the achievements of the EPI program during monitoring and evaluation of the cMYP.

6 COSTING AND FINANCING

6.1 Macroeconomic information

The macroeconomic information was included for purposes of placing the costing and financing information. The 2009 GDP per capita is around 220 USD (CIA World fact book) and it is expected to increase by a minimum of 5% annually.

Table 24. Macroeconomic information, current and projected, Ethiopia

	2009	2011	2012	2013	2014	2015
GDP per capita	220	225	237	257	283	317
Total health expenditures per capita (THE per capita)	2.0	2.5	3.1	3.9	4.9	6.1
Government health expenditures (GHE%THE)	9.1%	9.6%	10.0%	10.5%	11.1%	11.6%

6.2 Methodology for costing the cMYP

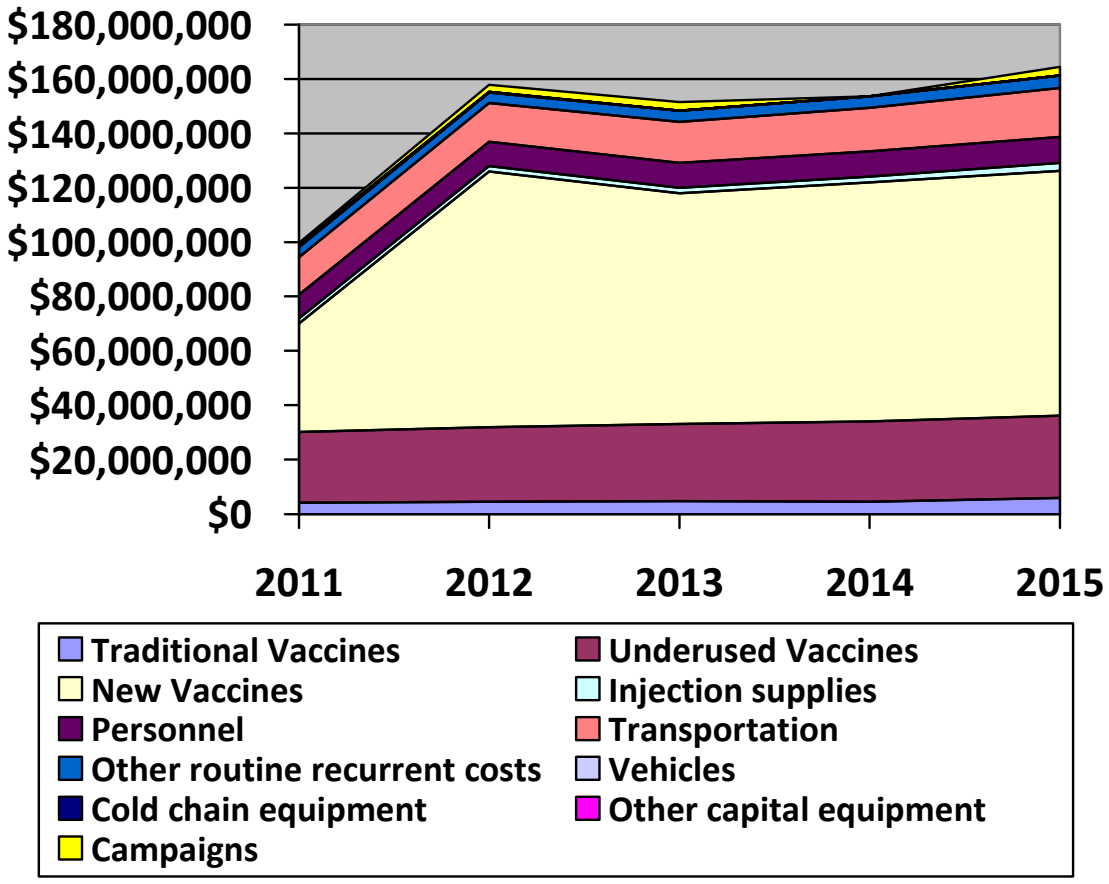
For the planned activities to successfully take place during the planned period, it is key to have adequate financing for all the proposed activities. To ensure the financing is secured, it is the responsibility of the Ministry of Health and the EPI program supported by the ICC to ensure the availability of the required financial and material support from both local and international sources.

The cost implications for the proposed program activities and how they are related to the available financing for respective categories of the program is highlighted in this section. Strategies are proposed to improve financial viability. Implementing this multi-year plan will require increasing costs over the 2011-2015 periods. The major increases in programme cost are driven mainly by:

- Introducing of new vaccines
- Supplemental Immunization activities

- Increases in population of children to be vaccinated due to coverage improvements and increase in the annual birth cohort**.**
- Accelerated health service expansion
- Cold chain expansion and rehabilitation

Figure 5. Immunization Program projection of future resource requirements, 2011-2015 (shared costs are not included)



The activities and inputs of the different EPI system components are costed. The costs are derived in different ways based on the interventions planned activities. Considering the product of unit prices, and quantities needed each year along with proportion of time used for immunization was used for costing inputs like vaccines, personnel, vehicles, cold chain equipment, etc.

Based on the immunization practice rule of thumb was applied such as a percentage of fuel cost as representative of maintenance costs for vehicles. This was used for deriving costs for injection supplies, and maintenance of equipment, and vehicles.

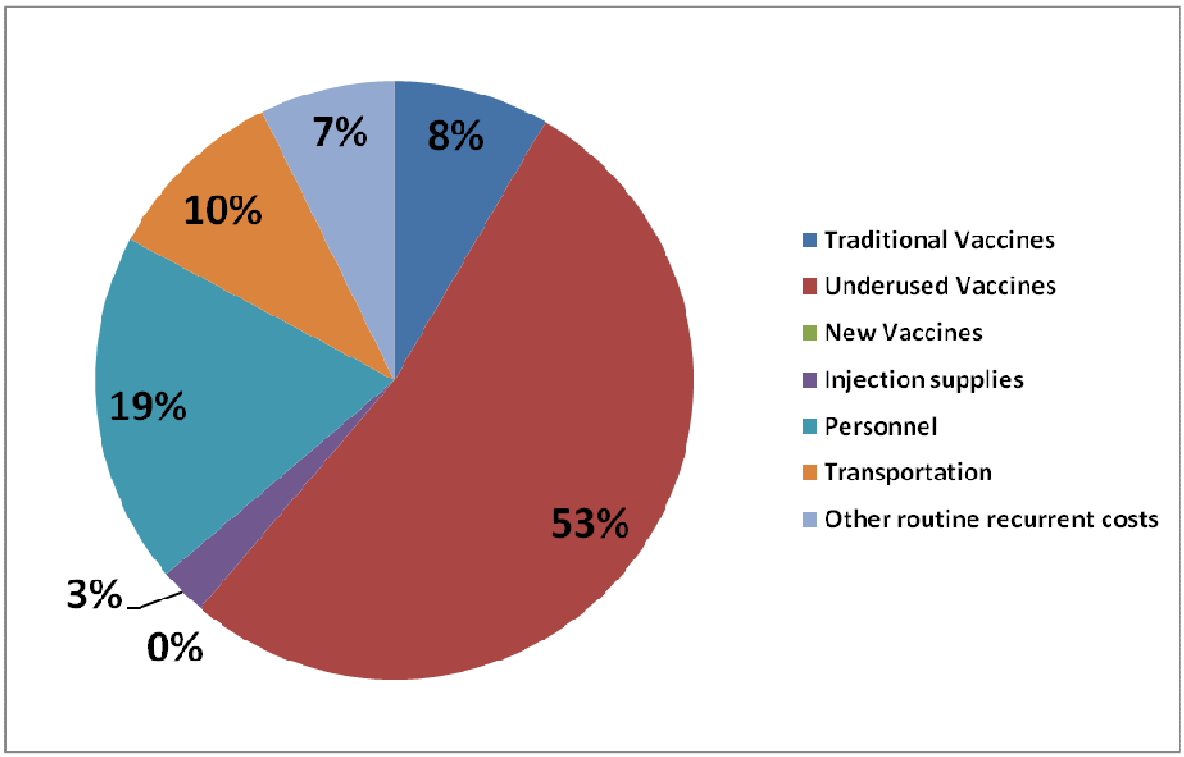
Based on past spending, where past expenditure of lump sum was used to estimate future expenditure. eg. Cost per child for specific campaign or training activities. All these different approaches are brought together in a pre-designed cMYP Excel costing tool. These derived costs are based on the following components:

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

6.2.1 The cost profile of baseline year (2009)

The cost profile of routine immunization was analysed for 2009 as a baseline, and 53% of all the costs was spent on Under used vaccines (DPT-HepB-Hib), 19% of all the costs was spent on personnel, 10% on transportation, 8% on Traditional vaccines, and 7% other recurrent costs which include disease surveillance, program management cold chain maintenance and short term training . All the rest fell under these cost components. The details are illustrated in figure 4 below.

Figure 6. Costing baseline profile of routine immunization in Ethiopia, 2009



6.3 Costing of cMYP 2011-2015

6.3.1 Vaccines and injection equipment

The costs are function of the unit prices for individual vaccines, with quantities determined by the target population, which is adjusted for by coverage and wastage objectives. The prices are based on information from UNICEF supply division. For the period of five years a total of 586 million USD will be needed for the traditional, under used and new vaccines and injection materials, the majority of this will be for the under used vaccines(Penta, 147 million USD), and new vaccine(Pneumococcal and Rota 414 million USD). The new Pneumococcal and Rota vaccine will be introduced by 2011 and 2012 respectively. The cost of traditional vaccines will increase from 3.8 million USD base year to over 6.1 million USD.

6.3.2. Personnel costs (EPI specific and shared)

Over the period of 2011-2015, the total programme cost (minus shared costs) is over 769 million USD (741 million for routine and 28 million for campaigns).

The cost estimates as with vaccines and injection equipment are based on unit expenditure on different personnel cadres working in EPI at the different levels of the system and the numbers of personnel, adjusted for by time spent on EPI related activities. The cost and time spent on supervision, and outreach activities were included for the different cadres of staff at the different level of the system. The unit expenditures are based on Government gross wages. The quantities available and needed for the duration of the cMYP were included. Time spent on EPI was estimated by input of the different level of staff at different levels. The total cost (salary, allowance during supervision and outreach activities) for personnel working in EPI related activities is about 46 million USD.

6.3.3. Cold chain equipment procurement and maintenance

Ethiopia developed a multi-year cold chain rehabilitation plan and the requirements of the cold chain equipment considered the current gap, the over aged cold chain equipment and the new health facilities to be constructed. To replace old equipment, furnish all new health facilities, fill the current gap and procure spare parts and cover the maintenance, procure additional cold rooms a total of 850,000 USD will be needed for the period of five years.

6.3.4 Operational costs for campaigns

Ethiopia is a priority country for polio eradication and currently conducting supplementary immunization activities to prevent polio importation and re-infection. Technical advisory group recommended conducting of polio supplementary immunization activities on twice a year at national level. Ethiopia is also a priority country for measles control and neonatal tetanus elimination. Measles follow-up through supplementary immunization should be conducted every 2 to 3 years covering children 6 to 47months and corrective TT supplementary immunization will be conducted in those areas selected as high risk areas (low routine coverage and low SIAs coverage in the last TT SIAs). The total cost estimated to conduct the planned supplemental immunization activities is 28 million USD.

6.3.6. Costs for immunization components during the period of the cMYP

The total program cost of both EPI specific and shared costs during the five years period is 893 million. Vaccine and injection material costs account for 67% followed by shared health system costs (22%) and Service delivery costs (13%).

Table 25. Costs for the different cMYP components (shared and EPI specific)

Cost Category	Expenditures in 2009	Future Budget Requirements					
		2011	2012	2013	2014	2015	Total 2011-2015
Vaccines (routine vaccines only)	27,633,530	72,401,035	131,274,335	124,152,020	127,275,928	131,404,229	586,507,547
Injection supplies	1,156,975	1,865,580	1,983,941	2,081,219	2,138,367	2,433,108	10,502,214
Personnel	8,585,687	8,758,758	8,958,975	9,139,566	9,322,682	9,509,136	45,689,118
Transportation	4,476,550	746,493	784,265	823,949	882,449	746,493	4,227,264
Maintenance and overhead	88,083	199,161	182,741	185,040	37,965	52,192	657,099
Short-term training	291,386	341,796	386,981	438,140	469,248	488,206	2,124,371
IEC/social mobilization	70,000	85,680	97,007	109,831	117,629	122,381	532,529
Disease surveillance	2,600,000	2,930,460	3,004,015	3,070,223	3,256,893	3,421,691	15,683,282
Programme management	235,000	266,067	301,241	341,065	365,281	380,038	1,653,692
Other routine recurrent costs	-	-	-	-	-		-
Subtotal	45,137,212	127,764,633	203,155,386	180,384,598	191,588,714	190,470,228	893,363,562
Routine Capital Costs	-	720,000	130,000	-	-	-	850,000
Campaign Costs	9,257,502	1,710,946	17,537,195	745,140	7,637,687	782,863	28,413,832
Shared Health Systems Costs	36,986,213	37,738,657	38,514,690	39,298,405	40,084,585	40,886,276	196,522,614
GRAND TOTAL	91,380,927	127,764,633	203,155,386	180,384,598	191,588,714	190,470,228	893,363,559