# Comprehensive Multi Year Plan

## Immunization Program of Punjab Province

## List of figures

# Acronyms

| | |
|---|---|
| ADCI | Accelerated Disease Control Initiative |
| AEFI | Adverse Events Following Immunization |
| AFP | Acute Flaccid Paralysis |
| BCG | Bacillus Calmette-Guerin |
| BHU | Basic Health Unit |
| cMYP | Comprehensive Multi Year Plan |
| DGHS | Director General Health Services |
| DHO | District Health Officer |
| DHQH | District Head Quarters Hospital |
| DoH | Department of Health |
| DPT | Diphtheria Tetanus Pertussis |
| DQA | Data Quality Audit |
| DQS | Data Quality Self-Assessment |
| DSV | District Superintendent Vaccination |
| EPI | Expanded Program on Immunization |
| EVM | Effective Vaccine Management |
| FMT | Female Medical Technician |
| FTE | Full Time Equivalent |
| GAVI | Global Alliance for Vaccines and Immunization |
| GDP | Gross Domestic Product |
| GHE | Government Health Expenditure |
| GoC | Government of China |
| GoP | Government of Pakistan |
| HMIS | Health Management Information System |
| HR | Human Resources |
| ICC | Inter-Agency Coordinating Committee |
| ILR | Ice Lined Refrigerator |
| IPV | Inactivated Polio Vaccine |
| ISC | Immunization System Component |
| KAP | Knowledge, Attitude and Practice |
| KM | Kilometer |
| LHS | Lady Health Supervisor |
| LHV | Lady Health Visitor |

| | |
|---|---|
| LHW | Lady Health Worker |
| M&E | Monitoring and Evaluation |
| MDG | Millennium Development Goal |
| MIS | Management Information System |
| MLM | Mid Line Managers |
| MNCH | Maternal Newborn and Child Health |
| MT | Medical Technician |
| NIPS | National Institute of Population Studies |
| NITAG | National Immunization Technical Advisory Group |
| OPV | Oral Polio Vaccine |
| P&D | Planning and Development |
| PC-1 | Planning Commission Performa No.1 |
| PCV-10 | Pneumococcal Conjugate Vaccine - 10 |
| PDHS | Pakistan Demographic and Health Survey |
| PEI | Polio Eradication Initiative |
| PIP | Provincial Immunization Program |
| PITB | Punjab Information Technology Board |
| PKR | Pakistani Rupee |
| POL | Petrol Oil Lubricants |
| PPRA | Public Procurement Regulatory Authority |
| PRSP | Punjab Rural Support Program |
| RED | Reaching Every District |
| RHC | Rural Health Center |
| SIA | Supplemental Immunization Activity |
| SIS | Skilled Immunization Staff |
| SOPs | Standard Operating Procedures |
| SWOT | Strengths, Weaknesses, Opportunities and Threats |
| THE | Total Health Expenditure |
| THQH | Tehsil Head Quarters Hospital |
| TSV | Tehsil Superintendent Vaccination |
| TT | Tetanus Toxoid |
| UC | Union Council |
| UNICEF | United Nations Children Fund |
| USD | United States Dollar |

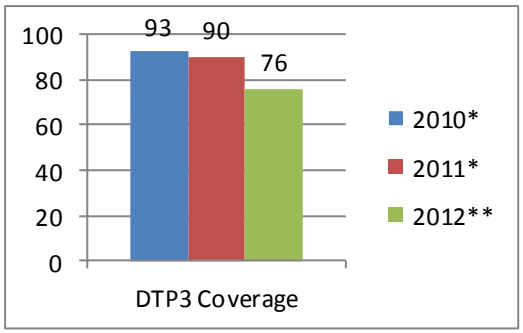
| | |
|---|---|
| VPD | Vaccine Preventable Disease |
| WHO | World Health Organization |

# Comprehensive Multi Year Plan Summary

## Immunization Achievements

- Online Disease Surveillance System (Dashboard)
- 66% fully immunized children
- More than 97% coverage in polio NIDs
- <1% turnover rate of vaccinators

## DTP3 Coverage




*Administrative data

**PDHS 2013 data

## Immunization System Analysis

- Fifty five percent deficit of SIS
- Deficient and low quality outreach sessions
- UC micro plans are not implemented
- Deficient fixed sites in urban areas including slums particularly mega cities
- No provincial immunization policy
- Under-staffed Provincial EPI Cell
- Limited qualified technical
- Ageing and insufficient cold chain equipment
- No purpose built warehouses
- Frequent polio SIAs

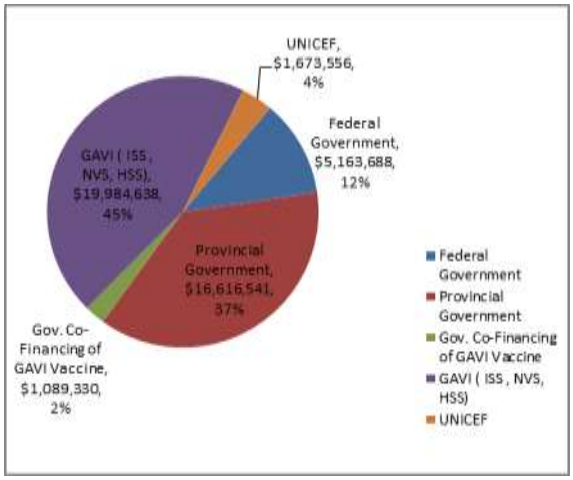
## Health System Constraints

- No approved HR policy
- Limited practice of developing annual health plans
- Fragmented health information system
- Lack of coordination among vertical health programs

## Baseline Costing Profile

| Baseline Indicators | 2012 |
|---|---|
| Total Immunization Expenditures ($) | 89,329,178 |
| Campaigns ($) | 44,801,426 |
| Routine Immunization only | 44,527,752 |
| per capita ($) | $ 0.48 |
| per DTP3 child ($) | $ 19.73 |
| Total Shared Costs ($) | 27,678,287 |
| % Shared health systems cost | 24% |
| TOTAL ($) | 117,007,465 |

## Baseline Financing Profile



## Immunization Priorities

- Polio eradication
- Increasing immunization coverage and reducing vaccine preventable diseases
- Increasing the number of fixed EPI centers
- Extending the reach of immunization services to remote area populations
- Improving the quality of immunization services through improved cold chain and logistics
- Introducing new vaccines (IPV and Rotavirus)

## Immunization Goals & Objectives

- Measles incidence reduced to less than 20 cases per million population by 2018 with optimally functioning surveillance system
- Cases of polio from 2 to zero by 2018
- Neonatal death caused by neonatal tetanus reduced to less than 0.05 case per 10,000 newborn by 2018
- Increase DPT3 coverage to 85% by 2018
- Increase the proportion of children fully immunized to 77% by 2018

## Performance Monitoring

| Indicator | 2012 | 2018 |
|---|---|---|
| DTP3 coverage | 76% | 85% |
| Measles 1 coverage | 70% | 80% |
| PCV(10)3 coverage | 0 | 85% |
| % of children fully immunized | 66% | 77% |
| % of districts that have at or above 80% DTP3 coverage | -- | 61% |
| Dropout rate - % point difference between DTP1 and DTP3 coverage | 11% | <10% |

## Priority Immunization Program Strategies

- Develop and institutionalize performance management system
- Introduce mechanisms of accountability through third party monitoring
- Increase the number of skilled immunization staff
- Upgrade/maintain adequate cold chain equipment
- Construct state of art warehouses
- Develop and implement evidence based communication strategies

## Partnerships & Sustainability Strategy

- Enhance efficient utilization of human resources by developing synergies with other health initiatives
- Minimize wastage of resources under immunization program
- Advocacy for ensuring financial sustainability of immunization program
- Improve public private partnership initiatives

## Health and Development Impacts

- Improve child survival
- Reduced disability in the community associated with vaccine preventable disease (Polio)
- Contribute to poverty reduction goals through reduction of preventable hospitalization for childhood illnesses

## Cost and Financing Projections

| Indicator | 2014 ($) | 2015 ($) | 2016 ($) | 2017 ($) | 2018 ($) |
|---|---|---|---|---|---|
| Total Resources Required | 207,132,631 | 197,409,748 | 222,362,801 | 242,371,373 | 246,508,047 |
| Per capita | 1 | 2 | 2 | 2 | 2 |
| Total secure financing | 192,036,572 | 187,327,677 | 80,836,413 | 82,879,765 | 88,901,235 |
| Funding gap (with secure financing only) | 15,096,059 | 10,082,071 | 141,526,389 | 159,491,608 | 157,606,812 |
| Total probable financing | 15,096,059 | 10,082,071 | 90,387,702 | 100,303,629 | 104,019,114 |
| Funding gap (with secure and probable financing) | 0 | 0 | 51,138,687 | 59,187,979 | 53,587,698 |

# 1 Situational Analysis

## 1.1 Background information

### 1.1.1 Administrative and political structure

Punjab, is the second largest province of Pakistan in terms of land, spreads over an area of 205,345 Sq. Kms. The province of Punjab is divided into 8 Divisions. The administrative unit is the district which is further subdivided into tehsils and union councils. The districts vary in terms of area, population and resources. The overall political governance of the province is managed by the provincial cabinet headed by the Chief Minister of Punjab. The Chief Secretary of the province is the administrative head of all departments in the province.

**Map of Punjab**

The number of districts, tehsils and union councils is given below:

**Figure 1: Number and average population size of Districts, Tehsils and UCs**

| Unit | Number | Average size of population |
|---|---|---|
| Districts | 36 | 2,553,978 |
| Tehsils | 147 | 625,464 |
| Union Councils | 3,520 | 26,120 |

### 1.1.2 Landscape and climate

The landscape is amongst the most heavily irrigated and canals can be found throughout the province. However, the region also has desert area (Cholistan desert). The Indus River and its many tributaries traverse the Punjab from north to south. The total cultivated land of the province is around 70% of the total land.[1] The communication system of Punjab in terms of roads is fairly better than other provinces. Punjab Highways Department is responsible for construction and maintenance of provincial road network. The Punjab inherited 4,305 kms of metallic roads at the time of independence in 1947. The pace of progress remained comparatively slow up till 1980, an average annual increase in road network was about 5%. After 1980, the progress improved, with an average increase of about 13% annually. At present the Punjab Highways Department is maintaining a network of over 38,000 kms of roads.[2]

Most areas in Punjab experience extreme weather with foggy winters, often accompanied by rain. By mid-February the temperature begins to rise; springtime weather continues until mid-April, when the summer heat sets in. The onset of the southwest monsoon is anticipated to reach Punjab by May, but since the early 1970s the weather pattern has been irregular. The spring monsoon has either skipped over the area or has caused it to rain so hard that floods have resulted. June and July are oppressively hot. In August the oppressive heat is punctuated by the rainy season, which brings relief in its wake. The hardest part of the summer is then over, but cooler weather does not come until late October.

The climate is very hot in summer with temperatures rising as high as 110 degrees F (46 degrees C). Winters are mild on the plains and extremely cold (below the freezing point) in some of the hilly areas like Murree (District Rawalpindi).

[1] http://www.pbs.gov.pk/content/land-utilization-statistics-0
[2] http://www.punjab.gov.pk/communication_works_highways_department

Average annual rainfall in Punjab ranges between 96 cm sub-mountain region and 46 cm in the plains.

Above mentioned factors (very hot and cold climate, desert area, etc.) are also responsible for poor performance of health services delivery including immunization. This needs attention, extra resources and special measures for the immunization services in order to improve the coverage rates.

### 1.1.3 Demographic

**Figure 2: Population Demographics 2012 (Baseline)**

| Punjab | Rural (69%) | Urban (31%) | Total Population |
|---|---|---|---|
| Total Population | 63,440,814 | 28,502,394 | 91,943,208 |
| Births | 2,220,428 | 997,584 | 3,218,012 |
| Surviving Infants | 2,049,455 | 920,770 | 2,970,225 |
| Pregnant Women | 2,264,837 | 1,017,536 | 3,282,373 |
| Child Bearing Age Women | 13,956,979 | 6,270,527 | 20,227,506 |

The baseline numbers of various target groups given in the figure 2 have been calculated on the 1998 census data, applying National Institute of Population Studies (NIPS) growth rate. The urban and rural distribution is also calculated on the basis of 1998 census data. Most of the population (69%) resides in the rural areas.

Birth registration practices are poor in overall Pakistan. As per UNICEF's Report on "State of The World's Children 2011", twenty seven percent births are registered in Pakistan during 2000 & 2009.[3] However, the situation in Punjab is much better as compared to other provinces, as 77% children get registration.[4]

External population migration is common in Punjab province. People migrate from other provinces to the industrial cities of Punjab like Lahore, Sialkot, Faisalabad etc., whereas people from rural areas migrate to foreign countries (especially gulf countries for labour related livelihood). Internal migrations are not very common and but mostly people migrate from southern Punjab to Central Punjab for livelihood.

All of above mentioned factors like more population residing in rural areas and some migration factors can affect immunization services delivery and need attention. Immunization program should get help from birth registration data, as Punjab has better birth registration practices.

### 1.1.4 Social and political context

#### (1) Poverty

The value for poverty headcount ratio at $2 a day (Purchasing Power Parity) in Pakistan was 60% as of 2008. Whereas, the value for poverty headcount ratio at poverty line of $1.25 a day in Pakistan was 21% as of 2008.[5]

In 2007, the incidence of poverty in Punjab was 43.8%, whereas 22.9% population was in severe poverty. Furthermore, 10.2% population was also vulnerable to poverty.[6]

[3] http://www.unicef.org/adolescence/files/SOWC_2011_Main_Report_EN_02242011.pdf
[4] http://www.pndpunjab.gov.pk/user_files/File/MICSPunjab2011_ProvinciaReport190913.pdf
[5] http://iresearch.worldbank.org/PovcalNet/index.htm

Immunization program can impact economic growth through its broader impact on health. Healthy workers are more economically productive and more likely to save and invest, healthy children are more likely to attain higher levels of education and healthy parents are better able to invest in the health and education of their children.[7]

### (2) Education

The literacy ratio of Punjab is 47%. The literacy ratio is higher in males (57%) as compared to (35%) in females.[8] Net intake rate in primary education was 44 percent while net primary school attendance adjusted ratio was 59 percent. Net secondary school attendance ratio was 40 percent.[9]

This low literacy ratio especially among females can affect the performance of immunization program due to lack of knowledge and understanding regarding the importance and benefits of vaccination among the community. This needs special attention and appropriate communication and social mobilization strategies.

### (3) Culture and traditions

The major language spoken in Punjab is Punjabi with slight variation. Punjabis themselves are a heterogeneous group comprising different biradiris and communities. Biradari, which literally means brotherhood is an important unit of Punjabi society, and includes people claiming descent from a common ancestor. The biradaris collectively form larger units and most common are Jats, Arain, Gujjars, Awans, Rajputs, Sheikhs, Mughals, Maliks, Niazis, Dogars, Qureshis and Syeds.

Despite its tropical wet and dry climate, extensive irrigation makes it a rich agricultural region. Its canal-irrigation system established by the British is the largest in the world. Wheat and cotton are the largest crops. Other crops include rice, sugarcane, millet, corn, oilseeds, pulses, vegetables, and fruits such as oranges (Kinoo). Livestock and poultry productions are also important. Punjab contributes about 76% to annual food grain production in the country.

Punjab has also more than 68 thousand industrial units. Lahore and Gujranwala divisions have the largest concentration of small electrical engineering units. The district of Sialkot excels in sports goods, surgical instruments and cutlery goods. Punjab is also a mineral-rich province with extensive mineral deposits of Coal, Iron, Gas, Petrol, Rock Salt (with the second largest salt mine in the world), Dolomite, Gypsum, and Silica-sand.

The incidence of poverty differs between the different regions of Punjab. Northern and Central Punjab is facing much lower levels of poverty than Western and Southern Punjab. Those living in Southern and Western Punjab are also more dependent on agriculture due to lower levels of industrialization in those regions.

Most of the women are housewives and have minimal role in the decision making but some percentage also contributes to economic uplift by doing jobs. However, male members of the family are responsible for earnings and doing various jobs including employment (public and private), farming, labor and business.

[6] http://www.ophi.org.uk/wp-content/uploads/Pakistan-2013.pdf?3f40f1
[7] Bloom, David E., David Canning & Mark Weston. The Value of Vaccination. World Economics 6(3): 15-39.
[8] Census 1998, Government of Pakistan.
[9] http://www.pndpunjab.gov.pk/user_files/File/MICSPunjab2011_ProvinciaReport190913.pdf

Above mentioned cultural and traditional factors combined with low literacy rate, may have impact on the performance of immunization program. The main reason for resistance against immunization could be illiteracy and other socio-cultural factors.

### 1.1.5 Public expenditure management

The department of Finance and Planning & Development (P&D) have key role in the development of allocation of provincial budgets. However, the provincial budget preparation involves the line departments for expenditure estimates within the ceilings provided by the Government of Punjab. Each year, the budget process involves the rolling forward of the previous budget estimates.

Recurring budget duly approved by the provincial assembly, is assigned to the relevant departments for the recurring expenditure (non-development), whereas the development expenditures are handled by P&D department. All departments are required to develop and submit their PC-1s, for the approval and release of budgets. The brief overview of overall development and non-development expenditure of Punjab for the year 2013-14 is given in figure 3.

**Figure 3: Governemnt of Punjab - Expenditures for Year 2013-14**

| Current Expenditure (Rs. in Billion) | Development Expenditure (Rs. in Billion) | Total Expenditure (Rs. in Billion) |
|---|---|---|
| 920.21 | 290.00 | 1,210.21 |

Share of Federal grants is PKR 702.12 billion, whereas the share of foreign direct grants is PKR 29.7 billion.[10] The overall GDP of Pakistan for year 2012 is US $ 225 billion and per capita GDP is US $ 1,257 as per World Bank database.[11]

## 1.2 Health Sector Analysis

### 1.2.1 Governance

The overall political governance of the province is managed by the provincial cabinet headed by the Chief Minister of Punjab. The Chief Secretary of the province is the administrative head of all departments in the province. The Additional Chief Secretary provides assistance to him/her in the overall management and administration. Every department, including the department of health, is headed by the Secretary and Director General for all technical matters.

Secretary Health is head of the department while Director General Health Services is the technical lead. The Secretariat of Health is the apex management unit for the entire health department. Department of Health also works with many civil society organizations and foreign donors under the umbrella of MoUs normally signed between the organizations and the DoH.

Each and every vertical program including EPI is headed by the Director Health Services EPI (Provincial Program Manager) under the administrative control of Secretary and Director General Health Services.

Every district is headed by the Deputy Commissioner and Executive District Officer (EDO) is responsible for his/her respective portfolio like health, education, etc. At the district level, even vertical programs are looked after by the EDOs.

[10] http://finance.punjab.gov.pk/system/files/2013-2014ABS.pdf
[11] http://data.worldbank.org/indicator/NY.GDP.PCAP.CD/countries

As a public private partnership initiative, DoH Punjab has contracted out BHUs to the Punjab Rural Support Program (PRSP) in 14 districts of Punjab. The main objective of this contracting was to make the non-functional health facilities functional to an optimum level of performance.

### 1.2.2 Health workforce

Health workforce is an important component of the health systems worldwide as it consumes the biggest share of the health budget, manages other resources and runs the health services system.

World Health Report 2006 identified that 57 countries including Pakistan are facing a health workforce crisis. Each of these countries have less than 23 health workers (doctors, nurses, midwives) per 10,000 people; the minimum required to achieve an 80% coverage rate for deliveries by skilled birth attendants or for measles immunization.[12]

The main issues related to health workforce include: no provincial HR policy, no HR audit/accountability system, political interference in recruitment, many health facilities without required minimum staff, poor performance appraisal system and lack of capacity building opportunities.

According to the DoH Punjab data, availability of various categories of health workforce (public sector only) per 10,000 population is given below:

**Figure 4: Health workforce (public sector only) per 10,000 population**

| S. No. | Type of health workforce | Availability per 10,000 population |
|---|---|---|
| 1. | Doctor | 0.86 |
| 2. | Nurse | 0.20 |
| 3. | LHV | 0.39 |

It is evident from the figure 4 that there is an extreme shortage of health workforce in the province and is not sufficient for the provision of healthcare delivery services.

No exact data is available on urban rural distribution and inflow/outflow of health staff; however, the urban ratio is higher than rural.

### 1.2.3 Finance

Punjab provincial government's total health expenditure (THE) in 2013 -14 is planned to be PKR 67.63 billion on health services which is 5.6% of Total General Government Expenditure (TGGE). The past trend of Punjab government's expenditure on overall health services is given in figure 5.[13]

**Figure 5: Punjab government's expenditure on overall health**

| Punjab Government's Total Health Expenditure * | Year 2010-11 | Year 2011-12 | Year 2012-13 |
|---|---|---|---|
| PKR in billions | 24.348 | 38.617 | 54.507 |

However, as per World Bank data, Pakistan government's total health expenditure per capita in 2011 was US $ 30. In this expenditure, government's share is US S 3.20 only.[14]

[12] The World Health Report, 2006
[13] http://finance.punjab.gov.pk/ADP
[14] *http://data.worldbank.org/indicator/SH.XPD.PCAP/countries Planning & Development Department*

### 1.2.4 Medical products and Technology

The DoH is maintaining centralized purchase system in the province through the medical store depot (MSD). Mostly the drugs are procured at provincial level; however, small quantities may be purchased at the district level. There is a set procedure under Public procurement regulatory authority (PPRA) rules for procurement of all sorts of commodities. Under the control of DG Health there are drug inspectors who monitor the quality of drugs in the industry as well as in the market. They also have a check over the food commodities in their jurisdiction.

### 1.2.5 Service delivery

Health care delivery system of DoH Punjab is a three-tiered health care delivery system (primary, secondary and tertiary care). As shown in figure 6, starting at grass root level, health houses (47,154) provide community health care services through lady health workers and are connected to basic health units (2,535) with an upward referral pathway to rural health centers (336), tehsil headquarter hospitals (80) and district hospitals (34). There are also 11 tertiary level teaching hospitals. In addition to these facilities, other centers like dispensaries and MCH centers (1,983) are also providing healthcare delivery services. However, this extensive healthcare infrastructure has not been translated into optimal healthcare delivery due to a number of issues related to the health system. This includes health workforce related issues (already discussed above under the health workforce section), no provincial health policy, mal-distribution of resources, etc.

**Figure 6: Service delivery capacity by type of public and private healthcare providers - static**

| Type of service | Number of facilities | | |
|---|---|---|---|
| | Required | Available/Functional | Delivering EPI |
| 1. **DHQ** | 38 | 34 | 34 |
| 2. **THQ** | 147 | 80 | 80 |
| 3. **RHC** | 336 | 336 | 336 |
| 4. **BHU** | 3,520 | 2,535 | 2,535 |
| 5. **Dispensaries and MCH Centers** | No data | 1,983 | No data |
| 6. **Health Houses** | 91,943 | 47,154 | 0 |

**Figure 7: Service delivery capacity per type of healthcare professional – community level**

| Type of service | Number of Positions | | |
|---|---|---|---|
| | Required | Available | Delivering EPI |
| 1. **LHW** | 91,943 | 47,154 | 3,471 |
| 2. **CMW** | No data | 2,906 | 0 |
| 3. **Vaccinator** | 6,075 | 3,691 | 3,691 |
| 4. **CDC** | 3,520 | 1,767 | 0 |
| 5. **Sanitary patrol** | 3,520 | 1,735 | 0 |

### 1.2.6 Health Information management

The DoH is using the same information systems that are used in other parts of the country like district health information system (DHIS), vaccine preventable diseases surveillance system (VPD) and other program specific information systems mostly used by the vertical programs including EPI.

All these information systems are collecting data from BHUs, RHCs, THQs, DHQs and other health facilities. Incharge or designated persons at these facilities compile data, prepare report and submit to the EDO Health. After compilation at the district level, EDO Health submits reports to the respective officials at the provincial level, for example DHIS reports to the Director MIS and EPI reports to the Provincial EPI Manager. There are several issues in these reporting systems including low reporting rate, no feedback or error rectification mechanism in practice and lack of coordination among various

systems. The information generated by these systems is not used for decision making by the management. In addition to these, also there are issues in terms of quality and reliability of data.

Recently, Punjab Information Technology board has introduced an online disease surveillance system (Dashboard), which is very effective at tehsil level and above.[15] However, there is a need to further improve this system by creating few more fields in order to cater program needs.

## 1.3 Immunization system

Expanded Program on Immunization (EPI) is one of the most important vertical programs in the province. The Federal EPI Cell, Ministry of Health (MoH) was performing most of the immunization functions until July 2011. After 18th amendment to the constitution in 2011, most of the health functions and responsibilities were assigned to the provinces. As a result, Government of Punjab is now responsible to strengthen and develop the provincial capacity to deliver EPI services in the province. However, it was agreed and decided that the vaccine procurement till 2015 will be managed by the Federal EPI Cell.

### 1.3.1 Routine Immunization

**Figure 8: Situational Analysis – routine immunization**

| Indicators | 2010 | 2011 | 2012 |
|---|---|---|---|
| **Official Coverage Estimates** | | | |
| DTP1 | 99% | 99% | 87% |
| DTP3 | 93% | 90% | 76% |
| Measles 1 | 92% | 95% | 70% |
| Measles 2 | 85% | 85% | No data |
| OPV0 | 78% | 72% | 72% |
| OPV3 | 93% | 93% | 92% |
| TT2+ | 63% | 67% | 74% |
| Most Recent Survey Coverage % DTP3 | | | 76% |
| % Fully Immunized Child | | | 66% |
| **Access and demand** | | | |
| % Drop Out DTP1 - DTP3 | 5% | 9% | 11% |
| % Drop Out DTP1 - Measles (1st dose) | 7% | 4% | 17% |
| % Drop out Measles 1st and 2nd dose | 14% | 14% | No data |
| **Immunization Equity** | | | |
| % gap in DTP3 between highest and lowest socio economic quintiles | No data | No data | No data |
| Number and proportion of districts with DTP3 coverage > 80% | 1(3%) | 1(3%) | 2(6%) |

There is a discrepancy in immunization coverage rates reported by EPI reporting system and third party coverage surveys. As per EPI administrative reports, the DTP3 coverage of Punjab for year 2012 is 88%, while it is 76% as reported by the recent PDHS 2013. After consultations with all the relevant stakeholders (DoH, WHO, UNICEF and others), DoH Punjab has decided to use baseline coverage figures of PDHS-2013 for the year 2012.

[15] http://www.pitb.gov.pk

According to PDHS 2013, the coverage of various antigens and % of fully immunized children in Punjab province is better than others. However, there is a need for further strengthening EPI in order to improve the performance of program.

### 1.3.2 Accelerated Disease Control Initiatives

**Figure 9: Situational Analysis - by accelerated disease control initiatives**

| Indicators | 2010 | 2011 | 2012 |
|---|---|---|---|
| **Polio** | | | |
| OPV3 coverage | 93% | 93% | 92% |
| Number of rounds and sub-national rounds per year | 10 | 10 | 8 |
| Coverage Range | 97% | 98% | 97% |
| **MNT** | | | |
| TT2+ coverage | N/A | N/A | N/A |
| Number and proportion of districts reporting >1 case of neonatal tetanus per 1000 live birth | No data | No data | 3 (8%) |
| Was there an SIA? (Y/N) | No | No | No |
| Neonatal deaths reported and investigated | No data | No data | 25 |
| Delivery at Facility Rate | | | |
| **Measles & Rubella** | | | |
| Measles / MR vaccination coverage (1st dose) | 92% | 95% | 70% |
| Measles / MR vaccination coverage (2nd dose) | 85% | 85% | No data |
| Number of lab confirmed measles/rubella outbreaks | | | |
| Geographic extent National Immunization Day | Selected Districts | Selected Districts | N/A |
| Age Group (in months) | 6-59 | 6-59 | N/A |
| Coverage | 103% | 102% | N/A |
| Total Measles Cases (Lab/Clinical/epidemiological) | 505 | 1392 | 3051 |
| Total Rubella Cases (Lab confirmed) | 89 | 81 | 163 |

Figure 10 provides achievements and baseline values for accelerated disease control initiative (ADCI). The OPV administrative coverage of NIDs was 97%, 98% and 97% during the years 2010, 2011 and 2012 respectively. The administrative coverage of measles (1st dose) was 103% and 102% during the years 2010 and 2011 respectively.

### 1.3.3 Analysis of Immunization system performance

#### (1) Summary of immunization system performance

**Figure 10: Situational analysis of routine EPI by immunization system components**

| Indicators | 2010 | 2011 | 2012 |
|---|---|---|---|
| **Program management** | | | |
| 1. Law & Regulation | | | |
| 1.1 Is there legislation or other administrative order establishing a line item for vaccines? | No | No | No |
| 1.2 Is the line item for vaccines in regular / recurrent Budget | No | No | No |
| 1.3 Are regulations revised in the province to implement national or provincial policies? | No | No | No |
| 2. Planning | | | |
| 2.1 Does the Province have an annual work plan for | Yes | Yes | Yes |

| Indicators | 2010 | 2011 | 2012 |
|---|---|---|---|
| immunization funded through Health Authorities budgeting processes? | | | |
| 2.2 What is the number of UC with an annual micro-plan for immunization? (Please indicate denominator – Number of UC per province/area) | All-but no proper implementation | All-but no proper implementation | All-but no proper implementation |
| 2.3 Number of planned supervision visits conducted vs. the number of planed visits | No data | No data | No data |
| 3. Coordination and advocacy | | | |
| 3.1 What were the Number of ICC (or equivalent) meetings held last year at which routine immunization was discussed? | -- | -- | 2 Steering Committee + Monthly Task force |
| 3.2 What were the Number of NITAG (or equivalent) meetings held last year | -- | -- | Steering Committee + Task Force |
| 3.3 How many presentations on immunization performance, expenditures, were made to Parliament? | -- | -- | No |
| **Human Resource Management** | | | |
| 4. Availability of qualified workforce: | | | |
| 4.1 Number of healthcare skilled immunization staff per 10,000 population | 1.37 | 1.37 | 1.37 |
| 4.2 % of vaccinator posts currently vacant | -- | -- | 9% |
| 4.3 Turnover rate of SIS (or vaccinators specifically) | -- | -- | <5% |
| 5. Capacity building | | | |
| 5.1 Number (and proportion) of immunization program staff trained in immunization services through MLM, IIP or other training modalities per year: | | | |
| a) Mid-wives andLHWs/LHS | 0 | 0 | - |
| b) Nurses | 0 | 0 | - |
| c) Other Skilled immunization staff (vaccinators) | 0 | 0 | - |
| d) Managers | 0 | 0 | - |
| e) Technicians | 0 | 0 | - |
| f) Other | | | - |
| 5.2 % of immunization health workers Refreshing trained in immunization in the last two years (data from PIE and EPI reviews) | 0 | 0 | - |
| 5.3 Curriculum review for pre-service medical and nursing immunization education conducted | No | No | No |
| **Costing and financing** | | | |
| 6. Financial sustainability | | | |
| 6.1 What percentage of total routine vaccine spending was financed using government funds? (including loans and excluding external public financing) | No data | No data | No data |
| 6.2 What proportion of the line item in the provincial budget for immunization was actually funded (actually allocated / planned)? | 100% | 100% | 100% |
| | | But not on time | |
| 6.3 What % of immunization resources are being met by the domestic health budget (as identified in the annual budget plan) | -- | -- | 25% |
| 6.4 Government expenditures on routine immunization per surviving infant | | | |
| 6.5 Are provincial immunization budgets and expenditures monitored and reported at national level? | No | No | No |

| Indicators | 2010 | 2011 | 2012 |
|---|---|---|---|
| **Vaccine supply, quality and logistics** | | | |
| 7. Transport / Mobility | | | |
| 7.1 Percentage of districts with a sufficient number of supervisory/EPI field activity vehicles /motorbikes/bicycles (based on their need) in working condition | -- | -- | 25% |
| 7.2 Number of UC with vaccinators using transportation means for outreach | -- | -- | 3,378 out of 3,520 |
| 8. Vaccine supply | | | |
| 8.1 Was there a stock-out of any antigen at provincial level during 2012? | -- | -- | No |
| 8.2 If yes, specify duration in months | -- | -- | -- |
| 8.3 If yes, specify which antigen(s) | -- | -- | -- |
| 9. Cold chain / logistics | | | |
| 9.1 Number of UC with adequate numbers of appropriate and functional cold chain equipment vs. Number of UC with functioning health facilities | | | |
| a) With ILR | -- | -- | 2,560 |
| b) With any kind of refrigerators | -- | -- | 281 |
| 9.2 Availability of a cold chain replacement plan | No | No | No |
| 10. Waste disposal | | | |
| 10.1 Availability of a waste management policy (guidelines/SOP) | Yes | Yes | Yes |
| 10.2 Number of districts implementing waste management policy | 100% | 100% | 100% |
| **Immunization services** | | | |
| 11. Geographical access: | | | |
| 11.1 Number of population per each EPI fixed sites | -- | -- | 27,500 |
| 11.2 Proportion of area covered by immunization service to the total populated area | -- | -- | -- |
| 11.3 Proportion of UC not having EPI centers | -- | -- | 679 out of 3,520 |
| 11.4 Proportion of UC not having Skilled Immunization Staff (SIS) | -- | -- | 142 out of 3,520 |
| 12. Efficiency of service delivery | | | |
| 12.1 Share of immunization services delivered by EPI centers | -- | -- | 20% |
| 12.2 Average time EPI Centers provide immunization service per day | 6 hrs | 6 hrs | 6 hrs |
| **Surveillance and Reporting** | | | |
| 13. Routine Surveillance | | | |
| 13.1 Percentage of integrated VPD surveillance reports received at provincial level from districts compared to number of reports expected: | | | |
| a) Timeliness | -- | -- | 70% |
| b) Completeness | -- | -- | 80% |
| 13.2 AFP detection rate/100,000 population under 15 year of age | 5.74 | 6.47 | 5.77 |
| 13.3 % suspected measles cases for which a laboratory test was conducted | -- | -- | 3051 |
| 13.4 Number of neonatal deaths for which a follow up investigation conducted | N/A | N/A | No data |
| 13.5 Sentinel Surveillance for Rotavirus establish | No | No | Yes |
| 13.6 Sentinel Surveillance for meningitis (Hib/PCV) | No | No | - |

| Indicators | 2010 | 2011 | 2012 |
|---|---|---|---|
| established | | | |
| 13.7 % of suspected meningitis cases tested for Hib/pneumococcal disease according to standard protocol | No data | No data | No data |
| 14. Coverage monitoring | | | |
| 14.1 % gap in match between DTP3 survey coverage and officially reported figures | -- | -- | 12% |
| 15. Immunization safety | | | |
| 15.1 % of districts that have been supplied with adequate (equal or more) number of AD syringes for all routine immunizations | 100% | 100% | 100% |
| 16. Adverse Events | | | |
| 16.1 National AEFI System is Active with a designated national/provincial committee | No | No | No |
| 16.2 Number of serious AEFI cases reported and investigated | No data | No data | No data |
| **Demand Generation and Communication** | | | |
| 17. Communization strategy | | | |
| 17.1 Availability of a routine immunization communication plan | No | No | No |
| 17.2 KAP Study conducted in relation to immunization | No | No | No |
| 18. Evidence based communication | No | No | No |
| 18.1 % of government funds on demand generation / communication: EPI and PEI | -- | -- | No exact data |
| a) EPI (without PEI) | | | |
| b) PEI | | | |

## (2) Program Management

The provincial EPI policy does not exist in the province. As the Federal EPI Cell, Ministry of Health (MoH) was taking care of the immunization program till July 2011, hence the national EPI policy was used by the provincial program before the devolution and even afterwards it is used by the province. The national EPI policy is comprehensive and is applicable in most of the cases; however, the DoH Punjab is planning to develop their own provincial EPI policy. After the devolution, DoH Punjab is now responsible to strengthen and develop the provincial capacity to deliver EPI services in the province except the vaccine procurement, which will be managed by the Federal EPI Cell till 2015, as there is no budget line item for vaccine procurement in the provincial budget and lack of capacity for the vaccine procurement. The regular provincial budget mainly covers salaries and overhead expenses. Strengthening EPI program at the provincial level requires lot of advocacy efforts and capacity building activities at the highest management level, which lacks at the moment.

There is lack of ownership for EPI by the decision makers at provincial and district levels. This is mainly due to the lack of awareness and orientation about EPI and its importance. Lack of ownership for EPI by Punjab Rural Support Program (PRSP) is also one of the most important factors responsible for not delivering effective immunization services. The preventive services were not included in their previous contract.

In the current scenario, the Provincial Program Manager EPI cannot practice powers of drawing and disbursing EPI budget. Hence, he or she is not able to ensure timely utilization of EPI budget.

It was identified that the existing roles, responsibilities and powers of Deputy District Health Officer (DDHO) positions are not appropriate. These positions are not attractive and less powerful, as DDHOs are not able to take necessary decisions for the improvement of immunizations services.

## (3) Human Resource Management

**Figure 11: Availability and workload of skilled immunization staff (2012)**

| Accredited EPI Service Providers | Posts occupied (in FTE) | Share of Total Operation Time allocated to Immunization | Share of immunization time spent on PEI | FTE spent on PEI | Available (FTE) for EPI | **Total FTE spent on immunization** |
|---|---|---|---|---|---|---|
| **Vaccinators** | 3,691 | 100% | 30% | 1,107 | **2,584** | **3,691** |
| **Nurses** | 1,817 | 0% | 0% | 0 | **0** | **0** |
| **Dispensers** | 4,738 | 0% | 0% | 0 | **0** | **0** |
| **Lady Health Visitors (LHVs)** | 3,530 | 20% | 0% | 0 | **706** | **706** |
| **Medical Technicians (MT)** | 2.211 | 20% | 0% | 9 | **442** | **442** |
| **Mid-wives** | 5,863 | 10% | 0% | 0 | **586** | **586** |
| **Lady Health Workers (LHWs)** | 47,153 | 15% | 50% | 3,537 | **3.536** | **7,073** |
| | | | | **4,644 (37%)** | **7,854 (63%)** | **12,498 (100%)** |
| **Total FTE available for EPI (except PEI)** | | | | | | **7,854** |
| **Total FTE Needed for EPI (except PEI)** | | | | | | **15,539** |
| **Deficit** | | | | | | **7,685 (49%)** |

Keeping in view the large size of population, the number of existing vaccinators is not sufficient for providing adequate and quality immunization services. As shown in figure 12, there is deficit of 7,685 skilled immunization staff in the province. The existing vaccinators are also having capacity issues that need to be resolved. The reasons for shortage of FTE for EPI are: i) thirty seven percent FTE is being taken by PEI, ii) the involvement of other existing qualified health staff is minimal as they are not properly trained in immunization iii) less number of sanctioned vaccinators' positions and iv) some of the existing sanctioned positions are vacant due to ban on recruitment plus requirement of 2 years diploma. Provincial EPI Cell is understaffed due to less number of sanctioned positions and some of the existing sanctioned positions are also not filled. The managerial staff has capacity related issues due to lack of their management training which lead to poor planning, monitoring and supervision related to the immunization services. The existing vaccinators are not performing well due to motivational issues, lack of accountability and political interference.

## (4) Costing and Financing

The budgetary constraint is an issue in the province. There is shortage of EPI funds especially for POL and other operational expenses. The immunization program mainly depends upon external resources from donors (WHO, UNICEF, GAVI, etc.) and domestic development funds. Hence, the main issue is financial sustainability. The provincial government mainly covers salaries and overheads for immunization through regular/non-development funds. For securing development funds, the EPI program prepares and submits the PC-1 document to the provincial government and after its approval, EPI program gets funds. Due to government procedures and formalities, this process always takes longer. Once the PC-1 is approved, the timely release of funds remains a challenge. The preparation of good quality PC-1 is also an issue due to lack of managers' training in PC-1

development and absence of provincial cMYP. DoH Punjab has developed and submitted EPI PC-1, but not yet approved by the Executive Committee of National Economic Council (ECNEC).

### (5) Vaccine, Cold Chain and Logistics

EPI program does not forecast the requirement of vaccine and injections but Federal EPI Cell calculates and provides vaccine to the provinces. Provincial EPI program receives adequate quantity of vaccine and injection supplies. However, the buffer stocks at provincial and district level are not sufficient. Supply and distribution system at provincial level is weak due to lack of capacity of staff handling supply and distribution and no computerized system. EPI program does not regularly develop supply cycle and distribution plan for vaccine and injections. For distribution of vaccines and injections to the districts, provincial immunization program has vehicles both refrigerated and non-refrigerated but these vehicles are not sufficient for timely distribution. There is inadequate and improper storage capacity for vaccine and other related logistics as no purpose built warehouses including cold storage spaces available in Lahore and Multan. Most of the cold rooms are very old and need to be replaced. EPI program also faces lot of issues related to the vaccine management including lack of EVM assessment, shortage and standardization of cold chain equipment and lack of cold chain equipment maintenance & repair plan. The provincial and divisional cold chain maintenance workshops need strengthening and improvement. Stable power supply is also a major problem.

### (6) Immunization Services Delivery

Punjab is taking efforts for the improvement of immunization services; however, there are still lots of issues that need special attention in order to provide effective immunization services in the province. According to recent PDHS 2013, sixty six percent of children are fully immunized[16]. Challenges in the provision of immunization services lie mainly at the implementation level. These include i) deficient and low quality outreach sessions due to staff absenteeism, no defaulter lists and no health education sessions, ii) UC micro-plans are not implemented due to lack of supervision and follow-up from provincial and district level. There is less number of fixed EPI centers in urban areas particularly in Mega cities. The size of population in urban areas including slums is increasing rapidly (more than 100,000 in some UCs). There is a huge force of LHWs at the community level but its involvement especially in routine immunization is low. The existing EPI staff especially vaccinators are not sufficient to provide routine immunization. Frequent polio SIAs are also affecting routine immunization, as EPI staff's involvement in PEI is increasing.

### (7) Monitoring, Surveillance and Reporting

Monitoring: Monitoring and supervision could play a vital role in the success of immunization system if planned and conducted in a well-organized and effective manner. However, at present the monitoring and supervision system is weak at all levels. Monitoring and supervision plans are not prepared regularly, and even if plans are prepared, these plans are not implemented. Monitoring and supervision visits are being carried out at supervisors' own will and discretion. There is no established mechanism of reporting, feedback and action on these visits. The coverage data is always inflated, as there is lack of accountability and no feedback mechanism in place. There is no data validation on regular basis.

Surveillance and reporting: The main purpose of EPI surveillance is a well-functioning and sustained EPI and vaccine preventable diseases (VPD) reporting system that could be used for decision making

[16] Pakistan Demographic and Health Survey, 2013.

at the managerial level in order to improve the EPI services. However, in reality it is not doing as it was envisioned. There are several issues that lead towards not performing well of the surveillance system. These include: lack of ownership and accountability, lack of training for immunization and management staff on VPD surveillance, no feedback and error rectification mechanism in practice, lack of monitoring and supervisory visits and no use of data for decision making by the management. Punjab government has introduced online disease surveillance system (Dashboard), which is very effective for tehsil and above levels but few more fields need to be created.

### (8) Demand Generation, Communication and Advocacy

In addition to the programmatic issues, other factors those are further contributing towards the low immunization coverage are lack of awareness among community regarding the importance and benefits of immunization, little involvement of community and political leadership, lack of capacity of immunization staff in social mobilization and evidence based communication strategies are not developed and implemented.

## 1.4 Summary – SWOT

| Program management | |
|---|---|
| **Strength** | **Weaknesses** |
| • Well-structured program | • No provincial EPI policy<br>• Lack of advocacy with high level management<br>• Lack of program ownership by decision makers<br>• PRSP do not own EPI<br>• No DDO powers with Provincial Program Manager EPI<br>• Ineffective working of DDHOs at tehsil level |
| **Opportunities** | **Threats** |
| • Strong support of the development partners | • Political interference particularly at district level |
| **Human resource management** | |
| **Strength** | **Weaknesses** |
| • Trained HR (Vaccinators, LHVs) | • In appropriate recruitment rules<br>• 49% deficit of skilled immunization staff<br>• Provincial EPI Cell is understaffed<br>• Lack of capacity among managerial staff<br>• Demotivated vaccinators and EPI supervisors |
| **Opportunities** | **Threats** |
| • Partners' support | |
| **Costing and financing** | |
| **Strength** | **Weaknesses** |
| • Regular EPI budget for salaries and overheads | • Shortage of EPI funds<br>• No provincial cMYP<br>• PC-1 is not yet approved |
| **Opportunities** | **Threats** |
| • Donors' support | • Overreliance on donors for vaccines |
| **Vaccine supply, cold chain and logistics** | |
| **Strength** | **Weaknesses** |
| • Uninterrupted vaccine and logistic supply from Federal EPI Cell | • Weak supply and distribution system<br>• Buffer stocks at provincial and district level are not sufficient<br>• Shortage of vehicles for distribution of vaccines<br>• No proper warehouses at provincial and sub-provincial level<br>• Cold rooms at provincial level are aging<br>• Lack of vaccine management<br>• No cold chain repair and maintenance plan |
| **Opportunities** | **Threats** |
| • Partners' support | • Overreliance on donors for cold chain equipment<br>• Unstable power supply |

| Immunization services delivery | |
|---|---|
| **Strength** | **Weaknesses** |
| • Well placed Infrastructure (Static and outreach) | • Deficient and low quality outreach sessions<br>• UC micro plans are not implemented<br>• Deficient fixed sites in urban areas including slums particularly mega cities<br>• Frequent polio SIAs |
| **Opportunities** | **Threats** |
| • Lady Health Workers may be involved in EPI | • Population movement inter and intra-province<br>• Incentives for SIAs |
| **Monitoring, surveillance and reporting** | |
| **Strength** | **Weaknesses** |
| • Disease surveillance dashboard<br>• AFP surveillance system | • Weak monitoring and supervision system<br>• Inflated coverage data<br>• No data validation<br>• Irregular weekly VPD surveillance |
| **Opportunities** | **Threats** |
| • Support from PITB | |
| **Demand generation, communization and advocacy** | |
| **Strength** | **Weaknesses** |
| • Availability of EPI staff for follow-up of vaccination to caregivers | • Lack of awareness among community regarding immunization<br>• Lack of capacity of immunization staff in social mobilization |
| **Opportunities** | **Threats** |
| • Partners' support<br>• Huge network of health field staff (LHWs, H&N Supervisors, etc.)<br>• Huge number of PEI workers moving house to house<br>• PEI developed infrastructure for communication | • Illiteracy<br>• Poverty<br>• Misconceptions in the community that polio vaccination protects children for all EPI diseases<br>• PEI door step delivery made community a passive recipient |

# 2 Immunization objectives and strategies

## 2.1 Program objectives and milestones

Goal of the PIP is to decrease VPD associated morbidity and mortality:

- Cases of measles from 34 to 20 (per 1 million population) by 2018
- Cases of polio from 2 to zero by 2018
- Death caused by Tetanus from 0.08 to 0.05 per 10,000 newborn by 2018.

The objective of the PIP is to improve performance of the immunization system that is measured in terms of coverage and equity as listed below:

**Figure 12: Coverage rates (Baseline and Projections)**

| Indicators | 2012 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| 1. **Increase DTP3 coverage** | 76 | 78 | 80 | 82 | 84 | 85 |
| 2. **Increase Measles 1 coverage** | 70 | 72 | 75 | 77 | 79 | 80 |
| 3. **Increase the proportion of population protected at birth from neonatal tetanus** | 74 | 75 | 77 | 79 | 82 | 85 |
| 4. **Increase OPV3 coverage** | 92 | 78 | 80 | 82 | 84 | 85 |
| 5. **Increase PCV(10)3 coverage** | N/A | 78 | 80 | 82 | 84 | 85 |
| 6. **Increase IPV coverage** | N/A | -- | 25 | 50 | 60 | 70 |
| 7. **Increase Rota virus vaccine coverage** | N/A | -- | -- | 25 | 50 | 60 |
| 8. **Increase Hepatitis (Birth dose) coverage** | N/A | -- | 25 | 50 | 60 | 70 |
| 9. **Increase the proportion of children fully immunized – (% of children aged 12-23 months who receive all basic vaccinations in a country's routine immunization program)** | 66 | 67 | 69 | 72 | 75 | 77 |
| 10. **Improve geographical equity - % of districts(UC) that have at or above 80% DTP3 coverage** | -- | 28 | 33 | 42 | 50 | 61 |
| 11. **Improve socio-economic equity - DTP3 coverage in the lowest wealth quintile is +/- X % points of the coverage in the highest wealth quintile** | -- | -- | -- | -- | -- | -- |
| 12. **Decrease dropout rate - percentage point difference between DTP1 and DTP3 coverage** | 11 | <10 | <10 | <10 | <10 | <10 |
| 13. **Increased demand - % of children whose mothers intend to vaccinate children** | No data | 2 percent increase in baseline | 2 percent increase in baseline | 2 percent increase in baseline | 2 percent increase in baseline | 2 percent increase in baseline |

Figure 9 shows that OPV3 coverage (92%) is much higher than actual, as PDHS figures does not differentiate routine coverage from overall (routine +PEI). Therefore, OPV3 coverage we assume to be much lower than 92%, as given in future coverage targets.

## 2.2 Strategies and main activities

In order to achieve the goals and objectives of the PIP, following component wise strategies and activities have been formulated in the light of situational analysis especially undertaken for this task.

### 2.2.1 Program Management

The objective of the immunization system component is to increase program management performance. It means that by 2018:

- Immunization program planning is integrated into provincial budgeting, namely:
  - Provincial EPI policy/guidelines are developed and implemented
  - EPI annual plans are developed and consistent with the provincial cMYP
  - PC1 documents are adjusted as needed and aligned with the EPI annual plans
- Implementation annual progress reports are produced and discussed with key stakeholders regularly
- The provincial cMYP is updated regularly reflecting either changes in the context (epidemiological, vaccine availability, etc.), resource availability or immunization system outcomes (achievements)
- Capacity of management staff is build
- Ownership and accountability is improved at the management level
- Coordination or interaction with EPI partners (donors, private entities and non-governmental organizations) increases (e.g. partners engage in decision-making (e.g. planning, assessment of achievements or challenges) regularly, as documented in meeting minutes).

Strategies and activities to achieve the component objective are as follows:

ISC Objective 1: **Increase program management performance**

Strategy 1.1: Advocacy and partnership development:

Activity 1.1.1: Identification/ mapping of relevant stakeholders

Activity 1.1.2: Regular advocacy meetings with provincial health authorities/ policy makers (Steering and technical committees)

Activity 1.1.3: Produce regularly policy briefs/guidelines/advocacy materials to share with high level officials

Strategy 1.2: Management staff capacity building and motivation growth (see corresponding strategy under HR management component)

Activity 1.2.1: Management and technical training on EPI for senior level health managers

Strategy 1.3: Policy/guidelines formulation

Activity 1.3.1: Develop provincial EPI policy/guidelines in consultation with all relevant stakeholders and share with high level officials for their comments

Activity 1.3.2: Finalize provincial EPI policy/guidelines incorporating high level officials' comments

Strategy 1.4: Effective planning

Activity 1.4.1: Develop comprehensive multi-year plan (cMYP) and PC-1 in consultation with all the relevant stakeholders

Activity 1.4.2: Develop comprehensive yearly operational plan in consultation with all the relevant stakeholders

Strategy 1.5: Improve systems through delegation of powers

Activity 1.5.1: Review existing financial powers of provincial program manager EPI and do modifications to assign Drawing and disbursing powers to him/her.

Activity 1.5.2: Review existing roles, responsibilities and powers of DDHO positions and do modifications to make them more powerful and interesting, enabling DDHOs to take necessary decisions for the improvement of immunizations services.

Strategy 1.6: Improve ownership and accountability at program management level

Activity 1.6.1: Conduct regular EPI review meetings chaired by the Secretary Health

Activity 1.6.2: Take corrective measures in the light of feedback from review meetings

### 2.2.2 Human Resource Management

The objective of the immunization system component is to increase the availability of qualified human resources for the immunization program. It means that by 2018:

- Proportion of skilled immunization staff (SIS) per 10,000 population increases from 1.37 to 1.7
- Managerial and technical positions are staffed
- Capacity of SIS and managerial staff is increased
- Motivation level of immunization staff is increased
- Performance of key immunization staff is increased.

**Figure 13: Availability and workload of SIS (Baseline and Different Scenarios)**

| | Total FTE spent on immunization | FTE spent on PEI | Total FTE available for EPI (except PEI) | Total FTE Needed for EPI (except PEI) | GAP (in FTE and %) | |
|---|---|---|---|---|---|---|
| **Baseline** | 12,498 | 4,644 | **7,854** | 15,539 | **7,685** | 49% |
| **Scenario 1** | 15,441 | 4,644 | **10,797** | 15,539 | **4,742** | 31% |
| **Scenario 2** | 17,213 | 4,644 | **12,569** | 15,539 | **2,970** | 19% |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Scenario 3** | 20,183 | 4,644 | **15,539** | 15,539 | **0** | 0% |

Out of 3 different scenarios given in figure 14, provincial EPI program has selected scenario 3 as a strategic priority. The existing gap (7,685) FTE will be fulfilled by recruiting 2,384 new vaccinators and by involving existing qualified health professionals (5,301 FTE).

Strategies and activities to achieve the component objective are as follows:

ISC Objective 2: **Increase the availability of qualified human resources for the immunization program**

Strategy 2.1: Increase number of EPI Cell staff

Activity 2.1.1: Fill existing vacant positions

Activity 2.1.2: Create and fill new positions

Strategy 2.2: Increase the number of SIS by mobilizing (or focusing on) vaccinators

Activity 2.2.1: Review, modify and update job descriptions for vaccinators

Activity 2.2.2: Get wavier for 2 years' diploma which is currently a pre-requisite for vaccinators.

Activity 2.2.3: Develop selection criteria ensuring merit

Activity 2.2.4: Advertise vaccinator positions in provincial/local media

Activity 2.2.5: Select and contract new vaccinators

Activity 2.2.6: Explore and provide professional/career growth opportunities to vaccinators

Strategy 2.3: Increase the number of SIS by integrating available qualified health professionals in the delivery of immunization services:

Activity 2.3.1: Assess opportunities (availability, readiness/willingness) for engagement of different categories of SIS into immunization program

Activity 2.3.2: Carry out consultations with relevant health authorities (vertical program management) and agree on feasible and sustainable arrangements

Activity 2.3.3: Revise the regulatory framework (standards/guidelines, scope of work) in order to ensure the engagement of SIS in the immunization as planned

Strategy 2.4: Enhance capacity of SIS and managerial staff:

Activity 2.4.1: Conduct rapid training need assessment

Activity 2.4.2: Develop training material in the light of training need assessment findings

Activity 2.4.3: Develop training plan for SIS and managerial staff

Activity 2.4.4: Carry out refresher training for each SIS at least once in 2 years (as per the national policy)

Activity 2.4.5: Carry out training of managerial staff in planning (e.g. vaccine forecasting, budgeting), EVM, reporting, decision making and advocacy

Activity 2.4.6: Assess periodically competency of selected category of healthcare professionals involved in immunization

Activity 2.4.7: Train immunization staff in medical, surveillance and logistics required for the introduction of new vaccines

Strategy 2.5: Increase motivation of key staff of the immunization program

Activity 2.5.1: Assess regularly motivations of selected category of HR of the immunization system

Activity 2.5.2: Develop and implement non-financial incentives (career growth opportunities, promotion, recognition/awards, etc.)

Activity 2.5.3: Explore possibilities for financial incentives (bonuses, performance based payments, etc.) and implement whenever feasible

Strategy 2.6: Increase performance of key staff of the immunization program

Activity 2.6.1: Introduce web-based tracking of vaccinators through android cell phones

Activity 2.6.2: Improve existing performance appraisal system by incorporating key performance indicators for each category of SIS and managerial staff

Activity 2.6.3: Conduct regular performance appraisal of key immunization staff on the basis of key performance indicators

Activity 2.6.4: Provide appropriate incentives to the best performers

Activity 2.6.5: Issue warning and punishment to poor performers

### 2.2.3 Costing and Financing

The objective of the immunization system component is to increase financial efficiency and sustainability of the immunization program. It means that by 2018:

- Immunization system outcome targets are balanced with the financial resources available:
  - Proportion of secured financial resources vs. planned
  - Coverage targets revised/adjusted to the availability of funding

ISC Objective 3: **Increase financial efficiency and sustainability of the immunization program.**

Strategy 3.1: Resource mobilization and sustain financing

Activity 3.1.1: Develop comprehensive multi-year plan including costing in consultation with all relevant stakeholders

Activity 3.1.2: In the light of cMYP, develop PC-1 and submit for approval

Activity 3.1.3: Advocacy and follow up with the authorities for approval of PC-1

Activity 3.1.4: Regular advocacy with the concerned authorities for inclusion of EPI budget in non-development

### 2.2.4 Vaccine, Cold Chain and Logistics

The objective of the immunization system component is to improve/sustain uninterrupted supply of vaccines to immunization service delivery. It means that by 2018:

- Timely collection and distribution of vaccine and injection devices is increased
- % of districts with average EVM score above 80% is increased

Strategies and activities to achieve the component objective are as follows:

ISC Objective 4: **Improve/sustain uninterrupted supply of vaccines to immunization service delivery**

Strategy 4.1: Timely collection and distribution of vaccines and injection devices

Activity 4.1.1: Forecast the requirement of vaccines and injection devices

Activity 4.1.2: Share the requirements with federal EPI cell for procurement of vaccines and injection devices

Activity 4.1.3: Timely collect vaccines and injection devices

Activity 4.1.4: Develop the supply cycle and distribution plan

Activity 4.1.5: Distribute the vaccines and injection devices as per distribution plan

Strategy 4.2: Effective Vaccine Management (EVM)

Activity 4.2.1: Carry out EVM assessment

Activity 4.2.2: Review and update cold chain equipment inventory

Activity 4.2.3: Standardize cold chain equipment

Activity 4.2.4: Purchase and install necessary cold chain equipment

Activity 4.2.5: Review and update the maintenance and repair plan

Activity 4.2.6: Strengthen provincial and divisional cold chain maintenance workshop

Strategy 4.3: Build state of art warehouses

Activity 4.3.1: Secure land for warehouses in Lahore and Multan

Activity 4.3.2: Approach donors to provide support for building two warehouses (one in Lahore and one in Multan)

Activity 4.3.3: Construct warehouses

### 2.2.5 Immunization Services Delivery

The objective of the immunization system component is to strengthen capacity of immunization service delivery. It means that by 2018:

- Geographical access increased: Number of population per each EPI fixed sites decreased from 27,500 to 20,000
- Share of static/fixed immunization services delivered by EPI centers (vs. outreach) increased from 20% to 30%
- Number of UC not having EPI centers is decreased 679 to zero (These new EPI centers will be established within existing health facilities. Hence, no cost will be required for construction)
- Number of UC not having Skilled Immunization Staff (SIS) is decreased from 142 to zero
- Involvement and capacity of LHWs in routine immunization is increased

Strategies and activities to achieve the component objective are as follows:

ISC Objective 5:**Strengthen and optimize capacity of immunization service delivery**

Strategy 5.1: Increase number of EPI static centers by making existing BHU/RHC functional (for EPI)

Activity 5.1.1: Secure room/ space for EPI center in existing health facilities (not having EPI center)

Activity 5.1.2: Recruit qualified staff (see corresponding strategy under component 2.2.2 “Human Resource Management”)

Activity 5.1.3: Install cold chain equipment (see corresponding strategy under component 2.2.4 “Vaccine, Cold Chain and Logistics”)

Strategy 5.2: Increase number of ORT and mobile

Activity 5.2.1: Conduct need assessment for ORT and mobile

Activity 5.2.2: Develop micro plan on the basis of need assessment findings

Strategy 5.3: Involve LHWs in routine immunization

Activity 5.3.1: Develop training manual for LHWs

Activity 5.3.2: Conduct training of LHWs in routine immunization

Strategy 5.4: Decrease involvement of EPI staff especially vaccinators in PEI

Activity 5.4.1: Advocacy meetings with health authorities to minimize the involvement of EPI staff in PEI

### 2.2.6 Monitoring, Surveillance and Reporting

The objective of the immunization system component is to increase performance of surveillance and routine monitoring/reporting. It means that by 2018:

- Reliability and accuracy of administrative data increased:
  - Discrepancy between administrative and survey data is decreased
  - % of reporting units receiving satisfactory DQS score/mark is increased
- Ability of surveillance to detect and report on certain cases increased:
  - Number of non-polio AFP cases detected and reported
  - Number of discarded measles cases per 100,000 population

Strategies and activities to achieve the component objective are as follows:

ISC Objective 6: **Improve performance of surveillance and routine monitoring/reporting**

Strategy 6.1: Monitoring and supervision

Activity 6.1.1: Develop quarterly monitoring and supervision plan

Activity 6.1.2: Conduct monitoring and supervision visits as per plan

Activity 6.1.3: Prepare and submit monitoring reports for feedback

Activity 6.1.4: Take corrective measures in the light of feedback

Strategy 6.2: Strengthen Disease surveillance system (PITB's Dashboard)

Activity 6.2.1: Review and update disease surveillance indicators

Activity 6.2.2: Training of immunization staff and managers on disease surveillance

Activity 6.2.3: Generate and review reports

Activity 6.2.4: Take corrective measures

Strategy 6.3: Ensure regular, complete and reliable reporting

Activity 6.3.1: Conduct regular monitoring to ensure regular and complete reporting

Activity 6.3.2: Assess main causes of data quality flaws

Activity 6.3.3: Introduce regular (FORMAL) feedback mechanism on the administrative reports of subordinated entities

Activity 6.3.4: Take corrective measures in the light of feedback received from high-ups

Activity 6.3.5: Provide continuous supportive supervision

### 2.2.7 Demand Generation, Communication and Advocacy

The objective of the immunization system component is to improve knowledge and attitude toward immunization among target population. It means that by 2018:

- 2 percent point annual increase in caregivers who understand benefits of immunization (or demonstrate proper knowledge of benefits) is increased
- 2 percent point annual increase in caregivers who will advise their friends/relatives/neighbors to vaccinate children regularly.

Strategies and activities to achieve the component objective are as follows:

ISC Objective 7: **Improve knowledge and attitude toward immunization among target population**

Strategy 7.1: (in short-run) continue community mobilization and communication interventions that proved being effective:

Activity 7.1.1: Conduct advocacy meetings with community leaders and district administration to sensitize and motivate them regarding the routine immunization

Activity 7.1.2: Develop social mobilization plans at all levels

Activity 7.1.3: Capacity building of immunization staff involved in social mobilization

Activity 7.1.4: Conduct social mobilization activities as planned

Activity 7.1.5: Monitor social mobilization activities

Activity 7.1.6: Provide regular supportive supervision to social mobilization teams

Strategy 7.2: (in long-run) Develop and implement evidence based communication strategies

Activity 7.2.1: Conduct formative research of the target population regarding immunization

Activity 7.2.2: Develop communication plan in the light of formative research findings

Activity 7.2.3: Conduct communication activities as per plan

Activity 7.2.4: Assess the effectiveness of the communication strategies

# 3 Implementation and M&E

## 3.1 Timelines for the cMYP

| Objective/strategies/activities | | | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|
| ISC Objective 1: | Increase program management performance | | | | | | |
| Strategy 1.1: | Advocacy and partnership development: | | | | | | |
| | Activity 1.1.1: | Identification/ mapping of relevant stakeholders | ■ | | | | |
| | Activity 1.1.2: | Regular advocacy meetings with provincial health authorities/ policy makers (Steering and technical committees) | ■ | ■ | ■ | ■ | ■ |
| | Activity 1.1.3: | Produce regularly policy briefs/guidelines/advocacy materials to share with high level officials | ■ | ■ | ■ | ■ | ■ |
| Strategy 1.2: | Management staff capacity building and motivation growth (see corresponding strategy under HR management component) | | | | | | |
| | Activity 1.2.1: | Management and technical training on EPI for senior level health managers | ■ | ■ | ■ | ■ | ■ |
| Strategy 1.3: | Policy/guidelines formulation | | | | | | |
| | Activity 1.3.1: | Develop provincial EPI policy/guidelines in consultation with all relevant stakeholders and share with high level officials for their comments | ■ | | | | |
| | Activity 1.3.2: | Finalize provincial EPI policy/guidelines incorporating high level officials' comments | | ■ | | | |
| Strategy 1.4: | Effective planning | | | | | | |
| | Activity 1.4.1: | Develop comprehensive multi-year plan (cMYP) and PC-1 in consultation with all the relevant stakeholders | ■ | | | | |
| | Activity 1.4.2: | Develop comprehensive yearly operational plan in consultation with all the relevant stakeholders | ■ | ■ | ■ | ■ | ■ |
| Strategy 1.5: | Improve systems through delegation of powers | | | | | | |
| | Activity 1.5.1: | Review existing financial powers of provincial program manager EPI and do modifications to assign Drawing and disbursing powers to him/her. | ■ | ■ | | | |
| | Activity 1.5.2: | Review existing roles, responsibilities and powers of DDHO positions and do modifications | ■ | ■ | | | |

| Objective/strategies/activities | | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| Strategy 1.6: Improve accountability at district level | | | | | | |
| Activity 1.6.1: | Conduct regular EPI review meetings chaired by the Secretary Health | ■ | ■ | ■ | ■ | ■ |
| Activity 1.6.2: | Take corrective measures in the light of feedback from review meetings | ■ | ■ | ■ | ■ | ■ |
| ISC Objective 2: Increase the availability of qualified human resources for the immunization program | | | | | | |
| Strategy 2.1: Increase number of Provincial EPI EPI Cell staff | | | | | | |
| Activity 2.1.1: | Fill existing vacant positions | ■ | | | | |
| Activity 2.1.2: | Create and fill new positions | | ■ | | | |
| Strategy 2.2: Increase the number of SIS by mobilizing (or focusing on) vaccinators | | | | | | |
| Activity 2.2.1: | Review, modify and update job descriptions for vaccinators | ■ | | | | |
| Activity 2.2.2: | Get wavier of "2 years diploma", which is currently a prerequisite for vaccinators. | ■ | | | | |
| Activity 2.2.3: | Develop selection criteria ensuring merit | ■ | | | | |
| Activity 2.2.4: | Advertise vaccinator positions in provincial/local media | | ■ | | | |
| Activity 2.2.5: | Select and contract new vaccinators | | ■ | | | |
| Activity 2.2.6: | Explore and provide professional/career growth opportunities to vaccinators | ■ | ■ | | | |
| Strategy 2.3: Increase the number of SIS by integrating available qualified health professionals in the delivery of immunization services: | | | | | | |
| Activity 2.3.1: | Assess opportunities (availability, readiness/willingness) for engagement of different categories of SIS into immunization program | ■ | | | | |
| Activity 2.3.2: | Carry out consultations with relevant health authorities (vertical program management) and agree on feasible and sustainable arrangements | ■ | | | | |
| Activity 2.3.3: | Revise the regulatory framework (standards/guidelines, scope of work) in order to ensure the engagement of SIS in the immunization as planned | ■ | | | | |
| Strategy 2.4: Enhance capacity of SIS and managerial staff: | | | | | | |
| Activity 2.4.1: | Conduct rapid training need assessment | ■ | | | | |

| Objective/strategies/activities | | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| Activity 2.4.2: | Develop training material in the light of training need assessment findings | ■ | | | | |
| Activity 2.4.3: | Develop training plan for SIS and managerial staff | ■ | | | | |
| Activity 2.4.4: | Carry out refresher training for each SIS at least once in 2 years (as per the national policy) | ■ | | ■ | | ■ |
| Activity 2.4.5: | Carry out training of managerial staff in planning (e.g. vaccine forecasting, budgeting), EVM, reporting, decision making and advocacy | ■ | | ■ | | ■ |
| Activity 2.4.6: | Assess periodically competency of selected category of SIS | ■ | ■ | ■ | ■ | ■ |
| Activity 2.4.7: | Train immunization staff in medical, surveillance and logistics required for the introduction of new vaccines | ■ | ■ | | | |
| Strategy 2.5: | Increase motivation of key staff of the immunization program | | | | | |
| Activity 2.5.1: | Assess regularly motivations of selected category of HR of the immunization system | ■ | ■ | ■ | ■ | ■ |
| Activity 2.5.2: | Develop and implement non-financial incentives (career growth opportunities, promotion, recognition/awards, etc.) | ■ | | | | |
| Activity 2.5.3: | Explore possibilities for financial incentives (bonuses, performance based payments, etc.) and implement whenever feasible | ■ | | | | |
| Strategy 2.6: | Increase performance of key staff of the immunization program | | | | | |
| Activity 2.6.1: | Introduce web-based tracking of vaccinators through android cell phones | | ■ | | | |
| Activity 2.6.2: | Improve existing performance appraisal system by incorporating key performance indicators for each category of SIS and managerial staff | ■ | ■ | | | |
| Activity 2.6.3: | Conduct regular performance appraisal of key immunization staff on the basis of key performance indicators | | | ■ | ■ | ■ |
| Activity 2.6.4: | Provide appropriate incentives to the best performers | ■ | ■ | ■ | ■ | ■ |
| Activity 2.6.5: | Issue warning and punishment to poor performers | ■ | ■ | ■ | ■ | ■ |
| ISC Objective 3: | Increase financial efficiency and sustainability of the | | | | | |

| Objective/strategies/activities | | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| immunization program. | | | | | | |
| Strategy 3.1: Resource mobilization and sustain financing | | | | | | |
| Activity 3.1.1: | Develop comprehensive multi-year plan including costing in consultation with all relevant stakeholders | | | | | |
| Activity 3.1.2: | In the light of cMYP, develop PC-1 and submit for approval | | | | | |
| Activity 3.1.3: | Advocacy and follow up with the authorities for approval of PC-1 | | | | | |
| Activity 3.1.4: | Regular advocacy with the concerned authorities for inclusion of EPI budget in non-development | | | | | |
| ISC Objective 4: Improve/sustain uninterrupted supply of vaccines to immunization service delivery | | | | | | |
| Strategy 4.1: Timely collection and distribution of vaccines and injection devices | | | | | | |
| Activity 4.1.1: | Forecast the requirement of vaccines and injection devices | | | | | |
| Activity 4.1.2: | Share the requirements with federal EPI cell for procurement of vaccines and injection devices | | | | | |
| Activity 4.1.3: | Timely collect vaccines and injection devices | | | | | |
| Activity 4.1.4: | Develop the supply cycle and distribution plan | | | | | |
| Activity 4.1.5: | Distribute the vaccines and injection devices as per distribution plan | | | | | |
| Strategy 4.2: Effective Vaccine Management (EVM) | | | | | | |
| Activity 4.2.1: | Carry out EVM assessment | | | | | |
| Activity 4.2.2: | Review and update cold chain equipment inventory | | | | | |
| Activity 4.2.3: | Standardize cold chain equipment | | | | | |
| Activity 4.2.4: | Purchase and install necessary cold chain equipment | | | | | |
| Activity 4.2.5: | Review and update the maintenance and repair plan | | | | | |
| Activity 4.2.6: | Strengthen provincial and divisional cold chain maintenance workshop | | | | | |
| Strategy 4.3: Construct state of art warehouses | | | | | | |

| Objective/strategies/activities | | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| Activity 4.3.1: | Secure land for warehouses in Lahore and Multan | ■ | | | | |
| Activity 4.3.2: | Approach donors to provide support for constructing two warehouses (one in Lahore and one in Multan) | ■ | | | | |
| Activity 4.3.3: | Construction warehouses | ■ | | | | |
| ISC Objective 5: | Strengthen and optimize capacity of immunization service delivery | | | | | |
| Strategy 5.1: | Increase number of EPI static centers by making existing BHU/RHC functional (for EPI) | | | | | |
| Activity 5.1.1: | Secure room/ space for EPI center in existing health facilities (not having EPI center) | ■ | | | | |
| Activity 5.1.2: | Recruit qualified staff (see corresponding strategy under component 2.2.2 “Human Resource Management”) | | ■ | | | |
| Activity 5.1.3: | Install cold chain equipment (see corresponding strategy under component 2.2.4 “Vaccine, Cold Chain and Logistics”) | | ■ | | | |
| Strategy 5.2: | Increase number of ORT and mobile | | | | | |
| Activity 5.2.1: | Conduct need assessment for ORT and mobile | ■ | | | | |
| Activity 5.2.2: | Develop micro plan on the basis of need assessment findings | ■ | ■ | ■ | ■ | ■ |
| Strategy 5.3: | Involve LHWs in routine immunization | | | | | |
| Activity 5.3.1: | Develop training manual for LHWs | ■ | | | | |
| Activity 5.3.2: | Conduct training of LHWs in routine immunization | ■ | ■ | ■ | ■ | ■ |
| Strategy 5.4: | Decrease involvement of EPI staff especially vaccinators in PEI | | | | | |
| Activity 5.4.1: | Advocacy meetings with health authorities to minimize the involvement of EPI staff in PEI | ■ | | | | |
| ISC Objective 6: | Improve performance of surveillance and routine monitoring/reporting | | | | | |
| Strategy 6.1: | Monitoring and supervision | | | | | |
| Activity 6.1.1: | Develop quarterly monitoring and supervision plan | ■ | ■ | ■ | ■ | ■ |
| Activity 6.1.2: | Conduct monitoring and supervision | ■ | ■ | ■ | ■ | ■ |

| Objective/strategies/activities | | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| | visits as per plan | ■ | ■ | ■ | ■ | ■ |
| Activity 6.1.3: | Prepare and submit monitoring reports for feedback | ■ | ■ | ■ | ■ | ■ |
| Activity 6.1.4: | Take corrective measures in the light of feedback | ■ | ■ | ■ | ■ | ■ |
| Strategy 6.2: | Strengthen disease surveillance system (PITB's Dashboard) | | | | | |
| Activity 6.2.1: | Review and update disease surveillance indicators | ■ | | | | |
| Activity 6.2.2: | Training of immunization staff and managers on disease surveillance | ■ | | ■ | | ■ |
| Activity 6.2.3: | Generate and review reports | ■ | ■ | ■ | ■ | ■ |
| Activity 6.2.4: | Take corrective measures | ■ | ■ | ■ | ■ | ■ |
| Strategy 6.3: | Ensure regular, complete and reliable reporting | | | | | |
| Activity 6.3.1: | Conduct regular monitoring to ensure regular and complete reporting | ■ | ■ | ■ | ■ | ■ |
| Activity 6.3.2: | Assess main causes of data quality flaws | | | | | |
| Activity 6.3.3: | Introduce regular (FORMAL) feedback mechanism on the administrative reports of subordinated entities | ■ | ■ | ■ | ■ | ■ |
| Activity 6.3.4: | Take corrective measures in the light of feedback received from high-ups | ■ | ■ | ■ | ■ | ■ |
| Activity 6.3.5: | Provide continuous supportive supervision | ■ | ■ | ■ | ■ | ■ |
| ISC Objective 7: | Improve knowledge and attitude toward immunization among target population | | | | | |
| Strategy 7.1: | (in short-run) continue community mobilization and communication interventions that proved being effective: | | | | | |
| Activity 7.1.1: | Conduct advocacy meetings with community leaders and district administration to sensitize and motivate them regarding the routine immunization | ■ | | | | |
| Activity 7.1.2: | Develop social mobilization plans at all levels | ■ | ■ | ■ | ■ | ■ |
| Activity 7.1.3: | Capacity building of immunization staff involved in social mobilization | ■ | | ■ | | ■ |
| Activity 7.1.4: | Conduct social mobilization activities as planned | ■ | ■ | ■ | ■ | ■ |
| Activity 7.1.5: | Monitor social mobilization activities | ■ | ■ | ■ | ■ | ■ |

| Objective/strategies/activities | | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| Activity 7.1.6: | Provide regular supportive supervision to social mobilization teams | | | | | |
| Strategy 7.2: | (in long-run) Develop and implement evidence based communication strategies | | | | | |
| Activity 7.2.1: | Conduct formative research of the target population regarding immunization | | | | | ? |
| Activity 7.2.2: | Develop communication plan in the light of formative research findings | | | | | |
| Activity 7.2.3: | Conduct communication activities as per plan | | | | | |
| Activity 7.2.4: | Assess effectiveness of the communication strategies | | | | | |

## 3.2 Monitoring and Evaluation

### 3.2.1 M&E Framework for immunization

M&E Framework

M&E framework attached as saved as a separate excel file.

### 3.2.2 Monitoring and Evaluation Strategy and Plan

M&E framework tool will be used to track and assess the performance of the immunization program. The framework is based on seven components of immunization system discussed above. The added value of the framework is that it brings together indicators across the results chain in its entirety i-e from “inputs/processes”, “outputs”, and “outcomes”, to “impact”. It is designed to address monitoring and evaluation needs for different users and multiple purposes including:

- monitoring of program inputs, processes and results, required for the management of immunization program investments;
- immunization program performance assessment, as the key for decision-making processes at the provincial level; and

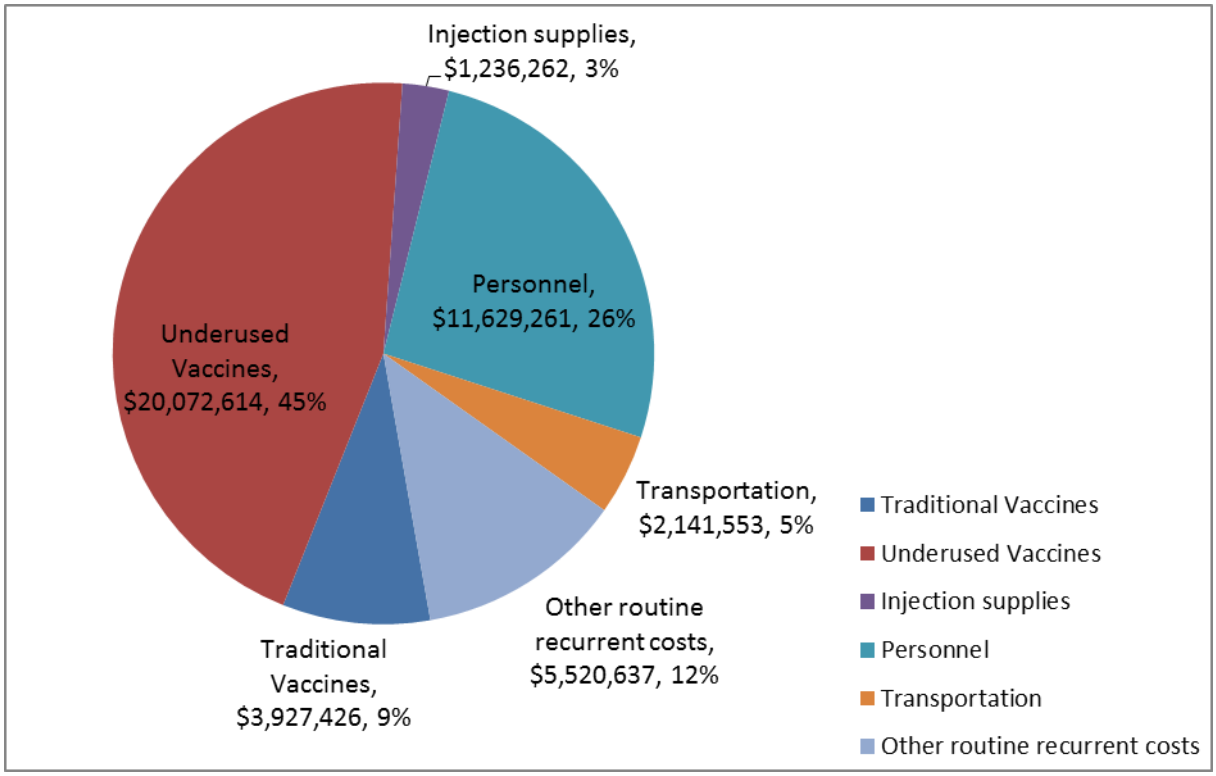
Most of the data will be collected through the existing DSS Dashboard, EPI/DoH MIS systems. However, the findings of other independent surveys like PDHS, PSLM, MICS and others will also be used for validation purposes.

# 4 Immunization Program Costing and Financing

cMYP Costing Tool

## 4.1 Current program costs and financing

**Figure 14: Baseline Cost Profile (shared costs and campaigns excluded)**




The baseline cost profile for Punjab is grouped under four categories: Personnel, Transportation, Other Routine Recurrent Costs, Vaccines and Injection and Supplies (Figure 14).

### 1. Personnel

The information pertaining to personnel consisted of three components: salaries and allowances for full-time EPI staff, per-diems for vaccinators and mobile teams and per-diems for supervisory and monitoring staff.

The baseline information was compiled on the basis of standard government payment rates that are used for payment of salaries, allowances and per-diems. The EPI Provincial Office used this in consultation with the Provincial Health department.

The analysis of the baseline cost profiles (2012) shows that USD11.629 million was incurred on personnel cost which constituted to 26% of the total expenditure on immunization program. Further analysis shows that 90% of this cost was spent on payment of salaries and allowances. The expenses incurred under 'Personnel' were borne by the provincial government.

### 2. Transportation

The expenditure on transportation was based on the type and number of vehicles available at provincial, district and union council levels. In addition, information was collected regarding average mileage per year of a given vehicle. The provincial EPI office provided the information on the quantity of fuel used per 100KM.

The analysis shows that the expenditure on transportation contributed to 5% (USD 2.141 million) of the total expenditure in 2012. The cost of transportation was very economical in Punjab due to its concentrated population pattern. The provincial government was the sole contributor for the running expenditure on transportation.

### 3. Other routine recurrent costs

The other routine costs comprised expenditures for cold chain maintenance and overheads, short term trainings, social mobilization, disease surveillance and program management. This information was populated by cMYP costing tool based on the standard inputs provided by the Provincial EPI Cell.

The total expenditure against routine recurrent costs was USD 5.520 million which was found 12% of the total baseline expenditure. Besides provincial government, GAVI & UNICEF contributed for this expenditure (48% in total) on the other routine recurrent costs.

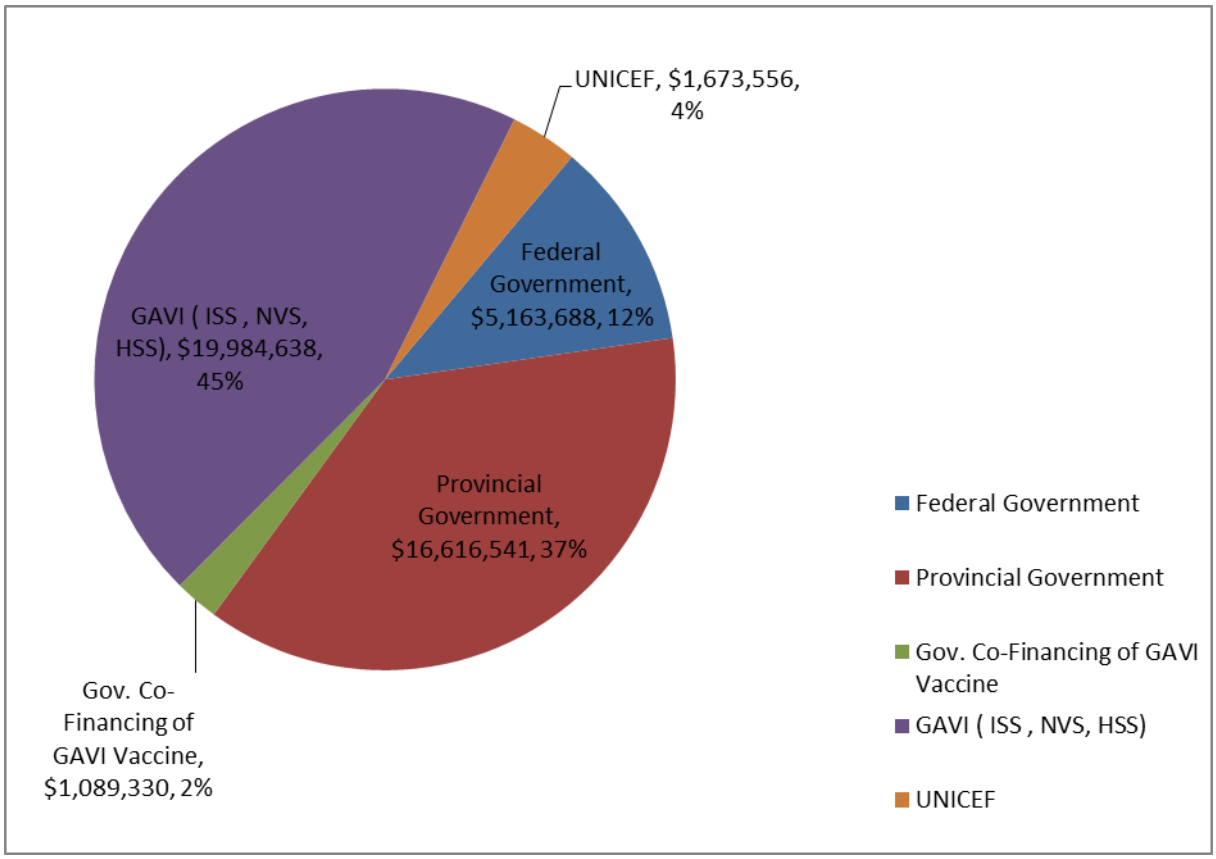
### 4. Vaccines, Injections and Supplies

This category consists of: Traditional Vaccines, Underused and New Vaccines, and Injections and Supplies. The Traditional Vaccines include BCG, OPV, Measles and Tetanus Toxoid, whereas Underused Vaccines include Pentavalent (DPT-HepB-Hib). New vaccines include Pneumococcal, IPV and Rota vaccine. Pneumococcal was introduced in October 2012. The government plans to introduce IPV and Rota vaccine from 2015 and 2016 respectively. All the vaccines are procured at the Federal level and then supplied to the provincial governments.

WHO's forecasting tools was not used for estimating the expenditures made for procuring vaccines and injections. It was based on the information provided by the Provincial EPI Cell on the number of doses per antigen supplied during 2012. The total expenditure was calculated by using the cost per dose per antigen provided in the costing tool.

In 2012, 57% (USD 25.236 million) of the total expenditure was incurred on vaccines, injections and supplies, the main cost driver for EPI. In the coming years, this cost will further increase because the government plans to introduce new vaccines: IPV and Rota.

**Figure 15: Baseline Financing Profile (shared costs and campaigns excluded)**




In 2012, the total spending on EPI program in Punjab was shared among the federal government, provincial government, GAVI and UNICEF (Figure 15).

The finances provided by the federal government (12%) were solely spent on procuring vaccines and injection supplies. The breakdown of this expenditure is presented in Figure 15. The contribution from GAVI was major contributor i.e., 45% of total was spent on underused vaccines and some on other routine activities. The UNICEF's contribution was 4% of total and was mainly spent on short-term trainings, social mobilization and disease surveillance.

In 2012, the GAVI remained the biggest financer of the EPI program which provided 46% of the total resources. Secondly, Provincial government had taken the burden of all expenditures (37%) including payment of salaries and allowances, transportation and maintenance of cold chains equipment. Despite spending nearly USD16.616 million overall on immunization, the Punjab government remained dependent upon the contributions from the Federal government and International Donors (UDS 27.911 million).

**Figure 16: Immunization program baseline indicators**

| Baseline Indicators | 2012 |
|---|---|
| Total Immunization Expenditures | 89,329,178 |
| Campaigns | 44,801,426 |
| Routine Immunization only | 44,527,752 |
| per capita | $ 0.48 |
| per DTP3 child | $ 19.73 |
| % Vaccines and supplies | 57% |
| % Government funding | 49% |
| % Total health expenditures | 2% |
| % Gov. health expenditures | 16% |
| % GDP | 0.04% |
| Total Shared Costs | 27,678,287 |
| % Shared health systems cost | 24% |
| **TOTAL** | **117,007,465** |

The analysis of the baseline indicators shows that, in 2012, the total expenditure of the immunization system was USD89.329 million (Figure 16). However, it is important to mention that besides this immunization-specific cost, the Government of Punjab also contributed USD 27.678 million as the Shared Health System costs which formed 24% of the total expenditure on immunization system.

Of the total immunization expenditure, 50% funds were spent on special immunization campaigns, primarily on Polio Eradication Initiative (PEI). In comparison, the routine immunization activities consumed USD44.527 million (50%) of the total immunization expenditure excluding shared health system costs. The Provincial EPI management plans to highlight this important aspect at all forums including politicians, technocrats and donors in order to bring their focus more towards the significance of routine immunization services.

Further analysis of indicators reveals that, the expenditure on routine immunization in 2012 was spent at an average of USD0.48 per capita or USD19.73 per DTP3 child. The future investments in human resources, cold chain equipment, vehicles and transportation will obviously increase per capita and per DTP3 child costs.

The provincial EPI management also plans to use these indicators as a demand creation tool to deliver general awareness messages to the general population highlighting how much government is spending on every child in Punjab. For example, in 2012, the government spent USD19.73 on every child when he/she became 3 and a half month old. This expenditure rose up to USD 25.84 when the shared health systems were also accounted for.

## 4.2 The next section present details on future resource requirements.

**Figure 17: Future resource requirements by cost categories**

| Cost Category | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| **Routine Recurrent Cost** | **US$** | **US$** | **US$** | **US$** | **US$** |
| Traditional Vaccines | 3,994,935 | 4,171,735 | 4,334,507 | 4,502,952 | 4,636,934 |
| Underused Vaccines | 21,199,239 | 22,298,877 | 23,398,392 | 24,421,246 | 25,134,162 |
| New Vaccines | 57,352,164 | 49,381,173 | 62,806,146 | 73,979,344 | 78,325,317 |
| Injection supplies | 2,533,285 | 2,822,504 | 3,082,737 | 3,245,864 | 3,403,625 |
| Personnel | 12,576,905 | 17,717,844 | 23,210,350 | 25,067,178 | 27,072,552 |
| Transportation | 2,834,936 | 3,874,210 | 4,945,827 | 2,445,760 | 2,662,598 |
| Other routine recurrent costs | 7,622,801 | 8,618,346 | 9,292,160 | 8,897,665 | 9,265,571 |
| Vehicles | 1,700,160 | 2,154,989 | 1,501,577 | 0 | 0 |
| Cold chain equipment | 2,800,444 | 1,551,930 | 2,072,303 | 1,250,810 | 0 |
| Other capital equipment | 57,120 | 0 | 30,657 | 0 | 0 |
| Campaigns | 64,568,092 | 51,119,240 | 52,821,474 | 60,904,551 | 55,338,802 |
| **Total** | 177,240,081 | 163,710,849 | 187,496,130 | 204,715,369 | 205,839,562 |

Figure 17 shows future requirements by cost categories of immunization program in Punjab for next five years (2014-18). The majority of funds will be utilized on all vaccines followed by campaigns cost.

The routine immunization costs are further divided in categories: Vaccines and Injection Supplies, Personnel, Transportation, Vehicles, Cold chain equipment, other Capital equipment, other routine recurrent costs and campaigns.

### 1. Vaccines and Injection Supplies

The financial projections for vaccines and injection supplies are based on the number of doses required per antigen including wastage rates and the price list available in the costing tool.

The Federal Government will provide resources for traditional vaccines. The underused vaccines and two new vaccines will be financed through co-financing between the Federal government and GAVI. The government plans to introduce new vaccines: IPV, Rota and Hep B (Birth Dose) vaccines in 2015 and 2016. Rota and Hep B will be supported through co-financing between the Federal government and GAVI. However, IPV will be supported by GAVI. The introduction of new vaccines will have financial implication not only for the resource requirement for procurement of vaccines and injection supplies but also for cold chain equipment, overhead costs and training of personnel.

In order to achieve the immunization coverage targets, the additional resource requirement for purchasing vaccines and injection supplies will increase in 2018. In comparison to the expenditure of USD25.236 million in 2012, the resource requirement will increase to USD 111.500 million by the year 2018. These aspects are discussed in the subsequent sections.

### 2. Personnel

The provincial EPI office plans to increase the availability of qualified human resources for the immunization program at provincial, district and union council levels (ISC Objective 2).

At provincial level, new positions of, Provincial Epidemiologist, Statistical Assistant, Cold Chain Technicians, Communication Officer and MIS/IT Assistants will be created. The vacant positions will also be filled.

At district level, one position each for EPI Coordinator and district epidemiologist will be created in all 36 districts. Further, vacant positions will also be filled.

At UC level, 2384 vaccinators will be recruited to meet the deficit across Punjab.

The addition of new staff will require a substantial increase in resource allocation for immunization program. By 2018, the funds required for payment of salaries and allowances will be more than doubled as of 2012. The provincial government will require USD27.072 million in 2018 as compared to USD 11.629 million in 2012.

### 3. Transportation

Expansion in the EPI program coverage will result in minor increase in demand for resources for transportation. In 2012, nearly 5% of the total resources were spent on transportation. By 2018, the immunization system will require to increase this expenditure to USD 2.662 million compared to USD 2.141 million in 2012. This requirement is closely linked with the increase in POL prices. Although, the costing tool has accounted for inflation in POL prices, the provincial EPI office will revise these estimates on yearly basis in order to ensure realistic projections for resource requirement.

### 4. Vehicles

The immunization system will require an amount of USD5.356 million to procure vehicles required for the immunization staff and supply of vaccines. These projections are based on the price list provided by Federal EPI Cell and the total number of vehicles that are planned to be hired. The immunization program also plans to replace the existing vehicles that have completed their on-road life. The provincial level staff will be provided 4-wheel drive, single cabin vehicles & refrigerated trucks whereas district level will be provided single cabin vehicles for monitoring and supervision whereas additional 1,594 motorbikes will be procured for vaccinators for outreach immunization services.

### 5. Cold chain equipment

The immunization program plans to enhance the capacity of the cold chain system in order to meet the needs when new vaccines will be introduced in 2014 onwards. It includes installation of an additional cold room, and supply of new ILRs/Freezer to district offices and ILRs to fixed EPI centers. It also includes supply of power generators and other cold chain equipment. The provincial EPI office has estimated these projections by using the information on number of items required and the price list provided by the Federal PC-I.

It is estimated that USD 7.675 million will be required to meet the needs of cold chain equipment.

## 6. Other capital requirement

The immunization system will use USD 87,777 for supplying other capital equipment (laptops, computers, photocopiers, furniture etc.) for one provincial office and 36 district offices. These projections are estimated by using average unit costs as per the prevailing market rates.

## 7. Other recurrent costs

Other recurrent costs consists of funds required for cold chain maintenance and overheads, maintenance of other capital equipment, utility bills, short-term training, IEC/social mobilization, disease surveillance, program management and other routine recurrent costs. The provincial EPI office has estimated the resource requirement under this category by breaking down each component into activities and determining the average cost per activity.

The financial projections indicate that the immunization program will require USD 43.696 million to meet the expenditure planned under other recurrent costs.

In total, immunization system in Punjab will require USD 759 million to meet the needs of routine immunization system over a period of 5 years (2014-18).

In addition to the routine immunization, the provincial government plans to conduct special immunization campaigns in the next 5 years. Majority of the campaign costs will be incurred on PEI – with an average coverage of 98%. In addition to PEI, the government plans to conduct two measles campaigns with an average coverage of 95%, one each in 2014 and 2017. In order to achieve the coverage targets, the immunization system will require USD284 million.

**Figure 18: Costs by Strategy**

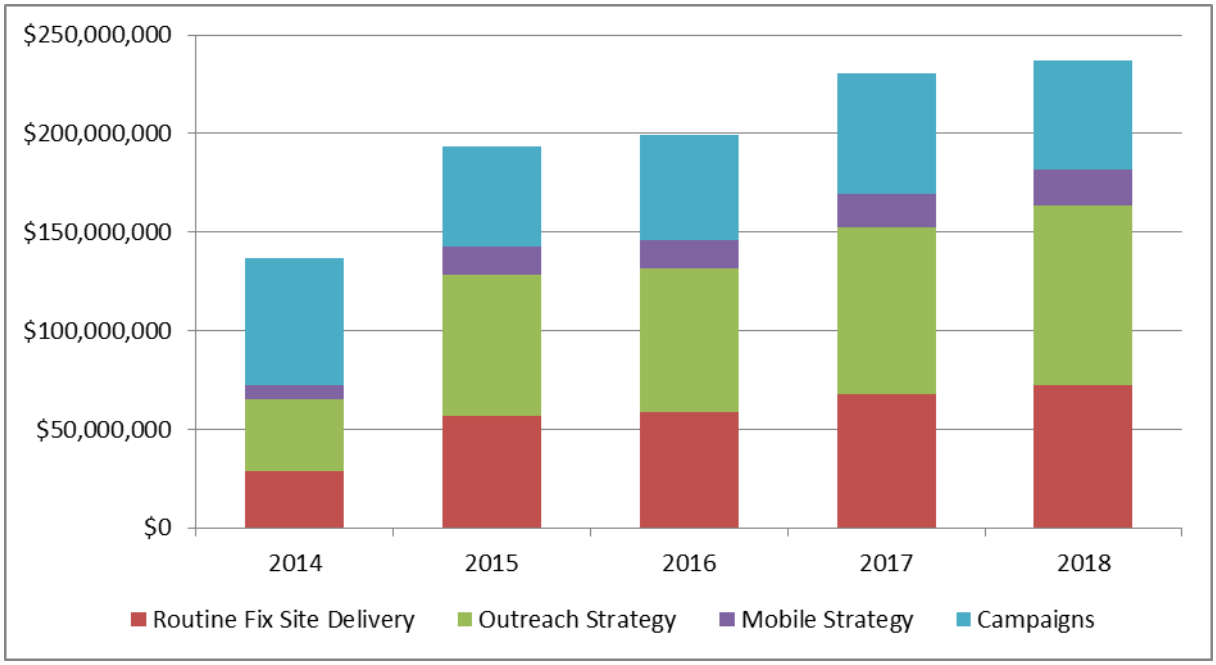
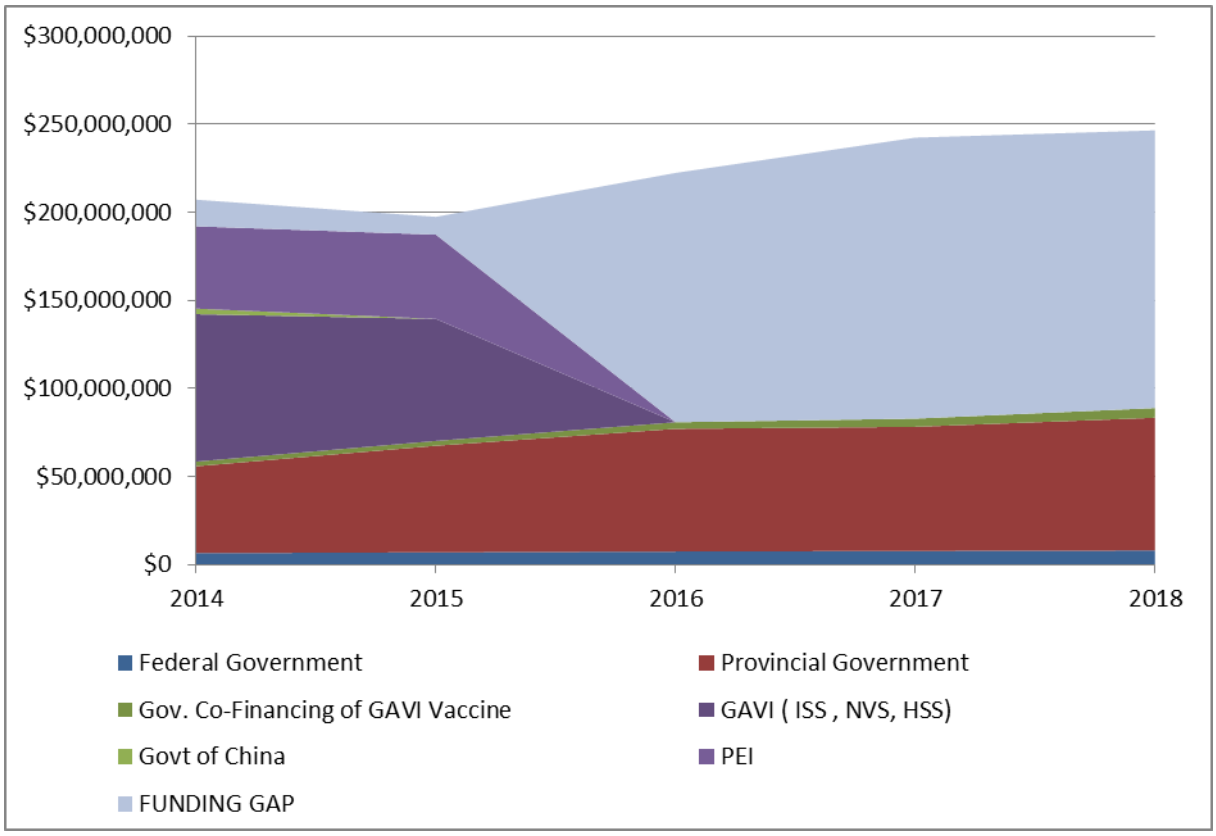



Figure 18, very clearly depicts the average costs of immunization program by strategy for next five years (2014-18). 28% percent of total cost is kept for routine fix site delivery, while 36% for outreach strategy. The remaining 36% funds will be utilized on the mobile strategy and campaigns.

## 4.3 Future financing and funding gaps of the immunization program

**Figure 19: Future Secure Financing and Gaps (shared costs excluded)**




The financial projections presented in Figure 19 indicate that the Federal and provincial governments are the main sources of secure financing for immunization program in the next five years and PEI for 2014 & 2015. Further, provincial and federal government contribution will gradually increase from USD 58.500 million in 2014 to USD 88.901 million in 2018. The major contribution from GAVI will be for providing vaccines and operational support for measles campaign.

Considering only the secure funds, there is a substantial funding gap which increases overtime and substantiate after 2015. The funding gap increased from 7.2% in 2014 to 64% in 2018. The main drivers of this funding gap are the costs required for vaccines, campaigns and other recurrent costs. It also includes the resources required for conducting PEI activities from 2016 onwards. Bridging this gap, it is important to maintain the momentum build during 2014-15 and improve performance of the immunization program.

**Figure 20: Future Secure and Probable Financing and Gaps (shared costs excluded)**

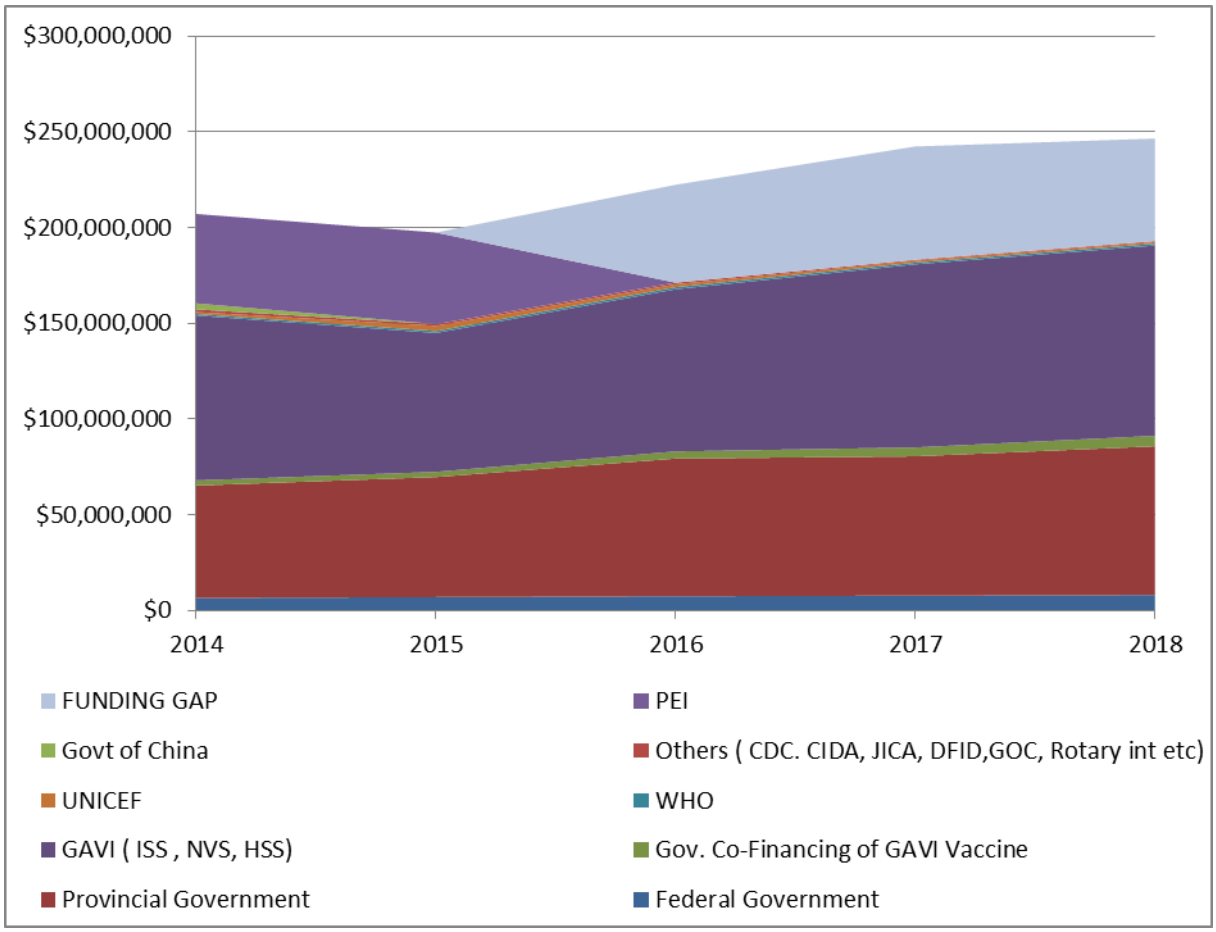



Figure 20, shows that the probable funding do not have the potential to bridge the funding gap highlighted especially after 2015; as in Figure 19. The major contributors to probable funding are GAVI, WHO and UNICEF. The financial projections indicate that considering both secure and probable funding beyond 2015, there will be substantial gap especially for underused, new vaccines and campaigns and there is dire need to increase allocation of provincial funds beyond 2015. Provincial government should also make efforts to secure funds from GAVI, in post 2015 scenario.

## 4.4 Funding gap analysis

**Figure 21: Composition of the Funding Gap with secure financing only**

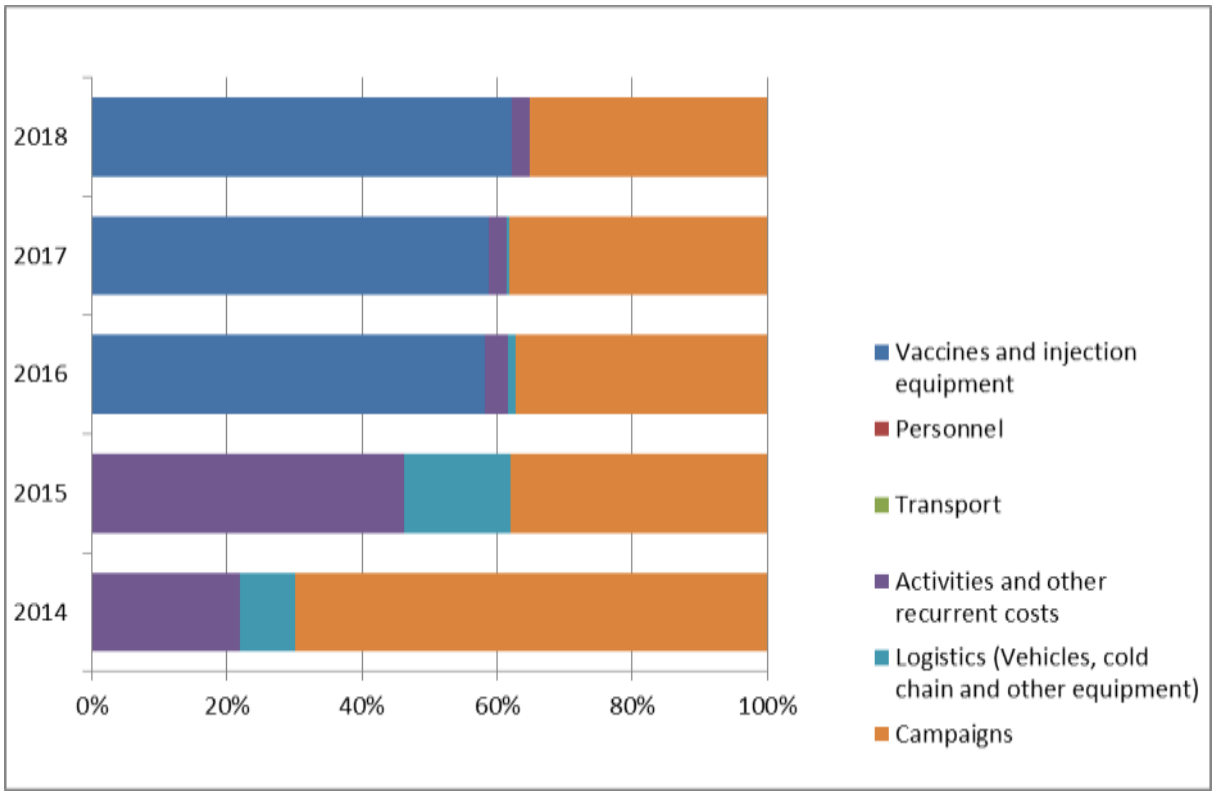



Figure 21, highlights the composition of the funding gap. Throughout 2014-2018, the gap is mainly related with the resources required for campaigns and vaccines for which average USD 91 million are needed annually. From 2016 onwards, PEI activities will require mobilization of additional resources because the current PEI program covers the costs up to 2015 only. If funding gap for polio campaigns and underused/new vaccines remain, it increases likelihood of polio transmission and undermines previous investments in polio eradication.

Another important component of the funding gap is the resource requirement for activities and other recurrent costs. The immunization program estimates that average USD 4.076 million annually will be required to bridge this gap in the next 5 years. If the funding gap related to activities and recurrent cost is not addressed it will affect overall performance of the immunization program.

## 4.5 Financial sustainability

The macroeconomic indicators listed in Figure 22 highlight that sustainability of immunization system is closely linked with resource allocation from the government health expenditures. The current financial projections indicate that the cost per DPT3 child will increase to USD 68 in 2018 from USD 32 in 2012; mainly due to introduction of 3 new vaccines from 2014 onwards.

It is expected that the government will continue its funding for immunization system. The financial analysis shows that there are multiple financers/partners, however the program mainly depends upon the federal government as well as international donors' funding. However, the resource deployment for immunization program as percentage of the government health expenditure will increase gradually i.e., 42% in 2012 to 52% in 2018.

In order to secure funding requirements from all financers, the provincial immunization program has to work hard and run a very strong resource mobilization campaign. The immunization program has an opportunity of having potential donors that are ready and willing to support the provincial immunization program as identified during the SWOT analysis. This cMYP will help a lot in preparing proposals/financial requests for potential donors and also will help in preparing provincial PC-1 for EPI immunization program for securing provincial government's share.

**Figure 22: Sustainability indicators**

| Macroeconomic and Sustainability Indicators | 2012 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| Per capita GDP ($) | 1,256 | 1,332 | 1,372 | 1,414 | 1,456 | 1,500 |
| Total health expenditures per capita (THE per capita $) | 30 | 32 | 33 | 34 | 35 | 36 |
| Population | 91,943,208 | 95,245,517 | 96,940,888 | 98,666,436 | 100,422,698 | 102,210,222 |
| | | | | | | |
| GDP ($) | 115,480,669,248 | 126,867,029,298 | 133,002,897,927 | 139,514,339,802 | 146,215,448,368 | 153,315,333,121 |
| Total Health Expenditures (THE $) | 2,758,296,240 | 3,047,856,560 | 3,199,049,294 | 3,354,658,807 | 3,514,794,432 | 3,679,567,995 |
| Government Health Expenditures (GHE $) | 275,829,624 | 335,264,222 | 351,895,422 | 402,559,057 | 421,775,332 | 478,343,839 |
| | | | | | | |
| **Resource Requirements for Immunization** | | | | | | |
| Routine and Campaigns ($) | 117,007,465 | 207,132,631 | 197,409,748 | 222,362,801 | 242,371,373 | 246,508,047 |
| Routine Only ($) | 72,206,040 | 142,564,539 | 146,290,508 | 169,541,327 | 181,466,823 | 191,169,245 |
| per DTP3 child ($) | 32 | 59 | 58 | 65 | 66 | 68 |

| Macroeconomic and Sustainability Indicators | 2012 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|
| **% Total Health Expenditures** | | | | | | |
| **Resource Requirements for Immunization** | | | | | | |
| Routine and Campaigns (Includes Vaccines and Operational Costs) | 4.24% | 6.80% | 6.17% | 6.63% | 6.90% | 6.70% |
| Routine Only | 2.62% | 4.68% | 4.57% | 5.05% | 5.16% | 5.20% |
| **Funding Gap** | | | | | | |
| With Secure Funds Only | | 0.50% | 0.32% | 4.22% | 4.54% | 4.28% |
| With Secure and Probable Funds | | 0.00% | 0.00% | 1.52% | 1.68% | 1.46% |
| **% Government Health Expenditures** | | | | | | |
| **Resource Requirements for Immunization** | | | | | | |
| Routine and Campaigns (Includes Vaccines and Operational Costs) | 42.42% | 61.78% | 56.10% | 55.24% | 57.46% | 51.53% |
| Routine Only (Includes Vaccines and Operational Costs) | 26.18% | 42.52% | 41.57% | 42.12% | 43.02% | 39.96% |
| **Funding Gap** | | | | | | |
| With Secure Funds Only | | 4.50% | 2.87% | 35.16% | 37.81% | 32.95% |
| With Secure and Probable Funds | | 0.00% | 0.00% | 12.70% | 14.03% | 11.20% |
| **% GDP** | | | | | | |
| Resource Requirements for Immunization | | | | | | |
| Routine and Campaigns (Includes Vaccines and Operational Costs) | 0.10% | 0.16% | 0.15% | 0.16% | 0.17% | 0.16% |
| Routine Only (Includes Vaccines and Operational Costs) | 0.06% | 0.11% | 0.11% | 0.12% | 0.12% | 0.12% |
| **Per Capita** | | | | | | |
| Resource Requirements for Immunization | | | | | | |
| Routine and Campaigns (Includes Vaccines and Operational Costs) | 1.27 | 2.17 | 2.04 | 2.25 | 2.41 | 2.41 |
| Routine Only (Includes Vaccines and Operational Costs) | 0.79 | 1.50 | 1.51 | 1.72 | 1.81 | 1.87 |

# 5 Annexes

## Annex 1: Costing and financing

**Figure 23: Expenditures and future resource requirements by cMYP components (in US$)**

| cMYP Component | Expenditures | Future Resource Requirements | | | | | |
|---|---|---|---|---|---|---|---|
| | 2012 | 2014 | 2015 | 2016 | 2017 | 2018 | Total 2014 - 2018 |
| Vaccine Supply and Logistics (routine only) | 27,601,015 | 92,486,268 | 85,566,543 | 100,787,191 | 111,094,845 | 115,268,560 | $505,203,407 |
| Service Delivery | 13,770,814 | 15,411,841 | 21,592,054 | 28,156,177 | 27,512,938 | 29,735,151 | $122,408,160 |
| Advocacy and Communication | 2,170,876 | 2,345,757 | 2,438,762 | 2,537,288 | 2,639,795 | 2,746,442 | $12,708,044 |
| Monitoring and Disease Surveillance | 196,148 | 1,473,536 | 1,531,878 | 1,531,912 | 1,659,366 | 1,658,191 | $7,854,883 |
| Programme Management | 788,899 | 954,586 | 1,462,373 | 1,662,088 | 903,874 | 1,092,416 | $6,075,338 |
| Supplemental Immunization Activities (SIA) (includes vaccine and operation costs) | 44,801,426 | 64,568,092 | 51,119,240 | 52,821,474 | 60,904,551 | 55,338,802 | $284,752,159 |
| Shared Health Systems Costs | 27,678,287 | 29,892,550 | 33,698,898 | 34,866,671 | 37,656,005 | 40,668,485 | $176,782,609 |
| **GRAND TOTAL** | **117,007,465** | **207,132,631** | **197,409,748** | **222,362,801** | **242,371,373** | **246,508,047** | **1,115,784,601** |

**Figure 24: Composition of the Funding Gap with secure funding (Immunization Specific only) in US$**

| Composition of the funding gap | 2014 | 2015 | 2016 | 2017 | 2018 | Avg. 2014 - 2018 |
|---|---|---|---|---|---|---|
| Vaccines and injection equipment | 0 | 0 | 82,461,553 | 93,749,106 | 97,955,087 | **274,165,746** |
| Personnel | 0 | 0 | 0 | 0 | 0 | **0** |
| Transport | 0 | 0 | 0 | 0 | 0 | **0** |
| Activities and other recurrent costs | 3,305,127 | 4,005,507 | 4,669,375 | 4,087,465 | 4,312,923 | **20,380,397** |
| Logistics (Vehicles, cold chain and other equipment) | 1,248,604 | 1,362,156 | 1,573,986 | 750,486 | 0 | **4,935,232** |
| Campaigns | 10,542,328 | 3,299,464 | 52,821,474 | 60,904,551 | 55,338,802 | **182,906,619** |
| **Total Funding Gap** | **15,096,059** | **8,667,127** | **141,526,388** | **159,491,608** | **157,606,812** | **482,387,995** |