

Comprehensive multiyear-Plan

Immunization Program of Sindh

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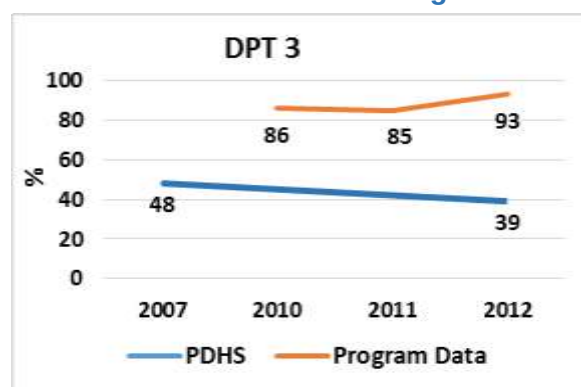
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IMMUNIZATION SITUATIONAL ANALYSIS SUMMARY 2010 – 2012

Immunization Achievements

1. 86% to 93% of DPT3 coverage
2. DPT1 – DPT3 drop out from 12 to 9%
3. 87% of districts with above 80% of DPT3 coverage
4. 88% to 98% coverage in polio campaigns
5. 0% districts reporting >1 case of neonatal tetanus per 1000 live births
6. Very low turnover of vaccinators
7. High turnover of staff at top management level
8. Service delivery strategy is developed
9. Recurrent budget for EPI staff salaries
10. Functional AFP surveillance system

Immunization Coverage



Immunization System Analysis

1. There is no EPI and HR policy
2. Vaccines are not part of provincial budget line item
3. No system for assessment of staff competencies
4. EPI provincial headquarter is understaffed and overburdened
5. Districts do not have dedicated EPI managers
6. LHWs cover 44% of province - could be utilized in EPI service delivery
7. Lack of demand generation activities

Health System Constraints

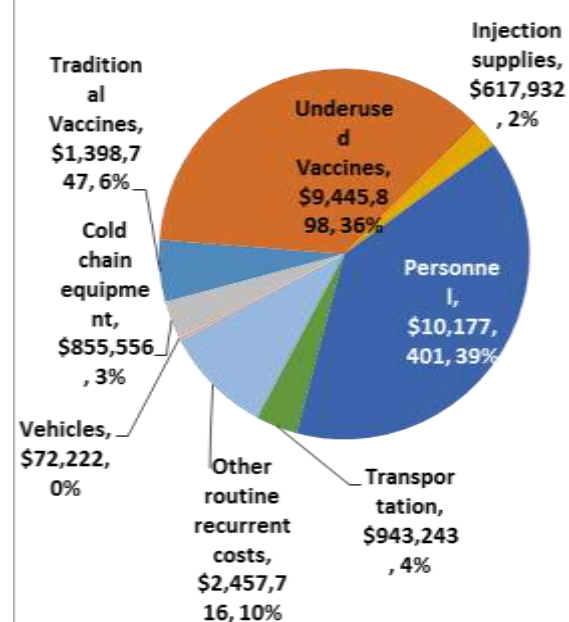
1. 105 union councils and 414 health facilities lack fixed EPI centers
2. Mostly old and Insufficient number of cold chain equipment
3. Only 3 cold chain technicians for entire province
4. Delayed release of funds
5. No designated surveillance staff at provincial and district level
6. High level of political interference in staffing
7. Limited outreach activities due to limited mobility
8. Inequitable distribution of vaccinators

Baseline Costing Profile

Indicators	2012
Total Immunization Expenditures (\$)	39,694,722
Campaigns (\$)	13,726,007
Routine Immunization only (\$)	25,968,715
per capita (\$)	0.66
per DTP3 child (\$)	52.54
% Vaccines and supplies	44%
% Government funding	57%
% Total health expenditures	2%
% Gov. health expenditures	22%
% GDP	0.05%
Total Shared Costs (\$)	6,813,200
% Shared health systems cost	15%
TOTAL	46,507,921

Baseline Financing Profile

(shared costs & campaigns excluded)



cMYP SUMMARY 2014 – 2018

Immunization Priorities

1. Polio eradication
2. Reduction in measles cases
3. Increase immunization coverage and reduce vaccine preventable diseases
4. Increase number of fixed EPI centers
5. Immunization of populations in hard to reach areas
6. Integrate LHWs to give vaccinations
7. Introduce vaccinators' induction training
8. Improve cold chain equipment
9. Introduce Hep-B birth dose, IPV and Rota
10. Introduce M-Health in EPI reporting and

Immunization Goals and Objectives

1. Reduce measles cases from 218 to 55 per million population
2. Reduce cases of polio from 4 to 0 by 2018
3. Reduce deaths from tetanus from 1.8 to 0.5 per 100,000 population
4. Increase DPT3 coverage to 85%
5. Increase fully immunized children to 80%
6. Reduce DPT1 – DPT3 dropout rate to 8%
7. Reduce gap of DTP3 coverage between lowest and highest wealth quintiles to 15%
8. Increase districts with 80% DPT3 coverage to 75%

Monitoring Framework

Indicator	2012	2018
Cases of measles per million population (#)	218	55
Cases of polio (#)	4	0
Neonatal deaths per 100,000 newborns (#)	1.8	0.5
DPT3 coverage (%)	39	85
% pregnant women have TT2	54	65
% Children fully immunized	29	80
% District with 80% DPT3 coverage	33	75
% dropout between DPT1 – DPT3	26	28
PCV3 coverage (%)	0	85

Priority Immunization Program Strategies

1. Develop provincial EPI policy and strategy
2. Include vaccines in budget as line item
3. Streamline EPI management processes
4. Strengthen EPI program management
5. Improve staff competencies
6. Reduce human resource gap to 0%
7. Introduce induction training for vaccinators
8. Increase staff motivation
9. Maintain uninterrupted supply of vaccines
10. Establish 454 EPI centers
11. Streamline data collection and reporting
12. Introduce M-Health to improve surveillance

Partnerships and Sustainability Strategy

1. Advocate provincial assembly committees and members to include all EPI costs in provincial budget
2. Enhance efficient utilization of program resources
3. Integrate LHW program in service delivery
4. Integrate private sector in service delivery

Health and Development Impacts

1. Contribution in achievement of MDG Goal 5 through improved child survival
2. Reduced disability in the community associated with vaccine preventable disease
3. Contribution in poverty reduction goals through reduction in household health expenditures for childhood illnesses
4. Reduced hospital burden of disease leading to national budget savings
5. Increased community wellness

Cost and Financing Projections (US\$)

	2014	2015	2016	2017	2018
Total Resources Needed:	90,804,762	85,181,152	95,359,774	100,232,203	108,436,353
Per capita needed:	1.63	1.68	1.84	1.86	2.06
Per DPT3 Child Needed	105	91	85	77	75
Secured Funding:	70,404,140	46,330,356	24,287,214	25,245,081	26,306,997
Possible Funding Gap:	20,400,622	38,850,796	71,072,560	74,987,122	82,129,356
Possible Funding Gap %	22.5	45.6	74.5	74.8	75.7
Probable Funding:	973,946	16,242,541	50,350,557	38,184,593	44,700,158
Probable Funding Gap:	19,426,676	22,608,255	20,722,003	36,802,529	37,429,198
Probable Funding Gap %	21.4	26.5	21.7	36.7	34.5

1 Situational Analysis

1.1. Background information

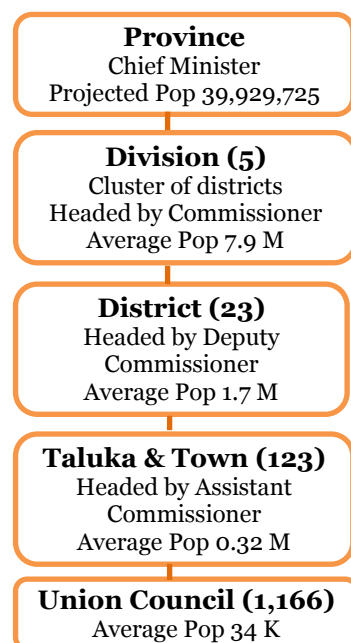
The province of Sindh and the people residing in the region are named after the river known as the Sindhu before partition and now called the Indus River. In Sanskrit, Sindhu means "river, stream", and in particular refers to the Indus river. In 325 BC the Greeks conquered Sindh under the command of Alexander the Great and rendered it as Indos, which is the modern Indus. The Indus Valley civilization is the farthest known settlement of archaeology in prehistoric times. When the primitive village communities in Balochistan were still struggling against a difficult highland environment, a highly cultured people were inhabitants of Kot Diji which was one of the most developed urban civilizations of the ancient world and sign of the Indus Civilization.

Agriculture is very important in Sindh with cotton, rice, wheat, sugar cane, bananas, and mangoes as the most important crops. Sindh is rich in natural resources of gas, oil, and coal.

1.1.1 Administrative and political structure

Government of Sindh is a 'one parliament' system of government based in its provincial capital i.e., Karachi. The parliament consists of 168 elected members. For women and non-Muslim minority, 30

Figure 2: Administrative divisions of Sindh



and 8 seats are reserved respectively. Government of Sindh consists of several departments each headed by a minister which is selected from the elected representative of the assembly and a secretary on the bureaucratic level.

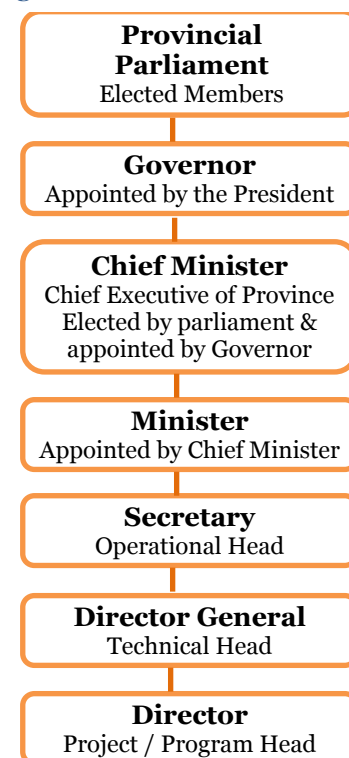
The official head of the province of Sindh is the Governor, appointed by the president of Pakistan. The Governor acts in accordance with the advice of the cabinet or the Chief Minister. The Chief Minister is appointed by the Governor from amongst the elected members of the Sindh assembly, who must possess the confidence of majority of members.

The Government of Sindh holds a cabinet of minister, each entrusted with a specific portfolio, with the chief minister as its head. The cabinet aids and advises the Governor in the exercise of his functions. The Chief Minister, as the head to the cabinet, notifies to Governor of all the decisions of the cabinet.

The Sindh province is divided into five divisions, 23 districts, 123 Taluka and towns, and 1,166 union councils. Based upon 1998 census the projected population of Sindh for 2013 is estimated at

39,929,725. On an average each division has a population of 7.9 million, each district has 1.7 million, Taluka 324 thousands and union council has population of around 34 thousands. Province of Sindh is undergoing establishment of new districts, Taluka and union councils. Therefore the number of these administrative units as well as their population size may change within the span of next few months. Along with other services, this change will have implications on immunization services in the newly established administrative units. With the addition of new units, the population size per unit will slightly decrease however setting up of immunization service delivery in new areas with ensuring infrastructure, recruitment of staff, providing cold chain equipment and bringing the newly established centers into the overall immunization system may take much longer which can negatively affect the immunization status in those areas.

Figure 1: Political and administrative structure of Sindh provincial government



1.1.2 Landscape and climate

Geographically Sindh is the third largest province of Pakistan with an area of 140,914 square kilometers (54,408 square miles). Sindh lies in a tropical to subtropical region and is divided into three climatic regions: Siro (the upper region, centered on Jacobabad), Wicholo (the middle region, centered on Hyderabad), and Lar (the lower region, centered on Karachi). Central Sindh's temperatures are generally lower than those of upper Sindh but higher than those of lower Sindh where maximum temperature typically reaches 43-44°C. Lower Sindh has a damper and humid oceanic climate with lower rainfall than Central Sindh. Lower Sindh's maximum temperature reaches about 35-38°C.

Currently the total road network in Sindh measures around 36,500 kilometers in length which is too lean when compared with the minimum requirement of 1 kilometer per square kilometer which measures around 140,900 kilometers¹.

1.1.3 Demographic

The population size, growth, rate of urbanization, and population density are among the main determinants for allocation of resources for health and healthcare delivery system including immunization program. In 1951, Sindh contributed 18% of population of Pakistan which increased to 23% in 1998. In 2012, Sindh shared around 39.2 million people in the population of Pakistan. The inter-censal population growth rate in Sindh was estimated at 2.8 which has currently decreased to 1.75. The total fertility rate (TFR) for Pakistan has decreased from 5.4 in 1990-91 to 3.8 in 2010-12 whereas currently the TFR for Sindh is 3.9. The Infant and Under Five Mortality Rates in Pakistan have decreased from 92 and 113 in 1997-2001 respectively to 74 and 89 in 2007-11².

Table 1: Population and EPI target groups – baseline (2012) and program duration

Population Data	Year					
	2012	2014	2015	2016	2017	2018
Population	39,231,406	40,640,474	41,363,875	42,100,152	42,849,535	43,612,257
Rural (52%)	20,400,331	21,133,046	21,509,215	21,892,079	22,281,758	22,678,374
Urban (48%)	18,831,075	19,507,428	19,854,660	20,208,073	20,567,777	20,933,883
Live birth (3.5% of population)	1,373,099	1,422,417	1,447,736	1,473,505	1,499,734	1,526,429
Surviving infant (92.3% of LB)	1,267,371	1,317,158	1,340,603	1,364,466	1,388,753	1,413,473
Pregnant women (1.02 as a factor of birth)	1,400,561	1,450,865	1,476,690	1,502,975	1,529,728	1,556,958

Source: National Institute of Population Studies data provided by Federal EPI Department

The population density per square kilometer has increased from 43 in 1951 to 216 in 1998 and currently it is estimated at around 300. In 2006, there were 5,120,260 households in Sindh of which 47.5% were urban and 52.5% were rural. The household size has increased from 6 (Urban 6.8; Rural 5.5) in 1998 to 6.6 (Urban 6.5; Rural 6.6) in 2006. While there is slight decrease in urban household size, the rural household size has markedly increased³. Table 1 gives distribution of EPI target population for the baseline year 2012 and projected population for the years 2014 to 2018.

The urban population growth is also proportionately very high as compared to other areas of the country, as a result the rural and urban population ratio has changed from 60:40 to 52:48 in 2010⁴. It is likely that, in the next few years, the urban population of Sindh will exceed its rural population, with fundamental implication on the patterns of resource allocation for all sectors⁵. This disproportionate increase in urban population of Sindh has resulted due to migration of people from rural Sindh, KPK and Balochistan to urban centers in Sindh.

There are no statistics available for on birth registration practices for Sindh however according to UNICEF's 2011 State of the World's Children report, only 27% of total births in Pakistan between 2000 and 2009 were registered. Although the birth registration services are available at union council and town municipal offices however the births are generally registered when a birth certificate is required for admission in school or any other purposes.

¹ Government of Sindh, Official Web Portal <http://www.sindh.gov.pk/dpt/worksandservices/highway.htm> accessed 23 Dec 2013.

² Government of Pakistan 2013, Pakistan Demographic and Health Survey 2012-13, National Institute of Population Studies

³ Government of Pakistan 2007, Pakistan Demographic Survey 2007, Bureau of Statistics

⁴ Government of Sindh, Population Welfare Department <http://www.pwdsindh.gov.pk/about-us/welcome-note.htm> accessed 23 Dec 2013

⁵ Abu Nasar and Naveed Aamir, "Internal Migration: The Case of Sindh Province" Conference Paper No. 40

Hard to reach areas

While majority of areas in Sindh are reachable throughout the year, there are 19 districts which have hard to reach areas. There are 12 districts each of which have 5 to 15 kilometers of areas which are difficult to reach due to stagnant flood waters. The problem worsens during floods after the summers which the province is continuously facing since 2010. The immunization services are delivered to these communities through boats. There are four district i.e., Dadu, Jamshoro, Kamber, and Sukkar have 20 union councils in mountainous terrains. These hilly areas have no roads and EPI services are delivered to these communities by riding on camels. Moreover there are three districts i.e., Tharparker, Umerkot and Khairpur which hard areas due to desert. There are 44 union councils in Tharparker, 6 in Umerkot and 5 in Khairpur which require 4 wheel drive vehicles to deliver immunization services.

It is estimated that around 3.3 million population lives in these hard areas. There are 0.53 million children under five, more than 116 thousand infants and 235 thousand pregnant women residing in these hard areas that constitutes approximately 8.5% of infants and 8.5% of pregnant women target group per annum .

Table 2: Districts with difficult to reach areas

S No	Name of District
Districts with water logged areas - need boats to deliver EPI services	
1	Ghotki
2	Kashmore
3	Shikarpur
4	Larkana
5	Khairpur
6	Naushehro Feroz
7	Dadu
8	Jamshoro
9	Matlari
10	Shaheed Benazirabad
11	Thatta
12	Badin
Districts with hilly areas - need camels to deliver EPI services	
1	Dadu
2	Kamber
3	Jamshoro
4	Sukkar
Districts with desert areas - need jeeps to deliver EPI services	
1	Tharparker
2	Umerkot
3	Khairpur

1.1.4 Social and political context

(1) Poverty

Poverty is one of the major determinants in accessing social sector services in including health services. This has a definite implication on planning of health service delivery including the immunization service delivery. Pakistan is ranked at 146 out of 187 countries in terms of human development and 49% of the population in Pakistan is living in multidimensional poverty⁶.

Until 2001, no uniform measure in Pakistan for estimating poverty existed when Pakistan's Planning Commission declared an official poverty line (OPL) for Pakistan which was estimated on a 2,350 calories per adult equivalent per day. This is based on an adult equivalent intake of 2150 calories in the urban areas and 2450 calories in the rural areas⁷. In purchasing power parity (PPP) terms the poverty line is defined as population below PPP \$1.25 a day⁶.

The poverty status of rural and urban areas of Sindh demonstrated varying trends but with common denominator that poverty is a rural phenomenon. Table 3 reveals that in 1998-99, 21.49% people in Sindh were below the poverty line with 8.22% in urban areas and 30.84% in rural areas. Karachi division was the least affected in terms of incidence of poverty with only 5.21% people below the poverty line. Whereas poverty was highest in Larkana division at 46.2 (Urban 31.94 and Rural 48.79). The trend estimations of poverty indicate that it increased significantly between 1998-99 and 2001-02 while it decreased between 2001-02 and 2004-05 both in rural and urban areas⁸.

Table 3: Trends of incidence of poverty in Sindh

Region	1998-1999			2001-2002			2004-2005		
	Overall	Urban	Rural	Overall	Urban	Rural	Overall	Urban	Rural
Sindh	21.49	8.22	30.84	32.09	13.30	45.34	15.32	6.54	21.96
Divisions of Sindh									
Karachi	5.21	4.06	12.50	6.98	5.50	24.05	2.13	1.64	7.81
Sukkur	29.30	11.66	33.09	45.11	25.00	49.30	18.94	14.13	20.74
Hyderabad	19.17	10.64	23.94	26.38	18.56	29.62	19.56	6.25	26.21
Mirpur Khas	25.81	19.44	26.92	49.81	29.16	54.24	19.31	11.11	22.39
Larkana	46.29	31.94	48.79	51.65	32.63	58.00	19.04	17.48	19.55

⁶ Human Development Report 2013, UNDP

⁷ Pakistan Poverty Alleviation Fund, 2013, Poverty Perspectives, Issue I

⁸ Ikram Ali, et al, 2008, Poverty Dynamics in Rural Pakistan: Divisional Level Diagnosis, Pak. J. Agri. Sci., Vol. 45(4)

In Pakistan the poverty gap was at 4.27 (Rural 4.6; Urban 3.43) in 1992-93. It increased to 7.03 (Rural 8.04; Urban 4.55) in 2000-01 and then decreased to 4.76 (Rural 5.64; Urban 2.87) in 2004-05⁹. For the year 2010-11 there was 38.3% (Rural 45.34; Urban 30.75) of population of Sindh living below the poverty line.

Across the districts the highest incidence of poverty (59.81) was in Kashmore, followed by Jaccobabad (59.42), Tando Muhammad Khan (57.36) and Larkana (56.36) whereas the least affected districts were Karachi (21.09), Hyderabad (27.50) and Dadu (33.06)¹⁰. The list of all the districts with poverty incidences is given at Annexure 2.

(2) Education

The women literacy is considered the main factor in improving child health including protecting the children from vaccine preventable diseases. In Sindh among the population aged 10 years and older, 78% (Male 85; Female 70) in urban areas and 41% (Male 58; Female 23) in rural areas are literate. There is marked difference in literacy rates between population belonging to first and fifth wealth quintile and rural and urban areas. Among females from first quintile only 14% and 35% are literate in rural and urban areas (Figure 3).¹¹

During the years from 2007 to 2012 the gross enrolment rates for 5-9 years old in Sindh have either remained stagnant (for male at 87) or have decreased (for female from 72 to 71 and overall from 80 to 79). However, for the same period there is slight increase (58 to 61) among population above 10 years of age who have ever attended school¹¹.

Among the districts of Sindh, Karachi has the highest education index¹² of 63.40 followed by Hyderabad (55.68) and Khairpur (55.12). Whereas the district of Tando Muhammad Khan has the lowest education index at 39.18, followed by Tando Allah Yar at 40.42 and Matiyari at 44.24¹³.

(3) Culture and traditions

Over the last thousand years the Sindh has been gradually transformed from predominantly nomadic tribal pastoral society into one that is more settled agrarian society¹⁴. Majority of population speaks Sindhi language which is an ancient language and rich in literature. Around 64% of households in Sindh speak Sindhi language, 18% speak Urdu, 7% Punjabi, 4% Pushto 2% Balochi, 1% Saraiki and 5% speak other languages including Memoni, Gujarati, Kutchi, Thari, Khovar, Persian/Dari, Luri and Brahui. In Sindh there are 91.31% Muslims, 8.51% Hindus and 0.18% belong to other religions¹⁵.

The status of women particularly in interior Sindh is generally low. They are considered to be a fragile segment of society. The female birth in the family is seldom welcomed. Girls are generally treated inferior to boys. Female education is considered to be against traditions. Women enjoy

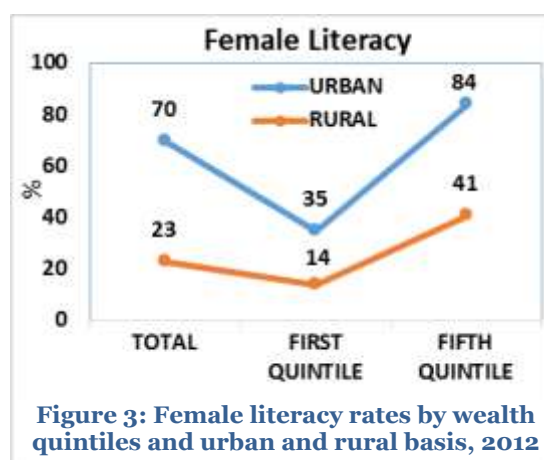


Figure 3: Female literacy rates by wealth quintiles and urban and rural basis, 2012

⁹ Government of Pakistan, Higher Education Commission, Status and Trend Analysis of Poverty in Sindh, accessed 25 Dec 2013 from: <http://pr.h.ec.gov.pk/Chapters/946S-4.pdf>

¹⁰ Haroon Jamal, 2013, Predicting Sub-National Poverty Incidence for Pakistan, Social Policy and Development Centre, Research Report No.85

¹¹ Government of Pakistan, 2013, Pakistan Social and Living Standards Measurement Survey 2011-12, Statistics Division, Pakistan Bureau of Statistics, Islamabad

¹² The education index for Pakistan is based upon the United Nations Educational, Scientific and Cultural Organization (UNESCO) Education For All Development Index (EDI), and is a composite score for indicators for access, attainment, literacy and gender parity.

¹³ Sustainable Development Policy Institute and Alif Ailaan, 2013, Pakistan District Education Rankings 2013

¹⁴ Maliha Khan, 2007, The Political Ecology of Irrigation in Upper Sindh: People, Water and Land, ProQuest Information and Learning Company, MI

¹⁵ Pakistan Population Census Report, 1998

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Chapter 1: Situational Analysis

limited physical mobility in the rural set-up. Their role in family and its decision making process is considered to be secondary¹⁶. This has major implications on overall health seeking practices of women including health seeking for their children which specifically includes immunization. They are not the sole authority to decide regarding immunization of their children.

1.1.5 Public expenditure management

The provincial budgets in Sindh province are developed by the department of Finance in collaboration with department of Planning and Development. The budgets are developed based upon annual financial requirements submitted by the various departments and building on the last year's budget estimates. The budgeting cycle extends from July to June next year. Table 4 gives provincial government health budget, health expenditures, GDP and health expenditures as percent of GDP for the last four years.

Table 4: Health budget allocations, expenditures, GDP and expenditures as GDP% (PKR Million)

BUDGET	FISCAL YEAR		2009-10		2010-11		2011-12	
	Budget	Spending	Budget	Spending	Budget	Spending	Budget	Spending
Recurrent	15,090	10,742	18,117	14,513	20,564	18,242	27,319	28,025
Development	3,294	3,887	5,072	4,099	6,492	3,965	7,061	5,633
Total Health Budget	18,384	14,630	23,189	18,612	27,056	22,206	34,380	33,659
GDP	3,446,521		3,993,410		4,787,093		5,443,539	
Health Spending as % of GDP	0.42		0.47		0.46		0.62	

Calculated from data source: Technical Resource Facility & PIFRA, 2012, Budget and expenditure analysis

The provincial assembly has the authority to approve the provincial budget. After approval budget is allocated to the relevant departments for the recurring (non-development) expenditure, whereas the development expenditures are managed by Planning and Development department. All the departments submit their requirements through PC-1 for the approval.

The total GDP of Sindh province for year 2011-12 was Rupees 5,443,539 million and GDP per capita is estimated at Rupees 138,755. The province of Sindh shared 28% of the GDP of Pakistan in year 2011-12. The GDP growth rate has decreased from 22.9% in 2006-7 to 13.7% in 2011-12¹⁷. The government of Pakistan spent 2.5% of GDP on health¹⁸ as compared to only 0.46% by the Sindh government in 2010-11 (Figure 4). However it is assumed that some part of national GDP is also spent in Sindh by the government of Pakistan.

1.2. Health Sector Analysis

1.2.1. Governance

Politically the province of Sindh is managed by the provincial cabinet headed by the Chief Minister.

The Chief Secretary is the operational and administrative head of the province.

Each provincial department is led by a minister, appointed by the chief minister, and operationally headed by the Secretary. Every department has a Director General who is the technical head of the department.

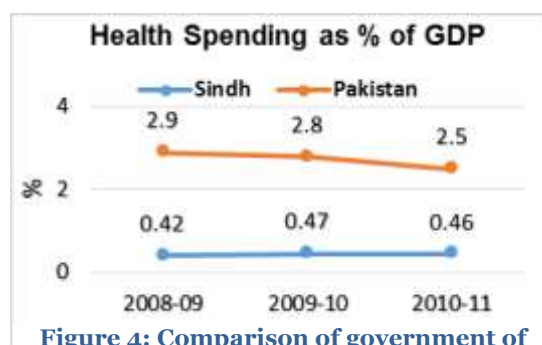
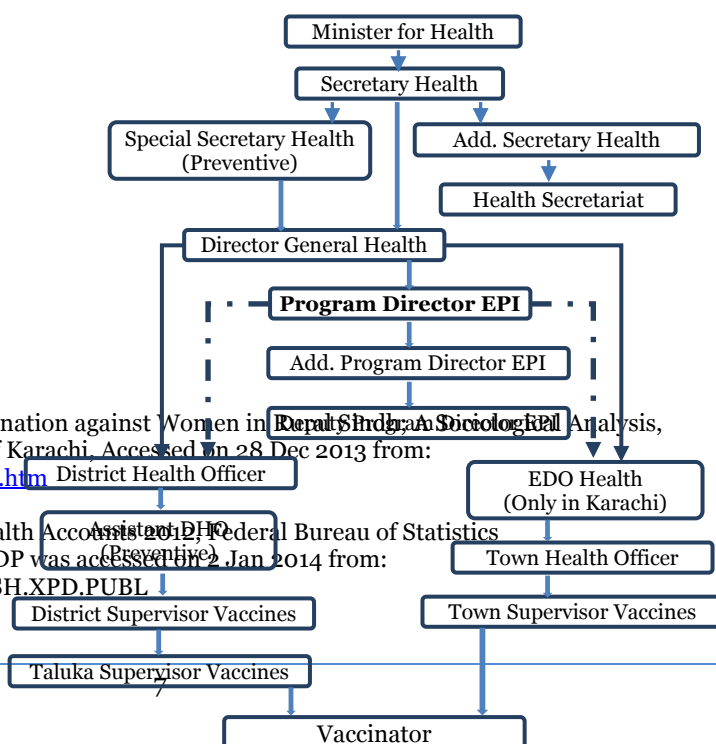


Figure 4: Comparison of government of Pakistan and Sindh spending on health as % of GDP

Figure 5: Organizational structure of Health and EPI department



¹⁶ Hamadullah Kakepoto, 2006, Discrimination against Women in Health Services, Department of Sociology/ University of Karachi. Accessed on 28 Dec 2013 from: <http://eprints.hec.gov.pk/1815/1/1743.htm>

¹⁷ Calculated on the basis of National Health Accounts 2012, Federal Bureau of Statistics

¹⁸ Pakistan spending on health as % of GDP was accessed from: <http://data.worldbank.org/indicator/SH.XPD.PUBL>

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Under the overall leadership of Minister for Health the provincial health department is managed by the Secretary Health.

Each program has a Program Director who works under Director General Health. The Program Director EPI is supported by an Additional Program Director and a Deputy Program Director.

At the district level the District Health Officer is head of health department in all the districts except in districts of Karachi where this position is called Executive District Officer Health. Both these positions work under the command of deputy commissioner who is overall head of the district. The EPI team works under the District Health Officer or Executive District Officer Health who has a loose reporting relationship with EPI provincial program director.

1.2.2. Health workforce

While there are no gold standards for assessing the sufficiency of the health work force, WHO estimates that countries with fewer than 23 health care professionals (counting only physicians, nurses and midwives) per 10,000 population will be unlikely to achieve adequate coverage rates. For Pakistan, WHO estimates 8 physicians, 4 nursing and midwifery personnel per 10,000 populations i.e., a total of 12 health worker in these categories (World Health Statistics 2010).

With the 18th amendment in the constitution, since June 2011, the Federal Ministry of Health has been dissolved and the overall responsibility for health services policy direction and planning has been devolved to the provinces. The challenges related to Human Resources for Health (HRH) in Sindh include: absence of HR policy; weak HRH management system; non-regulated private sector that operates primarily in urban areas; compromised quality control and standardization of care; health information systems not inclusive of HRH.

According to Pakistan bureau of Statistics there were 9.2 doctors, 0.79 LHV, and 4.75 nurses per 10,000 population in Pakistan¹⁹. In Sindh, as of 31 Dec 2013, there are 55,834 doctors registered with Pakistan Medical and Dental Council however exact data is not available about how many are working in Sindh.

1.2.3. Finance

Table 5 gives total health expenditures and share of public, private and donor contributions in Sindh. The share of public expenditures was decreased from 32% in 2005-06 to 19% in 2009-10 whereas private health expenditure was increased from 68% to 81%, respectively²⁰.

Table 5: Total health expenditures, share of public, private & donors (PKR Million)

YEAR	TOTAL HEALTH EXPENDITURES	PUBLIC EXPENDITURES		PRIVATE EXPENDITURES*		DONOR CONTRIBUTION	
	PKR	PKR	%	PKR	%	PKR	%
2005-06	34,407	11,114	32.3	23,248	67.6	45	0.13
2007-8	78,036	17,205	22.0	60,221	77.2	610	0.78
2009-10	96,221	18,612	19.3	77,679	80.7	3	0.003

* Private expenditures include out of pocket expenditures, employer funds and contribution from local NGOs

The per capita Sindh government spending on health was Rupees 489.9 (US\$ 5.3) in 2009-10, Rupees 859.6 (US\$ 9.0) in 2010-11 and Rupees 857.9 (US\$8.6) in 2011-12.²¹

The Sindh health budget was 7.79% of the total health budget in 2008-09 and total public sector health spending was 6.39% of the total provincial spending which was increased to 7.34% in 2010-11 (Table 6).

Table 6: Total provincial budget, health budget and spending on health as % of total budget (PKR in Millions)

BUDGET	FISCAL YEAR		2009-10		2010-11		2011-12	
	Budget	Spending	Budget	Spending	Budget	Spending	Budget	Spending
Total Provincial Budget	235,987	228,779	288,398	256,163	383,267	302,494	394,148	NA

¹⁹ Government of Pakistan, Pakistan Bureau of Statistics, Health Institutes, beds and personnel 2013

²⁰ Government of Pakistan, Pakistan Bureau of Statistics, Accessed 30 Dec 2013
<http://www.pbs.gov.pk/national-accounts-publications>

²¹ Per capita public health spending was calculated with the help of total population and public health spending for that year.

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Total Health Budget	18,384	14,630	23,189	18,612	27,056	22,206	34,380	33,659
Health budget as % of total budget	7.79	6.39	8.04	7.27	7.06	7.34	8.72	
Calculated from data source: Technical Resource Facility & PIFRA, 2012, Budget and expenditure analysis								

1.2.4. Medical products and Technology

The department of health invites districts to submit their requirements on annual basis. The medicines and supplies are purchased at provincial level through the Medical Stores Depot (MSD). The secretary health of the province has the overall authority to approve and finalize the provincial medical purchases. The District Health Officers and Executive District Officer Health (only in Karachi districts) have limited powers to purchase medicines for health facilities in the district as per approved list, issued by MSD.

The authority to approve and regulate production of a new medical product in Sindh, like any other part of the country, lies with the federal government. There is no bar for any person or organization in donating any medicines and equipment to any health facility or health department in the province.

1.2.5. Service delivery

Like rest of the country, Sindh Health care delivery system has three levels i.e., primary, secondary and tertiary. The National EPI Policy demands that each health facility at each of these health care delivery levels should have an EPI center. However out of 1,872 health facilities only 1,458 deliver EPI services (Table 19).

At the primary level, one BHU is required in each of the 1,123 union councils whereas there are a total of 890 BHUs and 702 of them deliver EPI services. There are 115 RHCs (requirement is 187 @ one RHC per 4-6 BHUs) and all of them have EPI services in place. There are 22,297 LHWs (requirement is 39,232 @ one per 1,000 population) and their role in EPI is to educate communities on importance of immunization.

At the secondary level 23 districts have DHQ hospitals whereas in 123 tehsils/Taluka there are only 43 THQ hospitals and in 80 tehsils RHCs are functioning as THQ hospitals.

At the tertiary level there are 6 teaching hospitals and all have EPI services in place.

Table 7: Service delivery capacity by type of public and private healthcare providers - static

Type of service	Number of facilities		
	Required	Functional	Delivering EPI
1. Teaching Hospitals	-	6	6
2. DHQ	27	23	23
3. THQ	123	43	43
4. RHC	187	115	115
5. BHU	1,166	860	702
6. Urban Health Centers	-	5	5
7. Urban Health Units	-	16	16
8. MCH Centers & Dispensaries	-	552	377
9. Others		252	171
10. LHW Health House	39,232	22,297	-

There are 2,575 vaccinators in Sindh, 27 DSV and 123 TSV. The role of DSV and TSV in EPI is limited to supervise the vaccinators and they themselves do not vaccinate children. The contribution of LHWs in EPI service delivery is only around 5% whereas LHS and CMWs have no role in it (Table 8).

Table 8: Service delivery capacity per type of healthcare professional – community level

Type of service	Number of facilities		
	Required	Functional	Delivering EPI
1. LHW	39,232	22,297	3,344 (FTE)
2. CMW	-	No data	0
3. Vaccinator	3,480	2,575	2575
4. DSV	27	27	0

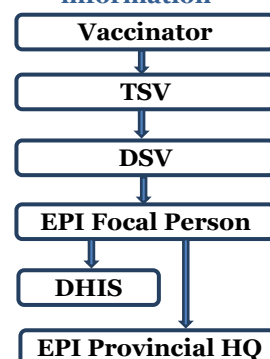
5. TSV	123	123	0
6. LHV	-	1,345	0
7. LHS	1,961	756	0

1.2.6. Health Information management

The adequate functioning of health information management system is key to success of health interventions as it helps in timely identification of problems during implementation and feeds to the ongoing decision making process and to further planning.

In Sindh, like other parts of the country, the first report on health information is generated by LHWs and BHU levels. The LHWs submit their reports to their respective LHS for onward submission to District LHW Coordinator. The Medical Officer of BHU submits BHU report to the DHO office. Similarly reports from RHCs, THQ hospitals and DHQ hospitals are submitted by respective in-charge of facilities to DHO/EDO office. These reports are incorporated into District Health Information System (DHIS) and DHO/EDO submits consolidated report to Director General Office and Provincial Health Information System at the provincial level. The EPI data from the vaccinators is also the part of district and provincial HMIS.

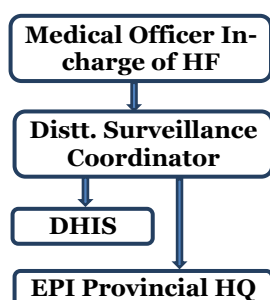
Figure 6: Flow and management of RI information



For routine immunization activities, each vaccinator has an EPI register where he enters the vaccination information and based on that prepares a report on monthly basis and submits to Taluka Supervisor Vaccines (TSV). TSV computerizes all vaccinators' reports and a consolidated report is submitted to District Supervisor Vaccines (DSV). DSV consolidates Taluka reports and shares the district report with EPI Focal Person (who is not a fulltime employee for EPI) for onward submission to DHIS and the EPI province headquarters (Figure 6).

Regarding EPI Surveillance, each health facility in-charge prepares and submits surveillance report to District Surveillance Coordinator (who is not a fulltime employee for EPI). The DSC consolidates facility surveillance reports and submits to DHIS and the EPI province headquarters (Figure 7).

Figure 7: Flow and management of EPI surveillance information



Despite the importance of HMIS, there are multiple issues which are prevalent at all levels within the system i.e., data collection, consolidation, submission and finally utilization. While not all the concerned personnel submit reports, generally the reports are submitted late. Moreover, there is no system for validation of information at any level which is evident by the difference between RI coverage data produced by the EPI program and third party survey data. There is no system for regular feedback to the districts from province and from district to sub-district levels and facilities. Regarding EPI, the reports are discussed in the Provincial Steering Committee where verbal feedback is given however it is seldom conveyed to the concerned levels. There is no mechanism for utilization of information at facility level, Taluka, district or provincial level.

1.3. Immunization system

Until 18th amendment in the constitution in 2011 the Federal Ministry of Health was performing most of the immunization functions through federal EPI program. After devolution, these responsibilities are shifted to provinces however the federal government will make arrangements for ensuring vaccines until year 2015.

1.3.1. Routine Immunization

The official program data reports high coverage rates of 90% and above for almost all antigens for 2012 (Table 9). However the coverage rates of above 100% put question mark on all program achievements and raises concerns regarding overall capacity of the system. The program reports that 21 districts had DPT3 coverage above 80% in 2012 and overall DPT3 coverage of 86% to 93% during 2010 and 2012 whereas recently conducted survey found that only 39% children had received DPT3 vaccine (PDHS 2013).

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Table 9: Situational Analysis – routine immunization

Indicators	2010	2011	2012
Official Coverage Estimates			
DTP1	98%	97%	102%
DTP3	86%	85%	93%
Measles 1	70%	82%	90%
Measles 2	33%	40%	59%
OPVo	58%	59%	66%
Most Recent Survey Coverage % DTP3			39%
% Fully Immunized Child			29%
Access and demand			
% Drop Out DTP1 - DTP3	12%	12%	9%
% Drop Out DTP1 - Measles (1st dose)	27%	16%	11%
% Drop out Measles 1st and 2nd dose	37%	41%	31%
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%	23 (35%)	23 (57%)	23 (87%)
New vaccines introduced into the routine schedule in the last plan period			

1.3.2. Accelerated Disease Control Initiatives

The coverage for OPV during accelerated disease control initiative for 3 years is reported to be 88% to 98% (Table 11). Similarly the coverage for measles 1 vaccination was reported at 90% in 2012 however more than 12.5 thousands cases of measles were reported during the same year. There were a total of 24 cases of neonatal tetanus in the province during 2012.

Table 10: Situational Analysis - by accelerated disease control initiatives

Indicators	2010	2011	2012
Polio			
OPV3 coverage	86%	85%	93%
Number of rounds and sub-national rounds per year	10	9	8
Coverage Range	88-96%	94-98%	96-98%
MNT			
TT2+ coverage	48%	50%	56%
Number and proportion of districts reporting >1 case of neonatal tetanus per 1000 live birth	23 (0%)	23 (0%)	23 (0%)
Was there an SIA? (Y/N)	No	No	No
Neonatal deaths reported and investigated	-	-	-
Delivery at Facility Rate			58.6%
Measles & Rubella			
Measles / MR vaccination coverage (1st dose)	70%	82%	90%
Measles / MR vaccination coverage (2nd dose)	33%	40%	59%
Number of lab confirmed measles/rubella outbreaks	961	816	2,918
Geographic extent National Immunization Day	-	-	-
Age Group (in months)	0-60	0-60	0-60
Coverage	92%	96%	97%
Total Measles Cases Lab/Clinical/epidemiological)	1650	1678	12659

Total Rubella Cases Lab/Clinical/epidemiological)	83	55	102
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1.3.3. Analysis of Immunization system performance

(1) Program management

There is no province EPI policy and strategy and where required the province follows the guidelines given in the national EPI policy. The provincial EPI headquarter is highly understaffed with only three technical positions to look after the entire program in the province. However UNICEF and WHO supports the provincial EPI management through provision of two technical positions.

The employees do not have job descriptions which need to be developed. For routine EPI operations the standard operating procedures are either outdated or are not available. These need a thorough revision. The system to assess and enhance EPI staff competencies is not in place. The program management faces a great deal of political interference at all levels which has resulted not only into inadequate distribution of key EPI staff i.e., vaccinators but also encourages staff to escape from work. At the district level there is no dedicated EPI management position. As an adhoc arrangement, the DHO assigns any doctor / medical officer the role of EPI Focal Person and District EPI Surveillance Coordinator, and sometimes both the responsibilities are given to one person. Around 80% of union councils reportedly develop annual micro plans however their quality is generally compromised (Table 11).

After devolution the federal government continues to provide vaccines (until 2015) however the province has not yet taken any step to include vaccines in the budget line item. There is an EPI steering committee at the provincial level which meets on monthly basis to discuss the progress.

Table 11: Situational analysis of RI by immunization system components – Program Management

Program management			
Indicators	2010	2011	2012
8. Law & Regulation			
8.1 Is there legislation or other administrative order establishing a line item for vaccines?	No	No	No
8.2 Is the line item for vaccines in regular / recurrent Budget	No	No	No
8.3 Are regulations revised in the province to implement national or provincial policies?	No	No	No
9. Planning			
9.1 Does the Province have an annual work plan for immunization funded through Health Authorities budgeting processes?	Yes	Yes	Yes
9.2 What is the number of UC with an annual micro-plan for immunization? (Please indicate denominator – Number of UC per province/area)		890 /1123	890 /1123 ²²
9.3 Number of planned supervision visits conducted vs. the number of planed visits	No data	No data	No data
10. Coordination and advocacy			
10.1 What were the Number of ICC (Steering Committee) meetings held last year at which routine immunization was discussed?	None	None	6
10.2 What were the Number of NITAG (or equivalent) meetings held last year?	NA		
10.3 How many presentations on immunization performance, expenditures, were made to Parliament?	None	None	None

(2) Human resource management

The EPI program does not have human resource management policy. Although EPI is a vertical program however the EPI provincial headquarter does have any direct control over the EPI human and other resources in the districts. Moreover at the district level only one position of DSV is available and there is no position of EPI manager which could dedicatedly manage the EPI program activities in the district.

There is very low staff turnover in EPI program in Sindh at all levels however the marked shortage of field staff is evident as there is only 0.65 skilled immunization staff available for 10,000 population (Table 12).

Despite the fact that on an average each union council has services of 2.3 vaccinators (compared to official allocation of 2 vaccinators), the overall deficit in EPI skilled human resource is around 25% (Table 13). This evidently reflects that population has increased and union council is probably no more an adequate basis for allocation of skilled EPI staff. A realistically developed human resource management policy may solve this important issue.

²² In 2012, there were 1123 union councils in Sindh.

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The skilled EPI staff had the opportunity to receive multiple training for conducting polio campaigns however the mid-level managers have not received any EPI training for the last 4 to 5 years. The vaccinators, on joining the EPI program, do not receive any structured training and at the time of their recruitment they are trained through attachment with another vaccinator.

Table 12: Situational analysis of routine EPI by immunization system components – Human Resource Management

Human Resource Management			
Indicators	2010	2011	2012
11. Availability of qualified workforce:			
11.1 Number of healthcare skilled immunization staff per 10,000 population	0.65	0.64	0.66
11.2 % of vaccinator posts currently vacant	0	0	0
11.3 Turnover rate of SIS (or vaccinators specifically)	No data	No data	No data
12. Capacity building			
12.1 Number (and proportion) of immunization program staff trained in immunization services through MLM, IIP or other training modalities per year:			5075 ²³
a) Mid-wives and LHS	0	0	0
b) Nurses	0	0	0
c) Other Skilled immunization staff (vaccinators: Only at recruitment, through attachment with another vaccinator)			
d) Managers	0	0	0
e) Technicians	0	0	0
f) Other			
12.2 % of immunization health workers Refreshing trained in immunization in the last two years (data from PIE and EPI reviews) (for polio campaign activities only)			100%
12.3 Curriculum review for pre-service medical and nursing immunization education conducted	No	No	No

Although the EPI program management does not see any role of nurses, medical technicians, female medical technicians and midwives in delivering EPI services however these human resources are available and depict potential opportunity for the program to benefit from them.

The EPI program management estimates that Lady Health Workers (LHWs) spend 15% of their time in delivering EPI services which are currently limited to raising awareness on immunization among their respective communities whereas Lady Health Visitors (LHVs) and dispensers spend 5% of their time in giving vaccinations. Recently the EPI program has trained LHWs in giving vaccinations in ten districts however they are not adequately supported to start vaccinations in their respective areas.

Table 13: Workload, availability and deficit of Human Resources

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	2,575	100%	20%	515	2,060	2,575
Nurses		0%	0%			
Dispensers	1,872	5%	0%	0	94	94
Lady Health Visitors (LHVs)	1,345	5%	0%	0	67	67
Medical Technicians (MT)		0%	0%			
Female Medical Technicians		0%	0%			
Mid-wives		0%	0%			
Lady Health Workers (LHWs)	12,297	15%	20%	369	1,476	1,845
Lady Health Workers (LHWs)	10,000	15%	20%	300	1,200	1,500
				1,184	4,897	6,081
				19%	81%	100%
Total FTE available for EPI (except PEI)					4,897	
Total FTE Needed for EPI (except PEI)					6,500	

²³ These numbers may not be accurate.

Deficit

1,603

25%

(3) Costing and financing

The EPI staff salaries are included in recurrent budget and the program gets the finances as per allocations in the annual budget plan but the vaccines are not part of provincial budget (Table 14). The programs covers its overhead and routine expenditures through preparing and submitting PC1 documents to provincial and federal governments which are approved. However the budgeted amounts are generally not sufficient for the program requirements. This reflects compromised capacity of the program to develop adequate budget estimates. Moreover the funds are released with significant delays which negatively affects the planned activities and overall implementation.

Table 14: Situational analysis of RI by immunization system components – Costing and Financing

Costing and financing			
Indicators	2010	2011	2012
13. Financial sustainability			
13.1 What percentage of total routine vaccine spending was financed using government funds? (including loans and excluding external public financing)	0%	0%	0%
13.2 What proportion of the line item in the provincial budget for immunization was actually funded (actually allocated / planned)?	100%	100%	100%
13.3 What % of immunization resources are being met by the domestic health budget (as identified in the annual budget plan)	100%	100%	100%
13.4 Government expenditures on routine immunization per surviving infant			
13.5 Are provincial immunization budgets and expenditures monitored and reported at national level?	No	No	No

(4) Vaccine, Cold Chain and Logistics

There are five cold rooms in Sindh, one is at provincial EPI headquarters and four in the districts. All of them are over aged and need replacement. In 1005 union councils where EPI centers are present there are 553 cold boxes and 3,890 standard vaccine carriers. In 1,458 EPI centers there are 403 large and 227 small ILR in working condition whereas 251 ILR are out of order. Among 331 refrigerators, 57 are solar refrigerators whereas another 253 are out of order. Most of the available cold chain equipment is old and need replacement (Table 15).

There are only 3 Cold Chain technicians for the entire province and the EPI field staff are not trained in cold chain maintenance at district and divisional levels.

Stock outs of vaccines is not a very frequent phenomenon in Sindh. In 2012 BCG remained out of stock for 4 weeks during Dec 2011 and Jan 2012 and for two weeks in March. The TT vaccine remained out of stock for one week in January and two weeks in March. Mainly these stock outs were due shortage of vaccines at the federal level.

There are four trucks at provincial office for transportation of vaccines which were provided through federal supplies. At the district level almost all DSV are mobile however they also have old vehicles and restricted fuel supplies.

Mobility of vaccinators is compromised because of old motorbikes and increased prices of fuel. Moreover they have to spend out of their pocket for fuel and they are reimbursed for which usually it takes several months. Last time 126 new motorbikes were added to the pool in March 2008, and 59 of them were issued to EPI staff in Karachi. The remaining vaccinators have motorbikes much older than 2008. In the absence of a functioning monitoring and supervision system right from provincial to district and Taluka level, with sufficient political interference and restricted mobility, the field workforce catches sufficient explanations to escape from working in the field.

Table 15: Situational analysis of RI by immunization system components – Vaccine supply, quality and logistics

Vaccine supply, quality and logistics			
Indicators	2010	2011	2012
14. Transport / Mobility			
14.1 Percentage of districts with a sufficient number of supervisory/EPI field activity vehicles /motorbikes/bicycles (based on their need) in working condition	DSV 100%	DSV 100%	DSV 100%
14.2 Number of UC with vaccinators using transportation means for outreach	1005	1005	1005
15. Vaccine supply			
15.1 Was there a stock-out of any antigen at provincial or district level during 2012?		Yes	Yes

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15.2 If yes, specify duration in months		December	January, March
15.3 If yes, specify which antigen(s)		BCG	BCG, TT
16. Cold chain / logistics			
16.1 Number of UC with adequate numbers of appropriate and functional cold chain equipment vs. Number of UC with functioning health facilities			1005 / 1083
a) With ILR (large and small)			630
b) With any kind of refrigerators			331
16.2 Availability of a cold chain replacement plan			None
17. Waste disposal			
17.1 Availability of a waste management policy (guidelines/SOP)			Yes
17.2 Number of districts implementing waste management policy			No data

(5) Immunization Services Delivery

There are a total of 1,458 EPI centers in Sindh and out of 1,123 union councils, 1018 have an EPI center. Moreover, among the 1,872 health facilities 414 do not have an EPI center whereas there are 40 union councils without any health facility and EPI center. These union councils are covered through neighboring EPI facilities.

Generally the communities have low level of trust on the EPI program and its services mainly because of ineffectiveness of the vaccines which they relate to the frequent electricity breakdown throughout the Sindh.

The EPI field staff is also facing issues in delivering services and documenting their outputs because the service delivery strategy, although developed, however is not implemented. More over the staff has two sources for calculation of immunization target groups i.e., data which is provided by the federal EPI cell and another set of data which comes from district health information system (DHIS).

The share of EPI centers in delivering immunization services is almost 100% however EPI services are also delivered by private hospitals and clinics which contribute a minute proportion to overall delivery of immunization services.

Table 16: Situational analysis of routine EPI by immunization system components – Immunization services

Immunization services			
Indicators	2010	2011	2012
18. Geographical access:			
18.1 Number of population per each EPI fixed sites	26,058	26,435	26,908
18.2 Proportion of area covered by immunization service to the total populated area			91%
18.3 Proportion of UC not having EPI centers			9%
18.4 Proportion of UC not having Skilled Immunization Staff (SIS)			9%
19. Efficiency of service delivery			
19.1 Share of immunization services delivered by EPI centers	Almost 100%	Almost 100%	Almost 100%
19.2 Average time EPI Centers provide immunization service per day	6 Hours	6 Hours	6 Hours

(6) Surveillance and Reporting

The EPI program in Sindh does not have designated surveillance staff at provincial and district level. The responsibility of surveillance and reporting is assigned to any official by the DHO of the district who collects the reports, consolidates them and share with other district and provincial officers. In reality there is no surveillance system in place. Moreover the districts do not receive any feedback or instructions for corrective actions as the surveillance data is hardly utilized for decision making. Although VPD surveillance reports are received from all the districts, they are not timely submitted and some of them are not complete (Table 17). There is significant gap between data that is generated by the EPI program and through surveys. Moreover there is no active surveillance system for MNT and for determining FIC.

Table 17: Situational analysis of routine EPI by immunization system components – Surveillance and reporting

Surveillance and Reporting			
Indicators	2010	2011	2012
20. Routine Surveillance			
20.1 Percentage of integrated VPD surveillance reports received at provincial level from districts compared to number of reports expected:			100%

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a) Timeliness			64%
b) Completeness			94%
20.2 AFP detection rate/100,000 population under 15 year of age	8.4	8.1	7
20.3 % suspected measles cases for which a laboratory test was conducted	85%	75%	34%
20.4 Number of neonatal deaths for which a follow up investigation was conducted			No data
20.5 Sentinel Surveillance for Rotavirus establish			Yes, two sites in Karachi
20.6 Sentinel Surveillance for meningitis (Hib/PCV) established			Yes, two sites in Karachi
20.7 % of suspected meningitis cases tested for Hib/pneumococcal disease according to standard protocol			No data
21. Coverage monitoring			
21.1 % gap in match between DTP3 survey coverage and officially reported figures			54%
22. Immunization safety			
22.1 % of districts (or UC?) that have been supplied with adequate (equal or more) number of AD syringes for all routine immunizations	100%	100%	100%
23. Adverse Events			
23.1 National AEFI System is Active with a designated national/provincial committee			No
23.2 Number of serious AEFI cases reported and investigated			No

(7) Demand Generation, Communication and Advocacy

The EPI program in Sindh desires to develop a communication strategy and an effective plan to generate demand however they are constrained due to lack of funds. All demand generation activities in Sindh are supported by partners and donors.

Table 18: Situational analysis of routine EPI by immunization system components – Demand generation and communication

Demand Generation and Communication			
Indicators	2010	2011	2012
24. Communication strategy			
24.1 Availability of a routine communication plan	No	No	No
24.2 KAP Study conducted in relation to immunization	No	No	No
25. Evidence based communication			
25.1 % of government funds on demand generation / communication: EPI and PEI	0%	0%	0%
a) EPI (without PEI)	0%	0%	0%
b) PEI	0%	0%	0%

1.4. Summary - SWOT

Strength	Weaknesses
- Very low staff turnover of vaccinators - Wide presence across the province - Infrastructure (wherever EPI Centers are available) - Service delivery strategy is developed - Cold chain equipment, though old however in sufficient numbers - Presence of information system which can be updated - Functional AFP Surveillance system - Recurrent budget for salaries - EPI program integrated with health system	Management - No provincial EPI policy and strategy - Vaccines are not in provincial budget line item - Job descriptions are not available for all cadre of employees - Standard Operating Procedures are either outdated or not available - There is no system for assessment of staff competencies and to improve them - There are only three technical positions at provincial headquarters of EPI - No dedicated EPI technical staff at district level - Program annual reports are not published - Annual plans are not linked with finances - Inequitable distribution of vaccinators Human Resource Management - There is no HR policy - EPI provincial headquarter does not have control on EPI human and other resources in the districts - There is no structured induction training for vaccinators - Core EPI staff is overburdened - Training of mid-level managers is not regularly conducted. Last training was conducted 5 years ago - High staff turnover of top and mid-level managers - Staff is highly demotivated Service Delivery - Insufficient number of fixed EPI Centers (105 UCs and 414 Health Facilities lack fixed EPI Center) - Service Delivery Strategy not fully implemented - Two sources (Federal EPI & DHIS) with different number for target population calculation

	▪ Mobility of vaccinators is compromised due to old motorcycles and increased fuel prices Vaccines, Cold Chain & Logistics ▪ Insufficient number of cold chain equipment – all kinds at all levels ▪ Only 3 Cold Chain technicians for the entire province ▪ Staffs are not trained in cold chain maintenance at divisional & provincial Level ▪ Cold rooms and cold chain equipment are over aged and most of them need replacement Financing ▪ Delayed release of finances ▪ Routine expenses are not in the recurrent budget ▪ Inadequate budget for routine expenses - weak financial planning Surveillance Monitoring and Reporting ▪ Significant difference in coverage figures between program data and survey results ▪ No designated surveillance staff at provincial and district level ▪ No system/mechanism to determine FIC ▪ No active surveillance system for Measles and NNT Demand Creation ▪ Status of community knowledge and attitude is not known ▪ No interventions for demand creation due to lack of funds
Opportunities	Threats
▪ 44% of province population is covered by LHWs ▪ Mobile health in EPI service delivery is successfully being implemented in Karachi. ▪ Commitment of GoS ▪ Devolution – if program prepares itself ▪ Possibilities of Public-Private partnership (PPHI, CSOs/NGOs etc.) ▪ Possibilities of Public-Public Partnership (LHWs Program, MNCH Program etc.) ▪ UN Agencies, GAVI, etc.	▪ Lack of political commitment ▪ Political interference in staffing ▪ Devolution is threat if not prepared accordingly ▪ Natural Disasters ▪ Security issues ▪ Bad Governance

2 Immunization objectives and strategies

2.1. Program objectives and milestones

The overall goal of the Provincial Immunization Program is to decrease Vaccine Preventable Diseases associated morbidity and mortality in the province of Sindh. The goals of the program are to decrease in the Sindh province, by 2018:

- **Cases of measles from 218 to 55 per 1,000,000 population;**
- **Cases of Polio from 4 to 0;**
- **Deaths caused by Tetanus from 1.8 to 0.5 per 100,000 newborn**

The Sindh Immunization Program plans to achieve its goals through improving performance of the immunization system. The performance is measured in terms of coverage and equity, as listed below in Table 19:

Table 19: EPI program coverage – Baseline (2012) and Target (2014-2018)						
Indicators	2012	2014	2015	2016	2017	2018
	%	%	%	%	%	%
Increase DTP3 coverage	39	48	57	67	75	85
Increase Measles 1 coverage	45	47	55	65	73	80
Increase TT2 coverage among women pregnant in last 5 years	54	55	57	60	62	65
Increase OPV3 coverage	39	48	57	67	75	85
Increase Hepatitis Birth (o) Dose coverage	0	0	25	50	60	75
Increase PCV3 coverage	0	48	57	67	75	85
Introduce and increase IPV coverage	0	0	25	50	60	75
Introduce & increase Rota Virus coverage	0	0	0	40	50	60
Increase the proportion of fully immunized children*	29	47	55	65	73	80
Improve geographical equity - % of districts that have at or above 80% DTP3 coverage	33	35	45	55	65	75
Improve socio-economic equity – reducing the gap of DTP3 coverage between lowest wealth quintile and highest wealth quintile	30	28	25	22	19	15
Decrease dropout rate - percentage point difference between DTP1 and DTP3 coverage	26	23	18	15	12	8
Increased demand - % of children whose mothers intend to vaccinate children	Baseline status will be determined through a KAP study and targets will be set subsequently					

*Fully immunized: % of children aged 12-23 months who receive all basic vaccinations in routine immunization program

2.2. Strategies and main activities

2.2.1. Program Management

In order to achieve overall program goals and objectives, the EPI program intends to address specific program management issues to increase program management performance. This means that by 2018:

- Provincial EPI policy and strategy is developed
- Vaccines are included in provincial budget line item
- HR policy is developed
- Job descriptions are available for all EPI staff
- Standard operational procedures have been developed / revised / updated
- Staff competency assessment is carried out regularly
- IACC is established and is meeting on quarterly basis
- Staff is recruited against new managerial positions and trained
- Annual program progress reports are produced and shared

- cMYP is revised on annual basis
- Annual EPI plans are developed at union council, district and provincial level

The strategies and activities to achieve objective are as follows:

ISC Objective 1: Increase program management performance

Strategy 1.1: Develop provincial EPI policy and Strategy in line with national EPI policy

- | | |
|-----------------|--|
| Activity 1.1.1: | Establish Provincial EPI Policy and Strategy development Task Force |
| Activity 1.1.2: | Produce draft provincial EPI Policy and Strategy: |
| Activity 1.1.3: | Review provincial draft EPI policy by Experts Committee and finalize the draft |
| Activity 1.1.4: | Seek Approval of Provincial EPI Policy by the provincial cabinet |
| Activity 1.1.5: | Modify cMYP in line with EPI policy and guidelines |

Strategy 1.2: Have vaccines included in the budget as line item

- | | |
|-----------------|--|
| Activity 1.2.1: | Review last three years budget and develop concept paper |
| Activity 1.2.2: | Share concept paper with relevant health and finance officials |
| Activity 1.2.3: | Follow up with finance department till the vaccines have been included in the provincial budget line item. |

Strategy 1.3: Streamline EPI program management processes

- | | |
|-----------------|---|
| Activity 1.3.1: | Develop HR policy |
| Activity 1.3.2: | Make job descriptions available for each cadre of EPI employees: <ol style="list-style-type: none"> 1) Identify employee category without a job description; 2) Develop new job descriptions for employee positions without a job description; and 3) Revise existing job descriptions; |
| Activity 1.3.3: | Make standard operating procedures of EPI program available: <ol style="list-style-type: none"> 1) Identify EPI operations without standard operating procedure; 2) Develop new standard operating procedures according to program needs; 3) Revise existing standard operating procedures where required. |

Strategy 1.4: Improve EPI program staff competencies

- | | |
|-----------------|--|
| Activity 1.4.1: | Assess competencies of key EPI management staff to determine training needs: <ol style="list-style-type: none"> 1) Adjust regulations (introducing competency assessment as a mandatory procedure); 2) Develop assessment criteria and methodology 3) Carry out assessments |
| Activity 1.4.2: | Arrange and conduct training where required. |

Strategy 1.5: Build and strengthen Public-Public and Public-Private partnerships

- | | |
|-----------------|--|
| Activity 1.5.1: | Establish IACC and hold its quarterly meeting |
| Activity 1.5.2: | Produce regularly policy and EPI status briefs and share with higher officials, partner organizations, corporate sector; |

Activity 1.5.3:	Present immunization program achievements, challenges and solutions to: 1) Health minister 2) Parliamentarians 3) Chairman Planning and Development 4) Secretary health
Activity 1.5.4:	Organize consultations meetings with EPI partners and follow up implementation of decisions and actions agreed in the past.
Activity 1.5.5:	Build partnership with education department to vaccinate children on enrollment in school through EPI services 1) Establish Inter-Sectoral Technical Committee (ISTC) 2) Complete planning at the EPI field team level
Strategy 1.6: Strengthen EPI program management	
Activity 1.6.1:	Induct new staff positions to strengthen management, supervision and surveillance functions.
Activity 1.6.2:	Recruit professionals against new staff positions
Strategy 1.7: Share annual program progress with key stakeholders	
Activity 1.7.1:	Prepare and publish program annual progress report:
Activity 1.7.2:	Share program annual progress report with parliamentarians, public and private sector partners, national and international donors.
Strategy 1.8: Review, revise and update cMYP on yearly basis	
Activity 1.8.1:	Form cMYP review committee
Activity 1.8.2:	Review, revise and update cMYP;
Strategy 1.9: Develop annual EPI program plan	
Activity 1.9.1:	Develop formats for annual EPI plan for union council and district levels
Activity 1.9.2:	Train, in development of annual EPI plans: 1) vaccinators 2) district EPI officers
Activity 1.9.3:	Assess quality of district annual plans
Activity 1.9.4:	Develop provincial annual EPI plan

2.2.2. Human Resource Management

The main objective of this immunization system component is to increase the availability of qualified human resources for the immunization program, build their capacities and increase their motivation. This means that by 2018:

- Human resource gap is reduced to 0%
- Induction training for vaccinators is initiated
- Mid-level managers are trained once every two years
- Staff motivation is increased

Comprehensive multiyear-Plan | Immunization Program of Sindh

Chapter 2: Immunization objectives and strategies

As of baseline there are 2,575 vaccinators, 1,872 dispensers, 1,345 lady health visitors (LHV) and 22,297 lady health workers (LHW) who primarily contribute in the EPI service delivery (Table 20). While the first three categories give vaccinations, the role of LHW is primarily in demand generation (estimated at 15% of their time) through educating communities on importance of immunization. With these resources the EPI program is facing a deficit of 25% in human resources (in FTE).

Table 20: Human resource deficit (in FTE) at baseline

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 RI and SIA	Total FTE spent on immunization
Vaccinators	2,575	100%	20%	515	2,060	2,575
Dispensers	1,872	5%	0%	0	93	94
Lady Health Visitors (LHVs)	1,345	5%	0%	0	67	67
Lady Health Workers (LHWs)	12,297	15%	20%	369	1,476	1,845
Lady Health Workers (LHWs)	10,000	15%	20%	300	1,200	1,500
Total FTE available for RI and SIA:						4,897
Total FTE Needed for RI and SIA:						6,500
Deficit:						1,603
						25%

Table 21 shows that when 905 vaccinators are added in the program and 7,000 LHWs start vaccinating children and women after training (increasing their contribution from 15% to 25%), the deficit is reduced to zero. The outcome of three scenarios is given at Annexure 1.

Table 21: Human resource deficit (in FTE) after adding new staff

Accredited EPI Service Providers	Posts occupied (in FTE)	Share of Total Operation time to allocate to Immunization	FTE spent on PEI	Available (FTE) for RI and SIA	Total FTE spent (immunization)
Vaccinators	3,480	100%	515	2,965	3,480
Dispensers	1,872	5%	0	93	93
Lady Health Visitors (LHVs)	1,345	5%	0	67	67
Lady Health Workers (LHWs)	15,297	15%	369	1,925	2,294
Lady Health Workers (LHWs)	7,000	25%	300	1,450	1,750
Total FTE available for RI and SIA:					6,500
Total FTE Needed for RI and SIA:					6,500
Deficit:					0

The program sets following strategies and activities to achieve objective related to human resource management:

ISC Objective 2: Increase availability of qualified human resources for the immunization program, build their capacities and increase their motivation

Strategy 2.1: Reduce human resource gap for skilled immunization staff to 0%:

- | | |
|-----------------|--|
| Activity 2.1.1: | Establish new EPI centers at 414 health facilities and 40 union councils which do not have an EPI center. |
| | <ol style="list-style-type: none"> 1) Recruit 905 vaccinator 2) Train newly recruited vaccinators |
| Activity 2.1.2: | Integrate additional 7,000 Lady Health Workers in EPI program to give vaccinations |
| | <ol style="list-style-type: none"> 1) Identify areas of low immunization coverage 2) Train additional 7,000 LHWs in giving vaccinations on already developed protocols 3) Give support and supplies to trained LHWs |

Strategy 2.2: Assess possibilities to integrate available qualified health professionals in the delivery of immunization services:

- | | |
|-----------------|--|
| Activity 2.2.1: | Assess opportunities (availability, readiness/willingness) and identify categories of health staff for engagement into immunization program; |
|-----------------|--|

Activity 2.2.2: Carry out consultations with relevant health authorities and agree on feasible and sustainable arrangements

Activity 2.2.3: Revise the regulatory framework (standards/guidelines, scope of work) in order to ensure the engagement of SIS in the program;

Activity 2.2.4: Carry out trainings in immunization of identified categories of health staff.

Strategy 2.3: Introduce induction training for vaccinators.

Activity 2.3.1: Issue notification regarding induction training of vaccinators

Activity 2.3.2: Develop vaccinators training curriculum

Activity 2.3.3: Arrange training facilities

Activity 2.3.4: Conduct induction training of newly recruited vaccinators

- 1) Assess pre training knowledge and skills
- 2) Arrange one month classroom sessions
- 3) Arrange three months practical sessions in the field
- 4) Assess post training knowledge and skills

Strategy 2.4: Build capacities of mid-level managers

Activity 2.4.1: Arrange refresher training of mid-level managers

Activity 2.4.2: Conduct refresher training starting with pre training assessment and concluding with post training assessment of knowledge and skills.

Strategy 2.5: Increase staff motivation – Give salary bonus to district and union council staff of highest achievers

Activity 2.5.1: Notify the district with highest immunization coverage in the province

Activity 2.5.2: Give salary bonus to all EPI staff of that district

Activity 2.5.3: Notify the union council in each district with highest immunization coverage

Activity 2.5.4: Give salary bonus to union council EPI staff

2.2.3. Costing and Financing

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

- Immunization system outcome targets are balanced with the financial resources
- Financial efficiency of immunization program is increased
- Sustainability of immunization program is increased

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

Strategy 3.1: Maintain cost per DPT3 child within a range of PKR 8,085 to 11,025:

Activity 3.1.1: Maintain cost per DPT3 child between PKR 8,085 and PKR 11,025

Strategy 3.2: Immunization system outcome targets are balanced with the financial resources available:

Activity 3.2.1: Assess availability of secured financial resources

Activity 3.2.2: Revise targets based on secured financial resources, if needed

Strategy 3.3: Increase financial efficiency of immunization program

Activity 3.3.1: Develop/revise financial SOPs

Activity 3.3.2: Train all concerned staff

Activity 3.3.3: Implement and monitor

Strategy 3.4: Increase sustainability of the immunization program

Activity 3.4.1: Develop comprehensive cMYP

Activity 3.4.2: Develop PC1 based upon program needs

Activity 3.4.3: Continue advocating health and finance department to include all EPI costs in provincial budget line items.

2.2.4. Vaccine, Cold Chain and Logistics

The objective of this immunization system component is to improve/sustain uninterrupted supply of vaccines to immunization service delivery.

This means that by 2018:

- Cold chain and vaccine management plan is in place
- Uninterrupted supply of vaccines to immunization service delivery is maintained
- vLMIS is implemented in all districts
- EVM assessment is carried out

The strategies and activities to achieve objective are as follows:

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

Strategy 4.1: Strengthen LMIS for vaccines

Activity 4.1.1: Pilot test vLMIS in 6 districts

Activity 4.1.2: Identify and remove issues in software utilization

Activity 4.1.3: Implement vLMIS in all districts

- 1) Train district staff in vLMIS
- 2) Introduce vLMIS in all districts

Strategy 4.2: Maintain uninterrupted supply of vaccines to immunization service delivery

Activity 4.2.1: Assess cold chain equipment and identifying equipment which needs replacement

Activity 4.2.2: Develop specifications and procurement plan (aligned with the availability of funding)

Activity 4.2.3: Purchase and install required equipment

Activity 4.2.4: Provide maintenance services on a regular basis

Strategy 4.3: Improve vaccine management by implementing EVM Improvement plan

Activity 4.3.1: Carry out EVM assessment

Activity 4.3.2: Revise the annual work plan in accordance with the EVM improvement plan

Activity 4.3.3: Report on the progress of implementation of the EVM improvement Plan

Strategy 4.4: Prepare cold chain and vaccine management plan to introduce new vaccines

Activity 4.4.1: Assess cold chain storage capacity and expand if needed

Activity 4.4.2: Train vaccine management personnel

- 1) Develop training manual for new vaccine
- 2) Train personnel on giving new vaccine

2.2.5. Immunization Services Delivery

The overall objective of this immunization system component is to strengthen capacity of immunization service delivery. This means that by 2018:

- At least 454 new EPI centers are established
- Partnerships are established with GPs, PPHI and CSOs
- Mobile Health component is tested and implemented
- Hepatitis B, IPV and rotavirus vaccines are added to routine immunization

The 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: Establish at least 454 EPI centers - 414 in health facilities without an EPI center and 40 in union councils without EPI center;

Activity 5.1.1: Assess health facilities for repairs needs and carry out repairs

Activity 5.1.2: Arrange building for EPI centers in union councils without health facility

Activity 5.1.3: Recruit 905 vaccinators (2 per EPI center) and start induction training;

Activity 5.1.4: Install cold chain equipment;

Activity 5.1.5: Start functions of EPI centers

Strategy 5.2: Increase performance of existing EPI Centers

Activity 5.2.1: Increase adequate distribution of vaccinators

- 1) Carry out consultations with health authorities
- 2) Carry out consultations with relevant politicians
- 3) Appoint vaccinators at their place of posting

Activity 5.2.2: Strengthen supportive supervision to vaccinators

Strategy 5.3: Build partnerships with General Medical Practitioners (GPs), PPHI and CSOs for increasing EPI coverage.

Activity 5.3.1: Invite GPs and assess their capacity

Activity 5.3.2: Select GPs and contract them

Activity 5.3.3: Finalize union councils to work with PPHI

Activity 5.3.4: Assess PPHI capacity, finalize and contract PPHI

Activity 5.3.5: Finalize union councils / locations to work with CSOs

Activity 5.3.6: Select and contract qualified CSOs

Activity 5.3.7: Conduct oversight of contract implementation

Strategy 5.4: Introduce Hep-B birth dose, IPV and Rota Virus in routine immunization

Activity 5.4.1: Train staff at all levels

Activity 5.4.2: Fulfil cold chain requirements

Activity 5.4.3: Ensure logistics

Activity 5.4.4: Start public awareness campaign

Activity 5.4.5: Launch new vaccines

(1) Hep B zero dose

(2) IPV

(3) Rota virus

2.2.6. Monitoring, Surveillance and Reporting

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

- Causes of data quality flaws are assessed
- Immunization coverage is assessed periodically
- DQS is conducted on quarterly basis
- EPI program progress is reviewed at district, divisional and provincial level
- Mobile health component is piloted and implemented at provincial level
- GPs are integrated in surveillance system at the district level

The strategies and activities to achieve the component objective are as follows:

ISC Objective 6: Increase performance of surveillance, routine monitoring and reporting

Strategy 6.1: Streamline data collection and reporting practices

Activity 6.1.1: Assess main causes of data quality flaws

Activity 6.1.2: Revise surveillance guidelines and forms

Activity 6.1.3: Introduce feedback mechanism on the administrative reports of subordinated entities

Activity 6.1.4: Conduct continuous supportive supervision

Activity 6.1.5: Assess immunization coverage through periodic survey

Activity 6.1.6: Conduct DQS at regular interval on quarterly basis

Strategy 6.2: Review EPI program progress at district, division and provincial level

Activity 6.2.1: Review EPI program progress at district level on monthly basis

Activity 6.2.2: Review EPI program progress at divisional level on quarterly basis

Activity 6.2.3: Review EPI program progress at provincial level twice every year

Strategy 6.3: Introduce Mobile Health component to improve surveillance

Activity 6.3.1: Finalize 8 districts for piloting Mobile Health component

Activity 6.3.2: Install servers at EPI provincial headquarters

Activity 6.3.3: Customize software according to program needs

Activity 6.3.4: Purchase mobile handsets and install applications

Activity 6.3.5: Train provincial, district, field staff and partners in M-Health

Activity 6.3.6: Launch field activities

Activity 6.3.7: Review progress and plan to cover entire province

Activity 6.3.8: Implement in entire province

Strategy 6.4: Integrate General Medical Practitioners (GPs) in surveillance at district level

Activity 6.4.1: Identify GPs to become part of surveillance system

Activity 6.4.2: Train selected GPs

Activity 6.4.3: Establish surveillance reporting mechanism with GPs

2.2.7. Demand Generation, Communication and Advocacy

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

- Benchmark for communities' knowledge and attitude is established
- Evidence based communication strategy is developed and implemented

The strategies and activities to achieve the component objective are as follows:

ISC Objective 7: Improve knowledge and attitude of communities toward immunization

Strategy 7.1: Determine status of knowledge and attitude of target communities towards immunization and area specific effective means of communication

Activity 7.1.1: Conduct KAP study to determine among target communities, the:

- (1) Current status of knowledge and attitude towards immunization
- (2) Effective ways (from the community perspective) of communication

Activity 7.1.2: Set EPI program target for subsequent years.

Mobile Health Component

Sindh EPI program desires add component of M-Health in its service delivery. The M-Health system uses of a mobile phone and Quick Response (QR) code based vaccine registry system. It has been, in partnership with EPI-Sindh, developed and pilot-tested on more than 16,000 infants in Karachi during 2012-13.

The enhanced system deploys a user-friendly interface to easily capture bio-data and immunization history. The immunization data is stored securely in the password protected memory of the phone, and on a central server to which the phone connects periodically for data transfer and backup. The data entry does not require cell phone coverage at all times and uploads stored data when connectivity is available.

The children are enrolled into the program and at enrollment, each child is given a unique QR code in the form of a sticker on their government-issued EPI card. The unique ID in the QR code serves as primary means to reliably track immunization history of children when they present their immunization card at EPI centers or during out-reach vaccination campaigns. The EPI vaccinator will use a basic android phone equipped with a camera to scan the QR code. By capturing the image of QR code (which have pre-assigned IDs), the vaccinator is quickly able to fill in basic information about the infant such as birthdate, gender, vaccine given, and other information as per EPI requirements. If the parent has access to a mobile phone number, that number will be recorded in the system. All vaccination data will be stored on the phone and will also be transmitted (via GPRS) to a central server for permanent storage and backup.

Strategy 7.2: Develop and implement evidence based communication strategy and interventions.

Activity 7.2.1: Develop communication interventions

Activity 7.2.2: Develop area specific communication plan

Activity 7.2.3: Pilot test the communication interventions

Activity 7.2.4: Implement communication interventions.

Strategy 7.3: Increase involvement of social influencers in EPI program

Activity 7.3.1: Map social influencers at union council level

Activity 7.3.2: Develop plan to sensitize social influencers on routine immunization, surveillance and referrals

Activity 7.3.3: Implement the plan

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: Develop provincial EPI policy and Strategy in line with national EPI policy					
Activity 1.1.1: Establish Provincial EPI Policy and Strategy development Task Force					
Activity 1.1.2: Produce draft provincial EPI Policy and Strategy:					
Activity 1.1.3: Review provincial draft EPI policy by Experts Committee and finalize the draft					
Activity 1.1.4: Seek Approval of Provincial EPI Policy by the provincial cabinet					
Activity 1.1.5: Modify cMYP in line with EPI policy and guidelines					
Strategy 1.2: Have vaccines included in the budget as line item					
Activity 1.2.1: Review last three years budget and develop concept paper					
Activity 1.2.2: Share concept paper with relevant health and finance officials					
Activity 1.2.3: Follow up with finance department till the vaccines have been included in the provincial budget line item.					
Strategy 1.3: Streamline EPI program management processes					
Activity 1.3.1: Develop HR policy					
Activity 1.3.2: Make job descriptions available for each cadre of EPI employees:					
1) Identify employee category without a job description;					
2) Develop new job descriptions for employee positions without a job description; and					
3) Revise existing job descriptions;					
Activity 1.3.3: Make standard operating procedures of EPI program available:					
1) Identify EPI operations without a standard operating procedure;					
2) Develop new standard operating procedures according to program needs;					
3) Revise existing standard operating procedures where required.					
Strategy 1.4: Improve EPI program staff competencies					
Activity 1.4.1: Assess competencies of key EPI management staff to determine training needs:					
1) Adjust regulations (introducing competency assessment as a mandatory procedure);					
2) Develop assessment criteria and methodology					
3) Carry out assessments					
Activity 1.4.2: Arrange and conduct training where required.					
Strategy 1.5: Build and strengthen Public-Public and Public-Private partnerships					
Activity 1.5.1: Establish IACC and hold its quarterly meeting					
Activity 1.5.2: Produce regularly policy and EPI status briefs and share with higher officials, partner organizations, corporate sector;					
Activity 1.5.3: Present immunization program achievements, challenges and solutions to:					
Activity 1.5.4: Organize consultations meetings with EPI partners and follow up implementation of decisions and actions agreed in the past.					
Activity 1.5.5: Build partnership with education department to vaccinate children on enrollment in school through EPI services					
1) Establish Inter-Sectoral Technical Committee (ISTC)					
2) Complete planning at the EPI field team level					
Strategy 1.6: Strengthen EPI program management					
Activity 1.6.1: Induct new staff positions to strengthen management, supervision and surveillance functions.					
Activity 1.6.2: Recruit professionals against new staff positions					
Strategy 1.7: Share annual program progress with key stakeholders					
Activity 1.7.1: Prepare and publish program annual progress report:					

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Chapter 3: Implementation and M&E

Objective/strategies/activities	2014	2015	2016	2017	2018
Activity 1.7.2: Share program annual progress report with parliamentarians, public and private sector partners, national and international donors.					
Strategy 1.8: Review, revise and update cMYP on yearly basis					
Activity 1.8.1: Form cMYP review committee					
Activity 1.8.2: Review, revise and update cMYP;					
Strategy 1.9: Develop annual EPI program plan					
Activity 1.9.1: Develop formats for annual EPI plan for union council and district levels					
Activity 1.9.2: Train, in development of annual EPI plans:					
1) Vaccinators					
2) district EPI officers					
Activity 1.9.3: Assess quality of district annual plans					
Activity 1.9.4: Develop provincial annual EPI plan					
ISC Objective 2: Increase availability of qualified human resources for the immunization program, build their capacities and increase their motivation					
Strategy 2.1: Reduce human resource gap for skilled immunization staff to 0%:					
Activity 2.1.1: Establish new EPI centers at 414 health facilities and 40 union councils which do not have an EPI center.					
1) Recruit 905 vaccinator					
2) Train newly recruited vaccinators					
Activity 2.1.2: Integrate additional 7,000 Lady Health Workers in EPI program to give vaccinations					
1) Identify areas of low immunization coverage					
2) Train additional 7,000 LHWs in giving vaccinations on already developed protocols					
3) Give support and supplies to trained LHWs					
Strategy 2.2: Assess possibilities to integrate available qualified health professionals in the delivery of immunization services:					
Activity 2.2.1: Assess opportunities (availability, readiness/ willingness) and identify categories of health staff for engagement into immunization program;					
Activity 2.2.2: Carry out consultations with relevant health authorities and agree on feasible and sustainable arrangements					
Activity 2.2.3: Revise the regulatory framework (standards/guidelines, scope of work) in order to ensure the engagement of SIS in the program;					
Activity 2.2.4: Carry out trainings in immunization of identified categories of health staff.					
Strategy 2.3: Introduce induction training for vaccinators.					
Activity 2.3.1: Issue notification regarding induction training of vaccinators					
Activity 2.3.2: Develop vaccinators training curriculum					
Activity 2.3.3: Arrange training facilities					
Activity 2.3.4: Conduct induction training of newly recruited vaccinators					
Strategy 2.4: Build capacities of mid-level managers					
Activity 2.4.1: Arrange refresher training of mid-level managers					
Activity 2.4.7: Conduct refresher training starting with pre training assessment and concluding with post training assessment of knowledge and skills					
Strategy 2.5: Increase staff motivation – Give salary bonus to district and union council staff of highest achievers					
Activity 2.5.1: Notify the district with highest immunization coverage in the province					
Activity 2.5.2: Give salary bonus to all EPI staff of that district					
Activity 2.5.3: Notify the union council in each district with highest immunization coverage					
Activity 2.5.4: Give salary bonus to EPI staff in those union councils					
ISC Objective 3: Increase financial efficiency and sustainability of the immunization program					
Strategy 3.1: Maintain cost per fully immunization child within a range of X-Y:					
Activity 3.1.1: Maintain cost per DPT3 child between PKR 8,085 and PKR 11,025					
Strategy 3.2: Immunization system outcome targets are balanced with the financial resources					

Comprehensive multiyear-Plan | Immunization Program of Sindh
Chapter 3: Implementation and M&E

Objective/strategies/activities	2014	2015	2016	2017	2018
available:					
Activity 3.2.1: Assess availability of secured financial resources					
Activity 3.2.2: Revise targets based on secured financial resources, if needed					
Strategy 3.3: Increase financial efficiency of immunization program					
Activity 3.3.1: Develop/revise financial SOPs					
Activity 3.3.2: Train all concerned staff					
Activity 3.3.3: Implement and monitor					
Strategy 3.4: Increase sustainability of the immunization program					
Activity 3.4.1: Develop comprehensive cMYP					
Activity 3.4.2: Develop PC1 based upon program needs					
Activity 3.4.3: Continue advocating health and finance department to include all EPI costs in provincial budget line items.					
ISC Objective 4: Improve / sustain uninterrupted supply of vaccines to immunization service delivery					
Strategy 4.1: Strengthen LMIS for vaccines					
Activity 4.1.1: Pilot test LMIS software for vaccines in 6 districts					
Activity 4.1.2: Identify and remove issues in software utilization					
Activity 4.1.3: Implement vLMIS in all districts					
1) Train district staff in vLMIS					
2) Introduce vLMIS in all districts					
Strategy 4.2: Maintain uninterrupted supply of vaccines to immunization service delivery					
Activity 4.2.1: Assess cold chain equipment and identifying equipment which needs replacement					
Activity 4.2.2: Develop specifications and procurement plan (aligned with the availability of funding)					
Activity 4.2.3: Purchase and install required equipment					
Activity 4.2.4: Provide maintenance services on a regular basis					
Strategy 4.3: Improve vaccine management by implementing EVM Improvement plan					
Activity 4.3.1: Carry out EVM assessment					
Activity 4.3.2: Revise the annual work plan in accordance with the EVM improvement plan					
Activity 4.3.3: Report on the progress of implementation of the EVM improvement Plan					
Strategy 4.4: Prepare cold chain and vaccine management plan to introduce new vaccines					
Activity 4.4.1: Assess cold chain storage capacity and expand if needed					
Activity 4.4.2: Train vaccine management personnel					
1) Develop training manual for new vaccine					
2) Train personnel on giving new vaccine					
ISC Objective 5: Strengthen and optimize capacity of immunization service delivery					
Strategy 5.1: Establish at least 454 EPI centers - 414 in health facilities without an EPI center and 40 in union councils without EPI center;					
Activity 5.1.1: Assess health facilities for repairs needs and carry out repairs					
Activity 5.1.2: Recruit 905 vaccinators (2 per EPI center) and start induction training;					
Activity 5.1.3: Install cold chain equipment;					
Activity 5.1.4: Start functions of EPI centers					
Strategy 5.2: Increase performance of existing EPI Centers					
Activity 5.2.1: Increase adequate distribution of vaccinators					
1) Carry out consultations with health authorities					
2) Carry out consultations with relevant politicians					
3) Appoint vaccinators at their place of posting					
Activity 5.2.2: Strengthen supportive supervision to vaccinators					
Strategy 5.3: Build partnerships with General Medical Practitioners (GPs), PPHI and CSOs for increasing EPI coverage.					
Activity 5.3.1: Invite GPs and assess their capacity					

Comprehensive multiyear-Plan | Immunization Program of Sindh
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Objective/strategies/activities	2014	2015	2016	2017	2018
Activity 5.3.2: Select GPs and contract them					
Activity 5.3.3: Finalize union councils to work with PPHI					
Activity 5.3.4: Assess PPHI capacity, finalize and contract PPHI					
Activity 5.3.5: Finalize union councils / locations to work with CSOs					
Activity 5.3.6: Select and contract qualified CSOs					
Activity 5.3.7: Conduct oversight of contract implementation					
Strategy 5.4: Introduce Hep-B birth dose, IPV and Rota Virus in routine immunization					
Activity 5.4.1: Train staff at all levels					
Activity 5.4.2: Fulfil cold chain requirements					
Activity 5.4.3: Ensure logistics					
Activity 5.4.4: Start public awareness campaign					
Activity 5.4.5: Launch new vaccines					
1) Hep B birth dose					
2) IPV					
3) Rotavirus					
ISC Objective 6: Increase performance of surveillance, routine monitoring and reporting					
Strategy 6.1: Streamline data collection and reporting practices					
Activity 6.1.1: Assess main causes of data quality flaws					
Activity 6.1.2: Introduce feedback mechanism on the administrative reports of subordinated entities					
Activity 6.1.3: Conduct continuous supportive supervision					
Activity 6.1.4: Assess immunization coverage through periodic survey					
Activity 6.1.5: Conduct DQS at regular interval on quarterly basis					
Strategy 6.2: Review EPI program progress at district, division and provincial level					
Activity 6.2.1: Review EPI program progress at district level on monthly basis					
Activity 6.2.2: Review EPI program progress at divisional level on quarterly basis					
Activity 6.2.3: Review EPI program progress at provincial level twice every year					
Strategy 6.3: Introduce Mobile Health component to improve surveillance					
Activity 6.3.1: Finalize 8 districts for piloting Mobile Health component					
Activity 6.3.2: Install servers at EPI provincial headquarters					
Activity 6.3.3: Customize software according to program needs					
Activity 6.3.4: Purchase mobile handsets and install applications					
Activity 6.3.5: Train provincial, district, field staff and partners in M-Health					
Activity 6.3.6: Launch field activities					
Activity 6.3.7: Review progress and plan to cover entire province					
Activity 6.3.8: Implement in entire province					
Strategy 6.4: Integrate General Medical Practitioners (GPs) in surveillance at district level					
Activity 6.4.1: Identify GPs to become part of surveillance system					
Activity 6.4.2: Train selected GPs					
Activity 6.4.3: Establish surveillance reporting mechanism with GPs					
ISC Objective 7: Improve knowledge and attitude of communities toward immunization					
Strategy 7.1: Determine status of knowledge and attitude of target communities towards immunization and area specific effective means of communication					
Activity 7.1.1: Conduct KAP study to determine among target communities, the:					
1) Current status of knowledge and attitude towards immunization					
2) Effective ways (from the community perspective) of communication					
Activity 7.1.2: Set EPI program target for subsequent years.					
Strategy 7.2: Develop and implement evidence based communication strategy and interventions.					
Activity 7.2.1: Develop communication interventions					
Activity 7.2.2: Develop area specific communication plan					
Activity 7.2.3: Pilot test the communication interventions					

Objective/strategies/activities	2014	2015	2016	2017	2018
Activity 7.2.4: Implement communication interventions.					
Strategy 7.3: Increase involvement of social influencers in EPI program					
Activity 7.3.1: Map social influencers at union council level					
Activity 7.3.2: Develop plan to sensitize social influencers on routine immunization, surveillance and referrals					
Activity 7.3.3: Implement the plan					



M&E Framework

3.2. Monitoring and Evaluation

3.2.1. M&E Framework for immunization

M&E Framework is developed based upon program objectives, strategies and activities. It is attached to this document (click the icon to open the file).

3.2.2. Monitoring and Evaluation Strategy and Plan

To monitor the progress on achievement of EPI program objectives, specific indicators set for each objective in the M&E framework will be used. The M&E framework is developed to assist the EPI program management in tracking its progress and achievements. tool will be used to track and assess the performance of the immunization program.

For the purpose of monitoring the program progress, the M&E framework utilizes the program generated information as well as results of independent surveys and assessments.

The program generated information includes RI reports, minutes of meetings, notifications, job descriptions, standard operating procedures, EPI and HR policy documents; PC1s, communication materials and plans, annual EPI plans, concept papers, training reports, monitoring reports, assessment reports, feedback documents, etc.

The independent surveys and assessments include KAP survey, periodic immunization coverage assessment surveys, PDHS, etc.



cMYP Costing Tool

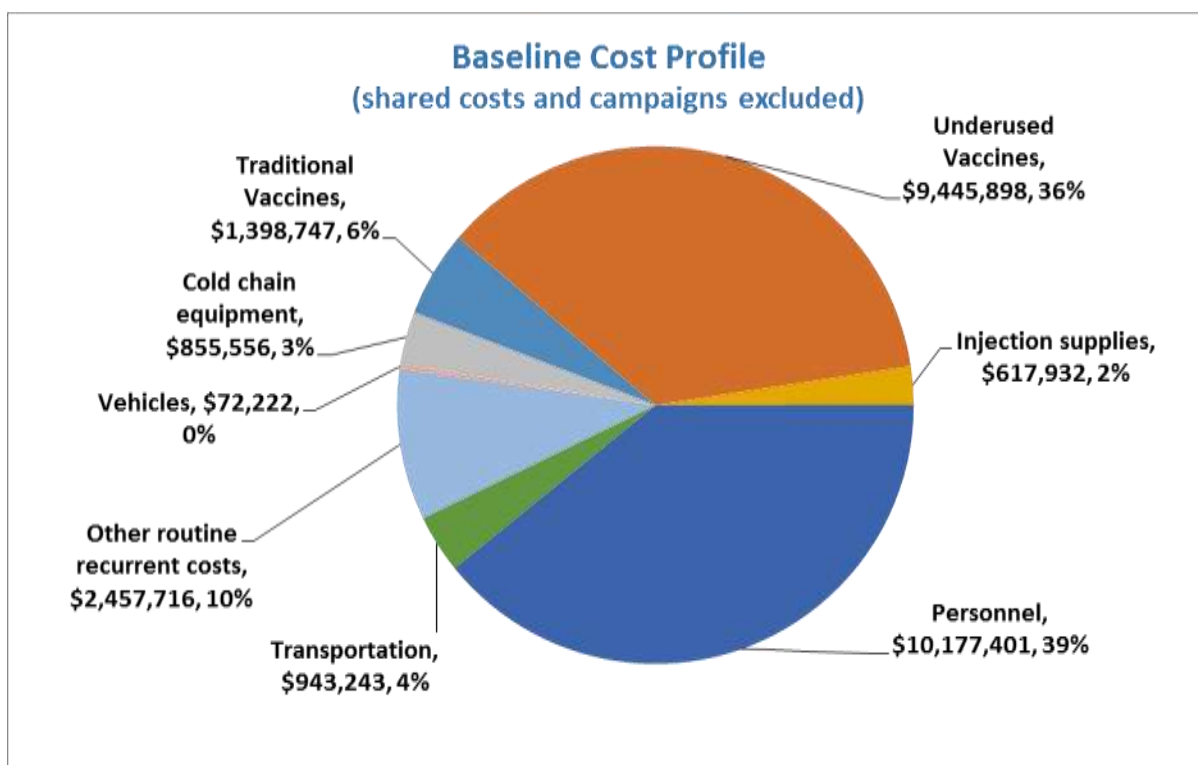
4. Immunization Program Costing and Financing

4.1. Current program costs and financing

In the year 2012 the EPI program in Sindh spent around US\$ 25.9 million (excluding NID and shared costs) on routine immunization (Table 22). There were five main expenditure categories: Personnel costs (39%); vaccines and injection supplies (44%); other routine recurrent costs (10%); transportation costs (4%); and cold chain costs (3%) (Figure 8).

4.1.1. Personnel costs

Figure 8: Baseline Cost Profile (shared costs and campaigns excluded)



The personnel costs consist of salaries, per diem for supervision and monitoring at provincial, district and union council level. A total of US\$ 10.2 million were spent on personnel which constituted 39% of the total baseline immunization costs (Figure 8).

The baseline costs were calculated using standard government payment structure for salaries, allowances and per-diems. The salaries and allowances constituted 94.7% of the total personnel costs whereas 1.9% were incurred on per diem for outreach activities and 3.5% on monitoring and supervision. Due to very thin structure, the salary share of provincial EPI office was only 1% whereas district and union council levels had 10% and 89% of share respectively. All the personnel costs were borne by the provincial government.

4.1.2. Vaccines and injection supplies

EPI program in Sindh spent US\$ 11.5 million (44%) of total immunization expenditures on vaccines and injection supplies during the baseline year 2012 (Figure 8). Among these costs, the share of traditional and underused vaccines was 12.2% and 82.4% whereas 5.4% were spent on injection supplies. The cost for all these supplies was borne by GAVI and co-financed by the federal government.

During 2012, no new vaccine was introduced. The program introduced PCV10 in 2013 and intends to introduce IPV and rotavirus vaccine in 2015 and 2016 respectively.

4.1.3. Other routine recurrent costs

During 2012, around US\$ 2.5 million were spent on routine recurrent costs which constituted 10% of the total immunization costs (Figure 8). The other routine recurrent costs include Cold chain maintenance and overheads, Maintenance of other capital equipment, Building overheads (electricity, water, etc.), Short-term training, IEC/social mobilization, Disease surveillance and Programme management.

Most of this spending (86%) was on cold chain maintenance and overheads followed by 11% on short term training whereas only 1.45% were spent on social mobilization and 0.9% on disease surveillance. The training and social mobilization component was financed by UNICEF and surveillance by WHO.

4.1.4. Transportation and vehicle costs

Currently the EPI Sindh program is spending 4% of its cost on transportation (Figure 8). The share of fixed site strategy (including vaccine distribution) and outreach and mobile strategy is 53% and 47% respectively.

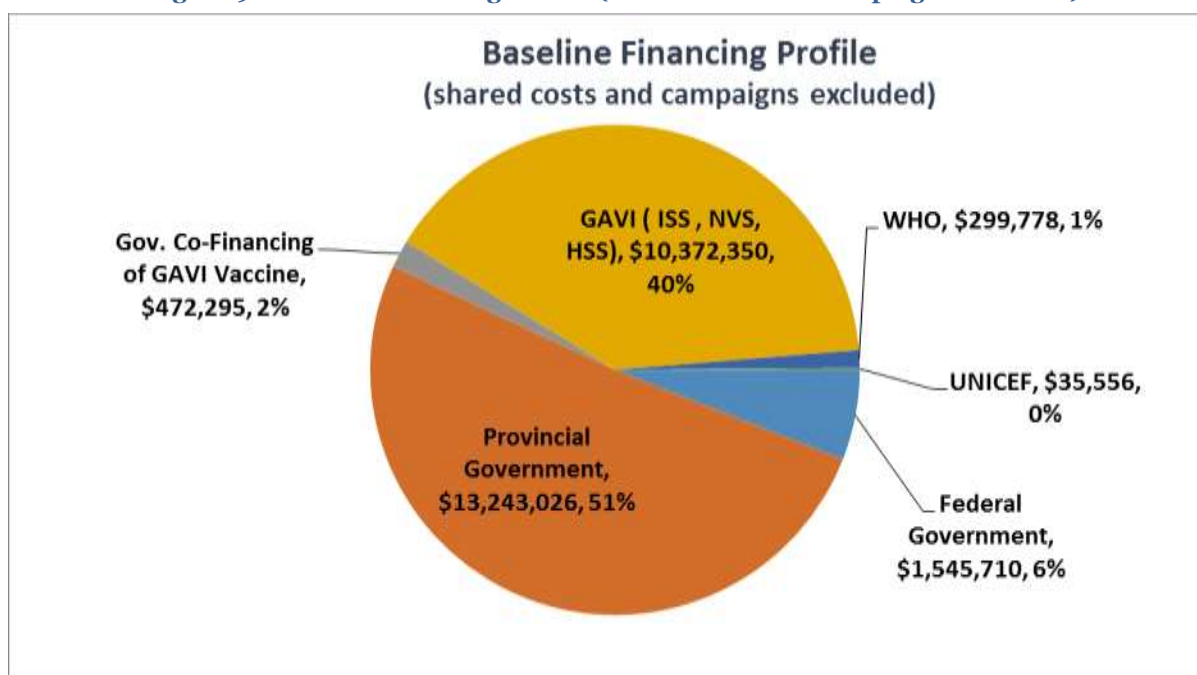
EPI Sindh has a total of 1498 vehicles and motorcycles at provincial, district and union council level including 1475 motorcycles. There are 20 vehicles at provincial headquarters including 7 refrigerated trucks, only 3 refrigerated truck at district level and 1475 motorcycles at union council levels.

4.1.5. Cold chain costs

In 2012, EPI Sindh spent only 3% on cold chain. Currently the EPI Sindh has 5 cold rooms at provincial level and 4 at district levels. Out of 5 cold rooms 2 are out of order whereas remaining 3 are also old and need replacement. With the introduction of three new antigens during the next three years, the program recognizes the need to enhance its cold chain capacity.

The provincial government was the main financier (51%) for EPI program interventions in province of Sindh during the year 2012 (Figure 9)

Figure 9: Baseline Financing Profile (shared costs and campaigns excluded)



whereas proportion of federal government's contribution was 6%. GAVI provided 40% of total finances in terms of vaccines. Around 1% of total finances were shared by WHO and UNICEF.

The federal government primarily provided vaccines and syringe supplies. The funds from Sindh government (\$13.2M) were mainly spent on staff salaries and allowances (77%), transportation (7%) and maintenance of cold chains equipment and other recurring costs (16%). The contribution from WHO and UNICEF was spent on social mobilization, training and surveillance.

Table 22 shows the baseline indicators for the year 2012. The Sindh government spent 0.05% of its GDP under EPI program in 2012 which is 22% of the government health expenditures and only 2% of the total health expenditures. About 57% of funding was provided by the government.

During 2012, about 85% (US\$ 39.7M) of total expenditures were incurred on immunization which also included campaigns. In total immunization expenditures the share of routine immunization was around 65% whereas 35% were spent on campaigns. The per capita cost was less than a dollar at US\$0.66 (PKR 59) whereas the cost per child for giving vaccinations up to DPT3 was US\$ 52.54 (PKR 4,729).

Table 22: Immunization program baseline indicators

Baseline Indicators	2012
Total Immunization Expenditures	39,694,722
Campaigns	13,726,007
Routine Immunization only	25,968,715
per capita	\$ 0.66
per DTP3 child	\$ 52.54
% Vaccines and supplies	44%
% Government funding	57%
% Total health expenditures	2%
% Gov. health expenditures	22%
% GDP	0.05%
Total Shared Costs	6,813,200
% Shared health systems cost	15%
TOTAL	46,507,921

4.2. Future resource requirements

Table 23 shows category wise future resource requirements for the program period from 2014 to 2018. The program categories consist of Vaccines and injection supplies, personnel, transportation, routine recurrent costs, vehicles, cold chain equipment and other capital equipment. The future resource requirements for these categories are described below in detail.

4.2.1. Vaccines and injection supplies

Table 19 gives the next five EPI program coverage targets for different antigens. The program plans to improve coverage of existing antigens as well as to include three new vaccines i.e., PCV 10, IPV in 2015 and Rota virus in 2016. In 2014 the cost for vaccines and injection supplies is estimated at US\$ 22.7M which will increase to US\$ 48.0M in 2018. This means that vaccines and injection costs will be more than doubled in five years. In 2014 the proportion of traditional vaccines costs out of total routine immunization costs is 1.9% which will increase to 2.35% in 2018. Similarly the cost for underused and new vaccines will increase from 10% and 26% to 14% and 42%, respectively (Table 23).

The resources for traditional vaccines will be provided by the Federal Government whereas the underused vaccine and PCV 10 will be funded by GAVI with co-financing by the Federal government. GAVI will finance the IPV vaccine whereas for Rota vaccine, co-financing by Federal government is required along with GAVI.

The costs for campaigns will decrease from 30% (US\$ 24.7M) in 2014 to 19% (US\$18.8M) in 2018 of the total program cost.

Table 23: Future resource requirements by cost categories (US\$ in million)

Cost Category	2014	2015	2016	2017	2018
Routine Recurrent Cost	US\$	US\$	US\$	US\$	US\$
Traditional Vaccines	1.10	1.29	1.51	1.69	1.91
Underused Vaccines	5.79	7.04	8.46	9.54	11.06
New Vaccines	15.06	15.61	25.73	28.64	33.64
Injection supplies	0.70	0.90	1.10	1.24	1.43
Personnel	12.69	15.22	15.98	16.78	17.62
Transportation	3.46	4.09	4.40	4.73	5.08
Other routine recurrent costs	6.69	7.36	8.03	7.59	8.73
Vehicles	5.35	0.54	0.03	-	-
Cold chain equipment	6.93	7.32	4.48	1.31	1.27
Other capital equipment	0.22	0.10	0.02	-	0.22
Total Routine Recurrent Costs	58.00	59.46	69.75	71.53	80.96

Comprehensive multiyear-Plan | Immunization Program of Sindh

Chapter 4: Immunization Program Costing and Financing

Campaigns	24.66	15.70	17.72	20.42	18.78
Total Costs	82.67	75.16	87.47	91.95	99.74

4.2.2. Personnel costs

The provincial EPI program intends to increase its overall capacity by inducting new positions at provincial, district and union council levels.

At the provincial level 5 EPI officers, one each of M&E, Surveillance, communication, HR, admin and finance officers, and 5 cold chain technicians will be added. Each district will be strengthened by addition of district EPI coordinator, data manager, surveillance, and M&E officers. This will add a total of 92 professional positions in the districts. At the union council level 7,000 LHWs will be integrated in immunization service delivery and 905 new vaccinators will be inducted in the program to decrease the human resource deficit in service delivery to 0% (Table 21).

The personnel costs will increase from US\$ 12.7M (22% RI costs) in 2014 to US\$15.2M (22%) in 2018.

During the baseline year all personnel costs were borne by the provincial government however for the subsequent years until the provincial government notifies and include new positions in the recurrent budget, these costs constitute a gap of US\$ 2.1M in financing which can have a negative impact on the overall program outcomes. Therefore the province urges the donors to funds these positions till the government approves them.

4.2.3. Transportation and vehicle costs

EPI Sindh program spent US\$ 0.9M (4%) in 2012 on transportation and intends to increase this amount to US\$ 3.46M (6% of RI costs) in 2014 and 5.1M (6% of RI costs) in 2018.

The program recognizes the need to strengthen its supervision, monitoring and surveillance, and outreach activities which requires more mobility. The EPI program plans to replace all existing motorcycles and to purchase 1983 additional motorcycles for vaccinators. Moreover 22 4WD jeeps are required for 42 hard to reach union councils in Tharparker district due to intense desert. With the addition of district level EPI staff the program also requires 92 4WD jeeps to strengthen supervision, monitoring and surveillance functions.

Program intends to replace and purchase all required vehicles during first three years and needs US\$ 5.9M to fulfil its vehicle needs.

The share of fixed site strategy (including vaccine distribution) and outreach and mobile strategy was 53% and 47% respectively

Table 24: Costs by Strategy (US\$ in million)

Strategy	2014	2015	2016	2017	2018
Routine Fix Site Delivery	\$16,390,957	\$33,069,972	\$34,740,532	\$38,818,029	\$39,904,155
Outreach Strategy	\$13,112,766	\$26,455,977	\$27,792,425	\$31,054,423	\$31,923,324
Mobile Strategy	\$3,278,191	\$6,613,994	\$6,948,106	\$7,763,606	\$7,980,831
Campaigns	\$24,664,818	\$15,700,088	\$17,723,715	\$20,423,894	\$18,783,781

during the baseline year. However, during the program duration of next five years this share is 50% for each of the two components (Table 24).

4.2.4. Cold chain costs

With the addition of new vaccines and keeping in view the existing condition of cold rooms, the province recognizes the need to strengthen its cold chain component through replacing existing cold rooms and installing 7 additional cold rooms at provincial level and 24 at district levels. Moreover to cater for the enhanced cold chain needs 235 additional large ILR are required in the districts and 2500 small ILR at the union council levels.

The province requires US\$ 21.3M i.e., 6.3% of RI costs, to meet its cold chain requirements over the next five years.

4.2.5. Routine recurrent costs

The other routine recurrent costs include cold chain maintenance and overheads, maintenance of other capital equipment, building overheads (electricity, water, etc.), short-term training, IEC/social mobilization, disease surveillance and programme management.

The program plans to spend 11.3% (US\$ 38.4M) of RI costs over the next five years to meet its future needs under routine recurrent costs.

4.2.6. Other capital requirements

For new positions at provincial and district levels, EPI program needs desktop computers, laptops, printers, Xerox, and furniture. To meet these needs US\$ 0.5M will be required over the five years duration.

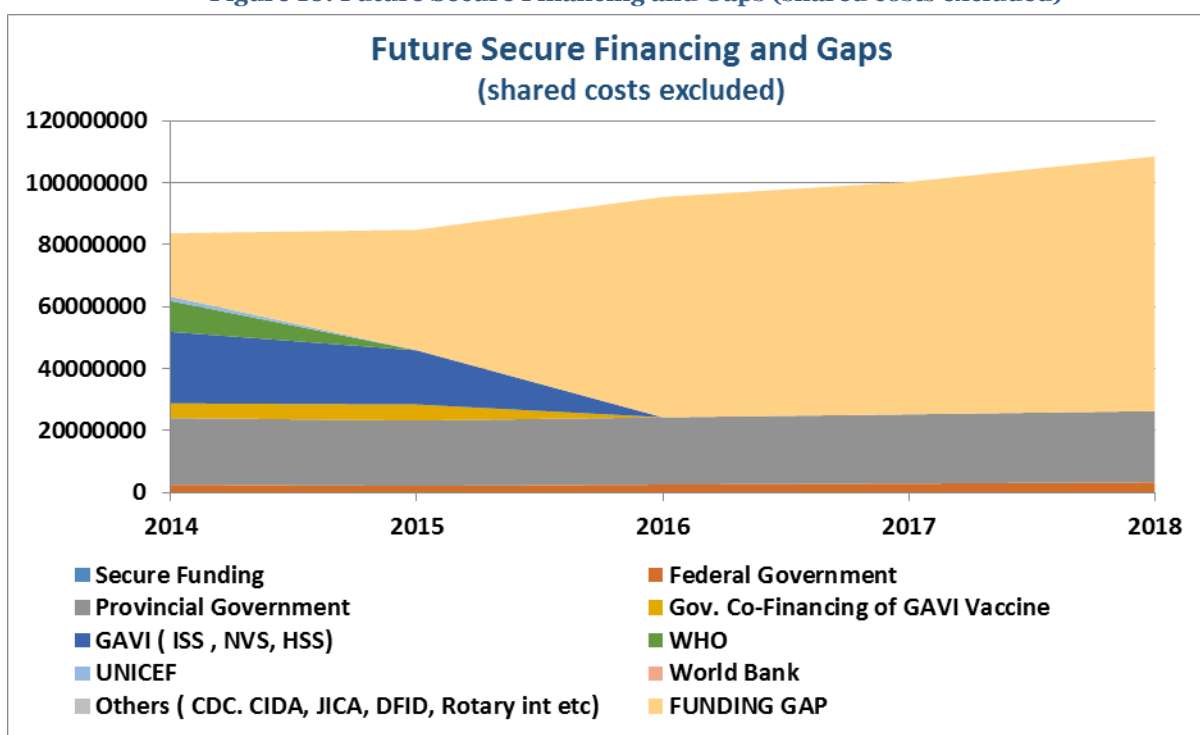
4.2.7. Summary - resource requirement

To meet its five year needs the EPI Sindh program needs a total of US\$ 480M. The program has a secured funding of US\$ 193M (40%) and needs US\$ 287M more to achieve its goals, objectives and targets.

4.3. Future financing and funding gaps of the immunization program

Figure 10 shows the secure finances, financing sources and the funding gap. For the year 2014 the secured funds from WHO (US\$9.2 M) decrease the gap to around 23% (US\$20.4 M) whereas for the subsequent years the gap is more than doubled. Considering only the secured funds

Figure 10: Future Secure Financing and Gaps (shared costs excluded)



available, the funding gap for the subsequent years 2015, 2016, 2017 and 2018 is respectively estimated at 45.6% (US\$38.8 M), 74.5% (US\$71.1

Table 25: Total resource requirements and funding gap (in US\$)

YEAR	2014	2015	2016	2017	2018	TOTAL
Total Resource Requirement	90,804,762	85,181,152	95,359,774	100,232,203	108,436,353	480,014,244
Funding Gap	20,400,622	38,850,796	71,072,560	74,987,122	82,129,356	287,440,456
% Funding Gap	22.5	45.6	74.5	74.8	75.7	59.9

M), 74.8% (US\$74.9 M), and 75.7% (US\$82.1 M). The total funding gap for the five years duration is estimated at 57.3% (US\$287.4 M) (Table 25).

The main constituents of funding gap are the resources needed for replacement and procurement of cold chain equipment, addition of qualified human resources, vehicles, other capital equipment and other recurrent costs. It also includes the resources required for conducting campaigns from 2016 onwards.

Figure 11: Future Secure and Probable Financing and Gaps (shared costs excluded)

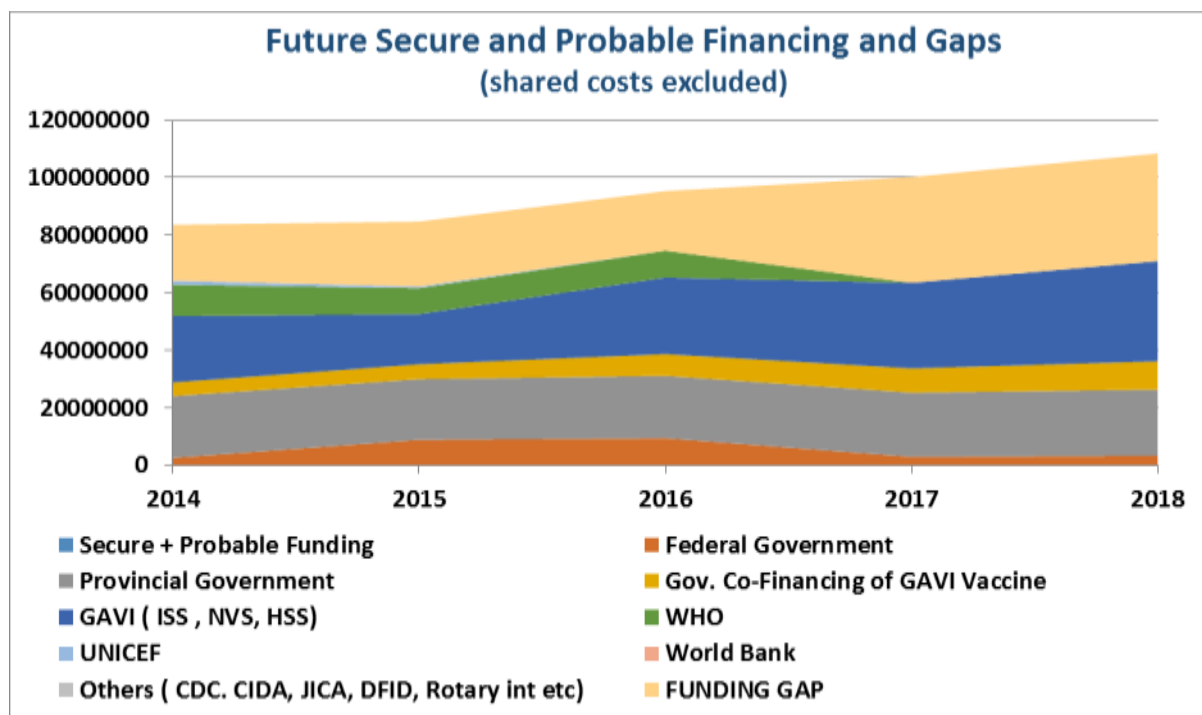


Figure 11 shows the possible financiers, secured funding and funding gap when probable funding is adjusted. Table 26 shows that with the probable funding available there is still overall gap of 28.5% (US\$ 137M). The main contributors to probable funding are the GAVI, federal

Table 26: Total resource requirements with probable funding and Funding Gap (in US\$)

YEAR	2014	2015	2016	2017	2018	TOTAL
Total Resource Requirement	90,804,762	85,181,152	95,359,774	100,232,203	108,436,353	480,014,244
Funding Gap with probable funding	19,426,676	22,608,255	20,722,003	36,802,529	37,429,198	136,988,661
% Funding Gap	21.4	26.5	21.7	36.7	34.5	28.5

government, WHO, and UNICEF.

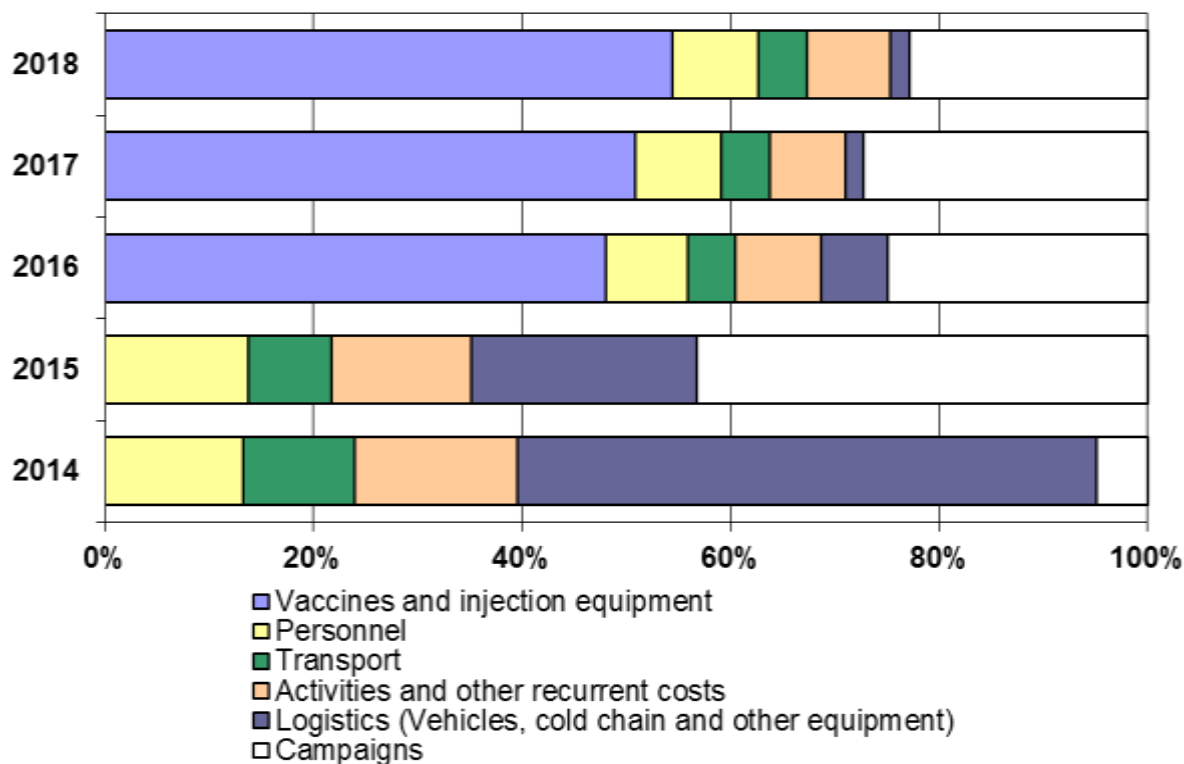
4.4. Funding gap analysis

With secured funding and when shared costs are excluded, the total funding gap includes almost all categories. However with probable funding some gap is reduced but it still persists for all the categories (Figure 12).

For the year 2014, in addition to secured funding US\$ 11M will be required to meet the logistic requirements, US\$ 2.6M to ensure that all planned EPI staff is in place, and US\$ 5.1M are required for transport and other recurrent costs. For the first program year the total funding gap is estimated at US\$20.4M.

For the year 2015, the main funding gap consists of logistics (22%) followed by 14% gap in personnel. There is 13% gap in recurrent costs and 8% in transport. The total gap for 2015 amounts to USD\$ 36.3M. For every passing year, the gap for all the categories keeps on increasing.

Figure 12: Composition of the Funding Gap with Secured Funds



If the funding gaps are not filled, it will have drastic impact on program achievements which in turn will affect the target populations in multiple ways.

Each category has its own implications on the achievements of program targets. If gap in personnel persists, it compromises the program capacity and quality of interventions. The gap in logistics, particularly in cold chain, will limit the program capacity to accommodate new vaccines. If the need for vehicles and transport is not met, it will drastically affect the supervision, monitoring and surveillance functions.

When EPI program outcomes are compromised, it leaves most of the children unvaccinated. This will negatively impact the households, communities, nation as a whole. The morbidity and mortality will increase leading to increase household expenditures on seeking healthcare and increased burden on curative facilities hence consuming more resources. Moreover the economic cost of increased morbidity and mortality will have long term impact on province. There will be repeated outbreaks of deadly diseases like measles, pertussis, etc. The province and nation will have less productive community which will further decrease the national product thereby increasing the poverty.

4.5. Financial sustainability

Table 27 shows the macroeconomic and sustainability indicators. In Sindh the cost per DPT3 child was US\$ 66 in 2012 and will increase on an average to US\$ 75 during next five years. There is only 1.5 times increase i.e., from 28% in 2012 to 43% in 2018 in percent requirement of immunization out of total government expenditures. With the aim to ensure sustainability the government has to prioritize its financial allocations to fill the financial gaps of immunization program either through direct funding or mobilizing resources.

In order to fill in the resource gap for EPI program the government has to: 1) develop and launch a resource mobilization strategy; 2) reprioritize its overall expenditures and fill in the EPI resource gap; 3) minimize resource wastage; and 4) act simultaneously on all options.

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Chapter 4: Immunization Program Costing and Financing

The development of cMYP for 2014-18 provides an excellent opportunity to the Sindh government where it can build on the cMYP and develop proposals and PCIs to reduce the funding gap.

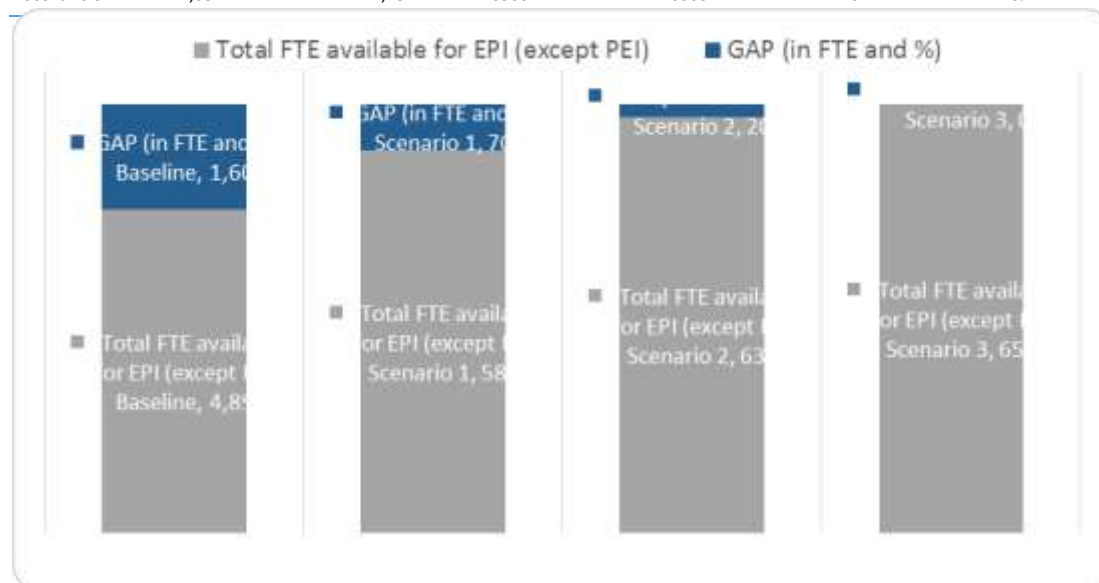
Table 27: Macroeconomic and sustainability indicators

Macroeconomic and Sustainability Indicators						
Reference	2012	2014	2015	2016	2017	2018
Per capita GDP (\$)	1,256	1,332	1,372	1,414	1,456	1,500
THE per capita \$)	30	32	33	34	35	36
Population	39,231,406	40,640,474	41,363,875	42,100,152	42,849,534	43,612,256
GDP (\$)	49,274,645,936	54,133,111,544	56,751,235,913	59,529,614,276	62,388,921,849	65,418,383,919
Total Health Expenditures \$)	1,176,942,180	1,300,495,172	1,365,007,861	1,431,405,152	1,499,733,698	1,570,041,214
GHE \$	117,694,218	143,054,469	150,150,865	171,768,618	179,968,044	204,105,358
Resource Requirements for Immunization						
Routine and Campaigns (\$)	\$46,507,921	\$90,804,762	\$85,181,152	\$95,359,774	\$100,232,203	\$108,436,353
Routine Only (\$)	\$32,781,914	\$66,139,943	\$69,481,064	\$77,636,058	\$79,808,309	\$89,652,572
per DTP3 child (\$)	\$66	\$105	\$91	\$85	\$77	\$75
% Total Health Expenditures - Resource Requirements for Immunization						
Routine and Campaigns	3.95%	6.98%	6.24%	6.66%	6.68%	6.91%
Routine Only	2.79%	5.09%	5.09%	5.42%	5.32%	5.71%
Funding Gap						
With Secure Funds Only		1.57%	2.85%	4.97%	5.00%	5.23%
With Secure & Probable Funds		1.49%	1.66%	1.45%	2.45%	2.38%
% Government Health Expenditures - Resource Requirements for Immunization						
Routine and Campaigns	39.52%	63.48%	56.73%	55.52%	55.69%	53.13%
Routine Only	27.85%	46.23%	46.27%	45.20%	44.35%	43.92%
Funding Gap						
With Secure Funds Only		14.26%	25.87%	41.38%	41.67%	40.24%
With Secure & Probable Funds		13.58%	15.06%	12.06%	20.45%	18.34%
% GDP – Resource requirement for immunization						
Routine and Campaigns	0.09%	0.17%	0.15%	0.16%	0.16%	0.17%
Routine Only	0.07%	0.12%	0.12%	0.13%	0.13%	0.14%
Per Capita - Resource Requirements for Immunization						
Routine and Campaigns (\$)	1.19	2.23	2.06	2.27	2.34	2.49
Routine Only (\$)	0.84	1.63	1.68	1.84	1.86	2.06

5. Annexes

Annex 1: Immunization skilled staff projections

	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	6,081	1,184	4,897	6,500	1,603	25%
Scenario 1	6,984	1,184	5800	6500	700	11%
Scenario 2	7,484	1,184	6300	6500	200	3%
Scenario 3	7,684	1,184	6500	6500	0	0%



Vaccinators 2575 @ 100%
 Dispensers 1872 @ 5%
 LHWs 1345 @ 5%
 LHWs 22297 @ 15%
GAP 25%

Vaccinators 3480 @ 100%
 Dispensers 1872 @ 5%
 LHWs 1345 @ 5%
 LHWs 22297 @ 15%
GAP 11%

Vaccinators 3480 @ 100%
 Dispensers 1872 @ 5%
 LHWs 1345 @ 5%
 LHWs 17297 @ 15%
 LHWs 5,000 @ 25%
GAP 3%

Vaccinators 3480 @ 100%
 Dispensers 1872 @ 5%
 LHWs 1345 @ 5%
 LHWs 15297 @ 15%
 LHWs 7,000 @ 25%
GAP 0%

Annex 2: Poverty indices by districts and urban/rural

Predicted Poverty Incidence, 2010-11						
[Percentage of Population Below the Poverty Line] [Districts of Sindh Province]						
Districts	Rank Order			Overall	Urban	Rural
	[1 = Highest Incidence] [23= Lowest Incidence]					
Badin	6	53.75	42.76	55.80		
Dadu	21	33.06	46.69	29.35		
Ghotki	14	45.81	53.66	44.42		
Hyderabad	22	27.50	23.92	42.34		
Jacobabad	2	59.42	63.98	58.18		
Jamshoro	9	50.24	44.74	52.05		
Karachi	23	21.09	20.22	43.55		
Kashmore	1	59.81	51.22	61.83		
Khairpur	16	41.54	58.64	34.98		
Larkana	4	56.34	60.82	53.40		
Maitari	15	42.55	47.03	41.26		
Mir Pur Khas	20	36.65	33.34	38.27		
Nawabshah	18	38.35	52.79	31.73		
Nowshero Feroze	13	46.43	58.37	43.48		
Sanghar	19	37.27	61.34	28.65		
Shahdadkot	8	51.72	72.50	46.77		
Shikarpur	5	55.33	52.17	56.21		
Sukkur	10	49.05	53.54	45.21		
Tando Allah Yar	17	41.33	40.75	41.58		
Tando Muda khan	3	57.36	55.98	57.64		
Tharparkar	11	46.98	35.32	47.44		
Thatta	7	53.66	40.42	55.88		
Umer kot	12	46.90	60.17	43.95		

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Annex 3: Expenditures and Resource Requirements by immunization system components

cMYP Component	Expenditures	Future Resource Requirements					
	US\$	US\$	US\$	US\$	US\$	US\$	US\$
	2012	2014	2015	2016	2017	2018	TOTAL 2014 -2018
Vaccine Supply and Logistics (routine only)	14,504,737	38,738,221	37,402,568	47,054,850	48,308,596	56,038,713	227,542,948
Service Delivery	11,120,644	16,150,545	19,308,282	20,380,126	21,509,683	22,704,043	100,052,680
Advocacy and Communication	35,556	208,575	150,322	206,389	156,395	214,727	936,408
Monitoring and Disease Surveillance	22,000	1,122,559	677,249	528,147	538,927	549,931	3,416,813
Programme Management	285,778	1,783,345	1,919,054	1,578,605	1,012,072	1,448,072	7,741,147
Supplemental Immunization Activities (SIA) (includes vaccine and operation costs)	13,726,007	24,664,818	15,700,088	17,723,715	20,423,894	18,783,781	97,296,297
TOTAL Direct Costs	39,694,722	82,668,063	75,157,565	87,471,833	91,949,567	99,739,266	436,986,293
Shared Health Systems Costs	6,813,200	8,136,699	10,023,587	7,887,941	8,282,636	8,697,087	43,027,950
GRAND TOTAL	46,507,921	90,804,762	85,181,152	95,359,774	100,232,203	108,436,353	480,014,243

Annex 4: Funding gap composition (US\$)

Composition of the funding gap	2014	2015	2016	2017	2018	Avg. 2014 - 2018
Vaccines and injection equipment	-	-	34,187,713	38,184,593	44,700,158	117,072,464
Personnel	2,607,365	5,018,036	5,566,621	6,148,589	6,765,729	26,106,340
Transport	2,131,711	2,884,641	3,171,346	3,477,230	3,807,468	15,472,396
Activities and other recurrent costs	3,063,197	4,868,629	5,887,196	5,441,299	6,579,233	25,839,554
Logistics (Vehicles, cold chain and other equipment)	10,972,062	7,867,876	4,535,969	1,311,517	1,492,987	26,180,411
Campaigns	973,946	15,700,088	17,723,715	20,423,894	18,783,781	73,605,424
Total Funding Gap*	19,748,282	36,339,270	71,072,560	74,987,122	82,129,356	284,276,590