Ministry of Health and Social Protection of the Population of Republic of Tajikistan

Comprehensive Multi-Year Plan 2016 -2020

DUSHANBE - 2015

Table of Contents

List of Figures and Tables

Abbreviations and Acronyms

AEFI	Adverse Event Following Immunization
AFP	Acute Flaccid Paralysis
BCG	bacille Calmette-Guérin (tuberculosis vaccine)
cMYP	comprehensive multi-year plan
DHS	demographic and health survey (Tajikistan)
DRS	Districts of Republican Subordination
DTP	diphtheria–tetanus–pertussis (vaccine)
DTP1	first dose of diphtheria–tetanus–pertussis (vaccine)
DTP2	second dose of diphtheria–tetanus–pertussis (vaccine)
DTP3	third dose of diphtheria–tetanus–pertussis (vaccine)
EPI	Expanded Programme on Immunization
EVM	effective vaccine management
GAVI	GAVI Alliance (formerly Global Alliance for Vaccines and Immunization)
GBAO	Gorno-Badakhshan Autonomous District
GDP	gross domestic product
GNI	gross national income
Hib	Haemophilus influenzae type B vaccine
HSS	Health systems strengthening
JAR	Joint Annual Report
JICA	Japan International Cooperation Agency
JRF	joint reporting form
MCV1	first dose of measles-containing vaccine
MCV2	second dose of measles-containing vaccine
MDG	Millennium Development Goal
MoHSPP	Ministry of Health and Social Protection of the Population (of Tajikistan)
MSF	Médecins Sans Frontières
NITAG	National Immunization Technical Advisory Group
NIP	national immunization programme
NRA	National Regulatory Authority
OPV	oral polio vaccine
OPV3	third dose of oral polio vaccine
PHC	primary health care
RCC	Regional Certification Commission (for poliomyelitis)
RCIP	State Institution of Republican Centre for Immunoprophylaxis (Tajikistan)
RV	rotavirus vaccine
RVC	Regional Verification Commission (for measles and rubella)
SIA	supplementary immunization activity
SNID	sub-national immunization day
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

1. Background information

1.1 Geography

The Republic of Tajikistan is a landlocked country in Central Asia covering an area of 143, 1 m^2. It borders Kyrgyzstan to the north, China to the east, Afghanistan to the south and Uzbekistan to the west. 93% of the territory consists of high mountains. The country's geography makes in-country and regional communications and transportation challenging, especially in winter.

The country is divided into five regions - *Dushanbe city*, the three areas (*Khatlon*, *Sughd* and the *Gorno-Badakhshan Autonomous District (GBAO)*), and the *Districts of Republican Subordination* (*DRS*; consisting of 13 districts).

Map of Tajikistan and regions

1.2 Economic situation

The Government of Tajikistan aims, by 2020: to double GDP, to reduce poverty to 20 percent, and to expand the middle class. In the last fifteen years, poverty decreased from more than 80 percent to about 32 percent (World Bank Country Overview, 2015) and Tajikistan's rate of reduction in poverty has been in the top 10% globally. However, there has been less success in decreasing non-monetary poverty. The main contributors to non-monetary poverty are limited or have no access to education (secondary and tertiary), heating, and sanitation. Access to improved drinking water sources is increasing (57% in 2000 to 76% in 2012) (Demographic and Health Survey (DHS) 2012), but this is unequal across regions and the poor in Tajikistan are mainly in rural areas and in the three regions of Khatlon, GBAO, and DRS.

Economic growth in Tajikistan has now slowed due to the economic recession occurring in Russia, the increase in migration regulations and the weakening of the Russian ruble. Furthermore, the Tajik Somoni has significantly depreciated in value against the U.S. dollar which jeopardizes the availability of resources for health services and procurement.

1.3 Demographics and other indicators

The population as of 1 January 2015 was 8 354 000 (Tajstat, 2015). Approximately 73.5 percent of the population lives in rural areas. The birth rate varied between 15.3 and 40.7 per 1,000 populations across districts in 2013. The range of infant mortality, under-5 mortality and maternal mortality rates was also wide across districts: 1.9 - 66.2, 2.3 - 69.7 and 14.1-186.6 respectively (Ministry of Health and Social Protection of the Population of Tajikistan (MoHSPP), 2014).

Ethnic groups are Tajiks - 75,6%, Uzbeks - 24,0%, Russian - 0,3%, others - 0,1%. State language is Tajik, while other languages are Uzbek, Russian. Tajikistan's population is young with 35% aged less than 15 years and less than 5% over 60 years.

Table 1: Population age groups (Republic Center of Immunoprophilaxis, 2015)

Age	Total	%
0-6	1,569,474	18,4
7-14	1,321,973	15,5
15-19	842,878	9,9
20-29	1,498,777	17,6
30-59	2,668, 077	31,3
> 60	603, 538	7,1

Tajikistan's population is young with 35% aged less than 15 years and less than 5% over 60 years.

School attendance is the norm but is not universal with approximately 87% of the primary school-age population and 83% of the secondary school-age population attending school. Females complete an average of 8.6 years of schooling, whilst males complete 9.3 years.

In 2012, 93% of households reported possession of cell phones compared with 11% in 2005, and computer ownership has also increased, from 1% in 2005 to 12% in 2012 (DHS, 2012)

Table 2: Basic Indicators (TajStat, 2015)

Basic indicators	2000	2005	2010	2014
Number of permanent population as of end of the year, thous.	6264.6	6842.2	7621.2	8352
In general population at age (thous.):				
younger than able-bodied people	2639.4	2578.4	2714.6	2892.1
able-bodied people	3295.9	3925.2	4548.9	5046
older than able-bodied people	329.3	338.6	357.7	413.9
Life expectancy by birth, years	68.2	70.6	72.5	73.4
all population	66.1	68.1	70.8	71.6
men	70.3	73.2	74.4	75.4
women	70.3	73.2	…	
Migrational increase (+), outflow (-)	-2.2	-1.4	-0.9	-0.7
Life expectancy at birth (years)	68.2	70.6	72.5	73.4
Infant mortality (per thousand live births)	89	65.1	34	…
Birth rate (per thousand people)	27	26.4	29.4	27.8
Death rate (per thousand people)	4.7	4.6	4.4	4
Fertility rate (in births per woman)	3.493	3.274	3.576	…
Rural population (in percent of population)	73.4	73.6	73.5	73.5
Urban population (in percent of population)	26.6	26.4	26.5	26.5
Physicians (per 10 thousand people)	21.6	19.2	20.2	20.8
Hospital beds (per 10 thousand people)	65.8	58.6	50.1	46.4

1.4 Millennium Development Goals Progress

The Republic of Tajikistan has made significant progress in lowering child and maternal mortality in the last twenty five years. This is due to a number of potentiating factors such as high political commitment to health care, well-coordinated partners' support and the dedication of the health workers. However, successful inclusion of new vaccines such as the pneumococcal vaccine and the recently introduced rotavirus vaccine into the routine immunization schedule have the potential to further impact on incidence of disease and under-five mortality due to acute respiratory infections, invasive bacterial disease and diarrhea.

Figure 1: Millennium Development Goals (MDGs) progress (WHO Statistical Profile, 2015)

Indicators	Statistics Baseline*	Latest**
Under-five mortality rate (per 1000 live births)	108	48
Maternal mortality ratio (per 100 000 live births)	68	44
Deaths due to HIV/AIDS (per 100 000 population)	0.5	6.1
Deaths due to malaria (per 100 000 population)	0.0	0.0
Deaths due to tuberculosis among HIV-negative people (per 100 000 population)	20	6.9

*1990 for under-five mortality and maternal mortality; 2000 for other indicators
**2012 for deaths due to HIV/AIDS and malaria ; 2013 for other indicators

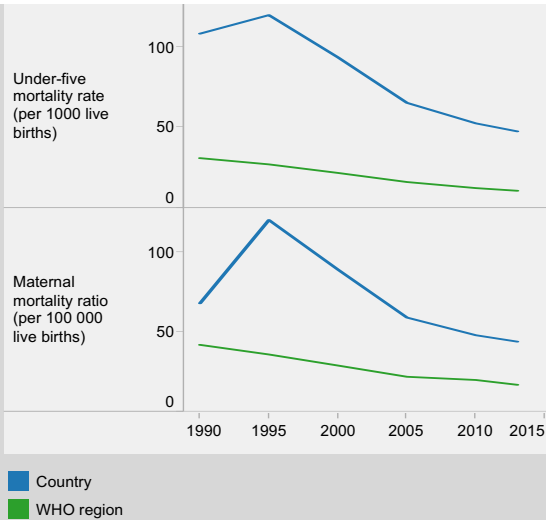
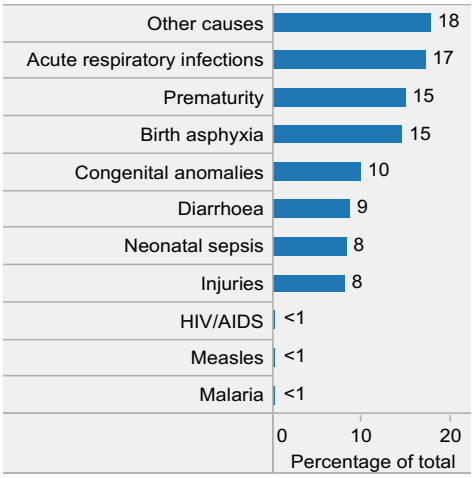


Figure 2: Distribution of causes of deaths in children under 5, 2013 (WHO Statistical Profile, 2015)



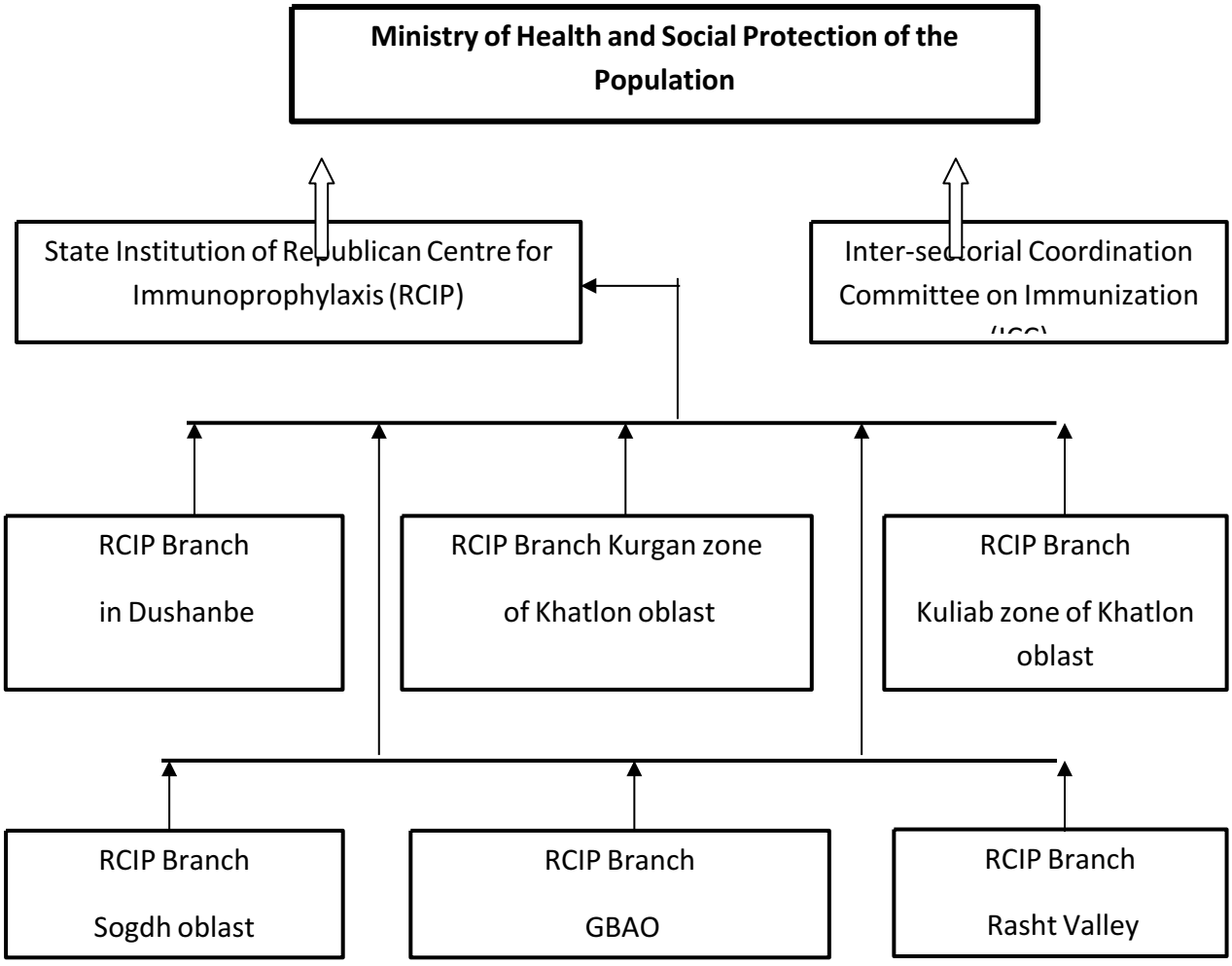
1.5 Health System

The health system in Tajikistan is still largely based on the Soviet health care model, organized around a network of inpatient facilities, but the country is transitioning towards a more PHC-centric approach. The National Health Strategy 2010-2020, implemented with the support of development partners, aims to remedy health system weaknesses in terms of financing, service delivery, health information systems and governance. A significant component of the Health System strengthening activities with financial support from GAVI from 2016 will be oriented on capacity strengthening of PHC with a focus on immunization service quality and safety; and concurrent activities such as that of the World Bank Health Services Improvement Project are also PHC-driven, aiming to increase the coverage and quality of basic PHC services by piloting a performance-based financing scheme.

The National Immunization Progamme (NIP) is implemented and managed by the State Institution of Republican Centre for Immunoprophylaxis (RCIP) and is the responsibility of the Ministry of Health. Important contributions have been made to the national EPI since its inception by international organizations, such as GAVI, JICA, WHO, UNICEF, USAID, MSF, the International Committee of the Red Cross and the International Development Association. More recently, the main donor has been GAVI with co-financing support for some vaccines such as pentavalent (DTP-HepB-Hib) and Rotavirus vaccine, and all other vaccines funded from domestic resource.

The NIP has historically functioned in isolation from other health service provision with specific systems of procurement and logistics, national-level dedicated staff and its own funding, planning and information systems. The program functions that are most integrated into the rest of the health system is at service delivery level and in surveillance of vaccine-preventable diseases.

Figure 3: Structure of Immunization Services of the Republic of Tajikistan



The RCIP has 40 members of national-level staff and three structural units: Departments of Epidemiology, Organization and Statistics and Department of Vaccines. There are six branches of the RCIP across the country responsible for the program management at the sub-national level, provided through the three oblast-level branches (Dushanbe, GBAO and Sugdh) and zonal branches (Kuliab, Kurgan-Tiube, and Rasht). There are 6 to 10 members of staff in each sub-national center. In recent years, some NIP program functions have been delegated to structural units at the district level through the District Centers for Immunoprophylaxis (CIPs) which operate under the financial and administrative control of the District PHC Centers or District Central Hospitals. There are also a few districts where Independent CIPs, financed by the local administrations (Hukumats), are managing the NIP program.

Overall, immunization services are provided by over 2,900 medical facilities, including medical houses and health houses, polyclinics, maternity services and rural hospitals. At the level of service delivery, immunization services are mostly provided by PHC health workers and integrated with the other primary health care services. However, staff participating in the delivery of immunization services includes internists, pediatricians, nurses and physician assistants. Tasks such as drawing up the vaccination schedules, monthly planning and reporting, and supervising the process of identifying target groups are the responsibility of Doctors. In the case of home visits, the home visiting (patronage) nurse is responsible for completing record forms as well as informing parents about upcoming immunization sessions and vaccination safety. In urban areas, immunization services are provided by Family Medicine Centers and general and children's clinics. In rural areas, immunization is delivered via health houses, village health centers and district health centers. Fixed facilities provide 80 -85% of the immunizations to children, whilst outreach and mobile services are responsible for between 3-5% of children's immunizations and 10-12% are given during campaigns. Access to fixed facilities is often limited to only one or two days per week (for two fifths of children). Immunizations are given in accordance with the national immunization schedule during certain times and the number of sessions for vaccination each month depends on the target population. In remote and hard-to-reach locations vaccination is carried out four times per year utilizing the mobile teams. The proportion of out-of-pocket health spending at point of access in Tajikistan is about 60-70%, which is higher than in many comparable countries (World Bank country overview, 2015). However, there is no formal private sector involvement in the provision of vaccination to children.

2. National Immunization Programme

2.1 Routine immunization

2.1.1 Immunization schedule

Pentavalent vaccine (DTP-HepB-Hib) was introduced in 2008. Prior to 2008, children were receiving only three doses of hepatitis B vaccine. However, following the introduction of the pentavalent vaccine children began receiving four doses of hepatitis B vaccine (first dose given at birth plus further three doses of pentavalent vaccine) (MOH, 2008).

Rotavirus vaccine was introduced in January 2015.

IPV (one dose per child) will be introduced in 2016. In view of the forthcoming introduction of IPV, the introduction of PCV and HPV was postponed. However, there is a preliminary plan to introduce PCV in 2018 and HPV in 2020 following an evidence review by a newly established NITAG.

Table 3: Current immunization schedule

BCG	Bacille Calmette-Guérin vaccine	3-5 days; 6 years;	Yes	
DT	Tetanus and diphtheria toxoid	1 year;	Yes	
DTwP	Diphtheria and tetanus toxoid with whole cell pertussis vaccine	16 months;	Yes	
DTwPHibHepB	Diphtheria and Tetanus and Pertussis and Haemophilus influenza and Hepatitis B vaccine	2, 3, 4 months;	Yes	
HepB	Hepatitis B vaccine	birth;	Yes	
IPV	Inactivated polio vaccine	4 months;	Yes	From January 2016
MR	Measles and rubella vaccine	12 months,	Yes	
OPV	Oral polio vaccine	birth; 2, 3, 4, 12 months;	Yes	
Rotavirus	Rotavirus vaccine	2, 3 months;		From January 2015
Td	Tetanus and diphtheria toxoid for older children / adults vaccine	6, 16, 26, 36, 46, 56 years;	Yes	

2.1.2 Vaccine coverage

According to the available data, Tajikistan has achieved and maintained a high level of coverage nationally for all antigens (aside from the newly introduced rotavirus vaccine) for the last five years. Vaccination coverage of children under 1-year-old by WHO/UNICEF official estimates in 2014 was 94% for OPV3, 98% for MCV2 and 97% for DTP3.

More than 95% of cities and regions had greater than 90% coverage of DPT3 (Pentavalent) compared with 94% of the districts in 2012. The dropout rate between the first and third doses of DTP is 5 % and the wastage of DTP3 reduced from 5% in 2012 to 4% in 2014 (Joint Appraisal, 2015). Less than 1 % of children aged 18-29 months have not received any vaccinations (DHS 2012). As of July 2015, coverage with the 1st dose of rotavirus vaccine reached 52%, and the coverage rate for the 2nd dose reached 41% (Joint Appraisal, 2015).

However, there is variation in the vaccine coverage reported across different sources. For example, whilst coverage with MCV2 was 97% in JRF data for 2012, the Tajikistan Demographic and Health survey in 2012 reported 91.4% coverage (see below)

Table 4: Summary of routine immunization indicators (data provided by RCIP during country mission, 2015)

Routine Immunization	Indicator	National Status	
		2010	2014
Immunization coverage	Official coverage estimates % DTP3	95.2	96.9
	Official coverage estimates % Measles	96.2	98.1
	Most recent survey coverage %DTP3	93.1 (2012)	
	% fully immunised child	95.2	98.1
Immunization demand	% drop-out DTP1-DTP3	2.6	1.6
	% drop-out Measles between first and second dose	23.3	18.9
Immunization equity	Number and proportion of districts with DTP3 coverage>80%	93.8	98.3
	Number of new vaccines introduced into routine schedule in	0	2
	last plan period		
New vaccines introduction	Pentavalent coverage	95.2	96.9

Table 5: Coverage performance data (JRF data)

Vaccine	2014	2013	2012	2011	2010
BCG	98	98	97	97	98
DTP1	98	98	96	98	95
DTP3	97	96	94	96	93
DTP4	96				
HepB1	98	98	98	98	96
HepB3	97	96	94	96	93
Hib3	97	96	94	96	93
OPV3	94	97	96	97	95
MCV1		92	95	98	94
MCV2	98	92	97	96	81
Rubella1	98	92			94

Percentage of children age 18-29 months who received specific vaccines at any time before the survey, by source of information (vaccination card at home or at a health facility or mother's report), and percentage vaccinated by 18 months of age, Tajikistan 2012

Source of information	BCG	Hepatitis B at birth	DPT/ pentavalent[1] 1	DPT/ pentavalent[1] 2	DPT/ pentavalent[1] 3	Polio 0[2]	Polio 1	Polio 2	Polio 3	Measles or MR	All basic vaccinations[3]	All basic[3] plus hepatitis B at birth	No vaccinations	Number of children
Vaccinated at any time before survey														
Vaccination card[4]	90.6	88.5	90.6	89.8	88.5	90.2	90.6	90.5	88.5	88.5	85.7	84.2	0.0	1,044
Mother's report	7.6	5.0	6.9	5.7	4.6	5.4	6.8	6.1	3.8	6.7	3.0	2.2	0.9	103
Either source	98.3	93.4	97.5	95.5	93.1	95.6	97.4	96.5	92.3	95.2	88.7	86.4	0.9	1,148
Vaccinated by 18 months of age[5]	98.3	93.4	97.4	95.2	91.7	95.6	97.3	96.3	91.7	91.4	84.3	82.0	0.9	1,148

[1]The pentavalent vaccine contains DPT, hepatitis B, and Haemophilus influenza type B (Hib) vaccines
[2]Polio 0 is the polio vaccination given at birth
[3]BCG, measles or MR, and three doses each of DPT/pentavalent and polio vaccine (excluding polio vaccine given at birth)
[4]Includes immunization cards kept by the parent/guardian and in the health facility
[5]For children whose information is based on the mother's report, the proportion of vaccinations given during the first

Table 6: Coverage performance (DHS, 2012)

Figure 4: Coverage data consistency across various sources 2014 (Joint Appraisal, 2015)

2.1.3 Equity of immunization services delivery and vaccination coverage

The Tajikistan Demographic and Health Survey in 2012 provided some insight into existing inequity and variation in coverage according to region, parental education level and socio-economic status. However, readiness for immunization in specific population sub-groups (for example, mothers with high education or socioeconomic status) needs to be evaluated further to better understand the reasons for apparent lower coverage in these groups. Furthermore, there is an established inequity in the apportionment of resources since the allocation of funding is based more on inputs such as pre-existing infrastructure, rather than the outputs of providers, the actual size of population and the population needs (Joint Appraisal, 2015) and it is important that this is also improved.

- Variation in coverage by region

Some populations in mountainous areas are not able to access PHC services due to distance to nearest facility, seasonal harsh climate or poor communication infrastructure; and geographic challenges are a challenge to ensuring equity of immunization service provision across Tajikistan. Remote mountainous regions and mobile communities can be hard-to-reach and underserved. The Demographic and Health Survey in 2012 demonstrated unequal vaccination coverage across regions with children living in the Soghd and Khatlon regions more likely to be fully vaccinated than children in other regions (93% and 91%, respectively) (DHS, 2012). Some of the health houses and village health centers are dilapidated and not fully staffed; therefore it is difficult for the required quality and volume of basic services to the catchment population to be delivered.

- Variation in coverage by level of parent/caregiver education

Children born to mothers with higher level education are less likely to have received all vaccines than children born to mothers with general secondary education (difference 8.5 percent points, Chi square $p<0.05$) or any other level of education including no education (DHS, 2012)

Table 7: % coverage by antigen and education level

Education level	BCG	HepB0	DTP3	Polio	MR	All vaccines	No vaccines	n
1 None/primary	97.6	88.9	90.0	88.8	93.0	86.2	1.6	99
2 General basic	97.5	91.2	**92.2**	90.8	**94.3**	**86.4**	1.1	433
3 General Secondary	98.8	95.7	95.6	96.4	96.4	92.7	0.6	494
4 Professional	99.7	97.5	92.4	96.9	96.9	87.8	0.0	67
5 Higher	**98.5**	**94.1**	83.7	**93.8**	93.8	77.7	**1.5**	55
Difference ((2) - (5))	**-1.0**	**-2.9**	**8.5**	**-3.0**	**0.5**	**8.7**	**-0.4**	
Chi square p<			***0.05***	*0.5*	*0.9*	*0.1*		

- Variation in coverage by wealth quintile

DTP3 and Polio coverage is higher in the lowest wealth income quintile compared to the highest quintile (DHS 2012). Statistically significant differences were observed for HepB birth dose (higher coverage in the highest quintile) and Polio (higher coverage in the lowest quintile). Furthermore, demands for out-of-pocket payments for vaccination in public settings can disproportionately affect coverage in lower socio-economic status groups.

Table 8: % coverage by antigen and wealth income quintile

Wealth quintiles	BCG	HepB0	DTP3	Polio	MR	All vaccines	No vaccines	n
Q1 Lowest	95.9	90.6	**92.9**	**94.3**	92.7	**88.7**	**1.7**	231
Q2 Second	99.7	94.3	95.6	95.4	97.7	92.4	0.0	265
Q3 Middle	99.0	95.3	92.7	90.0	95.0	88.5	1.0	240
Q4 Fourth	99.5	92.6	91.9	90.1	96.0	86.3	0.7	213
Q5 Highest	**98.0**	**94.3**	91.5	90.9	**94.4**	86.7	1.1	189
Difference (Q1 - Q5)	**-2.1**	**-3.7**	**1.4**	**3.4**	**-1.7**	**2.0**	**0.6**	
Chi square p<	*0.3*	***0.2***	*0.7*	***0.2***	*0.5*	*0.7*	*0.7*	
T-Test p<	*0.073*	***0.044***	*0.250*	***0.042***	*0.195*	*0.216*	*0.266*	

- Variation in coverage by gender or ethnicity

Almost no gender gap in immunization coverage or access to health care was seen in the recent surveys including the DHS.

There is also no evidence of ethnic disparity in immunization services access in Tajikistan.

2.2 Accelerated disease-control initiatives

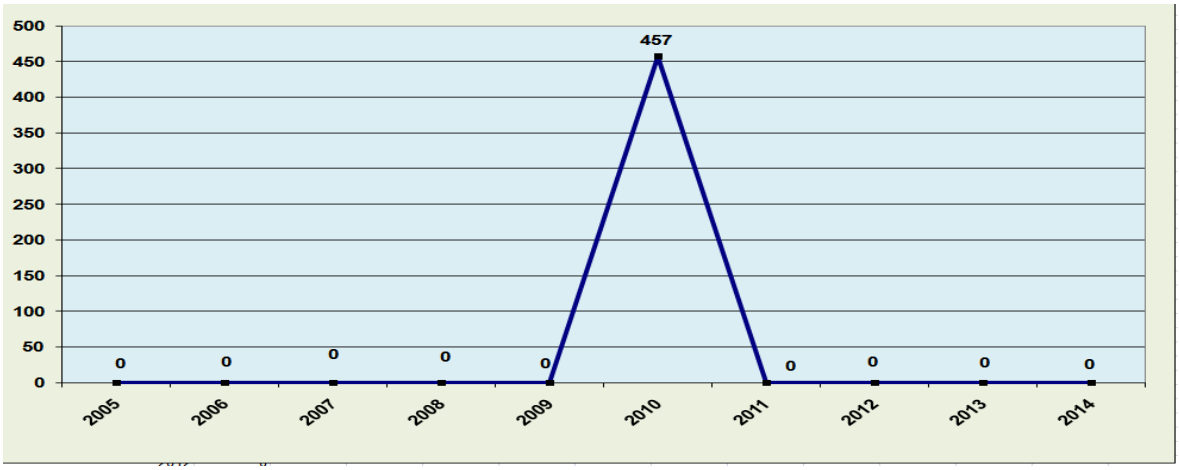
Table 9: Summary of accelerated disease control data 2010 and 2014 (data provided by RCIP during country mission, 2015)

Accelerated Disease Control	Indicator	National status	
		2010	2014
Polio	OPV3 coverage	94.9	94.4
	Non-polio AFP rate per 100 000 children under 15 years of age	12.7	2.4
	Number of rounds of national (NID) and subnational (SNID) immunization days	6	2
	Coverage range	98.8-99.6	98.6-98.9
Measles and rubella	MCV1 coverage	90.2	98.1
	MCV2 coverage	-	97.7
	Number of laboratory confirmed measles/rubella outbreaks	0	0
	Geographic extent national immunization day (NID)	0	0
	Total measles cases (lab/clinical/epidemiological)	0	0
	Total rubella cases (lab/clinical/epidemiological)	0	0

2.2.1 Polio

Following the large polio outbreak in 2010 (Figure 5), there were concerns about the reliability of coverage data in Tajikistan and failings of the routine immunization services.

Figure 5: Incidence of poliomyelitis in Tajikistan, 2005-2014 (absolute numbers)



A serosurvey conducted by WHO and the U.S. Centers for Disease Control and Prevention confirmed past immunity gaps in the population and an EPI review in 2012 also pointed to weaknesses in the health information system for immunization.

In response, supplementary immunization activities (SIAs) with OPV were conducted through 2012. Following the recommendation of the WHO Regional Certification Committee (RCC) in 2013, and considering the risk of importation from neighbouring polio-endemic country, the Ministry of Health proposed supplementary OPV immunization for children aged 0–5 years, and following the acquisition of 2.4 million doses of OPV in early 2014 (with the support of the KfW Development Bank of Germany), a further national campaign was undertaken. Between February and May of 2014, there were two successful rounds of vaccinations for children fewer than five years (coverage 98.7% and 98.6% respectively). Stationary and mobile vaccination teams were employed to reach remote populations, and activities were undertaken to enhance public participation and increase social mobilization (WHO EURO, 2015).

The findings of the Regional Certification Commission (RCC) in June 2015 commended Tajikistan for the SIAs and response to the threat of WPV importation from Afghanistan, but recommended that further improvements be made to increase surveillance quality

Table 10: RCC summary, June 2015

Surveillance quality	Population immunity	Other factors	Composite risk score
Average	High	No	Low

IPV is now scheduled to be introduced in Tajikistan in early 2016 and training materials have been developed with the support of partners. The introduction of IPV was initially planned for Q4 2015, but postponed due to vaccine supply constraints. The tOPV to bOPV switch will take place in April 2016 as per global strategy. However, the funding and procurement process for the switch to bOPV needs to be clarified, and given the neighbouring endemic country this

calls for immediate action.

2.2.2 Measles and Rubella

No outbreaks of measles or rubella have been detected since 2009 (Figure 6 and Figure 7).

Figure 6: Incidence of Measles, 2005-2014

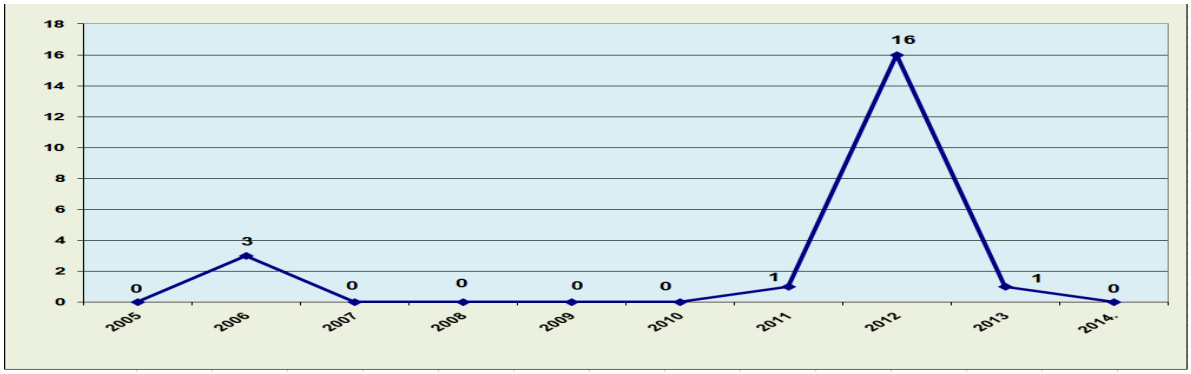
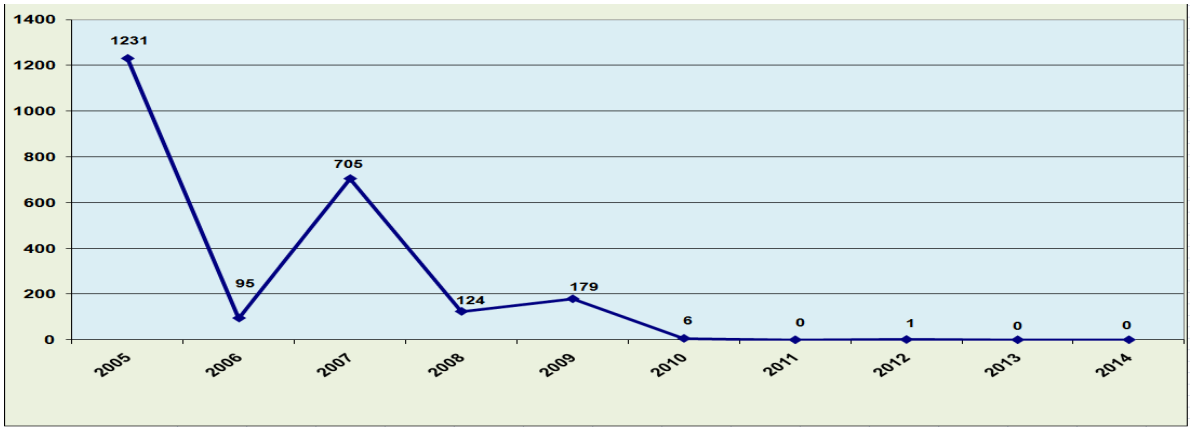


Figure 7: Incidence of Rubella, 2005-20014



Regional Verification Commission (RVC) in 2014 opinion was that the endemic transmission of measles and rubella has been interrupted which represents progress since 2012 when the RVC conclusion was inconclusive. Tajikistan is planning to move to MMR from MR vaccination in 2016.

Measles - Number of cases (suspect and confirmed)

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
4		11	88	16	177	5		7	8	9

Rubella - Number of cases

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
		8	100			1		1		

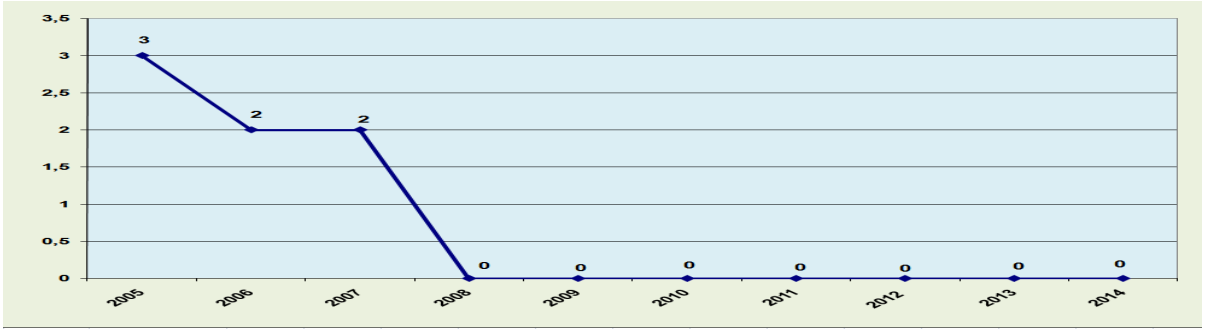
Table 11: Number of annual cases of measles and rubella (CISID, 2015)

Table 12: Status of measles and rubella elimination for 2013 (Review of Annual Status Update 2013 by Regional Verification Commission November 2014)

Component	RVC comment
RVC conclusion 2012	**Inconclusive about measles and rubella transmission status.** RVC encouraged Tajikistan to provide more complete surveillance data, including line-listing of discarded cases, in order to permit the RVC to determine measles and rubella elimination status in the country.
Epidemiology	No outbreaks reported. No cases of CRS recognized.
Surveillance performance and indicators	Timely and complete surveillance and rate of laboratory investigation performance indicators, but not for viral detection. All but one of the 36 suspected cases were discarded. Surveillance should be reinforced.
Immunization and population immunity	High reported MRCV1/2 coverage >97%, although methodology for determining coverage not presented and it is not clear that this is only administrative coverage.
Supplementary information	Not provided.
Specific comments to country	The RVC would appreciate receiving clarification on the methodology used for determining immunization coverage. Does the data provided refer to vaccine distribution or vaccine application? The RVC would appreciate receiving more information on population immunity to both measles and rubella. Surveillance quality needs to be improved, surveillance indicators should be correctly calculated and information provided on all suspected and discarded cases. Genomic data should be available for all sporadic cases. Therefore, a sustainable mechanism allowing for viral genotyping is necessary, using the arrangements in place within the Measles and Rubella Regional Laboratory Network. The RVC strongly recommends providing genomic sequence data in the next ASU.
RVC conclusion 2013	**Interrupted endemic transmission of measles and rubella.**

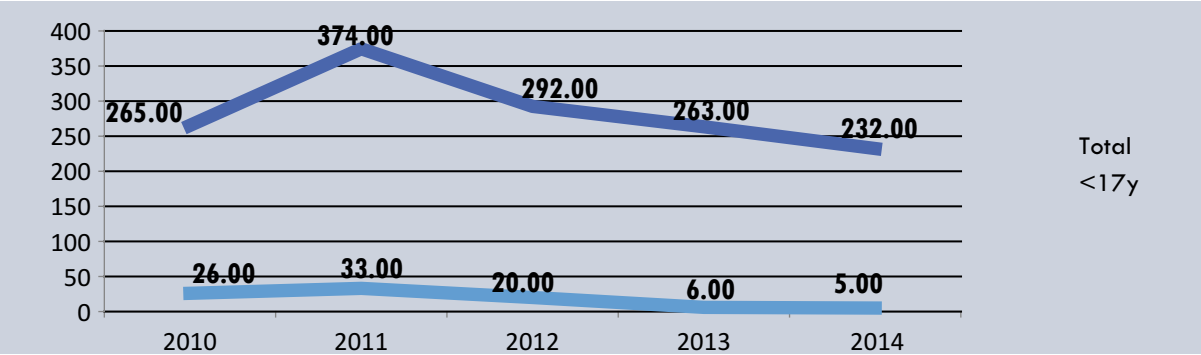
2.2.3 Diphtheria

Figure 8: Diphtheria cases in Tajikistan, 2005-2014 (absolute numbers)



2.2.4 Hepatitis B

Figure 9: Acute Hepatitis B cases in Tajikistan among children <14, 2005-2014 (absolute numbers)



2.3 Analysis of immunization system performance

2.3.1 Programme Management

The NIP is recognized by the Government of Tajikistan as one of the priority national public health programs. This has been demonstrated by the development of a legislative framework for implementation of the NIP. The law of immunoprophylaxis of infectious diseases (no. 680, 2010) established the state policy for the free-of-charge provision of immunization services to all citizens of Tajikistan. This was confirmed in the National Health Strategy 2010-2020. The Government has also committed to fulfill co-financing commitments by providing financing for vaccine procurement and 100% execution of approved budgets.

The national immunization strategy by the NIP for 2011-2015 is generally in line with World Health Organization (WHO) recommendations (EPI review, 2012) and a future plan 2016-2020 is also under development. In view of ongoing health reforms as part of the national health sector strategy, the potential impact on immunization services of integrating services at PHC

level will need to be evalated with both programmatic and financial considerations.

The State Service on Surveillance of Pharmaceutical Activities acts as the National Regulatory Authority (NRA), and is responsible for pharmaceuticals registration in Tajikistan. However, the functions of the NRA are thus far not fully established and the NRA does not perform all the necessary functions as yet, such as post-marketing evaluation (AEFI surveillance). Vaccines are not registered in-country and individual waivers are issued for importing any particular shipment. There is no expedited process for WHO pre-qualified vaccines registration.

At present, the AEFI surveillance function is performed by the RCIP in terms of receiving notifications and carrying out investigation of cases. However, the number of reported AEFI cases in recent years is low or zero.

2.3.2 Human Resources (HR)

There is currently a shortage of both doctors and nurses in Tajikistan and health workers are unevenly distributed across the regions and specialties with shortages of health professionals in PHC facilities. Since the immunization services in Tajikistan are predominantly provided through the PHC network, this HR shortage impacts on immunization service delivery with a lack of appropriately skilled health workers at local level. Though the profile of the health workforce in Tajikistan is changing with the ongoing health reforms from being specialist-dominated to a higher number of family medicine doctors and nurses; the problem of retention of qualified health professionals in remote areas due to inadequate working conditions and lack of financial incentives creates significant inequalities in the distribution of health workforce across Tajikistan between urban and rural populations (as emphasized in the Health System Review by WHO in 2010). Furthermore, the findings of the Joint Annual Report (JAR) in 2013 were that at all levels the level of knowledge and skill of available health workers is low and that there is additionally a lack of personnel trained in health management at rayon and medical facility levels. Though planned training activities have been conducted as planned in line with the last cMYP activity plan, sufficient funds have not been available for ensuring regular training opportunities for family medicine Doctors and vaccinators on immunization. This can create problems with inadequately addressed vaccine safety concerns and missed opportunities to vaccinate due to inappropriately stated contraindications to vaccination by the health worker.

HR development is one of the key components of the GAVI HSS Project, including training of all immunization staff in EVM at the national, regional, and district levels. Given the shortage of PHC facilities, 92 additional village health centers are also planned for construction and capital repair intended for the existing 725 facilities in accordance with the National Strategy of restructuring health facilities. This is intended to assist in addressing issues related to timeliness of the birth dose of HepB and BCG vaccines in the regions with a high proportion of

home deliveries.

2.3.3 Costing and Financing

There are three main sources for health expenditure and NIP funding in Tajikistan: out-of-pocket payments, the general budget, donor support. The proportion of out-of-pocket health expenditures has reduced to some extent from 73% in 2007 to 62.5% in 2012, but it remains higher than in many comparable countries.

In 2014, the approximate cost of the NIP was $5.3 million (M) including staff cost (US$ 0.35M), operational costs (US$ 0.47M) and the cost of vaccines and supplies ($4.5M). The government allocated $1.4M of the $5.3M for the NIP implementation, while donors provided $3.91M. In 2014, the NIP was supported by partners including GAVI, UNICEF, WHO, JICA and KFW. The project HOPE additionally provided a one-time financial contribution for the hepatitis B vaccine procurement (birth dose) due to the shortage of vaccines.

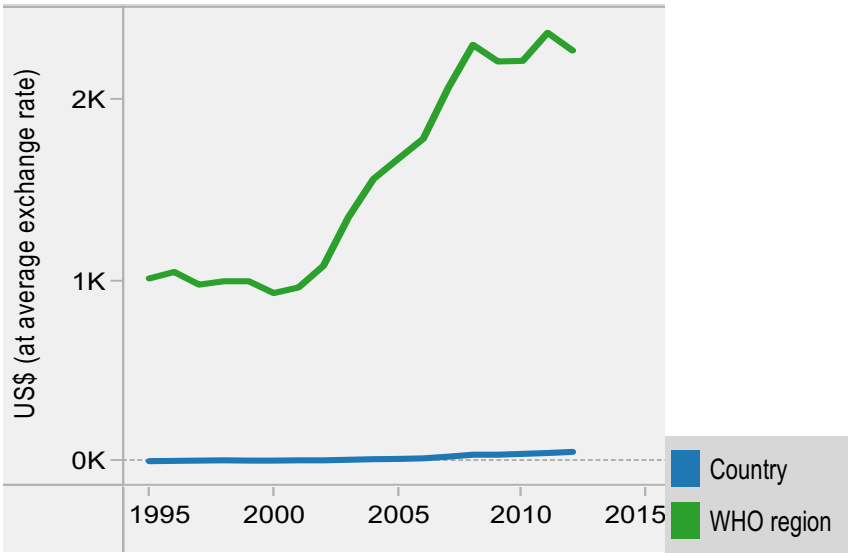
Table 13: The NIP funding in 2014

Source	Amount US Dollars
Government	$1,402,547
GAVI	$3,426,043
Unicef	$89,805
WHO	$135,891
JICA	$203,027
KFW	$395,446
Total	$5,318,759

Though the percentage of the total government budget to the health sector allocation has increased in recent years, it is still among the lowest in the region. Government funding for health care accounts for relatively little of total health care expenditure, and most budget funds are directed to cover secondary care salaries. There is a dedicated budget line for the NIP and a separate line item within the MOH budget for vaccine procurement including a co-financing line item, but the level of domestic funding is a major obstacle for the health sector as a whole and the NIP. Despite the Government's commitment to provide free basic services to the population including immunization services; the financial allocation for implementation is not enough to cover the needs of the programme resulting in shortages

and ad-hoc applications for donor financial support. This situation has been further aggravated by the economic crisis and the recent local current depreciation, which impacts on the relative level of available resource for vaccine procurement and aspects of immunization service delivery. Current health care reforms include a pilot of output and performance-based payment systems with the aim of improving efficiency and equity in resource allocation.

Figure 10: Per capita total expenditure on health – Tajikistan and WHO European Region



Gavi has been one of the primary donors of Tajikistan's NIP since its inception. All cash support from Gavi is reflected in the national health sector budget but goes through a parallel account. GAVI support to Tajikistan since 2001 amounts to $22,835.033 (to June 2015) and has included grants for:

- Immunization System Support (ISS from 2001-2005, 2008, 2010, 2012-2013)
- Health System Strengthening Support (HSS – 2010, 2012, 2014)
- New Vaccines Support (NVS) for HepB (2001, 2004- 2009)
- Pentavalent (2008-2015)
- Rotavirus (2014-2015)
- IPV to be introduced by January 2016, accompanied by Vaccine Introduction Grants (VIG) (2008, 2014)
- Injection Safety Support (2004- 2007)

One of the foci of the future HSS funding for the five years January 2016 to December 2020 (9,659,748 USD) is to improve coverage in low coverage areas, including some urban populations. The other key components are cold chain and logistical improvement, as well as

strengthening of PHC-level services.

The country remains Gavi-eligible at present and qualifies to receive all types of support. However, as Tajikistan's GNI per capita for 2014 is above the Gavi low-income country threshold, as of 1 January 2016 it will be considered as part of the preparatory transition co-financing grouping. This will necessitate improvement in recognized areas of programmatic weakness such as planning, budgeting, and budget execution. Effective resource mobilization strategies need to be employed to close current funding gaps for the national immunization programme and vaccine procurement

Table 14: GAVI support for Tajikistan

The Republic of Tajikistan procures all non-Gavi vaccines and the vaccines for SIAs exclusively through UNICEF. The procurement is based on the agreement between UNICEF and MOHSPP Tajikistan on 30 March 2004. The procurement of the newly introduced Rotavirus vaccine was also carried out through the UNICEF based on the same agreement.

2.3.4 Vaccine Supply, Quality and Logistics

A WHO/UNICEF Effective Vaccine Management (EVM) assessment was carried out in August 2015. Between August 2014 and July 2015, forty-five storage and health facilities were visited and their records assessed. The assessment findings were that in general vaccines and diluents are stored at the correct temperatures, cold and dry storage and transport capacities are adequate, buildings and cold chain equipment are sufficient and appropriate vaccine management policies are adopted and implemented. However, the assessment also revealed systemic weakness in the preventive maintenance of cold chain equipment and vaccine stock management. Of the 43 major recommendations made following the 2012 EVM Assessment; only 16 are fully implemented, 6 are partial implemented (or are still in the midst of being implemented) and 21 are not yet implemented. Five of the eight EVM criteria (building and equipment, maintenance, stock management, distribution and MIS and supportive functions) are constantly below 80% target at all levels. Stock management is the weakest link in the supply chain, though it is an aspect that has seen improvement since the last EVM assessment in 2012. The current difficult economic situation may lead to the stock outs of vaccines in 2016 particularly for MR, Hepatitis B and bOPV. In this EVM assessment, there was a 1% mismatch for a sampled vaccine between the physical count and stock record, and an 8.5% difference between the MR vaccines and the corresponding diluents. The introduction of an appropriate stock management computer application is one of the key recommendations of the EVM assessments, 2015.

In terms of achievements, the criterion of vaccine management (E8) is consistently close to or above the target 80% indicating the effectiveness of the training courses conducted in the country for staff at all levels. There is also an up-to-date Standard Operating Procedures (SOP) manual for vaccine management. The performance was similarly strong on the criterion of storage capacity (E3) with the current immunization schedule and for receiving vaccines in two shipments annually. However, with the planned introduction of new vaccines, additional cold-rooms are required and the cold storage capacity will need to be expanded significantly in 2017 and 2019.

Table 15: Mean criteria scores for EVM assessment in 2012 and for 2015 for district levels

EVM assessments	E2: Temperature	E3: Storage capacity	E4: Buildings, equipment,	E5: Maintenance	E6: Stock management	E7: Distribution	E8: Vaccine management	E9: MIS, supportive functions

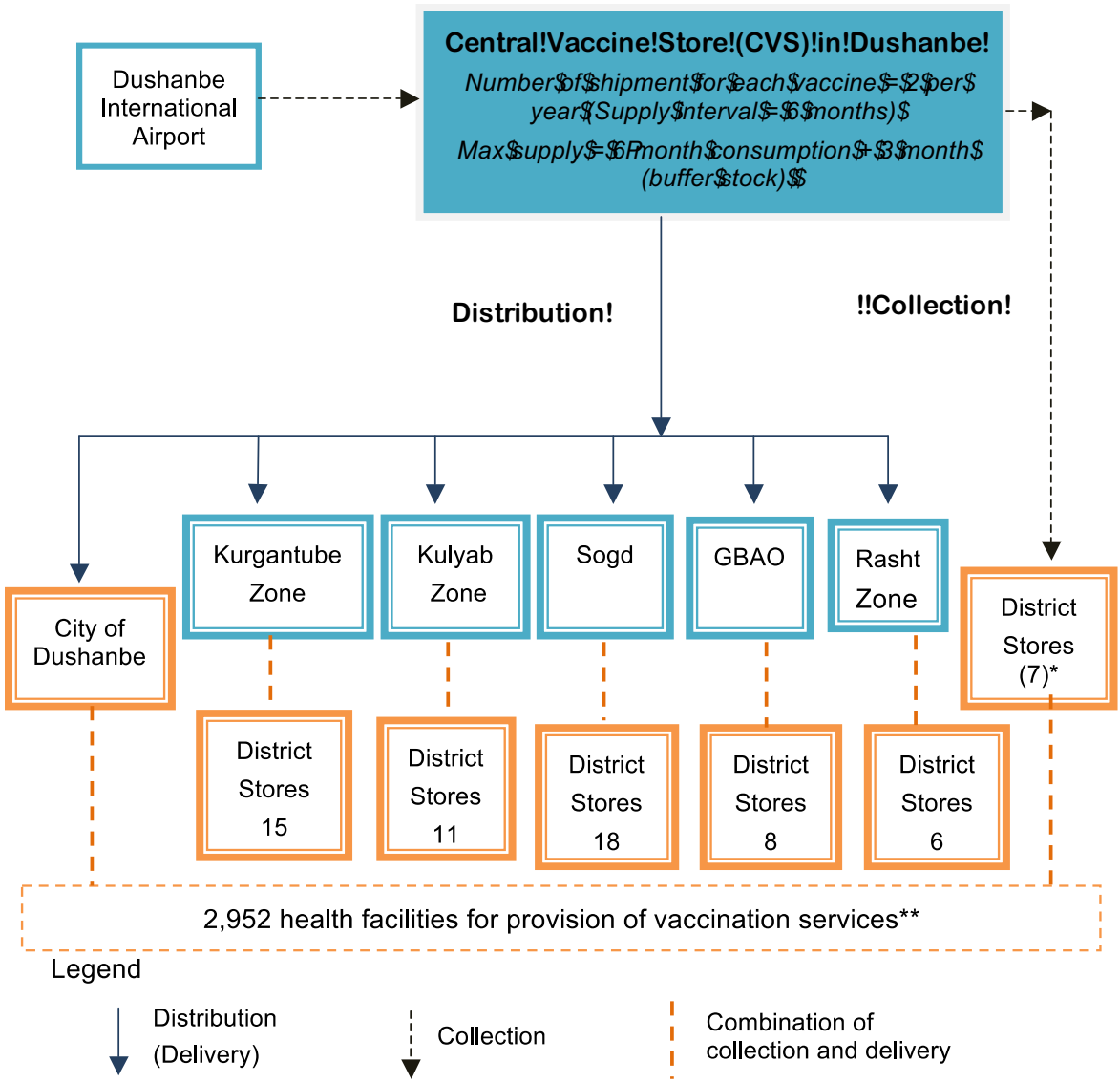
2015	**86%**	**75%**	**68%**	**48%**	**72%**	**64%**	**91%**	**72%**
2012	**92%**	**74%**	**74%**	**50%**	**78%**	**83%**	**93%**	**84%**
Differences	-6%	1%	-6%	-2%	-6%	-19%	-2%	-12%

Figure 11: Summary of the EVM assessment result for all levels (2015)

The vaccine supply chain in Tajikistan is a combination of deliver and collection. All vaccines and other dry supplies are distributed from the Central Vaccine Store to 13 subordinate stores. Fifty-eight districts either collect or receive their vaccines and supplies from five zone or provincial stores. All 2,952 health facilities collect vaccine and other supplies from their corresponding district stores.

In 2012, the total value of vaccines passing through the Central Vaccine Store was in US$ 2.6 million. This value will increase approximately 11-fold to US$ 29 million per year following the introduction of rotavirus vaccination in 2015, one dose of IPV in 2016 and the preliminary plan to introduce PCV and HPV for girls in 2018 and 2020, respectively.

Figure 12 : Vaccine supply chain in Tajikistan



* Gissar (Hissor), Rudaki, Vahdat, Tursonzade, Faizabad, Varzob, Shahrinav
** The number of vaccination outlets has been increased from 2,868 in 2012 to 2,952 in 2015 (ca 3% increase).

2.3.5 Surveillance and Reporting

The Republic Medical Information and Statistics Center (RMISC) is the central governmental agency responsible for the collection, analysis and publication of health data from all levels of the health system and publish the data annually. The State Committee on Statistics (Goskomstat) is responsible for the collection of vital statistics and for data quality audit at healthcare provider level, including immunization. The State Surveillance Centre for Sanitary and Epidemiological Services is responsible for providing official data on communicable diseases, except for the AFP and MR national passive surveillance which are within the remit of the RCIP.

Several policy documents have highlighted weaknesses relating to routine data collection and reporting by PHC facilities, and relating to internal and external data quality control practices. Operational research or processes of comparing outputs of routine health information systems to those of alternative data sources are not conducted or in place. Health institutions are reported to conduct a population census twice per year annually for their catchment area, but there remain a significant percentage of unregistered children (approximately 12% in DHS 2012) as a result of home deliveries and fees for birth certificates, which also affects the quality of data as well as immunization service planning and delivery. Data from any activity in the private sector are poorly captured.

There has been some progress in terms of ADC surveillance in recent years. During the polio outbreak in 2010, numerous problems were identified with AFP surveillance such as non-timely detection, low sensitivity, lack of transparency in reporting and a one-month delay occurring for transportation of specimens to the Regional Reference Polio Laboratory in Moscow. However, since then, a strong focus on AFP surveillance has been maintained and the MoH has updated surveillance guidelines and procedures. Measles and rubella surveillance also improved in 2009 with laboratory confirmation of all suspected cases, and an accreditation visit to the MR National Reference Laboratory was conducted by the WHO in December 2014.

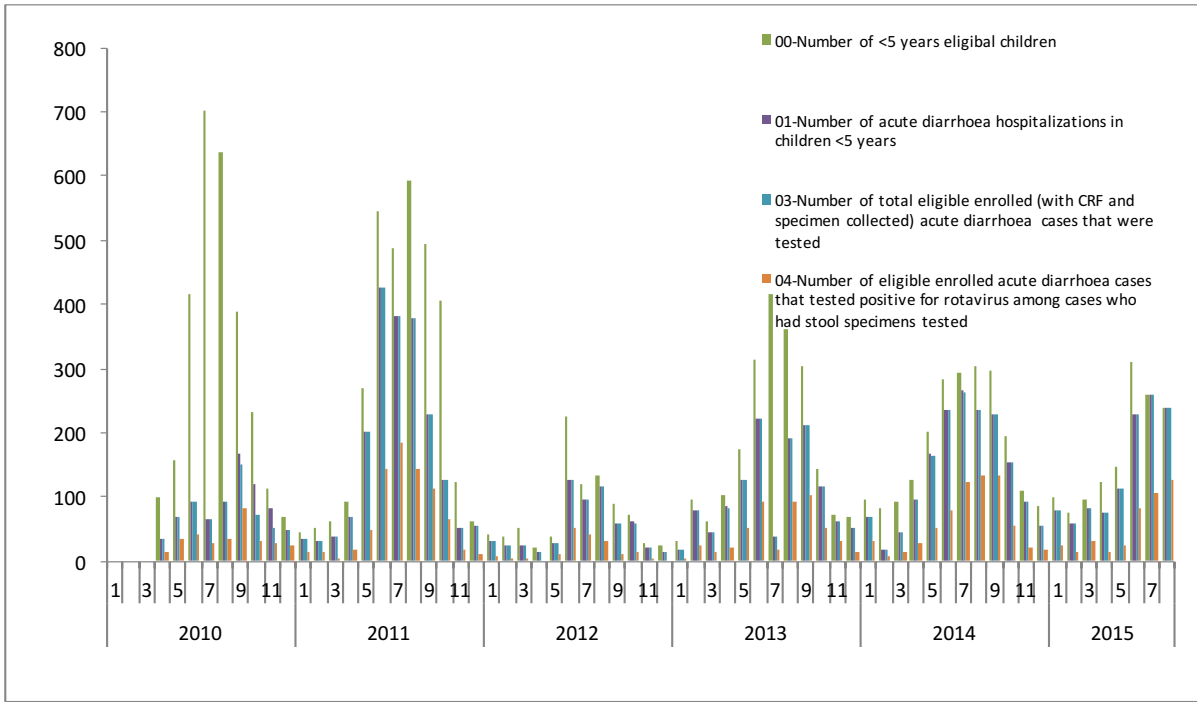
Despite these steps forward, there remains a great deal of work to do in terms of strengthening surveillance in Tajikistan. The surveillance systems for measles and AFP fall short on regional indicators of surveillance performance, for example for number of discarded measles cases per 100 000 population and non-polio AFP rate per 100 000 children under 15 years of age. The Regional Verification Commission (section 2.2.2) recommended further improvement in the quality and comprehensiveness of surveillance data in 2014. There have been no cases of CRS detected for over fifteen years (WHO Global Health Observatory Data Repository) which could be a reflection of high immunity to rubella in women of childbearing age, but could also reflect inadequacies in detection.

Reasons identified in the NIP review 2012 for the weakness in data collection and reporting at PHC-level include limited training for PHC staff on VPD surveillance and lack of knowledge of standard case definitions by medical staff.

Since 2009, the WHO supported Tajikistan in establishing sentinel surveillance sites for rotavirus in the two major urban areas of the country. The data collected on enrolled children seems to be of good quality (WHO/U.S. CDC monitoring visit, 2014). The surveillance results have demonstrated a high burden of rotavirus disease, where more than 35% of all

hospitalizations for gastroenteritis among the children under 5 years are attributed to rotavirus and the highest burden of rotavirus diarrhea is observed among the children aged 6-23 months.

Figure 13: Rotavirus sentinel site surveillance 2010-2015



AEFI surveillance is performed by RCIP staff and is limited to the receipt of notifications and carrying out case investigations. However, no cases have been reported during the last two years, which mandates an assessment of the quality of the AEFI reporting system.

A strategic development plan for the health information system in Tajikistan is in process. Work was carried out in 2013 to improve the health management information system, including transitioning health care facilities to the use of improved updated statistical reporting forms. A data quality review would be beneficial to evaluate progress and to assist with formulating strategies for improvement.

2.3.6 Demand Generation and Communication

As discussed earlier (section 2.1.3) there is demonstrated lower uptake for immunization among specific subgroups of the population that is not yet fully understood and a recent survey (Attachment #58 of HSS proposal) has also highlighted weak awareness about the role and importance of vaccination in the general population (many people think that vaccination

of children under 5 can cure diseases). The population mostly receives information relating to vaccination from health workers who in general also require increased opportunities for training in VPD.

The NIP has made progress in this area by the development of immunization and crisis communication strategies in 2014 (supported by UNICEF): It is planned to be endorsed in 2016. The implementation of these strategies will need to include capacity building and raising awareness for health professionals, parents and the public.

2.4 Joint Appraisal Process

The Joint Appraisal was conducted during the period of August 24 - 29 2015 in Dushanbe by the Joint Appraisal Mission composed by the representatives of Gavi Secretariat and WHO Regional office for Europe. The mission participants met with the Deputy Minister of Health and Social Protection of Population (MOHSPP), Heads of Departments of Maternal and Child Health, Economics and Finances and Budget Planning of the MOHSPP, as well as HSS Focal Point at the MOHSPP. The Mission participants also met with the Senior Management team of the Republican Center of Immunoprophylaxis (RCI), Health Policy Analysis Unit of the Scientific Research Institute for Preventive Medicine, Center of Family Medicine, Health care and Labor Budget Planning Unit of the Ministry of Finances (MoF), the World Bank Country Office Representatives, as well as the representatives of the UNICEF and WHO country offices.

This report was drafted by the independent consultant in close cooperation with Gavi SCM, and is based on the desk review of the relevant background documents, and extensive discussions during the mission. The report was shared for feedback with the mission members, regional offices of WHO and EURO for technical components and country counterparts. The Minister of Health and ICC members discussed (August 29th) and endorsed f

inal findings and recommendations of the report on September 16th 2015.

2.4.1 Technical Assistance: current areas of activity and agency responsibilities

In 2014 Tajikistan received following technical support from the Gavi Alliance partners:

WHO EURO

- Mission on development of Roadmap to introduce Mandatory Health Insurance in Tajikistan, March 2014
- Policy dialogue on improvement of health service delivery system in Tajikistan, M arch 2014

- Flagship course on Health Systems Strengthening, Tajikistan, 31 March – 3 April 201 4
- Senior Policy Dialogue on Health Financing Reforms, 4 April 2015
- EVIPNet pilot phase launch, Tajikistan, June 2014
- Introduction of Systems of Health Accounts, 2014
- Mission on Rational Use of Medicines, September 2014
- Joint Annual Review of the National Health Strategy 2010-2020, in 2014
- National Health Summit, December 2014
- Support in development and implementation of rotavirus vaccine and IPV introducti on plans
- Support in conducting trainings for medical workers on introduction of rotavirus v accine
- Support in conducting vaccine management assessment
- Support in vaccine stock management review

UNICEF

- Development of EPI communication strategy and crisis communication strategy and strategy materials, including a booklet and a poster on immunization, leaflets on rotavirus, and polio and TV and Radio spots
- Printing of materials for Rota introduction
- Cold chain management – provided support to the MoHSPP to reassess the capa city of the cold chain system as a part of the cold chain infrastructure preparedn ess for IPV introduction for informing cMYP 2016-2020, as well as a procurement plan for cold chain equipment under GAVIHSS grant
- Capacity development activities concerned with development of SOPs for eff ective vaccine management, trainings of national, regional, and district EPI mana gers, training of the family doctors on the rotavirus vaccine, and training of fam ily doctors from 10 remote districts on immunization l practice
- Polio campaign – provided communication support as well as campaign monito ring for two- rounds of polio campaign.

In addition the Gavi Alliance partners implement the following activities in 2015:

WHO

- Institutionalization of the Health Policy Analysis Unit, January 2015
- Joint mission on NCD and Health Service Delivery, June 2015
- Peer to peer training, sentinel surveillance for rotavirus, June 2015
- EVM Assessment (in collaboration with UNICEF) August 2015
- Joint Annual Review of NHS 2010-2020, Q4 2015
- Review of the National Family Medicine Programme, September-October 2015

- Mission on development of Public Health Concept and review of PH legislation, Octo ber 2015
- Civil Registration and Vital Statistics Rapid Assessment in Tajikistan, October 2015
- National Health Summit, in 2015
- Conduct trainings for medical workers on introduction of IPV vaccine, Q4 2015
- Establishment of NITAG in Q4 2015
- Rotavirus vaccine post-introduction evaluation November 2015
- cMYP development for 2016-2020, Q4 2015
- Data quality review, Q4 2015

UNICEF

- Finalization of the cold chain inventory
- Support for cMYP development in collaboration with the WHO
- Printing of SOPs for vaccine management and roll out
- Procurement of vaccines through the UNICEF SD

2.4.2 Future Needs

The following are the most critical needs of Tajikistan in the future:

- Strengthening immunization financing and resource mobilization for immunization program
- Strengthening program management capacity of the RCI
- Positioning of the NIP, analysing impact of the reform on immunization outcomes.
- Introduction of pneumococcal conjugate vaccine and implementation of HPV vaccine demonstration project
- Implementation of the EVM assessment recommendations
- Development of proposal for Gavi's new of the cold-chain optimization platform
- Long term human resource capacity at WHO country office to support program

Immunization fina ncing & resource mobilization	• Discuss mobilization of resources to fill financial gaps in procurement of vaccines and implementation of immunization programme at National Donors Coordination Committee • Support the MoH in raising additional financial resources through donors support to address possible stock outs of vaccines, including bOPV in Q1 2016 (GAVI, WHO, UNICEF) • Develop resource mobilization plan – (WHO TA) • Develop advocacy materials (for resource mobilization)– (WHO TA) • Train relevant staff for resource mobilization – (WHO TA) • Support high level visit to Tajikistan to advocate for increasing financing of immunization programme and health system in general (GAVI, WHO, UNICEF)

Vaccine procurement	• Assist country to develop plans for vaccine procurement and budgeting processes • Continue procurement of vaccines through UNICEF to ensure access to the most favorable prices (UNICEF) • Participate in procurement-related WHO training workshops – (WHO TA)
Evidence-based decision- making	• WHO support to the NITAG (building capacity through participation in Regional meetings and trainings, ETAGE meeting) (WHO TA) • Make evidence-based recommendations on introduction of pneumococcal conjugate and HPV vaccines • Continued WHO support in implementation of rotavirus sentinel surveillance and documentation and utilization of findings as evidence for resource mobilization – (WHO TA) • Prepare applications to Gavi and introduce PCV vaccine and implement HPV vaccine demonstration project • Costing HPV vaccine introduction and conducting cost-effectiveness evaluation (WHO) • Technical assistance in defining HPV delivery strategy and assessment of school readiness for HPV introduction; (WHO) • Support in development of national plan on comprehensive cervical cancer prevention and control (WHO)
Programme performance	• Implement recommendations of rotavirus post-introduction evaluation to be conducted in November 2015 – (WHO TA) • Continue trainings of medical workers on immunization (using MLM and IIP modules) at • district and health facility levels – WHO TA • Further strengthening of supportive supervision through development of SOPs – WHO TA • Technical support in switching from tOPV to b-OPV - (WHO TA) • IPV vaccine post-introduction evaluation (WHO) • Support to prepare for introduction of PCV and HPV vaccines (WHO) • Develop and implement strategy to timely administer hepatitis B birth dose to infants born at home (WHO) • Improve coverage and services amongst urban areas and geographically hard to reach areas (Gavi HSS) • Provision of long term technical assistance to RCI by WHO country office to support and built capacity of staff of RCI to effectively manage the program (WHO)
Data quality	• Conduct coverage (sero) survey to validate administrative immunization coverage (WHO) • Revise immunization monitoring system to improve monitoring of timeliness of the first dose of hepatitis B vaccine (WHO) • Support in improvement of immunization coverage monitoring system based on the results of coverage survey (WHO) • Provide support on denominator issues to further strengthen the data quality (WHO)

Communication &social mobilization	• Technical assistance in development and implementation of immunization communication action plans (WHO and Gavi HSS grant) • Educate health care professionals on vaccine safety and contraindications (WHO) • Support in development and implementation of communication strategy for PCV and HPV vaccine introduction.
Vaccine management & logistics	Support implementation of recommendations of vaccine management assessment (WHO and UNICEF), including: • cold chain equipment preventive maintenance plans • standard Operating Procedures (SOP) at all levels • update of training materials and regular trainings for immunization staff • appropriate stock management computer application at central and provincial levels • contingency plan for emergency situations during the transportation according to the corresponding • standard WHO Vaccine Management Training Courses • Development of supervisory check-list and a supervisory logbook • Support for development of proposal for the new CCE Platform opportunity (WHO) • Upgrading cold chain storage needs for future new vaccine introductions (Gavi • HSS and CCE Platform)
Vaccine regulations& AEFI surveillance system	• NRA Assessment to identify TA needs to improve the functions of NRA including pharmacovigilance and market authorization (WHO) • Support AEFI surveillance system evaluation and implementation of its recommendations - (WHO TA) • Develop an AEFI monitoring and response guidelines in accordance to evaluation recommendations - (WHO TA) • Conduct trainings of medical workers on AEFI monitoring and response • Support introduction of collaborative procedure for registration of WHO pre- qualified vaccines – (WHO TA)

3. Goals, objectives and milestones

3.1 Goals and indicators

Table 16: Goals and Indicators

Goal	Indicator
1.Achieve financial sustainability of the national immunization programme	Achieve financial self-sufficiency from domestic resources for defined set of vaccines
2. Maintain polio-free status	Confirmed absence of re-established transmission of wild polio-virus by annual RCC
3. Eliminate measles and rubella	Achieve interruption of endemic measles and rubella virus transmission with high-quality surveillance verified by RVC
4. Control hepatitis B infection.	Achieve absence of acute hepatitis B cases among children <17
5. Meet vaccination coverage targets at all administrative levels throughout the country.	Achieve with DTP3 containing vaccine coverage ≥ 95 % at national and regional, and ≥ 90% at rayon/Health facility levels. Introduce pneumococcal conjugate and HPV vaccines with GAVI support
6. Make evidence-based decisions on introduction of new vaccines.	Evidence-based decisions on introduction of PCV and HPV vaccines with GAVI support are made.

3.2 Objectives, Indicators, Strategies, Activities and Timelines

Table 17: Goals and Indicators

Objectives	Indicators	Strategies	Activities	Timelines
1. Maintain political commitment to immunization as a priority	Presence of a NITAG	1. Enhance governance of national immunization programmes with legislative and managerial tools.	1.1 Establish and strengthen legislative basis for immunization to enhance financial and programmatic sustainability of national immunization programmes.	2016-2020
			1.2 Strengthen monitoring and evaluation mechanisms to assess financial and programmatic sustainability of national immunization programmes	2016-2020
			1.3 Strengthen existing, coordination and collaboration mechanisms between immunization stakeholders to enhance performance of the immunization programme through alignment and effective management (regular presentations on programme performance, expenditure, costs of outbreaks vs prevention etc.)	2016-2020
			1.4 Strengthen immunization programme management capacity through continuous sustainable investment in immunization programme administration at all levels (on programme planning, implementation, evaluation).	2016-2020
			1.5 Use immunization coverage as one of the key performance indicators for the national functionality of the overall health system.	2016-2020
		1.2 Inform and engage opinion leaders (religious, etc.) and stakeholders with regard to the value of immunization to	1.2.1 Establish and support mechanisms to engage opinion leaders to build a strong alliance for the promotion of immunization at all levels, including the regional level.	2016

	enhance commitment to immunization as a priority.		
		1.2.2 Develop and disseminate audience -targeted evidence on the value and benefits of immunization (public health value, averting vaccine-preventable diseases and deaths; eliminating and eradicating targeted vaccine-preventable diseases; minimizing risks, social and economic costs associated with vaccine-preventable diseases).	2016-2020
		1.2.3 Develop and disseminate the evidence base for the broader impact of immunization for individuals, households, communities and countries (on school enrollment, productivity, physical and cognitive development).	2016-2020
		1.2.4 Advocate for inclusion of immunization in the agendas, plans and policies of wider governmental and nongovernmental for a both at an intra- and inter-country level.	2016-2020
		1.2.5 Train immunization programme core staff and provide tools to build alliances, advocate for immunization and facilitate peer-to-peer exchange of information and best practices.	2016-2020
	1.3 Strengthen the national immunization technical advisory mechanism to formulate and implement evidence-based policies.	1.3.1 Establish independent advisory groups on immunization composed of recognized experts that provide evidence-based policy and strategy guidance to national immunization programmes in order to ensure improved credibility and good governance.	2016
		1.3.2 Participate in peer-to-peer exchange of information, best practices and tools between national immunization technical advisory groups (NITAGs) to create synergies.	2016-2020

2. Individuals understand the value of immunization services and vaccines and demand vaccination			Consider briefing the public on advisory group recommendations to contribute to transparency and credibility.	
	Existence of a communications plan in case of a VPD outbreak and rapid response	1.2 Ensure that individuals receive information about the risks of vaccine-preventable diseases and the benefits of and risks of vaccination, and that trust in vaccines, immunization services and health authorities is enhanced.	1.2.1 Develop a communications plan in case of a VPD outbreak, serious AEFIs and rapid response	2016
	Domestic expenditure for routine vaccines per newborn increase to 15.5$		1.2.2 Introduce research methods to monitor public perceptions, knowledge, attitudes and opinions. Ensure that research-practice mechanisms are in place to assure evidence-informed communication and messaging.	2016-2020
			Implement multi-channel vaccination advocacy and communication activities and dedicated media campaigns, using traditional and new media to transmit information that responds to people's concerns and fears.	2016-2020
			Monitor and respond to inaccurate or false information and anti-vaccination sentiment.	2016-2020
			Expand the immunology and vaccinology components of the basic medical education curricula and provide health worker in-service training opportunities – through medical education institutions, health authorities and health professional associations and societies.	2016-2020

		2.2 Engage new partners, advocates, champions and ambassadors to convey messages and maintain a positive media environment.	2.2.1 Map and recruit new voices and agents of change, including educators, religious leaders, traditional and social media personalities, family physicians, community health workers, health mediators and trained immunization champions.	2016-2020
			2.2.2 Cultivate relationships with media, encouraging balanced immunization reporting and immunization training of national and subnational media, ultimately increasing the share of voice in the media for the benefits of vaccines, especially online.	2016-2020
			2.2.3 Engage, enable and support in-country professional associations and societies, academic institutions and civil society organizations, to advocate the value of vaccines to communities, policy -makers and the media.	2016-2020
		2.3 Build the risk communication capacity of authorities, so that they can prepare and implement communication strategies and campaigns based on reliable research and evidence in order to stimulate demand for routine childhood vaccination and for inclusion of new and underused vaccines in the national immunization schedule.	2.3.1 Develop evidence-informed communication plans for new vaccine introduction.	2016-2020
				2016-2020

			2.3.2 Leverage the routine immunization communications and advocacy legacy to support new vaccine introduction. At the same time, maximize the opportunity presented by vaccine introduction to promote immunization services and advocate for vaccination.	
			2.3.3 Include a public opinion, knowledge and attitudes research component in all post-introduction evaluations	2016-2020
3.The benefits of vaccination are equitably extended to all people through tailored, innovative strategies	Ensure ≥ 95% coverage with three doses of DTP-containing vaccine at national level, ≥ 90% in all HFs	3.1 Identify underserved populations (groups) and the causes of inequities on a regular basis.	3.1.1 Make use of immunization programme data (vaccination coverage and disease epidemiology data) and other information to identify underserved populations (groups).	2016-2020
	Ensure ≥ 95% IPV and OPV coverage at national level, ≥ 90% in HFs		3.1.2 Utilize operational research and social sciences to identify underlying causes for inequities.	2016-2020
	Ensure ≥ 95% MCV2 coverage at all administrative levels	3.2 Design and implement tailored, innovative strategies to address identified causes of inequity.	3.2.1 Build upon proven-effective approaches in reaching underserved groups, such as the "Reaching Every District" strategy, planning of outreach sessions).	2016-2020
			3.2.3 Expand a network of mobile teams for reaching the population in hard-to-reach or low density areas	2016-2020
	% of newborns delivered		3.2.4 Track each individual's immunization status, preferably through introduction of electronic	2016-2020

	at home receiving OPV and HepB within 24 hours in target population	immunization registries that are well integrated within health information systems and leverage other relevant civil registries.	
		3.2.4 Pay special attention to migrants, international travelers and marginalized communities, in ensuring their eligibility and access to (culturally) appropriate immunization services and information.	2016-2020
		3.2.5 Develop plans and standard operating procedures for timely and effective response to vaccine-preventable diseases during outbreaks, humanitarian crises and emergencies.	2016
		3.2.6 Train immunization managers and service providers to implement new strategies and tailored approaches to underserved and marginalized populations (training on planning and implementing tailored approaches, communication skills, engaging existing community structures and civil society organizations in planning and implementing tailored approaches, monitoring and evaluation).	2016-2020
	3.3. Introduce pneumococcal conjugate vaccine	3.3.1. Develop and implement pneumococcal conjugate vaccine introduction plan	2018
		3.3.2 Conduct post-introduction evaluation	2019
	3.4 Implement HPV vaccination in selected districts to define optimal vaccine delivery	3.4.1 Develop and implement HPV Demo project plan of activities	2018-2019
		3.4.2 Develop communication and social mobilization plan	
		3.4.3. Conduct trainings for medical workers	
		3.4.4. Assess implementation of joint deliver of HPV vaccination and other adolescent health interventions	

	and communication strategies		3.4.5 Develop national strategy on comprehensive cervical cancer prevention and control 3.4.6 Conduct coverage survey and post -introduction evaluation 3.4.7 Assess cost of HPV vaccination	
4.Strong immunization systems are an integral part of a well-functioning health system	Percentage of districts with ≥ 90% coverage with three doses of DTP-containing vaccine	4.1 Develop comprehensive, coordinated approaches within the immunization programme and the health system.	4.1.1 Ensure that global disease eradication and elimination initiatives (polio eradication, measles–rubella elimination) are incorporated into national immunization programmes and do not operate independently.	2016-2020
	Percentage of districts with < 5% drop-out rate between first and third dose of DTP-containing vaccine		4.1.2 Ensure that new vaccine (IPV, pneumococcal, human papilloma virus vaccine) introduction plans are accompanied by comprehensive plans to control targeted diseases in a more effective manner.	2016-2020
	Presence of an expert review committee to assess causality for AEFI		4.1.3 Conduct post –introduction evaluations for Rota and IPV.	2016-2017
	Percentage of districts with no stock-outs for any routine vaccine		4.1.4Develop Hep B control strategy including baseline assessment of disease epidemiology, reliability of coverage data and timeliness for vaccine birth dose to infants born at home. .	2016-2018
	Number of personnel that completed		4.1.5 Ensure that national immunization programme components (such as vaccine procurement, vaccine regulations, vaccine pharmacovigilance,	2016-2020

	training in data quality control, processing and reporting		laboratory-based vaccine-preventable disease surveillance, immunization information systems) are well integrated with broader (health) system components.	
	Rate of measles-rubella suspected cases >2/100 000		4.1.6 Ensure coherence and alignment with broader health policies (child and adolescent health, public health and health systems policies).	2016-2020
	Rate of non-polio AFP >2/100 000 among children <15y		4.1.7 Ensure active engagement of immunization advocates in planning and management of health system changes (decentralization, changes in service provision and financing) to secure and reposition essential functions of the national immunization programmes within restructured health systems.	2016-2020
			4.1.7 Ensure that essential functions of immunization programmes are kept centralized under decentralized health systems (so that the public good aspect of immunization is not neglected, inequities are not exacerbated and economies of scale are not lost).	2016-2020
		4.2 Strengthen monitoring and surveillance systems.	4.2.1 Improve the quality of immunization data and promote its analysis and use on a regular basis at all administrative levels (facility, subnational and national levels) to improve programme performance (through introduction of standard operating procedures).	2016-2020
			4.2.2 Develop and promote the use of new information technologies for collection, transmission and analysis of immunization data within immunization information systems that are well integrated with communicable disease and health information systems.	2016-2020
			4.2.3 Assess quality of immunization data by checking validity of	2016-2020

		immunizations and accuracy of processed data and target population data for immunizations (data quality review, coverage /sero surveys).	
		4.2.4 Further strengthen and expand laboratory-based and case-based vaccine-preventable disease surveillance systems to generate information for decision-making and monitor the impact of immunization.	2016-2020
		4.2.5 Strengthen the quality of laboratories through introduction of quality assurance and accreditation systems.	2016-2020
		4.2.6 Strengthen data management systems so that laboratory-based surveillance and epidemiology data systems reconcile and support each other.	2016-2020
		4.2.7 Ensure capacity for vaccine safety activities, including capacity to collect and interpret safety data, with particular emphasis on newly developed and introduced vaccines.	2016-2020
		4.2.8 Ensure that adverse events following immunization (AEFI) surveillance systems (pharmacovigilance) are in place and are an integral part of regional and global networks.	2016-2020
	4.3 Strengthen the capacity of managers and front-line workers.	4.3.1 Ensure that immunization and other primary health care programmes have adequate human resources to plan and deliver predictable high-quality services, and efficiently use existing human resources (through incentive mechanisms).	2016-2020
		4.3.2 Increase levels of pre-service and in-service training for human resources, and develop new, relevant curricula that approach immunization as a component of comprehensive disease control.	2016-2020
		4.3.3 Utilize new learning techniques to intensify capacity building efforts, and	2016-2020

		promote and support learning at all levels (such as e-learning, peer-to-peer, twinning, and networking).	
		4.3.4 Enhance sustainability of in-service training activities through integration with continuous medical education and accreditation systems.	2016-2020
		4.3.5 Ensure synergies between training and supportive supervision efforts.	2016-2020
	4.4 Strengthen infrastructure and logistics.	4.4.1 Develop and introduce standards and operating procedures for immunization supply systems that are well integrated with broader supply systems.	2016-2020
		4.4.2 Explore introduction of new technologies and innovative solutions to immunization supply systems and waste management systems.	2016-2020
		4.4.3 Adopt systematic approaches to assess the quality of immunization supply systems on a regular basis, and develop and implement immunization supply system improvement plans.	2016-2020
		4.4.4 Apply similar standards to the quality of supply systems that are not directly supervised by national immunization programmes (private sector supply and outsourced systems).	2016-2020
		4.4.5 Minimize the environmental impact of energy, materials and processes used in immunization supply systems, where applicable and affordable.	2016-2020
		4.4.6 Staff supply systems with adequate competent, motivated and empowered personnel at all levels.	2016-2020
		4.4.7 Establish information systems and where affordable, electronic systems, that help staff to accurately track available supply and to monitor quality of the cold chain system (national and branches).	2016-2020
			2016-2020

5.Immunization programmes have sustainable access to predictable funding and high-quality supply	Existence a fully functional national regulatory authority	5.1 Allocate adequate financial resources to national immunization programmes to achieve their objectives in the context of achievement of financial self-sufficiency.	5.1.1 Establish a commitment from governments to allocate adequate financial resources to immunization as required, to meet programme objectives.	
	% immunization resources met by domestic health budget to increase annually by ------		5.1.2 Conduct representative epidemiological, immunological, social and operational studies and investigations of vaccine impact to guide advocacy efforts on benefits of immunization and value of vaccines	2016-2020
	Number of stock outs at any administrative level		5.1.3 Allocate adequate funding for operational activities to improve the quality of immunization services, such as training, supervision, monitoring, surveillance, advocacy and communication.	2016-2020
			5.1.4 Allocate adequate funding for EVM assessment recommendations into annual planning and budgeting	2016-2020
			5.1.5 Establish resource mobilization plan	2016-2020
			5.1.6 Increase reliability of funds through earmarking and ensuring timely disbursement of funds.	2016-2020
		5.2 Improve Effective Vaccine Management and increase access to quality-assured vaccines and cold	5.2.1 Implement EVM assessment recommendations	2016-2020

	chain equipment		
		5.2.2 Establish a formal procedure to review EVM improvement plan implementation progress during ICC meetings	2016-2017
		5.2.2 Develop Cold Chain Enhancement (CCE) proposal and submit to Gavi Secretariat	2016-2017
		5.2.3 Develop integrated national regulations on storage of vaccines and cold chain requiring pharmaceuticals 5.2.2 Improve knowledge on the specificities of vaccine procurement and global market dynamics to optimize actions and activities in countries.	2016-2017
	5.3 Strengthen regulatory mechanisms to ensure access to and use of quality -assured vaccines in national immunization programs.	5.3.1 Conduct assessment of national regulatory authorities on a regular basis (against established international standards for required functions) and formulate institutional development plans that address challenges.	2016-2020
		5.3.2 Implement institutional development plan activities and recommendations to strengthen national regulatory authority functions.	2016-2020
		5.3.3 Harmonize national vaccine quality assurance activities with regional and global systems.	2016-2020
		5.3.4 Build and support networks of regulators to share best practices and to improve quality assurance capacities.	2016-2020

3.3 Monitoring and Evaluation

Table 18: Baseline and Target Indicators

Objective	Indicator	Source of data	Baseline (2014)	Target indicator (years)				
				2016	2017	2018	2019	2020
1. Maintain political commitment to immunization as a priority	Presence of a NITAG	RCIP	No	Yes	Yes	Yes	Yes	Yes
2. Individuals understand the value of immunization services and vaccines and demand vaccination	Existence of a communications plan in case of a VPD outbreak and rapid response	RCIP	No	Yes	Yes	Yes	Yes	Yes
	Domestic expenditure for routine vaccines per newborn	RCIP	$2.29	$2.29	$2.44	$5.21	$5.49	$5.77
3.The benefits of vaccination are equitably extended to all people through tailored, innovative strategies	≥ 95% coverage with three doses of DTP-containing vaccine at national level	RCIP	97%	97%	97%	97%	97%	97%
	≥ 90% coverage with three doses of DTP-containing vaccine in all HFs	RCIP	NA	50%	60%	70%	80%	90%
	≥ 95% IPV coverage at national level	RCIP	NA	50%	90%	95%	95%	95%
	≥ 90% IPV coverage in all HFs	RCIP	NA	50%	60%	70%	80%	90%
	≥ 95% OPV4 coverage at national level	RCIP	96.5%	96.5 %	97%	97%	97%	97%
	≥ 90% OPV4 coverage in all HFs	RCIP	NA	50%	60%	70%	80%	90%
		RCIP	98%	98%	98%	98%	98%	98%

	≥ 95% MCV2 coverage at all administrative levels							
	% of newborns delivered at home receiving OPV and HepB within 24 hours in target population	RCIP	7%	5%	3%	3%	2%	2%
	PCV vaccine is introduced in national immunization programme		No			Yes		
	HPV vaccine demonstration project is implemented and evaluated		No					Yes
4. Strong immunization systems are an integral part of a well -functioning health system	% districts with ≥ 95% DTP3 coverage	RCIP	100%	100%	100%	100%	100%	100%
	% of HFs with < 5% drop-out rate between first and third dose of DTP-containing vaccine	RCIP	NA	70%	80%	90%	95%	95%
	Presence of a functional expert review committee to assess causality for AEFI	RCIP	Yes	Yes	Yes	Yes	Yes	Yes
	% of districts with no stock-outs for any routine vaccine	RCIP	0%	90%	90%	95%	100%	100%
	% of personnel that completed	RCIP	30%	40%	60%	80%	90%	100%

	training on Immunization in practice (data quality control, processing and reporting, contraindications)							
	Rate of measles-rubella suspected cases per 100 000	RCIP	0,0007	2	2	2	2	2
	Non-polio rate of AFP per 100 000 among children <15y.o	RCIP	2.4	2.5	2.5	3	3	3
5.Immunization programmes have sustainable access to predictable funding and high-quality supply	Existence a fully functional national regulatory authority	RCIP/MoHSP	Yes	Yes	Yes	Yes	Yes	Yes
	% immunization resources met by domestic health budget to increase annually by ------							
	Number of stock outs at any administrative level	RCIP	1	0	0	0	0	0

Costing and Financing Section

Table of content

Table of figures

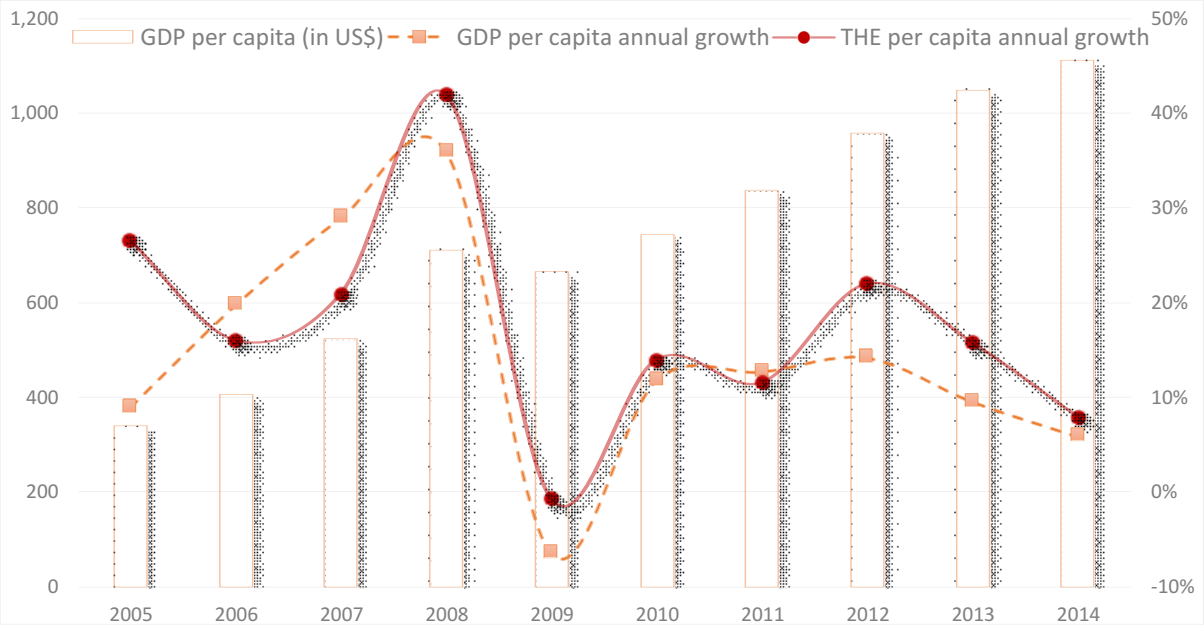
1 Immunization program costs and financing

1.1 Macroeconomic context and demographics

The following assumptions have been used for macroeconomic projections for Tajikistan 2016-2020 cMYP costing exercise:

- GDP per capita rate was set based on WHO estimates:
  - 6% - 12% GDP range of annual growth rate during 2010-2014 in accordance with the WB annual GDP growth rate forecast.
- GDP per capita (in current US$) was estimated at 1,110 in 2014 (according to the WHO Global Health Expenditure Database (GHED)) as shown in Figure 24.
- Total Health Expenditure (THE) per capita was 76 US$ in 2014 (in accordance with the WHO NHA GHED). THE per capita projections were made using the GDP per capita annual growth rate (range 6% - 12%) as described above
- GHE as % of THE – constant value at the rate for baseline year (2014) – 29% (in accordance with the WHO NHA GHED).
- Inflation rate (Consumer price index) was estimated at level of 5.0 - 6.1 in previous 3 years (according to the World Bank World Development Indicators);

FIGURE 1: MACROECONOMIC TRENDS AND HEALTHCARE FINANCING DYNAMICS



Source: WHO Global Health Expenditure Database

The total population was estimated at 8,354,000 in 2014 (in accordance with information provided by the Republican Center of Medical Statistics and Information of the Ministry of Health and Social Protection of Population (MHSPP) of Tajikistan):

- The population growth was projected at the annual growth rate of 2.38% (in accordance of the projections of MHSPP Republican Center of Medical Statistics and Information that is higher than the population annual growth % in last five years according to UN/The World Bank project).
- Infant mortality rate – constant at the rate 17.5 per 1000 live birth in 2014 in accordance with the MoH Tajikistan. Data on projected infant mortality rate was not available, thus the constant rate of

17.5 was used for cMYP costing and financing analysis;

- According to the Tajikistan Ministry of Health and Social Protection of Population:
  - The number of surviving infants was 228,177 in 2014, that translates into 232,241 newborns at the infant mortality rate of 17.5 per 1,000 live births (that is 3% of the total population in 2014).

The number of Childbearing Age Women (CBAW) 2,207,632 in 2014, that translates into 26% of total population.

1.2 Current program costs and financing

1.2.1 Expenditures on immunization in the baseline year

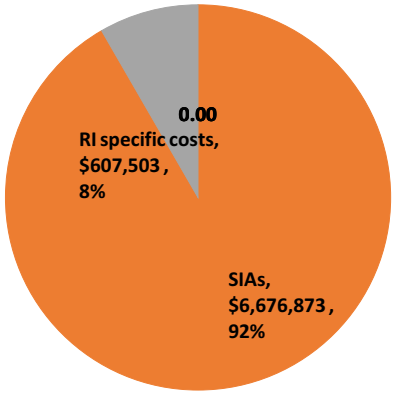
The national immunization program expenditures in 2014 amounted to 7.3 million US$ (with shared health system costs) as shown in Figure 2 below:

FIGURE 2: BASELINE INDICATORS (2014)

Total Immunization Specific Expenditures	**$7,250,333**
Supplemental immunization activities	$573,460
Routine immunization only	$6,676,873
Per capita	$0.80
Per DTP3 immunized child	$30
% Vaccines and Supplies	52.5%
% Government Funding	49.6%
% Of Total Health Expenditures (THE)	1.0%
% Government Health Expenditures	3.6%
% GDP	0.1%
Total shared costs	**$607,503**
% Shared Health Systems Cost	7.7%
Total Immunization Expenditures	**$7,857,836**

In 2014 Tajikistan conducted Polio campaign among the 0-5 years old children. Total cost of the SIA was 573,460 US$.

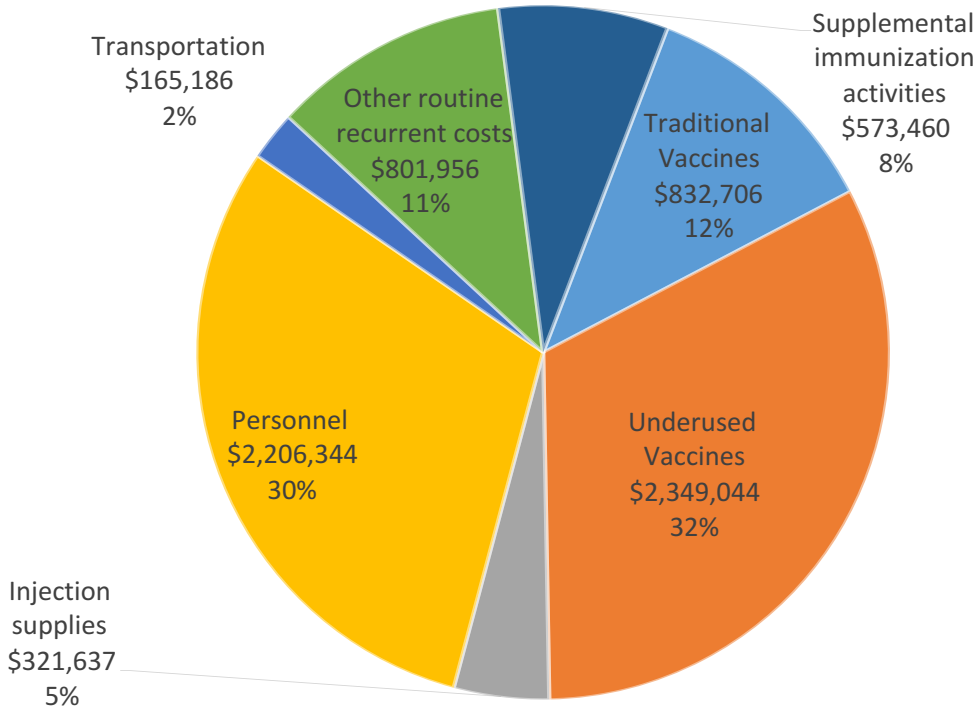
Shared health system costs (607,503 US$) accounted for 7.73% of the immunization expenditures in 2014 and the rest was spent specifically on routine immunization. The cost of fully (DTP3) immunized child was 30 US$.



1.05% of the total health expenditures (or 3.61% of the government health expenditure) was spent on routine immunization in 2014.

"Vaccines and injection supplies" were the major cost driver accounting for 52.47% (or 3.5 million US$) of all expenditures as shown in Figure 3 below:

FIGURE 3: ROUTINE IMMUNIZATION BASELINE COST STRUCTURE



"Personnel" costs were the second major cost driver accounting for 30.43% (or 2.2 million US$) of the total expenditures, followed by "other routine recurrent costs" accounting for 11.06% (or 801,956 US$) of the total expenditures. SIA expenditures constituted 7.91% of the total costs (or 572,460 US$); 2.28% or 165,186 US$ was spent on transportation in 2014.

1.2.2 Routine immunization cost structure

Personnel

Out of the total of 3,688 persons engaged in the national immunization program 701 are shared health system personnel (allocating some portion of work time to immunization) and 2,985 persons dedicate full work time to immunization as shown in Figure 21.

Vaccines

In total 832,706 US$ (11.49% of total program cost) were spent on traditional vaccines and 2,349,044 US$ (32.4% of total program cost) - on underused vaccines in 2014; the total expenditures on vaccines and injection supplies amounted to 3,503,388 US$.

Other Routine Recurrent Costs

The total for "other routine recurrent costs" amounted to 801,956 US$ in the baseline year.

"Program Management" was the main cost driver of "Other routine recurrent costs" accounting for 42% (or 336,094 US$). This was followed by "IEC/Social Mobilization", consuming 20% (or 163,992 US$) of Other routine recurrent costs of the program. "Cold-chain management and overhead" accounted for 13% (or 108,004 US$) of this cost category and "Disease Surveillance" and "building overheads" (water, electricity and etc.) accounted for 9% (70,000 US$) and 8% (66,366 US$) of "other routine recurrent costs" respectively.

Vehicles and Transportation

Transportation expenditures for vaccine distribution from the Central level to the provinces amounted to 165,186US$ in 2014 that constituted 2.28% of the total recurrent expenditures on routine immunization.

No funds were spent for vehicle procurement in the baseline year.

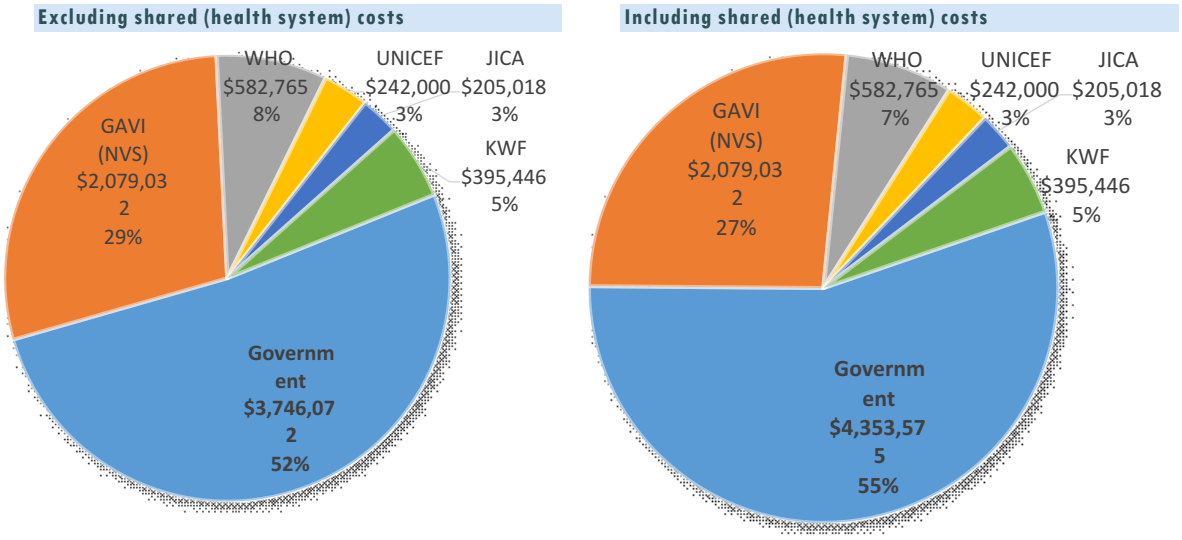
1.2.3 Supplemental immunization costs

EPI conducted Polio campaign among the children of 0-5 years old. Total cost of the SIA was 573,460 US$ out of which 65,249 US$ was spent on vaccines and injection supplies. The operational costs of the campaign amounted to 112,765 US$.

1.2.4 Immunization financing in baseline year

The Government was the major source of financing of the national immunization program accounting for 55% of all funds if shared health system costs are excluded and 60% if shared health system costs are included as shown in Figure 4 below:

FIGURE 4: IMMUNIZATION FINANCING PROFILE – BASELINE YEAR



Gavi was the second major source of funding. In 2014 Gavi provided (2,1 million US$) through NVS grant program accounting for 26% of the total funding (excluding shared costs). WHO contributed 7% (or 582,765 US$) to the total program funding and KWF contribution was equal to 5% (or 395,446 US$). Funding provided by UNICEF accounted to 3.08% (or 242,000 US$) and JICA contributed 2.61% (or 205,018 US$) of the total program financing.

1.3 Future resource requirements

1.3.1 Overview of the resource requirements' structure

The total resource requirements were estimated at 93.3 million US$ (including shared health system costs) for 2016-2020 as shown in Figure 5 below:

FIGURE 5: NATIONAL IMMUNIZATION PROGRAM COSTS SUMMARY BY SYSTEM COMPONENTS AND YEARS – BASIC SCENARIO

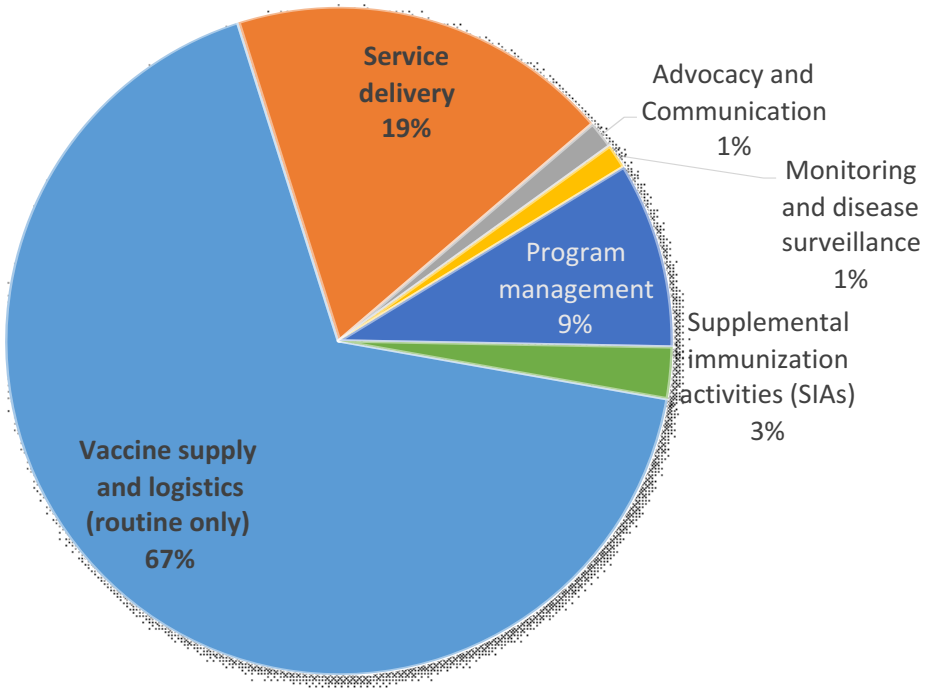
Immunization system components	Expenditures	Future resource requirements					Total 2016 -
	2014	2016	2017	2018	2019	2020	2020
Vaccine supply and logistics (routine only)	3,611,392	5,246,401	6,416,996	11,314,014	10,354,699	10,875,491	**44,207,600**
Service delivery	2,282,730	2,282,730	2,441,695	2,452,724	2,503,232	2,538,836	**12,219,218**
Advocacy and Communication	163,992	46,335	32,500	230,500	282,500	282,500	**874,335**
Monitoring and disease surveillance	158,800	158,800	158,800	158,800	158,800	158,800	**794,000**
Program management	459,959	277,693	1,476,993	1,315,557	1,605,281	1,240,045	**5,915,569**
Supplemental immunization activities (SIAs)	573,460	0	1,383,782	249,001	0	0	**1,632,783**
Total immunization Immunization costs	**7,250,333**	**8,011,959**	**11,910,766**	**15,720,596**	**14,904,512**	**15,095,672**	**65,643,505**
Shared Health Systems Costs (EPI Portion)	607,503	608,802	610,127	611,479	612,858	681,613	**3,124,879**
Total immunization resource requirements	**7,857,836**	**8,620,761**	**12,520,893**	**16,332,075**	**15,517,370**	**15,777,285**	**68,768,383**

The details of future resource requirement (by cost categories) is presented in Figure 25.

1.3.2 Description of cost drivers of the future resource requirements

The resources required for "vaccine supply and logistics" account for 67% of the total costs for 2016-2020 (excluding shared health system costs) as shown in Figure 6 below. "Service delivery" is the 2nd major cost driver – accounting for 19% of the future resource requirements followed by "Program Management" (9%) and SIAs (2%). "Advocacy and Communication" and "Monitoring and Surveillance" require for approximately 1% of total future resource requirements each.

FIGURE 6: THE FUTURE TOTAL RESOURCE REQUIREMENT STRUCTURE BY CMYP COMPONENTS (SHARED COSTS EXCLUDED)



The resource requirements for routine immunization per annum varies between 8.01 and 15.1 million US$ in 2016-2020 (excluding shared health system costs):

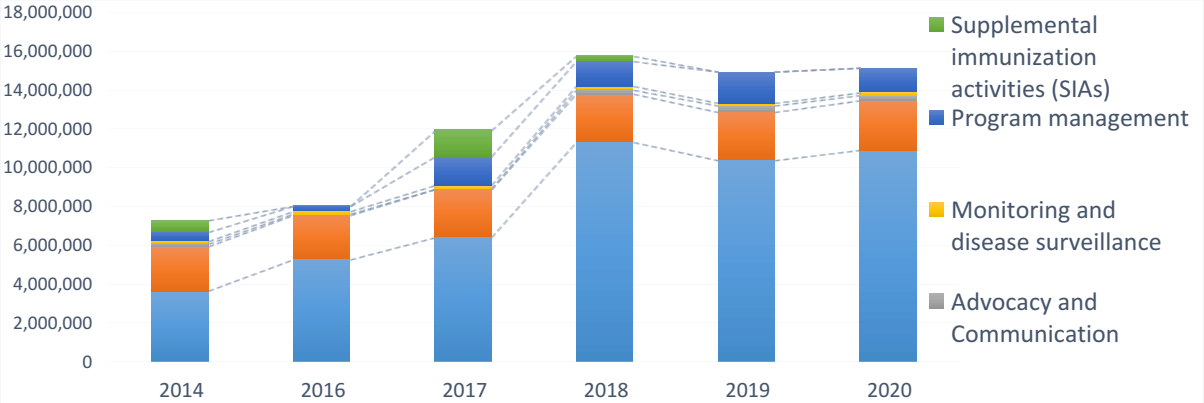
- The resource requirements for routine immunization will increase in the first projection year (2016) by 17%, from 6.7 million US$ in the baseline year to 8.01 million US$ in 2016.
- In the second projection year (2017) routine immunization resource requirements will further increase by 24% or 2.5 million US$ in comparison with the previous year.
- In 2018 the resource requirements for routine immunization will further increase by 32% (or by 4.9 million US$).

- In 2019 the resource requirements for routine immunization will decrease by 4% and in the final projection year (2020) – will modestly increase by 1% (or 191,159 US$).

In all these years' dynamics of the resources requirements for routine immunization could be attributed to the fluctuation of "Vaccine Supply and Logistics" related costs as it is shown in Figure 7.

Planned two supplementary immunization activities (Polio and MR campaigns) in 2017 and 2018 increase immunization program resource requirements by 1.6 million US$ over the course of cMYP cycle.

FIGURE 7: THE STRUCTURE OF FUTURE RESOURCE REQUIREMENTS BY CMYP COMPONENTS AND YEARS (SHARED COSTS EXCLUDED)



Vaccines and injection supplies

The following assumptions were used for the projection of vaccine and injection supply requirements:

- Coverage rates were set in line with the objective and targets of National Immunization Program by 2020 (>=95% by 2020).
- Wastage rates are estimated at 50% for BCG and at 20% for MR. For DTP4 and Dt the coverage rates were set at 10% and for the rest of routine immunization vaccines the coverage rates were set at 5%.

The present projections are based on vaccine price estimates provided by the UNICEF Supply Division and calculation of the local taxes and overhead costs imposed by the Tajikistan legislation. In difference with other WHO EURO region countries, Tajikistan imposes 5% VAT and customs tax on all vaccines procured through the Government budgetary allocations, including the Government co-financing share for purchasing vaccines through GAVI NVS support scheme. Thus, for precise estimation of vaccine prices for projection period, two different costs were set for Co-financed vaccines: GAVI and Government costs of vaccines:

  - The costs of Gavi supported vaccines include 4.5% Unicef handling fee and 10% fee for freight, insurance and inspection; and
  - The costs of Government procured vaccines include 4.5% Unicef handling fee, 10% fee for freight, insurance and inspection, as well as 5% Customs Tax paid at the moment of customs clearance of arrived vaccines.

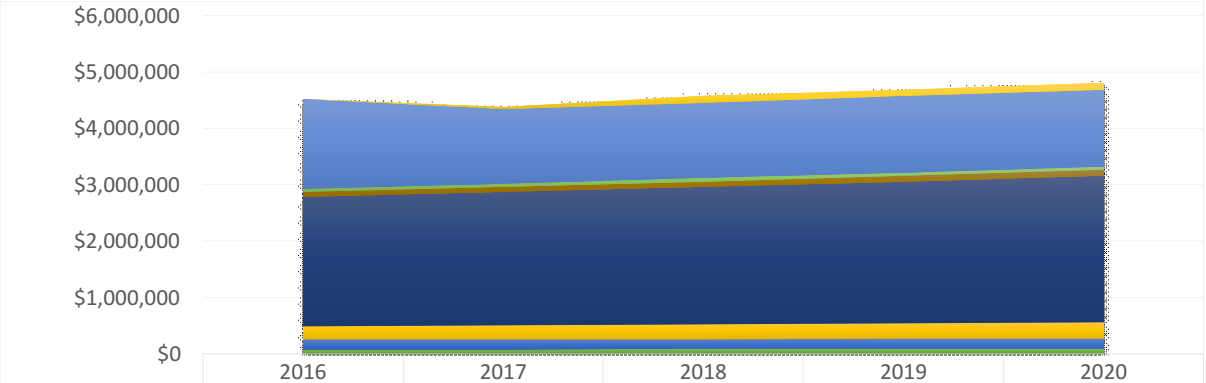
The resource requirement projections for vaccines (basic scenario) envisages costs of following vaccines:

- Traditional vaccines: BCG, OPV, Dt and DTP4 vaccines;

- Underused vaccines: HepB (introduced in Routine Immunization Schedule in 2002), Pentavalent (introduced in Routine immunization schedule 2008) and MR; and
- New vaccines: Rotavirus (introduced in Routine Immunization schedule in 2015), PCV (to be introduced in Routine Immunization schedule in 2018) and IPV (to be introduced in Routine Immunization schedule in 2017) vaccines.
- For the scenario A of the cMYP – the cost of HPV Demo project in 2020.

Figure 8 below illustrates the structure of routine immunization vaccine and injection supplies' costs by vaccines and years.

FIGURE 8: VACCINE AND INJECTION SUPPLY COST PROJECTIONS (ROUTINE IMMUNIZATION).

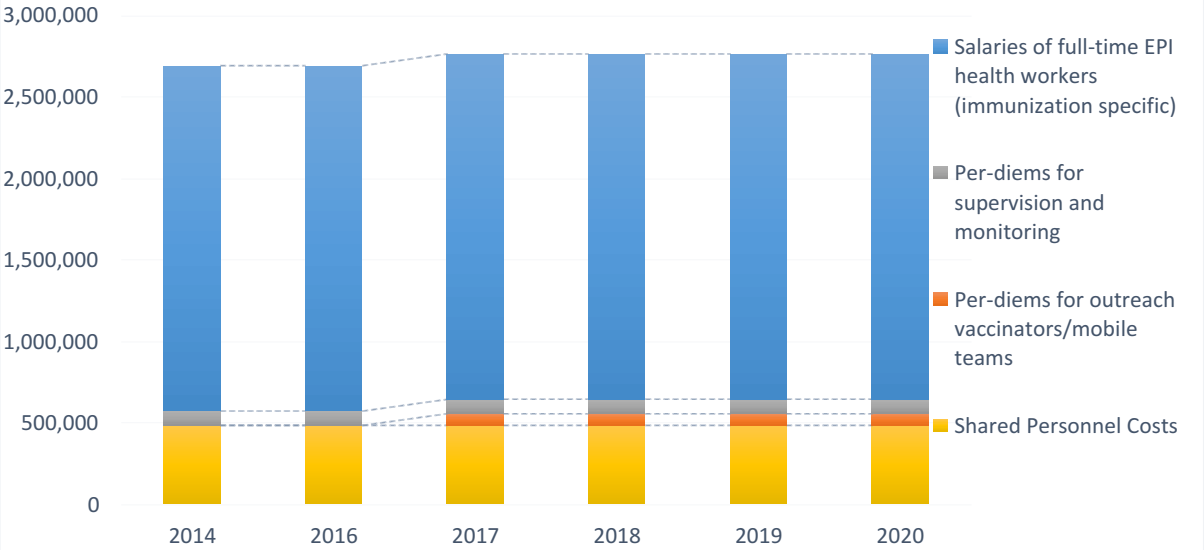


	2016	2017	2018	2019	2020
IPV	$0	$33,657	$111,544	$106,051	$115,448
Rota	$1,584,222	$1,315,419	$1,336,205	$1,353,671	$1,366,974
DT	$57,197	$58,551	$59,944	$61,371	$62,832
DTP4	$93,171	$95,375	$97,645	$99,969	$102,349
DTP+Hib+HepB	$2,286,537	$2,359,799	$2,436,820	$2,516,813	$2,599,746
OPV	$244,085	$251,834	$259,893	$268,209	$276,792
Hep B	$164,138	$169,349	$174,769	$180,361	$186,133
BCG	$85,353	$88,063	$90,881	$93,789	$96,791

Personnel

Personnel costs were estimated at 13.5 million US$ in 2016-2020, and salaries of the shared personnel (accountant, family doctor and nurse) accounted for its 21.57%.

FIGURE 9: PERSONNEL COSTS BY COST CATEGORIES AND YEARS (ROUTINE IMMUNIZATION)



The personnel costs, per diems for outreach vaccination and supervision and monitoring will remain constant throughout the baseline and projection years as it is shown in Figure 22.

Cold chain equipment

EPI plans to make significant investment in cold chain capacity strengthening and upgrading cold chain equipment almost at all service delivery points across the country. Cold chain equipment will be the major cost driver accounting for 83.22% of cold chain related resource requirements.

FIGURE 10: COLD CHAIN RELATED RESOURCE REQUIREMENTS

	2014	2016	2017	2018	2019	2020	Total 2016-2020
Cold chain maintenance and overhead	$108,004	$109,829	$178,051	$246,858	$162,935	$163,095	**$860,769**
Cold chain equipment		$34,374	$1,040,160		$13,517		**$1,088,052**
Total	**$108,004**	**$144,204**	**$1,218,212**	**$246,858**	**$176,452**	**$163,095**	**$1,948,821**

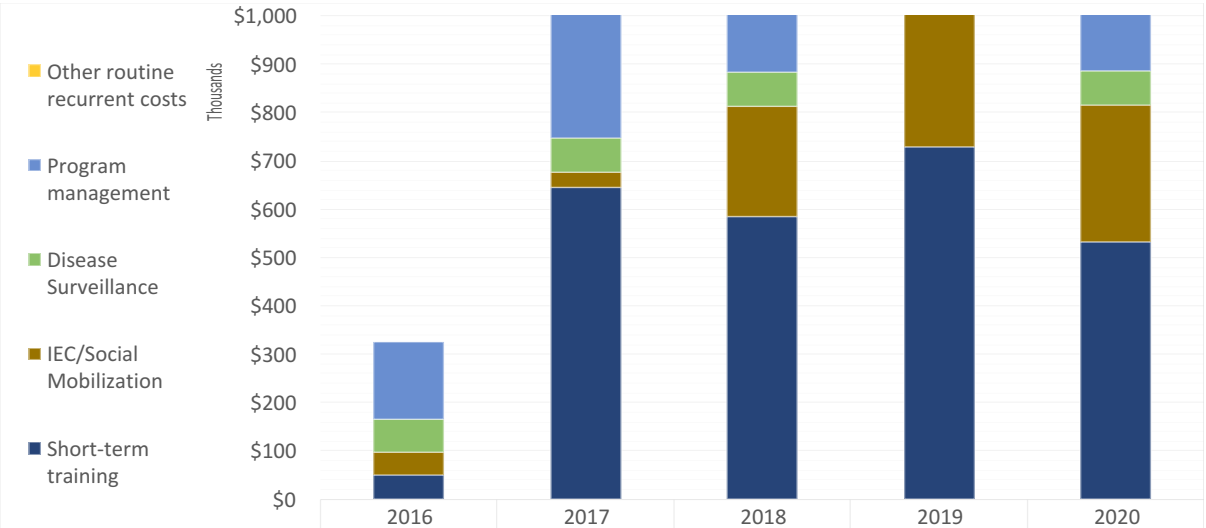
Cold chain maintenance and overhead costs account for 44.17% of the 1.9 million US$ estimated to cover the cold chain related needs as shown in Figure 10 above.

Other recurrent costs

Out of the total 7.2 million US$ required for "Routine Recurrent Costs", 37.6% or US$ 3.02 million US$ will be necessary to cover "Program Management" costs followed by "Short-term training" accounting for 31.5% of "Routine Recurrent Costs". "IEC/Social Mobilization" account for 10.9% (or 874,335 US$) and "Disease Surveillance" – 4.3% or 350,000 US$ (see

Figure 11 below).

Figure 11: The future resource requirements for "Activities and other recurrent costs"

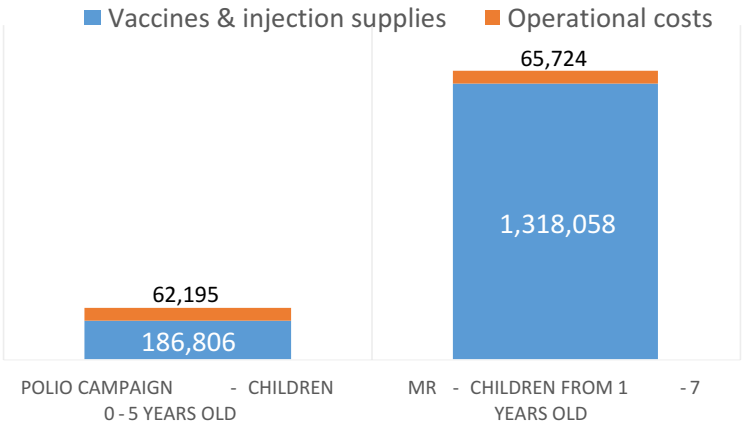


	2016	2017	2018	2019	2020
Other routine recurrent costs	$0	$0	$0	$0	$0
Program management	$160,000	$763,973	$661,444	$805,603	$633,386
Disease Surveillance	$70,000	$70,000	$70,000	$70,000	$70,000
IEC/Social Mobilization	$46,335	$32,500	$230,500	$282,500	$282,500
Short-term training	$50,000	$643,973	$583,684	$727,843	$533,386

Supplementary immunization activities

The cost of MR and Polio campaigns in 2017 and in 2018 was estimated at 1.6 million US$. The structure of campaigns is shown in Figure 12 below:

FIGURE 12: THE FUTURE RESOURCE REQUIREMENTS FOR SIAS



The operational costs of the campaigns were calculated based on historical unit costs: at 0.5 US$ per child targeted by SIA.

1.3.3 Description of scenarios for introduction of new vaccines

Scenario building parameters

Two different scenarios were developed for Tajikistan cMYP 2016-2020.

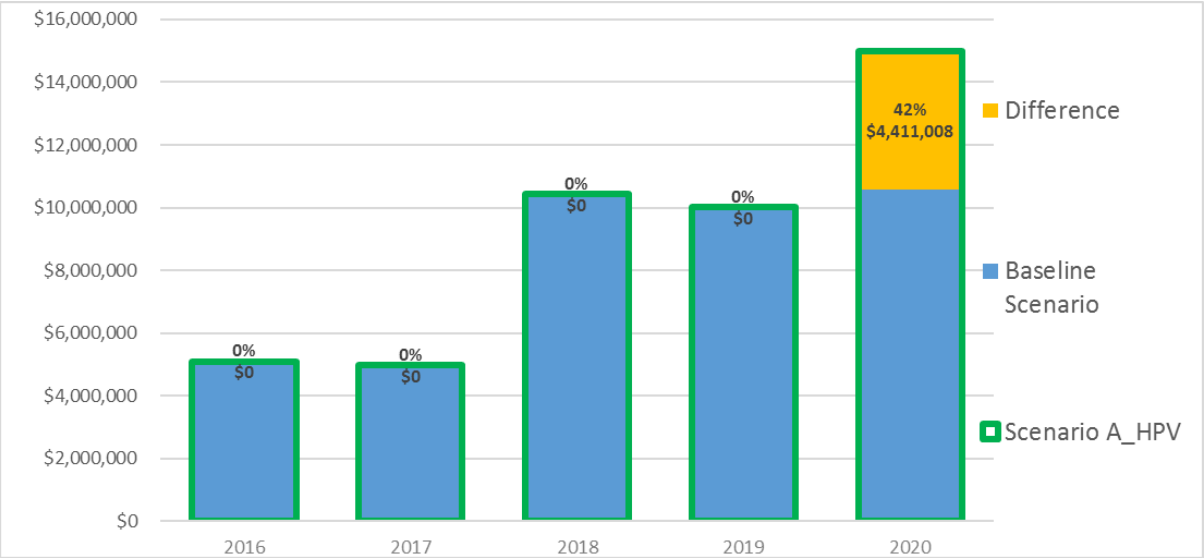
Basic Scenario – which envisions implementation of existing routine immunization program and introduction of IPV and PCV vaccines in 2017 and 2018 respectively.

Scenario A – considering introduction of the HPV vaccine in 2020 in addition to implementation of the Basic Scenario.

Results – financial implications of vaccine introduction

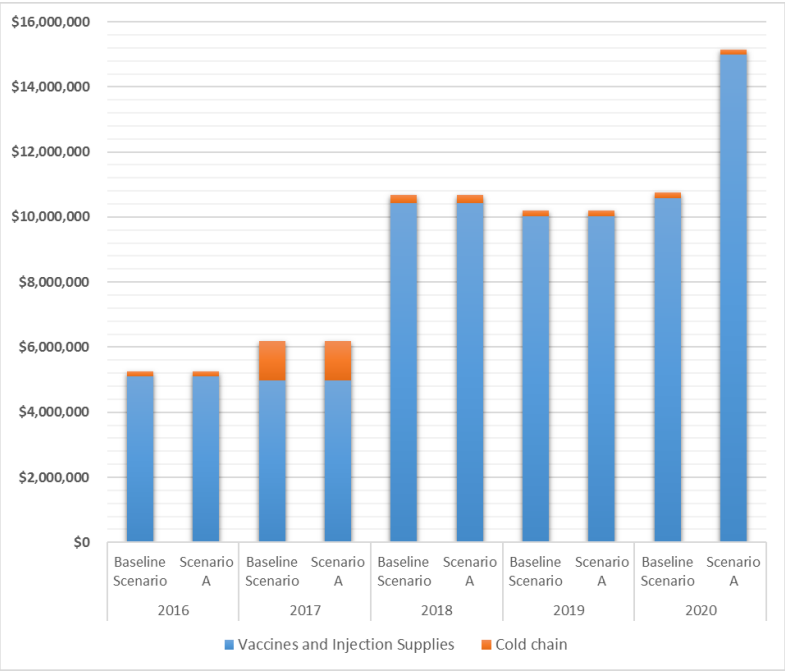
The implication of resource requirements for vaccines and injection supplies by scenarios and years is represented in Figure 13 below. The introduction HPV vaccine in 2020 increases annual resource requirement by 4.4 million US$ accounting for 42% of total program costs for the respective year.

FIGURE 13: COMMPARISON OF RESOURCE REQUIREMENTS FOR VACCINES AND INJECTION SUPPLIES BY SCENARIOS AND YEARS



Comparison of costs of vaccines and cold-chain across two different scenarios shows that introduction of HPV vaccine will not require substantial improvement or upgrade of existing cold-chain in addition to already planned upgrade of cold-chain within the basic scenario framework.

FIGURE 14: COMPARISON OF COSTS OF VACCINES AND COLD CHAIN ACROSS SCENARIOS



However, introduction of the new vaccine has substantial cost implications on the resource requirements for vaccines (see Figure 14) increasing resource requirement for vaccines by 53.32% or 5.3 million US$ which represents significant amount for Tajikistan immunization program accounting for 11.37% of total program costs.

1.4 Future financing and funding gaps

The total financing for 2016-2020 was estimated at 65 million US$ (including shared health system costs) or at 61.8 million US$ (excluding shared health system costs).

GAVI is the major source of financing for Tajikistan National Immunization Program. It is expected that GAVI through its NVS and HSS programs will provide 39.2 million US$ (NVS 31.1 million US$ and HSS 7.8 US$ during the projection period) which constitutes 60.38% of all funding if shared health system costs are included, or 39.1 million US$, if shared health system costs are excluded, that represents 63.32% of all funding (as shown in Figure 15 below). Program financing details for the projection period are presented in Figure 26.

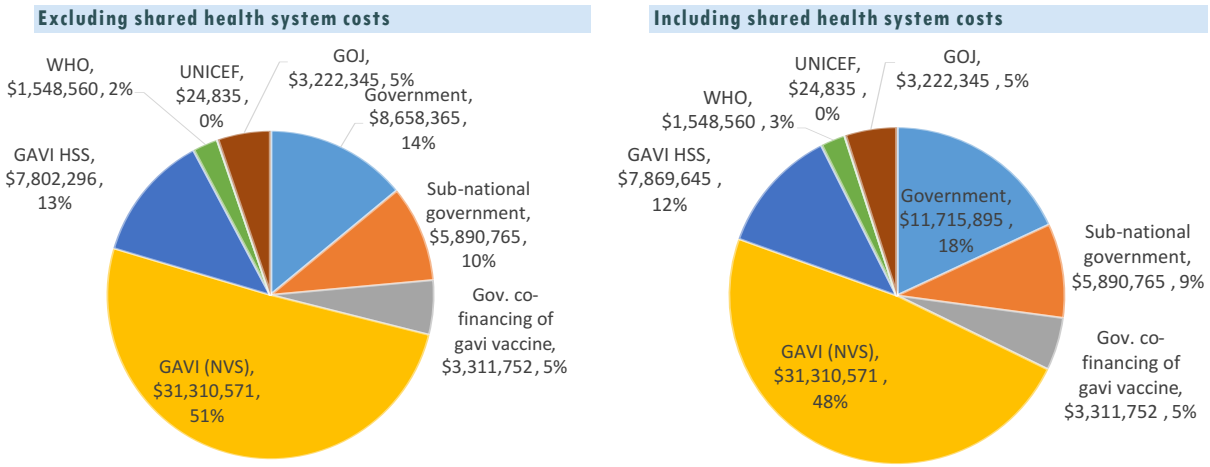
Government is the second major source of financing, contributing 32.23% of the total funding (or 20.9 million US$) with shared health system costs or 28.92% (or 17.9 million US$) of all funding excluding shared health system costs.

Government of Japan is one of the main sources of financing providing 3.2 million US$ which will account to 4.97% of total funding if shared health system costs, or 5.22% of total funding without shared health system costs.

WHO will contribute in total 1.5 million US$ which constitutes 2.39% of total funding with shared health system costs and 2.51% without shared health system costs.

Unicef contribution in the national immunization program funding will be 24,835 US$ which accounts for 0.04% of total funding.

FIGURE 15: THE FUTURE FINANCING (WITH SECURED AND PROBABLE FUNDS) STRUCTURE



94.71% (or 61.5 million US$) of funding is considered to be secured out of the total immunization specific financing 64.9 million US$ as shown in Figure 23.

When only secured funding is considered (excluding shared health system costs):

- the share of government financing is 29.12% (16.99 million US$ out of total 58.3 million US secured funds); however, 25.59% of probable funding (or 0.87 million US$) is expected to come from the state budget.
- The share of GAVI financing is 64.24% (37.48 million US$ of total secured funds). In addition, 47.89% of probable funding (1.6 million US$) is expected in addition from GAVI if the probable funds are secured.

The secured funding is sufficient to cover only 88.87% of the total resource requirements in 2016-2020, so the funding gap with secured financing ranges from 0% in 2016 to 16% in 2019 and amounts to 7.28 million US$ as shown in

Figure 16 on page 14.

FIGURE 16: FINANCING BY SOURCES AND FUNDING GAP BY YEARS (WITH SECURED FUNDS ONLY)

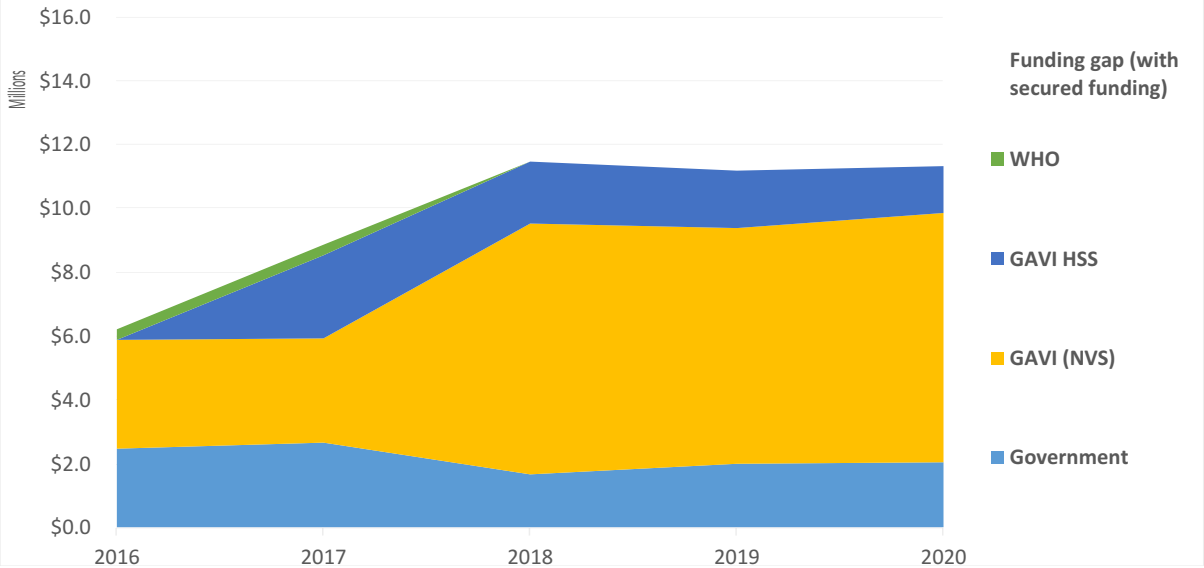


FIGURE 17: FINANCING BY SOURCES AND FUNDING GAP BY YEARS (WITH SECURED AND PROBABLE FUNDS)

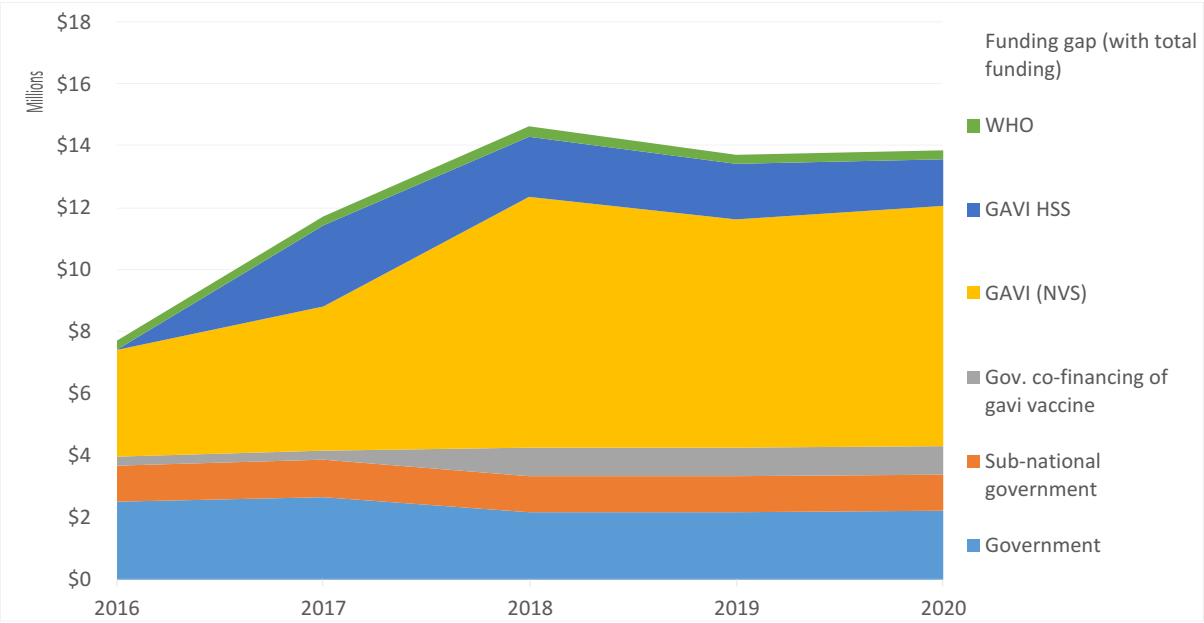


Figure 17 shows funding gap with secured and probable funding. If probable funds are secured the available financing will be sufficient to cover 94.1% of the total resource requirement for 2016-2002 and the funding gap will range between 0.89 million US$ (or 6% of total resource requirement in 2018) and 1.9 million US$ (or 13% of total resource requirement in 2020). The total funding gap will amount to 3.88 million US$ or account for 6% of the total resource requirements during the cMYP projection period.

1.5 Funding gap analysis and sustainability

1.5.1 Implications of funding gap on programmatic performance and sustainability

The funding gap (with secured funds only) in the amount of 7.3 million US$ affects all critical components of the immunization system, meaning that if probable funds are not secured, the

immunization system targets could not be achieved.

FIGURE 18: FUNDING GAP (WITH SECURED FINANCING ONLY) STRUCTURE BY YEARS

	2016	2017	2018	2019	2020	Total
Vaccines & injection supplies	0	0	887,273	1,071,357	1,888,131	**3,846,761**
Personnel	0	0	88,800	0	0	**88,800**
Transport	26,529	0	224,401	9,883	15,601	**276,413**
Activities and other recurrent costs	0	0	510,358	462,935	465,095	**1,438,388**
Logistics (vehicles, cold chain and other equipment)	0	0	0	0	0	**0**
Supplemental immunization activities	0	1,383,782	249,001	0	0	**1,632,783**
Total funding gap	**26,529**	**1,383,782**	**1,959,833**	**1,544,175**	**2,368,827**	**7,283,146**

Figure 18 above shows that Vaccines and injection supplies account for 53% of total funding gap (3.8 million US$). SIAs and Activities and other recurrent costs accounting for 22% (1.6 million US$) and 20% (1.4 million US$) of total funding gap respectively and Transport and Personnel contribute 4% (276,413 US$) and 1% (88,800) respectively in total funding gap.

FIGURE 19: FUNDING GAP (WITH SECURED AND PROBABLE FINANCING) STRUCTURE BY YEARS

	2016	2017	2018	2019	2020	Total
Vaccines & injection supplies	0	0	887,273	1,071,357	1,888,131	**3,846,761**
Personnel	0	0	0	0	0	**0**
Transport	0	0	1,771	9,883	15,601	**27,254**
Activities and other recurrent costs	0	0	0	0	0	**0**
Logistics (vehicles, cold chain and other equipment)	0	0	0	0	0	**0**
Supplemental immunization activities	0	0	0	0	0	**0**
Total funding gap	**0**	**0**	**889,044**	**1,081,240**	**1,903,732**	**3,874,016**

Figure 19 presents the structure of funding gap with probable and secured financing. If probable funding is secured Vaccines and injection supplies still remain the major driver of funding gap, accounting for 99% (or 3.8 million US$), followed by Transport – 1% (27,254 US$).

FIGURE 20: FUNDING GAP (WITH SECURED FUNDS ONLY) STRUCTURE BY THE MAJOR COST CATEGORIES

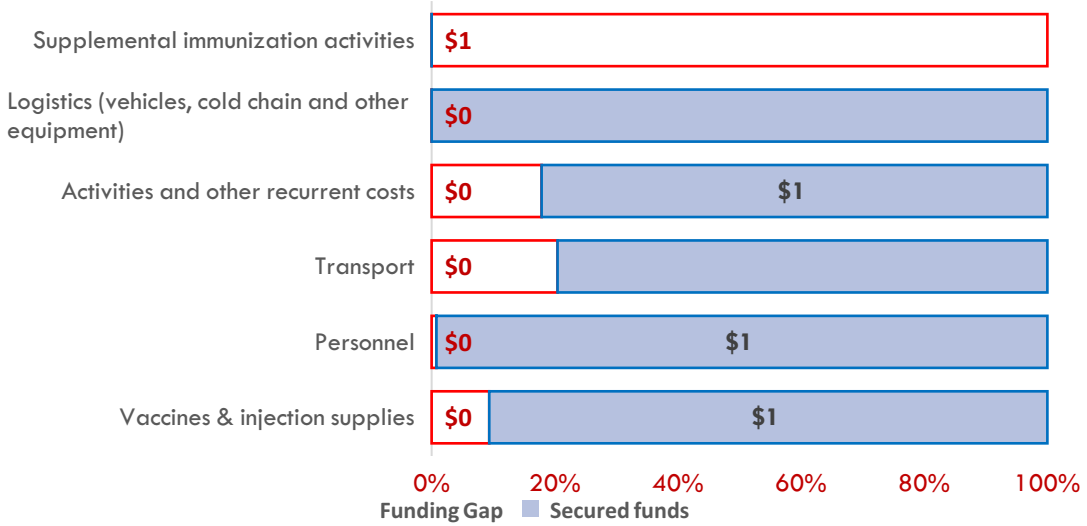


Figure 20 above shows that if funding is not secured the gap between the resource requirements and available funding for vaccines and injection supplies accounts for 53% of the resource requirements for vaccines, for SIAs –22% (for total SIA costs), for activities and other recurrent costs – 20%, and for transport and personnel – 4% and 1% respectively.

The funding gap is caused by a combination of several factors:

- Insufficient/unpredictable government allocations for procurement of vaccine and injection supplies.

- Existing regulations to imposed taxes on government funded vaccines, which further increases resource requirement for vaccine procurement;
- Decreased of external financing – This explains “SIA” related gap, as well as the funding gap related to “activities and other recurrent costs” that has been traditionally funded by the external donors.

1.5.2 Financial sustainability strategies

The main strategy to ensure financial sustainability of the National Immunization Program during the period 2016—2020 will be directed towards increasing reliability of financing from the domestic sources and optimization and/or minimization of costs related to the main drivers of existing financing gap. This could include following:

1. Advocate for increase of funding and timely release of funds for implementation of national immunization program at all levels;
2. Advocate for revision of vaccine importation policy, particularly revision of customs import tax regulations for vaccines procured by the State Funding;
3. Accelerate fundraising activities and work with donor community over the course of cMYP cycle to secure additional funding for filling program funding gaps;
4. Analyze vaccine wastage to improve vaccine forecast practices for reducing vaccine wastage.

Immunization program sustainability indicators are presented in **Error! Reference source not found.**.

Annexes

FIGURE 21: HEALTH WORKFORCE FOR IMMUNIZATION BY LEVELS AND TYPE (DEDICATED AND SHARED)

			Full time equivalent (FTE)		
	Number of positions filled	% Time working for Immunization	**Dedicated**	**Shared**	**Total**
National					
EPI General Director RCIP	1	100%	1	-	1
Deputy Director RCIP	2	100%	2	-	2
Accountant	1	100%	1	-	1
Economist	1	100%	1	-	1
Lawer	1	100%	1	-	1
Head of HR department	1	100%	1	-	1
Administrative Assistant	1	100%	1	-	1
Cold chain technician	3	100%	3	-	3
Cashier	1	100%	1	-	1
Head of Organization and Statistic Department	1	100%	1	-	1
Head of Epidemiology Department	1	100%	1	-	1
Store keeper	1	100%	1	-	1
Immunologist	9	100%	9	-	9
Epidemiologist	12	100%	12	-	12
Assistant Epidemiologist	6	100%	6	-	6
IT Specialist	11	100%	11	-	11
Driver	6	100%	6	-	6
Security Guard/worker/cleaner	8	100%	8	-	8
Subtotal National	**67**	**100%**	**67**	**-**	**67**
Oblast					
CIP director	6	100%	6	-	6
Deputy CIP Director	6	100%	6	-	6
Accountant	6	100%	6	-	6
Economist	3	100%	3	-	3
Head of HR Department	5	100%	5	-	5
Administrative Assistant	6	100%	6	-	6
Cold chain technician	6	100%	6	-	6
Head of Organization and Statistic Department	6	100%	6	-	6
Subtotal Oblast	**149**	**100%**	**149**	**-**	**149**
Rayon					
District Immunization center Director	65	100%	65	-	65
Epidemiologist	65	100%	65	-	65
Accountant	41	100%	41	-	41
Cleaner	65	100%	65	-	65
Security Guard	65	100%	65	-	65
Nurse	130	100%	130	-	130
PHC Accountant	24	10%	-	2	2
Subtotal Rayon	**455**	**95%**	**431**	**2**	**433**
Health Facilities					
Family doctor	2,338	10%	-	234	234
Nurse	2,338	20%	-	468	468
Vaccinator	2,338	100%	2,338	-	2,338
Subtotal Health Facilities	**7,014**	**43%**	**2,338**	**701**	**3,039**
Grand Total	**7,685**		**2,985**	**704**	**3,688**
			81%	19%	100%

FIGURE 22: PERSONNEL SALARIES OF EPI SPECIFIC AND SHARED PERSONNEL, PER DIEMS FOR OUTREACHA AND SUPERVISION BY ADMINISTRATIVE LEVELS, POSITIONS AND YEARS

EPI SPECIFIC Salary							
	2014	**2016**	**2017**	**2018**	**2019**	**2020**	**Total 2016 - 2020**
National	**$85,680**	**$85,680**	**$85,680**	**$85,680**	**$85,680**	**$85,680**	**$428,400**
EPI General Director RCIP	$4,320	$4,320	$4,320	$4,320	$4,320	$4,320	$21,600
Deputy Director RCIP	$5,040	$5,040	$5,040	$5,040	$5,040	$5,040	$25,200
Accountant	$2,160	$2,160	$2,160	$2,160	$2,160	$2,160	$10,800
Economist	$2,040	$2,040	$2,040	$2,040	$2,040	$2,040	$10,200
Lawer	$2,040	$2,040	$2,040	$2,040	$2,040	$2,040	$10,200

2. Annexes

Head of HR department	$1,680	$1,680	$1,680	$1,680	$1,680	$1,680	$8,400
Administrative Assistant	$660	$660	$660	$660	$660	$660	$3,300
Cold chain technician	$3,960	$3,960	$3,960	$3,960	$3,960	$3,960	$19,800
Cashier	$300	$300	$300	$300	$300	$300	$1,500
Head of Organization and Statistic Department	$1,440	$1,440	$1,440	$1,440	$1,440	$1,440	$7,200
Total	**$2,117,544**	**$2,117,544**	**$2,117,544**	**$2,117,544**	**$2,117,544**	**$2,117,544**	**$10,587,720**

Shared Salary

	2014	2016	2017	2018	2019	2020	Total 2016 - 2020
Rayon	**$2,880**	**$2,880**	**$2,880**	**$2,880**	**$2,880**	**$2,880**	**$14,400**
PHC Accountant	$2,880	$2,880	$2,880	$2,880	$2,880	$2,880	$14,400
Health Facilities	**$482,563**	**$482,563**	**$482,563**	**$482,563**	**$482,563**	**$482,563**	**$2,412,816**
Family doctor	$207,614	$207,614	$207,614	$207,614	$207,614	$207,614	$1,038,072
Nurse	$274,949	$274,949	$274,949	$274,949	$274,949	$274,949	$1,374,744
Total	**$485,443**	**$485,443**	**$485,443**	**$485,443**	**$485,443**	**$485,443**	**$2,427,216**

Outreach

	2014	2016	2017	2018	2019	2020	Total 2016 - 2020
Rayon	**$0**	**$0**	**$69,955**	**$69,955**	**$69,955**	**$69,955**	**$279,821**
Mobile Team Doctor	$0	$0	$23,318	$23,318	$23,318	$23,318	$93,274
Mobile team vaccinator	$0	$0	$23,318	$23,318	$23,318	$23,318	$93,274
Mobile team driver	$0	$0	$23,318	$23,318	$23,318	$23,318	$93,274
Total	**$0**	**$0**	**$69,955**	**$69,955**	**$69,955**	**$69,955**	**$279,821**

Supervision

	2014	2016	2017	2018	2019	2020	Total 2016 - 2020
National	**$48,000**	**$48,000**	**$48,000**	**$48,000**	**$48,000**	**$48,000**	**$240,000**
Deputy Director RCIP	$2,400	$2,400	$2,400	$2,400	$2,400	$2,400	$12,000
Cold chain technician	$3,600	$3,600	$3,600	$3,600	$3,600	$3,600	$18,000
Head of Organization and Statistic Department	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$6,000
Head of Epidemiology Department	$1,200	$1,200	$1,200	$1,200	$1,200	$1,200	$6,000
Immunologist	$10,800	$10,800	$10,800	$10,800	$10,800	$10,800	$54,000
Epidemiologist	$14,400	$14,400	$14,400	$14,400	$14,400	$14,400	$72,000
Assistant Epidemiologist	$7,200	$7,200	$7,200	$7,200	$7,200	$7,200	$36,000
Driver	$7,200	$7,200	$7,200	$7,200	$7,200	$7,200	$36,000
Total	**$88,800**	**$88,800**	**$88,800**	**$88,800**	**$88,800**	**$88,800**	**$444,000**

FIGURE 23: FINANCING PROJECTIONS BY SOURCES, YEARS, AND TYPES OF FINANCING

	2016	2017	2018	2019	2020	Total
Secured funding						
Government	1,852,828	2,062,363	1,043,012	1,398,247	1,429,569	**7,786,019**
Sub-national government	1,178,153	1,178,153	1,178,153	1,178,153	1,178,153	**5,890,765**
Gov. co-financing of Gavi vaccine	297,418	325,474	896,287	896,287	896,287	**3,311,752**
GAVI (NVS)	3,427,670	3,249,482	7,848,466	7,354,346	7,797,824	**29,677,788**
GAVI HSS	-	2,605,970	1,953,703	1,817,611	1,425,011	**7,802,296**
WHO	310,000	320,000	18,560	-	-	**648,560**
UNICEF	16,335	2,500	-	2,000	-	**20,835**
JICA	-	-	-	-	-	**-**
GOJ	903,026	783,043	822,582	713,694	-	**3,222,345**
KWF	-	-	-	-	-	**-**
	-	-	-	-	-	**-**
Subtotal secure funding	**7,985,430**	**10,526,984**	**13,760,762**	**13,360,338**	**12,726,845**	**58,360,359**
Probable funding						
Government	26,529	-	519,788	162,935	163,095	**872,347**
Sub-national government	-	-	-	-	-	**-**
Gov. co-financing of gavi vaccine	-	-	-	-	-	**-**
GAVI (NVS)	-	1,383,782	249,001	-	-	**1,632,783**
GAVI HSS	-	-	-	-	-	**-**
WHO	-	-	300,000	300,000	300,000	**900,000**

UNICEF	-	-	2,000	-	2,000	**4,000**
JICA	-	-	-	-	-	**-**
GOJ	-	-	-	-	-	**-**
KWF	-	-	-	-	-	**-**
	-	-	-	-	-	**-**
Subtotal probable funding	**26,529**	**1,383,782**	**1,070,790**	**462,935**	**465,095**	**3,409,130**
Total (secured and probable funding)						
Government	1,879,357	2,062,363	1,562,800	1,561,181	1,592,664	**8,658,365**
Sub-national government	1,178,153	1,178,153	1,178,153	1,178,153	1,178,153	**5,890,765**
Gov. co-financing of gavi vaccine	297,418	325,474	896,287	896,287	896,287	**3,311,752**
GAVI (NVS)	3,427,670	4,633,263	8,097,467	7,354,346	7,797,824	**31,310,571**
GAVI HSS	-	2,605,970	1,953,703	1,817,611	1,425,011	**7,802,296**
WHO	310,000	320,000	318,560	300,000	300,000	**1,548,560**
UNICEF	16,335	2,500	2,000	2,000	2,000	**24,835**
JICA	-	-	-	-	-	**-**
GOJ	903,026	783,043	822,582	713,694	-	**3,222,345**
KWF	-	-	-	-	-	**-**
	-	-	-	-	-	**-**
Total funding	**8,011,959**	**11,910,766**	**14,831,552**	**13,823,272**	**13,191,940**	**61,769,489**

FIGURE 24: HEALTHCARE FINANCING TRENDS

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total expenditure on health (THE) in million US$	**7.2**	**7.8**	**8.5**	**10.6**	**15.8**	**20.0**	**23.2**	**28.0**	**39.7**	**39.4**	**45.0**	**50.2**	**61.2**	**70.8**	**76.4**
Total Health Expenditure (THE) per Capita in US$	7.2	7.8	8.5	10.6	15.8	20.0	23.2	28.0	39.7	39.4	45.0	50.2	61.2	70.8	76.4
Total Health Expenditure (THE) per Capita in Int$ (PPP)	44	48	52	57	72	90	94	96	108	117	126	133	152	172	185
Total Health Expenditure (THE) % Gross Domestic Product (GDP)	4.6	4.6	4.5	4.5	5.1	5.9	5.7	5.3	5.6	5.9	6.0	6.0	6.4	6.8	6.9
General government expenditure on health (GGHE) in million US$	**1.5**	**1.6**	**1.7**	**2.2**	**2.9**	**3.9**	**4.6**	**6.2**	**9.8**	**9.8**	**11.9**	**14.3**	**18.0**	**21.7**	**22.0**
Ministry of Health expenditure in million US$	0.0	0.0	0.0	0.5	0.9	0.9	1.5	2.1	3.3	2.7	2.8	2.9	3.3	3.6	3.6
General Government Health Expenditure (GGHE) per Capita in US$	1.5	1.6	1.7	2.2	2.9	3.9	4.6	6.2	9.8	9.8	11.9	14.3	18.0	21.7	22.0
General Government Health Expenditure (GGHE) per Capita Int$ (PPP)	8.9	9.9	10.4	11.6	13.4	17.5	18.7	21.2	26.5	29.2	33.2	38.1	44.8	52.6	53.4
General Government Health Expenditure (GGHE) as % of THE	20.4	20.7	20.2	20.4	18.6	19.4	19.8	22.2	24.6	24.9	26.4	28.6	29.4	30.6	28.8
GGHE as % of General government expenditure (GGE)	6.5	6.4	5.6	5.6	5.3	5.9	5.9	4.3	5.0	5.4	5.9	6.2	7.5	7.3	6.8
GGHE as % of GDP	0.9	0.9	0.9	0.9	0.9	1.1	1.1	1.2	1.4	1.5	1.6	1.7	1.9	2.1	2.0
Private expenditure on health in million US$	**6**	**6**	**7**	**8**	**13**	**16**	**19**	**22**	**30**	**30**	**33**	**36**	**43**	**49**	**54**
Private Health Expenditure (PvtHE) as % of THE	79.6	79.3	79.8	79.6	81.4	80.6	80.2	77.8	75.4	75.1	73.6	71.4	70.6	69.4	71.2
Rest of the world funds / External resources in million US$		**0.6**	**0.7**	**1.6**	**1.5**	**2.4**	**2.1**	**2.7**	**3.5**	**3.9**	**3.7**	**4.8**	**7.0**	**7.3**	**6.3**
Rest of the world funds as % of THE	0.0	7.9	7.8	14.6	9.6	12.0	9.2	9.8	8.7	10.0	8.2	9.6	11.5	10.3	8.2
GDP per capita (in US$)	156	170	189	238	311	339	406	524	712	665	744	838	957	1,049	1,110
GGE as % of GDP	14.7	14.8	16.1	16.2	17.7	19.5	19.1	27.3	27.2	27.6	27.2	27.4	25.1	28.2	29.0
Exchange rate (TJS per US$)	1.85	2.39	2.78	3.06	2.97	3.12	3.31	3.44	3.43	4.18	4.38	4.63	4.76	4.76	4.95

Source: WHO NHA

FIGURE 25: NATIONAL IMMUNIZATION PROGRAM EXPENDITURES AND FUTURE RESOURCE REQUIREMENTS (BASIC SCENARIO) BY COST CATEGORIES

Cost category		Future Resource Requirements					
	2014	2016	2017	2018	2019	2020	Total 2016-2020
Routine recurrent costs							
Vaccines (routine vaccines only)	**3,181,750**	**4,651,954**	**4,500,156**	**9,795,253**	**9,379,265**	**9,923,594**	**38,250,222**
Traditional	832,706	383,664	395,137	407,047	419,320	431,968	**2,037,136**
Underused	2,349,044	2,684,068	2,768,615	2,857,336	2,949,369	3,044,694	**14,304,082**
New		1,584,222	1,336,405	6,530,870	6,010,575	6,446,931	**21,909,003**
Injection supplies	321,637	450,243	472,353	637,114	634,180	658,648	**2,852,539**
Personnel	**2,206,344**	**2,206,344**	**2,276,299**	**2,276,299**	**2,276,299**	**2,276,299**	**11,311,541**
Salaries of full-time EPI health workers (immunization specific)	2,117,544	2,117,544	2,117,544	2,117,544	2,117,544	2,117,544	**10,587,720**
Per-diems for outreach vaccinators/mobile teams			69,955	69,955	69,955	69,955	**279,821**
Per-diems for supervision and monitoring	88,800	88,800	88,800	88,800	88,800	88,800	**444,000**
Transportation	**165,186**	**165,186**	**254,196**	**265,225**	**315,733**	**351,337**	**1,351,677**
Fixed Site Strategy (Incl. Vaccine Distribution)	138,657	138,657	213,372	222,630	265,026	294,912	**1,134,598**
Outreach strategy	26,529	26,529	40,824	42,595	50,707	56,425	**217,079**
Mobile strategy							
Maintenance and overhead	**174,370**	**177,522**	**247,098**	**335,089**	**252,574**	**254,171**	**1,266,454**
Cold chain maintenance and overhead	108,004	109,829	178,051	246,858	162,935	163,095	**860,769**
Maintenance of other capital equipment				17,803	17,803	17,803	**53,409**
Building Overheads (Electricity, Water…)	66,366	67,693	69,047	70,428	71,836	73,273	**352,276**
Short-term training	57,500	50,000	643,973	583,684	727,843	533,386	**2,538,886**
IEC/Social Mobilization	163,992	46,335	32,500	230,500	282,500	282,500	**874,335**
Disease Surveillance	70,000	70,000	70,000	70,000	70,000	70,000	**350,000**
Program management	336,094	160,000	763,973	661,444	805,603	633,386	**3,024,406**
Other routine recurrent costs							
Subtotal	6,676,873	7,977,584	9,260,549	14,854,609	14,743,995	14,983,322	**61,820,060**
Routine capital costs							
Vehicles (100% EPI)			226,275	260,925	147,000	112,350	**746,550**

Cold chain equipment		34,374	1,040,160		13,517		**1,088,052**
Other capital equipment				356,060			**356,060**
Buildings Construction (100% EPI)							
Subtotal		34,374	1,266,435	616,985	160,517	112,350	**2,190,662**
Supplemental immunization activities (SIAs)							
Polio Campaign - children 0-5 years old	573,460			249,001			**249,001**
Vaccines & injection supplies	460,695			186,806			**186,806**
Operational costs	112,765			62,195			**62,195**
MR - children from 1-7 years old			1,383,782				**1,383,782**
Vaccines & injection supplies			1,318,058				**1,318,058**
Operational costs			65,724				**65,724**
Subtotal	573,460		1,383,782	**249,001**			**1,632,783**
Shared Health Systems Costs (EPI Portion)							
Shared Personnel Costs	485,443	485,443	485,443	485,443	485,443	485,443	**2,427,216**
Shared Transport Costs – Vehicles, Fuel and Maintenance	57,104	57,104	57,104	57,104	57,104	57,104	**285,522**
Shared buildings - construction						67,349	**67,349**
Shared Buildings – Overhead	64,956	66,255	67,580	68,931	70,310	71,716	**344,792**
Subtotal	607,503	608,802	610,127	611,479	612,858	681,613	**3,124,879**
Grand Total	**7,857,836**	**8,620,761**	**12,520,893**	**16,332,075**	**15,517,370**	**15,777,285**	**68,768,383**
Routine Immunization	7,284,376	8,620,761	11,137,112	16,083,073	15,517,370	15,777,285	**67,135,600**
Supplemental immunization activities (campaigns)	573,460		1,383,782	249,001			**1,632,783**

FIGURE 26: TOTAL RESOURCE REQUIREMENTS, FUNDING FROM ALL SOURCES BY RISK TYPES AND GOVERNMENT FINANCING BY COST CATEGORIES

Cost category	Future resource requirements Total 2016-2020	Funding from all sources			Funding Gap				Government Funding					
		Secured	Probable	Total	With secured funds only		With secured and probable		Secured	% of All secured funds	Probable	% of all probable funds	Total	% of Total funds
Routine recurrent costs														
Vaccines (routine vaccines only)	**38,250,222**	**35,363,568**	**0**	**35,363,568**	**2,886,654**	**8%**	**2,886,654**	**8%**	**3,874,905**	**11%**	**0**		**3,874,905**	**11%**
Traditional	**2,037,136**	1,169,774	0	1,169,774	867,362	43%	867,362	43%	201,765	17%	0		201,765	17%
Underused	**14,304,082**	13,583,345	0	13,583,345	720,737	5%	720,737	5%	1,391,436	10%	0		1,391,437	10%
New	**21,909,003**	20,610,448	0	20,610,448	1,298,555	6%	1,298,555	6%	2,281,703	11%	0		2,281,703	11%
Injection supplies	**2,852,539**	1,892,432	0	1,892,432	960,107	34%	960,107	34%	577,551	31%	0		577,551	31%
Personnel	**11,311,541**	**11,222,741**	**88,800**	**11,311,541**	**88,800**	**1%**	**0**	**0%**	**11,004,481**	**98%**	**88,800**	**100%**	**11,093,283**	**98%**
Salaries of full-time EPI health workers (immunization specific)	**10,587,720**	10,587,720	0	10,587,720	0	0%	0	0%	10,587,720	100%	0		10,587,721	100%
Per-diems for outreach vaccinators/mobile teams	**279,821**	279,821	0	279,821	0	0%	0	0%	61,561	22%	0		61,561	22%
Per-diems for supervision and monitoring	**444,000**	355,200	88,800	444,000	88,800	20%	0	0%	355,200	100%	88,800	100%	444,001	100%
Transportation	**1,351,677**	**1,075,264**	**249,159**	**1,324,422**	**276,413**	**20%**	**27,254**	**2%**	**911,968**	**85%**	**249,159**	**100%**	**1,161,127**	**88%**
Fixed Site Strategy (Incl. Vaccine Distribution)	**1,134,598**	911,968	222,630	1,134,598	222,630	20%	0	0%	911,968	100%	222,630	100%	1,134,599	100%
Outreach strategy + Mobile strategy	**217,079**	163,296	26,529	189,825	53,783	25%	27,254	13%	0	0%	26,529	100%	26,529	14%
Maintenance and overhead	**1,266,454**	**732,066**	**534,388**	**1,266,454**	534,388	42%	0	0%	0	0%	0	0%	0	0%
Cold chain maintenance and overhead	**860,769**	326,381	534,388	860,769	534,388	62%	0	0%	213,946	66%	534,388	100%	748,335	87%
Maintenance of other capital equipment	**53,409**	53,409	0	53,409	0	0%	0	0%	53,409	100%	0		53,410	100%
Building Overheads (Electricity, Water…)	**352,276**	352,276	0	352,276	0	0%	0	0%	352,276	100%	0		352,277	100%
Short-term training	**2,538,886**	2,388,886	150,000	2,538,886	150,000	6%	0	0%	0	0%	0	0%	0	0%
IEC/Social Mobilization	**874,335**	780,335	94,000	874,335	94,000	11%	0	0%	0	0%	0	0%	0	0%
Disease Surveillance	**350,000**	140,000	210,000	350,000	210,000	60%	0	0%	0	0%	0	0%	0	0%
Program management	**3,024,406**	2,574,406	450,000	3,024,406	450,000	15%	0	0%	0	0%	0	0%	0	0%
Other routine recurrent costs				0					0		0		0	
Subtotal	**61,820,060**	**56,169,698**	**1,776,347**	**57,946,045**	**5,650,362**	**9%**	**3,874,016**	**6%**	**16,410,984**	**29%**	**872,347**	**49%**	**17,283,332**	**30%**
Routine capital costs														
Vehicles (100% EPI)	**746,550**	746,550	0	746,550	0	0%	0	0%	0	0%	0		0	0%
Cold chain equipment	**1,088,052**	1,088,051	0	1,088,051	0	0%	0	0%	0	0%	0		0	0%
Other capital equipment	**356,060**	356,060	0	356,060	0	0%	0	0%	0	0%	0		0	0%
Buildings Construction (100% EPI)				0					0		0		0	
Subtotal	**2,190,662**	**2,190,661**	**0**	**2,190,661**	**0**	**0%**	**0**	**0%**	**0**	**0%**	**0**		**0**	**0%**

2. Annexes

Cost category	Future resource requirements Total 2016-2020	Funding from all sources			Funding Gap				Government Funding					
		Secured	Probable	Total	With secured funds only		With secured and probable		Secured	% of All secured funds	Probable	% of all probable funds	Total	% of Total funds
Supplemental immunization activities (SIAs)														
Polio Campaign - children 0-5 years old	**249,001**	**0**	**249,001**	**249,001**	**249,001**	**100 %**	**0**	**0%**	**0**		**0**	**0%**	**0**	**0%**
Vaccines & injection supplies	**186,806**	0	186,806	186,806	186,806	100 %	0	0%	0		0	0%	0	0%
Operational costs	**62,195**	0	62,195	62,195	62,195	100 %	0	0%	0		0	0%	0	0%
MR - children from 1-7 years old	**1,383,782**	**0**	**1,383,782**	**1,383,782**	**1,383,782**	**100 %**	**0**	**0%**	**0**		**0**	**0%**	**0**	**0%**
Vaccines & injection supplies	**1,318,058**	0	1,318,058	1,318,058	1,318,058	100 %	0	0%	0		0	0%	0	0%
Operational costs	**65,724**	0	65,724	65,724	65,724	100 %	0	0%	0		0	0%	0	0%
Subtotal	**1,632,783**	**0**	**1,632,783**	**1,632,783**	**1,632,783**	**100 %**	**0**	**0%**	**0**		**0**	**0%**	**0**	**0%**
Shared Health Systems Costs (EPI Portion)														
Shared Personnel Costs	**2,427,216**	**2,427,216**	**0**	**2,427,216**	**0**	**0%**	**0**	**0%**	**2,427,216**	**100%**	**0**		**2,427,217**	**100%**
Shared Transport Costs – Vehicles, Fuel and Maintenance	**285,522**	285,522	0	285,522	0	0%	0	0%	285,522	100%	0		285,523	100%
Shared buildings - construction	**67,349**	67,349	0	67,349	0	0%	0	0%	0	0%	0		0	0%
Shared Buildings – Overhead	**344,792**	344,792	0	344,792	0	0%	0	0%	344,792	100%	0		344,793	100%
Subtotal	**3,124,879**	**3,124,879**	**0**	**3,124,879**	**0**	**0%**	**0**	**0%**	**3,057,530**	**98%**	**0**		**3,057,531**	**98%**
Grand Total	**68,768,383**	**61,485,238**	**3,409,130**	**64,894,368**	**7,283,146**	**11%**	**3,874,016**	**6%**	**19,468,514**	**32%**	**872,347**	**26%**	**20,340,861**	**31%**
Routine Immunization	**67,135,600**	61,485,238	1,776,347	63,261,585	5,650,363	8%	3,874,016	6%	19,468,514	32%	872,347	49%	20,340,861	32%
Supplemental immunization activities	**1,632,783**	0	1,632,783	1,632,783	1,632,783	100 %	0	0%	0		0	0%	0	0%