

Ministry of Health  
Republic of Uzbekistan

**COMPREHENSIVE MULTI-YEAR PLAN  
FOR IMMUNIZATION  
2011-2015**

Tashkent  
May 2010

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## ACRONYMS

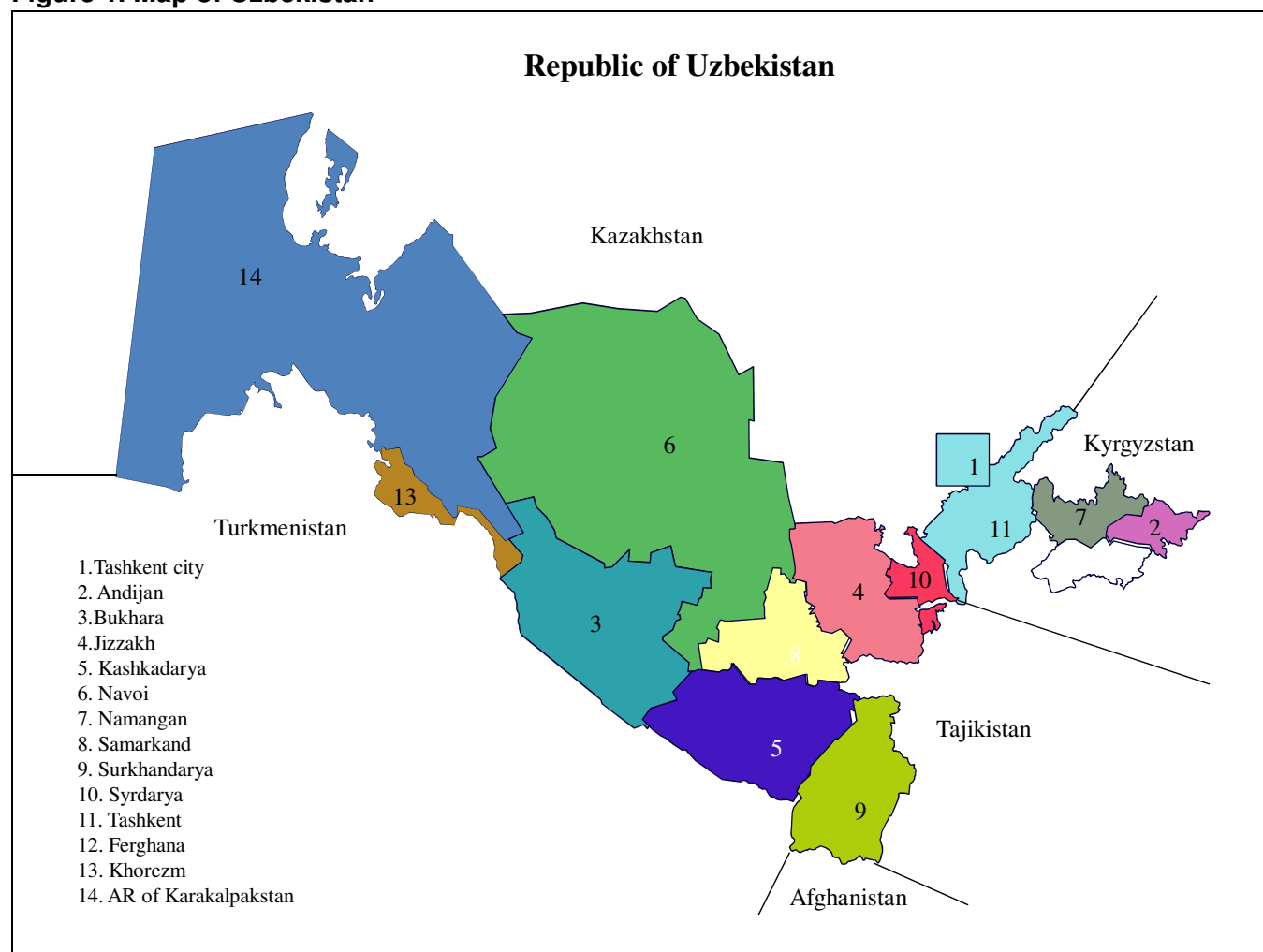
AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
BBP	Basic Benefit Package
BCG	Bacillus Calmette-Guerin (tuberculosis vaccine)
CDC	US Center(s) for Disease Control and Prevention
CRS	Congenital Rubella Syndrome
DHS	Demographic and Health Survey
DTP	Diphtheria-Tetanus-Pertussis vaccine
DQS	Data Quality Self Assessment
DTaP	Diphtheria-Tetanus-acellular Pertussis vaccine
DTwP	Diphtheria-Tetanus-whole cell Pertussis vaccine
DT	Diphtheria-Tetanus toxoids
EIW	European Immunization Week
EPI	Expanded Programme on Immunization
EVSM	Effective Vaccine Store Management
FSP	Financial Sustainability Plan
GAVI	Global Alliance for Vaccines and Immunization
GoUz	Government of Uzbekistan
HepB	Hepatitis B vaccine
Hib	Haemophilus Influenza type b
ICC	Interagency Coordinating Committee
IIP	Immunization in Practice
MCH	Maternal and Child Health
MDVP	Multi-Dose Vial Policy
MICS	Multiple Indicator Cluster Survey
MMR	Measles, Mumps and Rubella (vaccine)
MR	Measles and Rubella (vaccine)
MoH	Ministry of Health
NIP	National Immunization Programme
NRA	National Regulatory Authority
OPV	Oral Polio Vaccine
PHC	Primary Health Care
RCSSSES	Republican Center for State Sanitary Epidemiological Surveillance
SIA	Supplementary Immunization Activity
SIP	Safe Immunization Practices
SOP	Standard Operating Procedures
Td	Tetanus and Diphtheria toxoids for adults
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VPD	Vaccine Preventable Disease
VVM	Vaccine Vial Monitor
WB	World Bank
WHO	World Health Organization

## 1. BACKGROUND

### 1.1 GENERAL INFORMATION

Republic of Uzbekistan is a landlocked country located in central Asia. It is bordered to the north and north-east by Kazakhstan, to the west and south-west by Turkmenistan, to the south by Afghanistan and to the east by Tajikistan and Kyrgyzstan. Uzbekistan's territory is 447 400 km<sup>2</sup>. Its terrain is a combination of sandy deserts, intensely irrigated river valleys and mountains. The climate is continental, with long hot summers and short mild winters.

**Figure 1. Map of Uzbekistan**



Since the 1970s, Uzbekistan's population has more than doubled. The most recent estimates put the total population at 28,774 million people. The high population growth rates that occurred in the 1970s, however, have gradually decreased and population growth was 1.5% in 2005. This change can be primarily attributed to decreasing birth and fertility rates, as death rates slightly declined. The declining population growth is reflected in a changing demographic structure and age-dependency ratio. The share of the population aged 0–14 decreased from 45% of the total population in 1970 to 33.2% in 2005, while the age-dependency ratio declined by 40% over the same period.

Despite these demographic developments, the pressures on the health system that arise from an ageing population in many countries in western Europe do not seem to be currently in place in Uzbekistan. The share of the population over 65 years of age has decreased from 5.9% in 1970 to 4.7% in 2005. Uzbekistan is a multiethnic country. It has been estimated that in 1996, 80% of the population were ethnic

Uzbeks, 5.5% Russians, 5% Tajiks, 3% Kazakhs, 2.5% Karakalpaks and 1.5% Tatars, with the remaining 2.5% belonging to smaller ethnic groups. It can be assumed that the ethnic composition of Uzbekistan's population has changed since then, as the country has experienced significant emigration, in particular of Russian speaking residents.

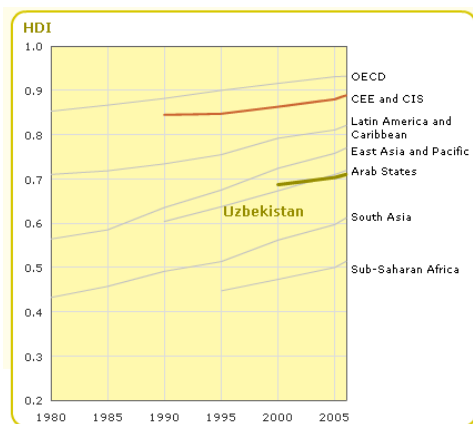
In terms of religious affiliation, most of the population identify themselves as Muslims (88%, mostly Sunnis). Other religious groups represented in Uzbekistan are Eastern Orthodox Christians (9%) and Jews (3%). The majority of the population (63%) live in rural areas.

## 1.2 POLITICAL AND SOCIO-ECONOMIC TRENDS

Uzbekistan's economy is mostly oriented towards services and agriculture, with a small share of gross domestic product (GDP) generated by industry. Despite being a dry and landlocked country, 11% of Uzbekistan consists of intensely cultivated, irrigated river valleys. It is the world's second-largest cotton exporter, a large producer of gold and oil, and a regionally significant producer of chemicals and machinery. Since independence, Uzbekistan has focused on the development of its industry and pursued a policy of self-sufficiency in energy, grain and other selected items. The Government has provided subsidies to textile and car production and to many other industries.

After the break-up of the Soviet Union, Uzbekistan experienced a significant fall in its GDP. Following a steady recovery in the period 1995–1999, GDP declined again by almost 40% between 1999 and 2002. Since then, GDP has slowly increased again

According to the GDP index, Uzbekistan is classified as an upper-low-income country.



Source: Indicator table G of the Human Development Report 2009

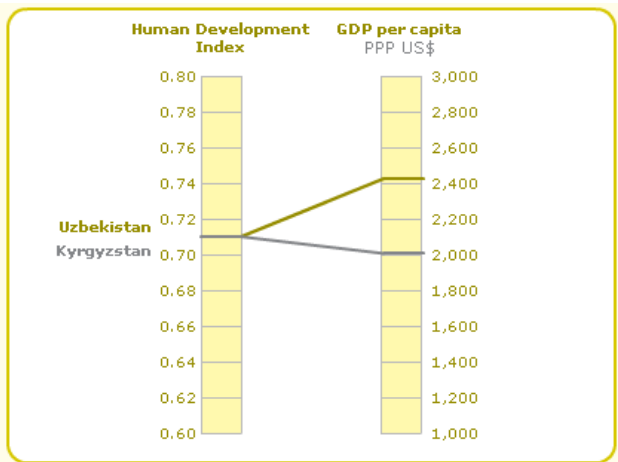
This year's HDI, which refers to 2007, highlights the very large gaps in well-being and life chances that continue to divide our increasingly interconnected world. The HDI for Uzbekistan is 0.710, which gives the country a rank of 119<sup>th</sup> out of 182 countries with data.

In the last years, the country has taken a gradual, step-by-step approach to structural reforms, cautiously introducing features of an open-market economy through measures such as adjustment of energy prices, current account convertibility, and lease-holding of collective farms. Nonetheless, the policy framework for Uzbekistan's crucial agricultural sector still requires significant strengthening to achieve the sector's full potential. An important source of income for many poor households in the past years came from the remittances of labor migrants, mainly to Russia and Kazakhstan, but unfortunately the global financial affected also their economic key sectors, forcing them to cut down immigration quotas and to send back the workers to their home country. Overall, the impact of economic growth on improving livelihoods has been inadequate: indeed, while poverty has decreased nationwide – largely on the strength of a reduction in urban areas<sup>1</sup> – it is falling more slowly in rural areas, where the overwhelming majority of the population is concentrated. Thus, over the last several years the differences in poverty rates between rural and urban households have increased, rising from 8 percentage points in 2001 to almost 12 percentage points in 2005.<sup>2</sup>

<sup>1</sup> Welfare Improvement Strategy (WIS), 2007. The share of the disadvantaged urban population fell from 22 percent in 2001 to 18 percent in 2005.

<sup>2</sup> Ibid.

By looking at some of the most fundamental aspects of people’s lives and opportunities the HDI provides a much more complete picture of a country's development than other indicators, such as GDP per capita (2,425 PPP USD in Uzbekistan). The figure shows that countries on the same level of HDI can have very different levels of income or that countries with similar levels of income can have very different HDIs.



Source: Indicator table H of the Human Development Report 2009

The Government is keen to ensure that high economic growth is sustainable, in the range of 8 to 10 % per annum through the year 2020. Although the short-term outlook appears positive, further major reforms will be necessary to stimulate additional private sector development, including deepening liberalization of trade and exchange systems and modernizing the financial sector.

The Constitution of Uzbekistan of 1992 defines the country as a democratic republic with the state power divided between the executive, legislative and judicial branches of government. The country retains its strong concentration of power in the executive branch. The Government attaches the highest priority to maintaining

economic, social and political stability. The current President was most recently re-elected in December 2007. In 2009, Parliamentary elections took place. In these elections, about 150 MPs, including 135 from single-member territorial constituencies and 15 from the Ecological Movement of Uzbekistan, were elected to the lower chamber of the Uzbek parliament – Oliy Majlis..

### 1.3 HEALTH CARE SYSTEM

Until 1991, the highly centralized health system of Uzbekistan was managed from Moscow. Since independence, the system is moving towards privatization and strengthening primary health care. The economic problems in 1990s have led to problems in vaccine supplies and general immunization coverage, which eventually allowed for outbreaks of poliomyelitis, diphtheria, and measles.

The health insurance system does not exist yet, but its introduction is envisaged by the ongoing reforms. 90% of health care services are being provided by government facilities, and remaining share belongs to non-governmental institutions and private practitioners.

The healthcare delivery system was condensed from six layers to three. These are primary health care (Rural Medical Centres and Feldsher-midwifery posts), a system of outpatient and general hospital secondary care (Regional and Central district hospitals) and highly specialized tertiary hospital care.

Regional and city hospitals, located in the main town of the region, have between 600 and 1000 beds and offer a range of secondary care specialists and more complex services. Central district hospitals have about 100–300 beds and are staffed with a range of specialists. Some incorporate a polyclinic.

Rural medical centres (SVPs) are introduced throughout the country within the framework of ongoing WB-financed health sector reform and are currently supposed to serve between 4000 and 6000 people each (up to 10 000 in remote areas). Compared with feldsher–midwifery posts, rural medical centres are staffed with more physicians (between one and five), who are often specialists in internal medicine, paediatrics or gynaecology, and between four and eight nursing and auxiliary health personnel.

Maternal and child health is one of the priorities for healthcare in Uzbekistan and the majority of aide projects are focused on this topic.

Key indicators on healthcare system are summarised in following table.

**Table 1: Selected indicators on healthcare system, Uzbekistan 2005**

<b>Indicator</b>	<b>Figure</b>
Hospitals (per 100,000 population)	4.4
Acute care hospitals (per 100,000 population)	20.9
Primary healthcare units (per 100,000 population)	0.8
Hospital beds (per 100,000 population)	541.2
Hospital beds in acute care hospitals (per 100,000 population)	1,526.6
In-patients at stationary hospitals (per thousand)	4,075.2
Average length of stay (days)	10.6
Bed occupancy rate (days)	305.5
Number of in-patients (in-patients per 100 persons)	15.6

#### **1.4 IMMUNIZATION SERVICES WITHIN HEALTH CARE SYSTEM**

Immunization services are delivered in 5000 health facilities throughout the country. The immunization program is managed by State Surveillance Department of the Ministry of Health and the NIP Manger is a Lead Specialist of the Department. Planning, procurements and distribution of immunization supplies, including vaccines, is managed by RCSSSES (Republican Center for State Sanitary and Epidemiological Surveillance), which has a network in all province and district centers. The epidemiologists employed at the branches of RCSSSES are acting as province and district EPI managers, respectively.



## 2. DISEASE TRENDS AND VACCINATION COVERAGE

### **2.1 MORBIDITY AND MORTALITY TRENDS FOR VACCINE PREVENTABLE DISEASES**

The European Region, including the Republic of Uzbekistan, was certified polio-free in 2002. However, in 2009, the European Regional Commission for the Certification of Poliomyelitis Eradication (RCC) concluded that Uzbekistan remains at risk for the importation of wild polioviruses, and that the risk appears to be growing. Due to geographical proximity to Tajikistan and Afghanistan, the RCC recommended polio sub-NIDs in the bordering areas, which were not implemented due to lack of internal and external funding. Given the 2010 polio outbreak in Tajikistan, all polio eradication activities should be reinforced immediately, and planned NID in May-June 2010 is just the first step for that.

**Figure 2. Polio morbidity and vaccination coverage, 1991-2007**

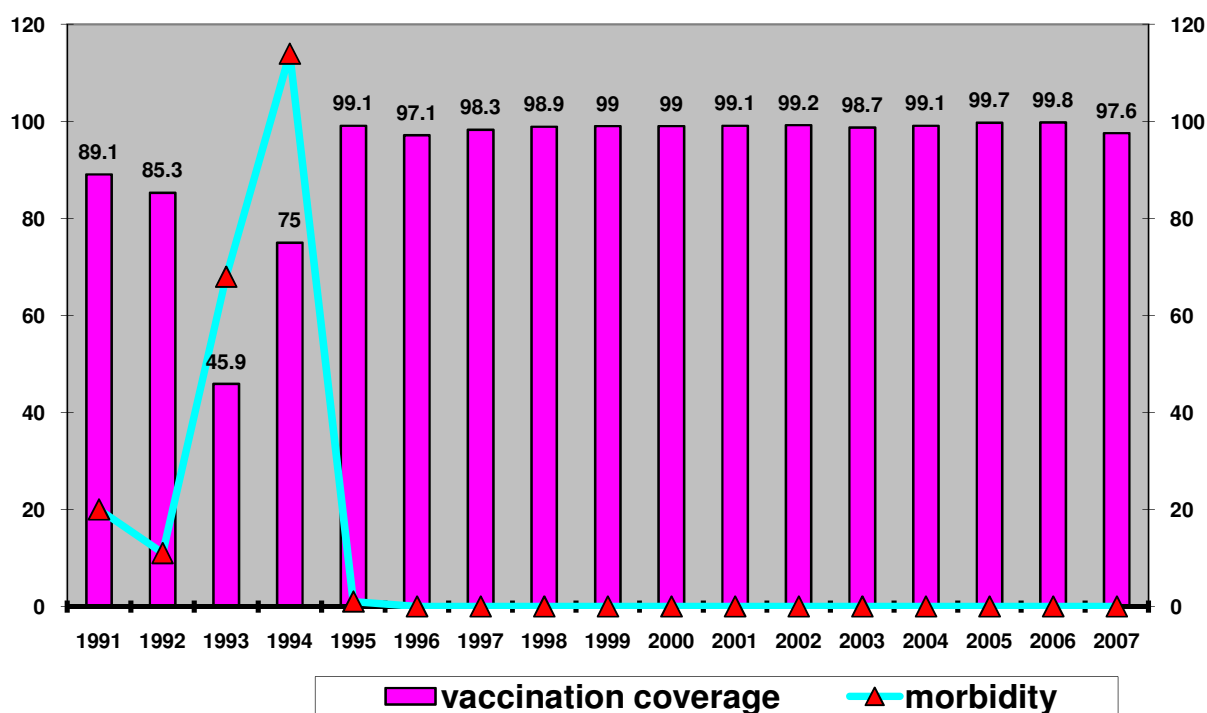


Figure 3. Diphtheria morbidity and vaccination coverage, 1991-2007

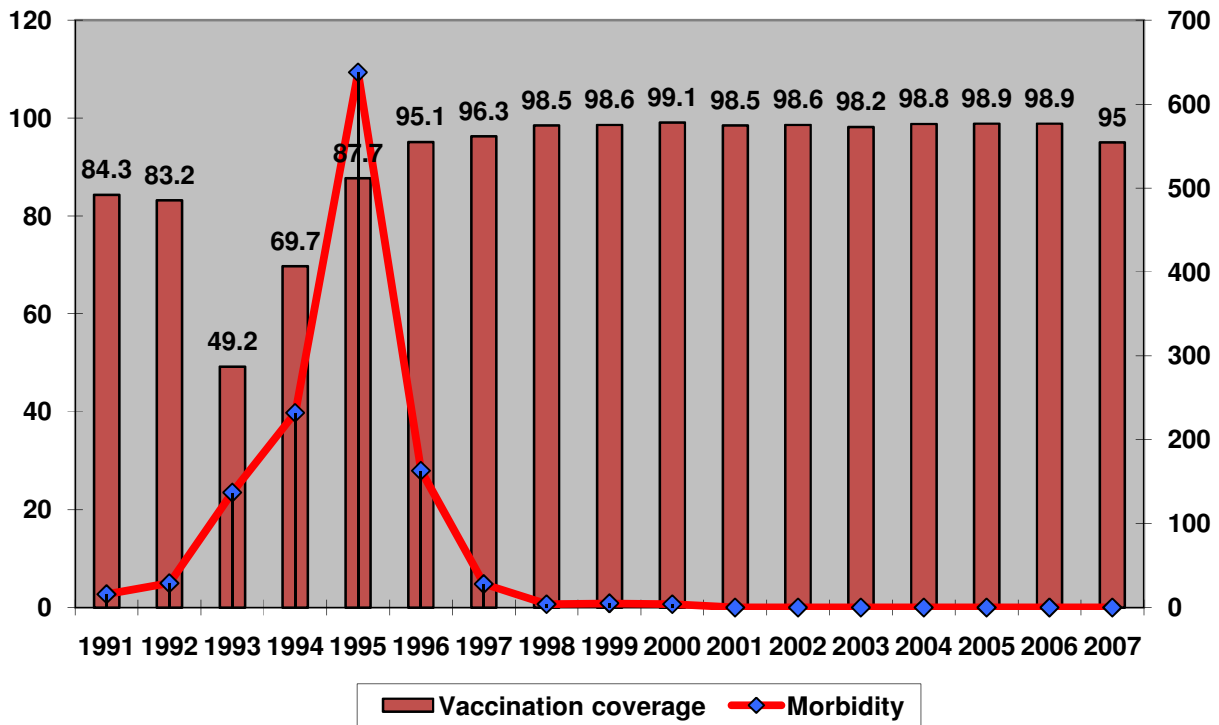


Figure 4. Measles morbidity rate, per 100,000, 1991-2009

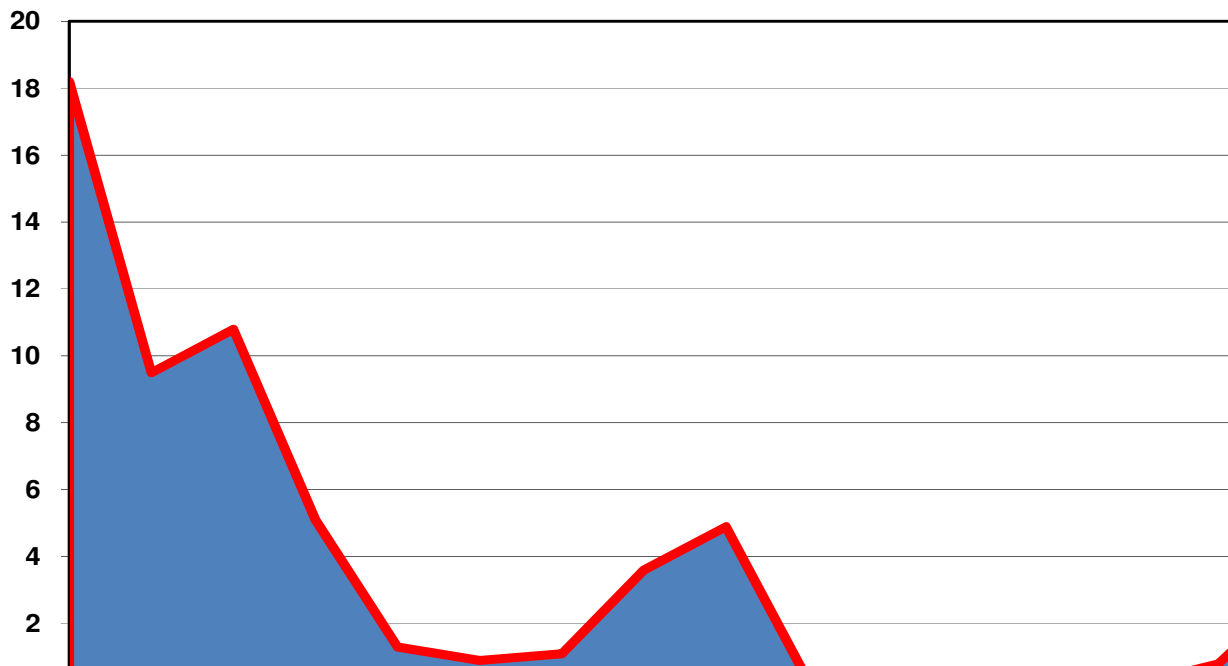


Figure 5. Hepatitis B morbidity and vaccination coverage, 2001-2007

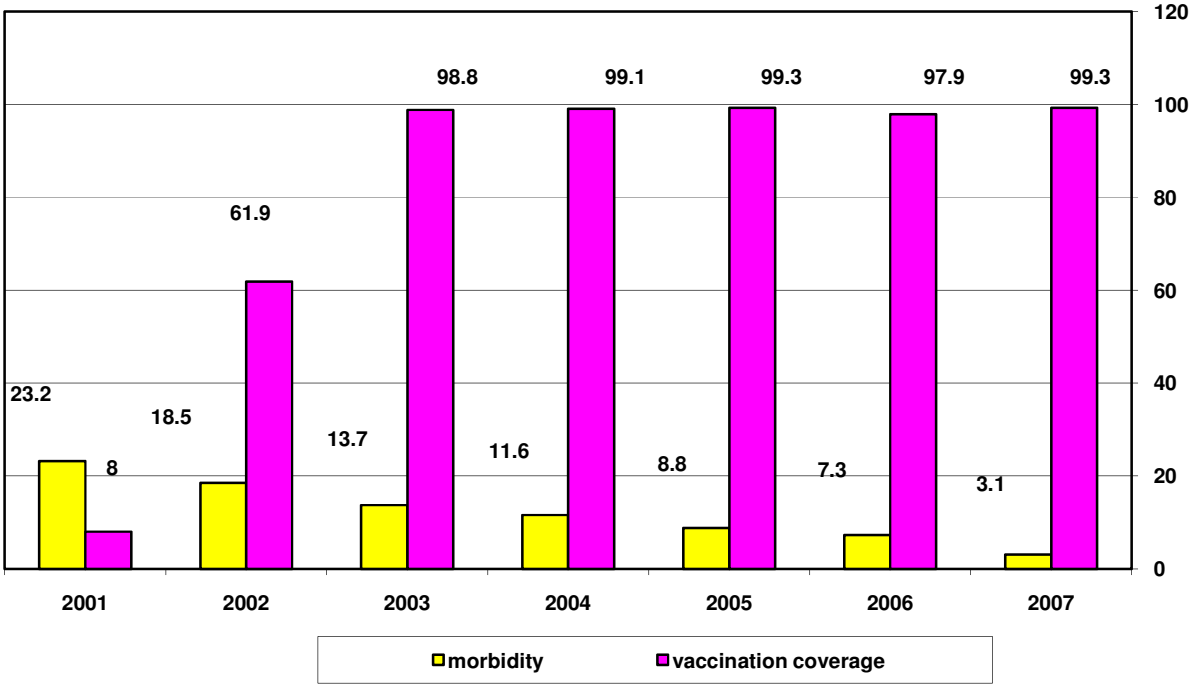
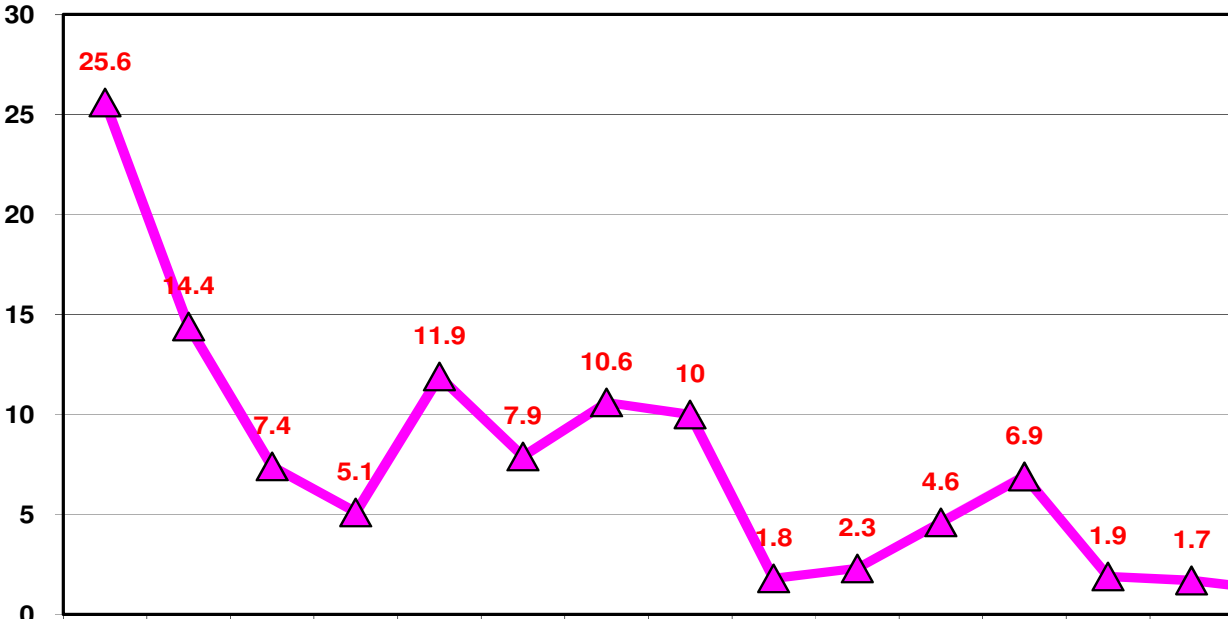


Figure 6. Rubella morbidity rate in Uzbekistan, per 100,000 , 1992-2009



## 2.2 VACCINATION SCHEDULE

The National Vaccination Schedule was changed last time in 2009 with connection to introduction of the Hib-containing pentavalent vaccine (DTP-HepB-Hib). The current vaccination schedule is as the following:

**Table 2. NATIONAL VACCINATION SCHEDULE**

Age	Vaccine
At birth	HepB -1
2-5 days	OPV-0, BCG-1
2 month	DTP-1, HepB -2 +Hib-1, OPV-1
3 month	DTP-2, HepB -3 +Hib-2, OPV-2
4 month	DTP-3, HepB -4 +Hib-3, OPV-3
12 month	MMR - 1
16 month	DTP- 4, OPV - 4
6 years	MMR-2
7 years (1 grade)	tD, OPV-5, BCG-2
14-15 years (8 grade)	BCG-3
16 years	tD-6

The country is planning to remove both booster doses of BCG from the routine calendar in the near future; the work in this direction is ongoing. The next revision of the national calendar is planned in connection with introduction on rotavirus vaccine.

## 2.3 VACCINATION COVERAGE

Coverage with routine vaccine is traditionally high in Uzbekistan. Coverage graphs for various antigens are presented in the previous chapter.

The annual data analysis shows above 95% national coverage against all antigens.

Table 3.

	2001	2002	2003	2004	2005	2006	2007
<b>DTP3</b>	98,3	99,4	98,1	97,9	98,1	95,8	95,0
<b>OPV3</b>	99,6	99,7	99,5	98,6	99,0	94,6	97,6
<b>BCG</b>	99,0	98,7	99,7	98,7	93,3	99,1	99,1
<b>HepB3</b>	8,0	61,9	98,8	99,1	99,3	97,9	99,2
<b>MCV1</b>	98,9	96,5	98,4	98,3	98,6	97,9	98,9

Nevertheless, there are several low-performing districts. In addition, problems with vaccine financing and supply during 2008-2010 have led to several stock-outs for various vaccines. Consequently, the coverage during certain periods of time was inadequate, and caught-up only in the Q4 of the year or Q1 of the following year. In 2009, vaccine for booster vaccination against polio and measles was not procured at all, thus MCV2 coverage in 2009 was only 8%, and OPV4 – 0%.

### 3. IMMUNIZATION PROGRAMME CHARACTERISTICS (ACHIEVEMENTS, PROBLEMS AND OBJECTIVES)

#### **3.1 SERVICE DELIVERY**

##### **3.1.1 Routine activities**

Routine immunization delivery in Uzbekistan is based on fixed immunization point strategies – vaccines are administered through the network of 5,000 sites. BCG1 and OPV0 are administered in maternity hospitals. In rural areas, at SVPs, vaccination is carried out on specific in order to decrease vaccine wastage when using multi-dose vials.

Reaching the “un-reached” population is part of the Reaching Every District (RED) strategy with the objective of strengthening district capacity through 5 components.

Re-establishing outreach services

Supportive supervision

Linking services with communities

Monitoring and use of data for actions

Planning and management of resources

The RED strategy activities are being complemented with Immunization in Practice (IIP) trainings for health staff. RED strategy implies use of additional strategies , such as outreach and mobile teams.

##### **3.1.2 Supplementary immunization activities**

Uzbekistan together with other countries of WHO European Region was certified polio-free in 2002. Uzbekistan participated in all MECACAR and MECACAR Plus activities. The last polio SIA, however, was conducted in the country in 2005. In 2009, the European Regional Commission for the Certification of Poliomyelitis Eradication (RCC) recommended Uzbekistan to resume polio SIA in areas bordering Afghanistan and Tajikistan given the geographical proximity to endemic countries. This recommendation was not implemented due to lack of internal resources and limited attention of international partners. The polio outbreak in Tajikistan in April 2010 served as a trigger and allowed to mobilize resources for response activities. The two-round nation-wide SIA with mOPV1 is planned to be carried out in Uzbekistan in May-June 2010 to prevent importation of wild polio virus from Tajikistan. AFP surveillance will be further strengthened to ensure sensitivity of the system and ability to timely detect cases.

Uzbekistan conducted a nation-wide measles and rubella immunization campaign in 2007 targeting population 7-29 years old. The SIA was conducted with high coverage which was confirmed by post-campaign assessment. The national strategic plan on Measles and Rubella Elimination and CRS control is in place. Since campaign, no measles case was reported in the country.

The country was not able to implement SIA on diphtheria included in the previous cMYP due to lack of resources. The plans are still valid in the course of the next cMYP.

### **3.1.3 Introduction of new vaccines.**

The MMR vaccine was introduced into the national immunization calendar from 2006.

The pentavalent Hib-containing vaccines was introduced with GAVI support in 2009.

The country plans to introduce two more vaccines during the next cMYP: rotavirus vaccine in 2012, and pneumococcal in 2014. All preparatory work for rota introduction is completed, and the introduction is postponed only due to unclear financing commitments from the government side to-date.

## **3.2 ADVOCACY AND COMMUNICATION**

The Advocacy and Communication activities for immunization are being implemented through the National Institute of Health, a leading PR and social mobilization agency under MOH. The external support to advocacy and communication activities is provided mainly by UNICEF and mostly during campaigns and other events. MOH collaborates with WHO and other partners in planning and implementing social mobilization activities. Relationships with mass media on health topics, including immunization, are arranged via press office of MOH. There is no designated person for communication on immunization at the national level. The National Immunization Manager is the focal point for advocacy and communication for immunization.

Starting from 2005, Uzbekistan participates in European Immunization Week (EIW) Initiative of WHO. This initiative is considered by Government as one of the best opportunities to achieve high vaccination coverage through sustainable public awareness campaigns on immunization. The objective of EIW is to increase vaccination coverage by raising awareness of importance of immunization. It initiated a broad spectrum of national events targeted at high risk population groups by means of advocacy, communication and supplementary immunization. Special attention is given to the activity targeted at vulnerable or hard-to-reach population groups. EIW promotes the key message that immunization of every child is vitally important from the point of view of disease prevention and life protection.

## **3.3 SURVEILLANCE**

The epidemiological surveillance system of vaccine preventable infections in Uzbekistan is based on a standard case definition of disease, identification of epidemiological links and laboratory examination of clinical samples.

With regard to measles, rubella and poliomyelitis, the surveillance system is based on the detection and registration of each suspected case with obligatory laboratory examination of clinical samples.

With regard to diphtheria, a whooping cough, mumps, and viral hepatitis B, the surveillance system aimed on the surveillance of disease by registering number of cases and an identifying the immunization status.

Table 4. AFP surveillance indicators

Indicator	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010 (4 mon.)

AFP cases	122	128	144	132	110	99	103	102	102	23
AFP rate per 100,000 <15	1,36	1,45	1,66	1,52	1,27	1,16	1,23	1,21	1,22	0,79
% adequate stool samples	95,9	99,2	100	98,5	98,2	100	100	100	100	100
% cases with 2 samples	100	100	100	100	100	100	100	100	100	100
AFP rate	0,96	0,99	1,00	0,98	0,98	0,99	0,99	0,99	0,98	0,79
% AFP within 7 days after onset of paralysis	89,3	95,3	91,7	90,2	90,0	89,9	94,2	91,2	92,2	91,3
% investigated within 48 hours	87,7	89,1	95,8	93,2	91,8	93,9	94,2	91,2	93,1	100
Hot cases	0	0	0	3	4	1	0	2	0	2
VAPP	0	0	0	0	0	0	0	0	0	0

Case-based surveillance for measles and rubella was introduced in the country after the MR SIA in 2007. The surveillance guidelines have been respectively revised, and introduction of measles and rubella surveillance module (MRSM) software is in pipeline.

In 2010, establishment of sentinel surveillance for invasive bacterial diseases is planned in two major cities.

Existing sentinel surveillance for rotavirus is planned to be moved to WHO network.

Uzbekistan RCSSSES virology laboratory is certified as national reference lab for polio and MR surveillance.

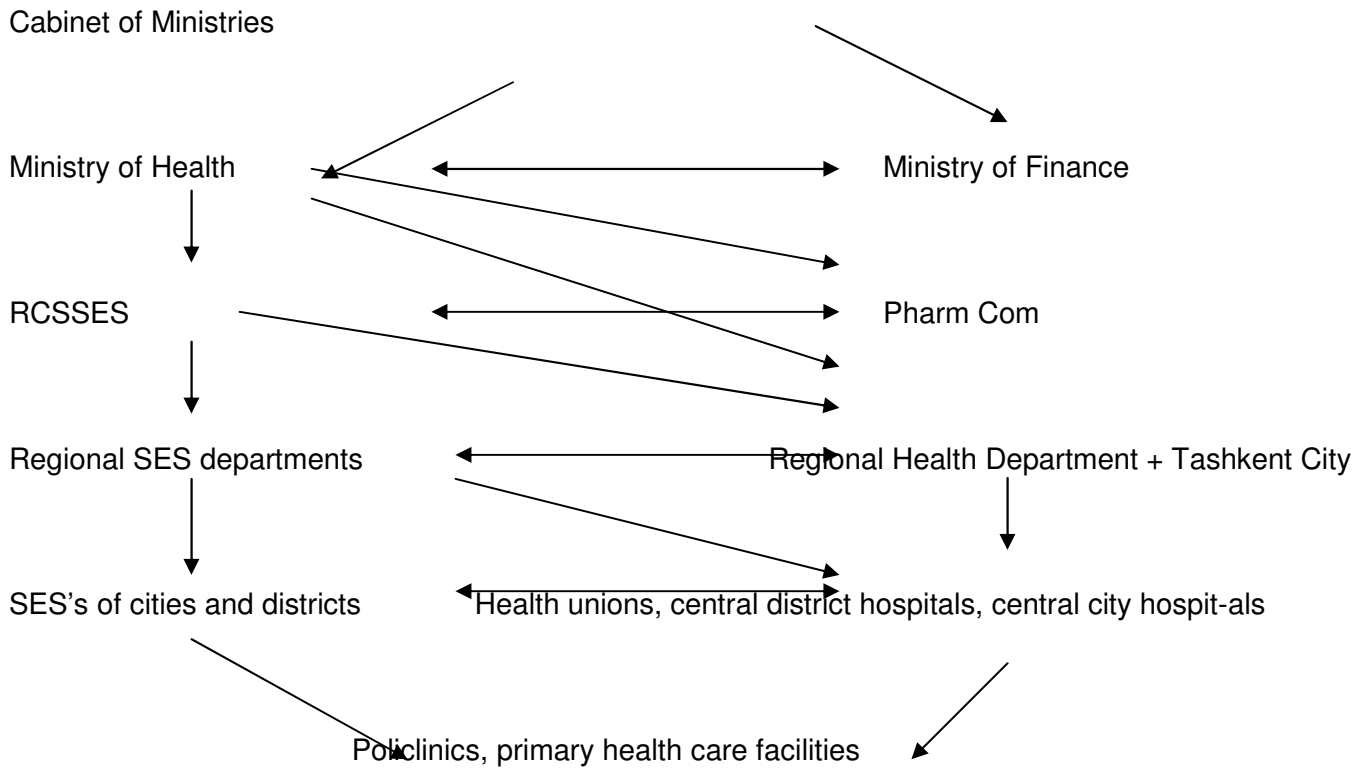
### **3.4 VACCINE SUPPLY, QUALITY AND LOGISTICS (IMMUNIZATION QUALITY AND SAFETY)**

#### **3.4.1 Vaccine procurement system**

There is legislation for public procurement established in Act no. 318. There is also an agreement in place between the MoH and UNICEF for the supply of vaccines. This initial agreement was signed in December 2006, and was renewed in March 2010. UNICEF delivered all vaccines to the MoH of Uzbekistan up to and including 2006. Starting from 2007 the MoH of Uzbekistan procures some vaccines

themselves; DPT, OPV, HepB and MMR. The MoH procures the aforementioned vaccines by means of one (open) tender per year.

The organisation chart of the cabinets of Ministries in Uzbekistan including communication lines is as follows.



Each quarter there is an inter-ministerial coordinating committee coming together to discuss immunization issues. On regular basis there are meeting between RCSSES and Pharm Com to discuss daily matters and issues.

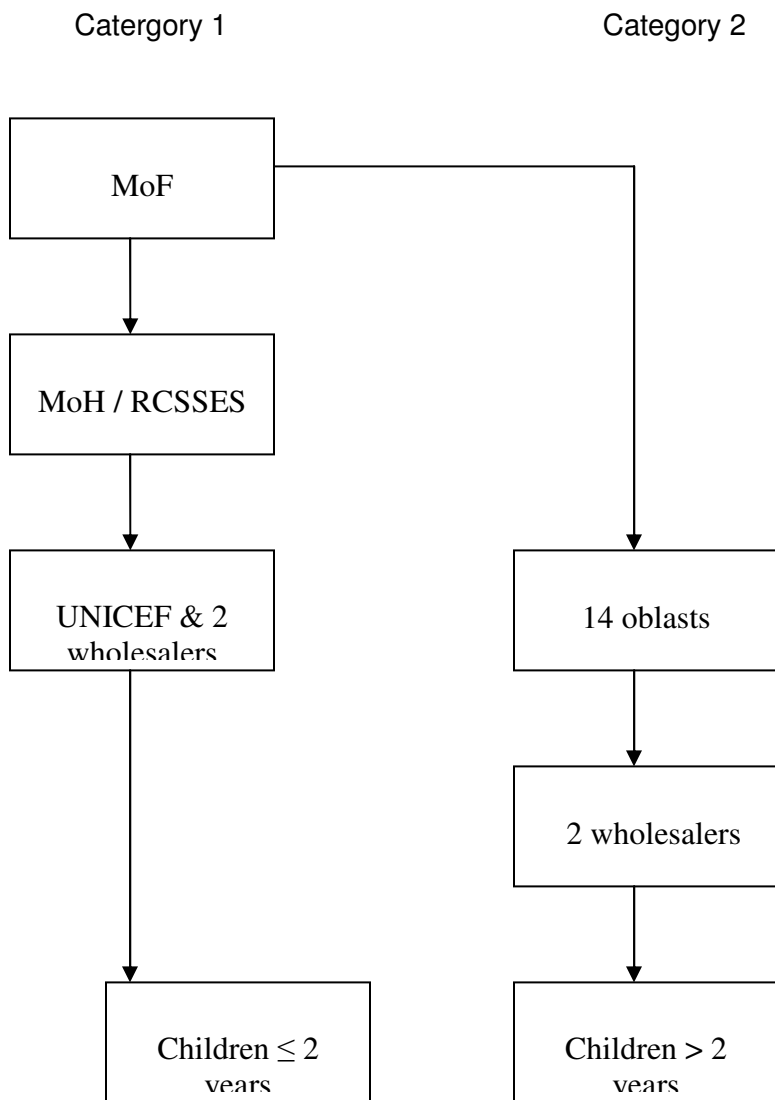
The oblasts have to procure all vaccines themselves for children over 2 years of age. The other vaccines are procured by RCSESS and supplied by or UNICEF or two wholesalers: Tibbiyot Dunyosi and Grand Gross Medical.

The EPI manager is responsible for forecasting. A forecasting tool is in place. Forecasting is based on the demand and not on history. Wastage (approximately 25% for HepB) and available stock on oblast level is included in each forecast. Once a month, all oblasts have to report to the RCSSES with regard to their available stock. The definitive forecast is finalised and authorised at least before December. However, there is not an official deadline for finalising the yearly forecast.

In Uzbekistan the supply of vaccines is defined in two categories. The MoH on central level is responsible for the procurement of vaccines for children up to and including 2 years of age. On decentral level the oblasts are responsible for the procurement of all vaccines and other pharmaceuticals for children over 2 years of age. UNICEF is delivering some of the vaccines to the RCSSES for category 1. The RCSSES is paying in local currency (UZS) to UNICEF. First UNICEF has to agree with the concerting conditions UZS / USD and payment conditions, then delivery can take place.

The financing system is as follows.





There is a separate budget line for vaccines within the MoH, so the necessary financial resources are clearly earmarked. Release of the budget by the MoF to the MoH / RCSSES and oblasts is done every quarter (25%). This periodical release can cause some inconsistency in relation to timely ordering, supply and payment of vaccines. Sometimes this system creates situations with minimum stock (under the recommended 25% safety stock). The fiscal year in Uzbekistan runs from January 1 to January 1 of the next year and VAT is not applicable in Uzbekistan. A tender committee is present in Uzbekistan.

Timely release of the budget and available storage capacity are factors that determine how many deliveries the RCSSES can / will have during the year. UNICEF delivers 4 times per year (each quarter), the two wholesalers deliver twice per year. In case there is a lack of sufficient storage capacity, the RCSSES can use an additional storage owned by one of the wholesalers Tibbiyat Dunyasi.

Upon arrival, the Vaccine Arrival Report of UNICEF is used for each delivery. Transportation from the Tashkent airport to the central store is done by one or two refrigerated trucks.

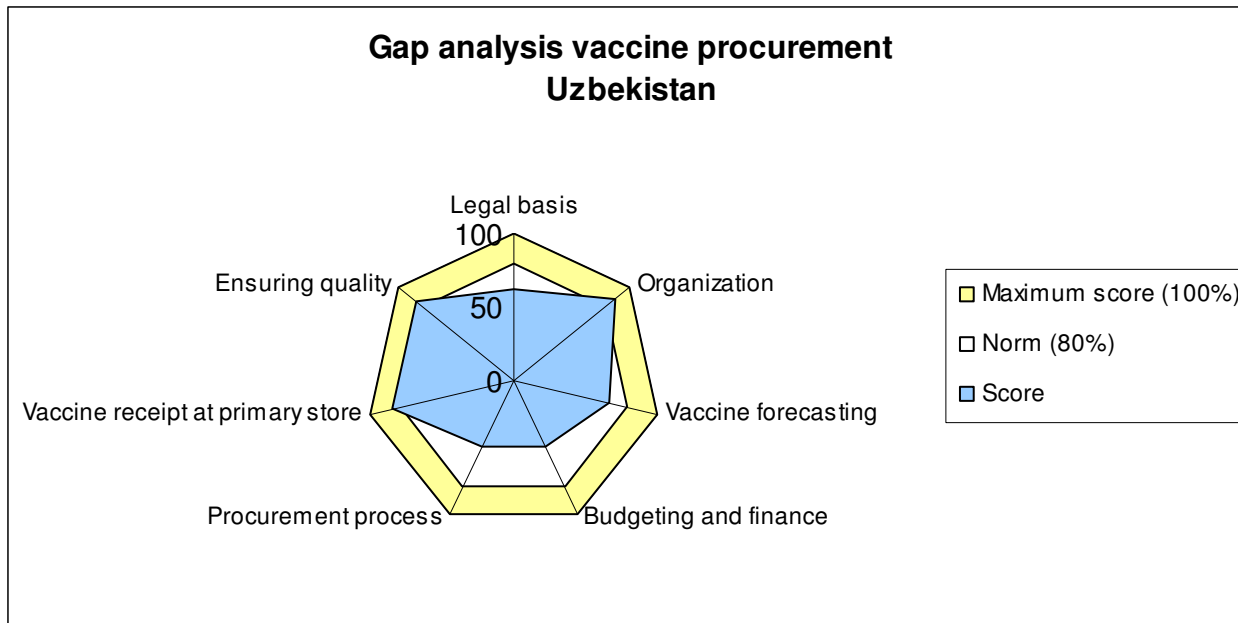
There are verbal agreements between RCSSES and Pharm Com (national NRA) and customs. Based on these agreements, vaccines are allowed to be taken from the customs before the clearance. This is why customs holding store is not used for vaccines. However, airport cold store can be used during the domestic air cargo services. There is no clearing agent for vaccines shipped through UNICEF

procurement division. This is performed by the EPI designated staff. Staff also perform physical inventory once per month.

Temperature monitoring in the cold rooms is done by computer system established with assistance of UNICEF in 2007-2008.

All procured vaccines should be registered in the country. Each registration costs USD 3,000 per registration and has no expiry date. However, it is not compulsory that all procured vaccines are also WHO pre-qualified. The requirement of only using WHO pre-qualified vaccines should be considered to ensure a high and continue quality of vaccines.

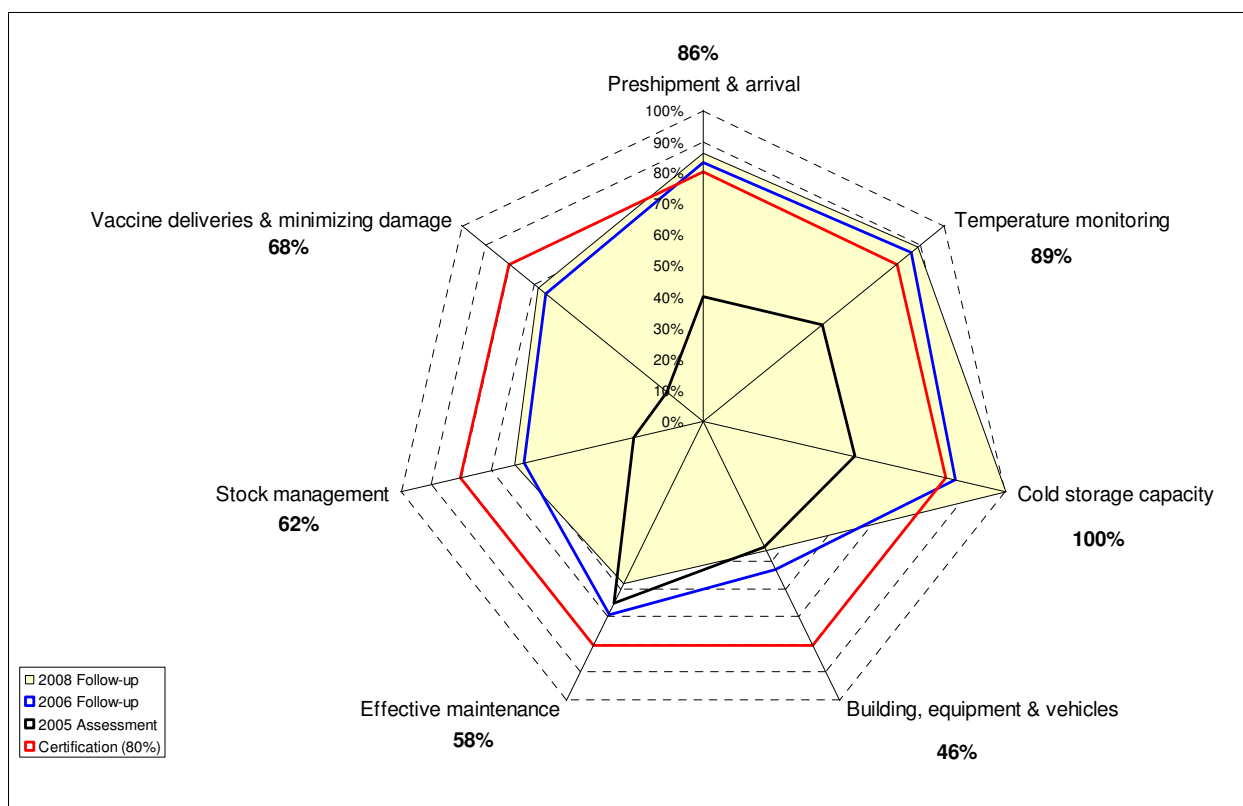
**Figure 8. Gap analysis vaccine procurement**



### 3.4.2 Vaccine store management

EVSM assessments were conducted in Uzbekistan in 2005 and 2007. In 2008, two follow up missions were organized to assess progress in implementing the recommendations. The outcomes of assessments are presented in the figure below:

*Figure 9. Vaccine storage management evaluation outcomes (EVSM ), 2008*



### 3.4.3. Waste management and disposal

Sharp waste, which is generated during immunization activities, is handled distinct from other risk waste. First of all this waste is not disinfected by chloride solution but disposed off without any further handling in sharp boxes.

In order to meet the GAVI requirements the MoH has developed specific guidelines at country level for the destruction of the syringes in the framework of the EPI. These guidelines include: 1) a specific procedure for collecting syringes directly into safety boxes without removing or recapping needles, 2) the incineration of the syringes (plus needles) in the HCF (either in rural or in urban areas) at special chosen places and the bury of the remnants in special refuse pits. These guidelines were formalized in the decree Order N° 107 issued on March 23<sup>rd</sup>, 2001.

One objective of the GAVI application was the installation of 223 “De Montfort” incinerators in all central and urban hospitals until the end of 2008 to dispose of HCW. Within the Immunization Programme of UNICEF (2002) a pilot project was conducted and 25 incinerators were built in 2 provinces (Karakalpakstan republic, Khorezm province) in 2002-2003 with UNICEF assistance. Two small scale incinerators were built in 1 province in 2001 with SDC assistance.

The sharp boxes are made of cardboard and are delivered together with vaccines and are incinerated (together with infectious waste).

The waste is disposed of through open air burning in rural areas and centralized incineration in urban areas where possible.

### 3.4.4 National Regulatory Authority

The following laws, regulatory acts and orders compose the legal-regulatory basis for national regulation system:

Law «About Drugs and Pharmaceutical Activity» (April 1997) with amendments and additions (April 1999)

Law of the Republic of Uzbekistan «About Licensing of Certain Types of Activities», 25 May 2000;

Law of the Republic of Uzbekistan as of 28 December 1993 «About Certification of Products and Services»;

Decree of the Cabinet of Ministers of the Republic of Uzbekistan, 6 July 2004, № 318 «About Additional Measures on Simplifying Production Certification Procedure»;

Decree of the Cabinet of Ministers of the Republic of Uzbekistan, 5 December 2002, № 427 «About Realization of Measures on Improvement of Consumer Commodities Import to the Republic Uzbekistan»;

Decree of the Cabinet of Ministers of the Republic of Uzbekistan as of 7 May 2008, №90 «About Introduction of Amendments as well as Recognizing some Decisions of the Government of the Republic of Uzbekistan State (Decree of the President of the Republic of Uzbekistan as of 27 March 2008, N ПП-823 “About Further Measures on Regulating Foreign-economic activity of the Republic of Uzbekistan”)»;

«Rules for Products Certification» registered by the Ministry of Justice of the Republic of Uzbekistan» as of 18 March 2005, N 1458;

«Rules for Certification by Separate Types of Homogenous Products Required for Compulsory Registration», approved by the order of the Director General of the Agency "Uzstandard" on 07.09.2005, N 340, registered by the Ministry of Justice of the Republic of Uzbekistan as of 28.09.2005, N 1513;

«Rules for Inspection Control of Certified Products and Services», approved by the order of Director General of the Agency "Uzstandard" as of 1 February 2005, N 24-П;

Order of the Main Department on Quality Control of Drugs and Medical Products MoH RUz №01-19 as of 18.08.1999 «About Improvement of Work on Quality Control of Medical Immunobiologicals»

Order MoH RUz №566 as of 31.10.2000 «About Registration of Medical Immunobiologicals and Their Application in Medical Practice»

Order MoH RUz №29/51 as of 20.11.2000 «About Improvement of Work on Quality Control of Medical Immunobiologicals»

Methodical Guidelines «Construction, Content and Exposition of Pharmacopeia Articles Related to Medical Immunobiologicals»

«Construction and Exposition of Specifications for Medical Immunobiologicals»

Guiding document «Manufacturing and Control of Medical Immunobiologicals for Quality Assurance». РД 42-06:2008

About Measures on Improvement of Immunoprophylaxis of Infectious Diseases and Introduction of Surveillance System for Adverse Events Following Immunization. Order of MoH Uz № 759, December 1999

Rules and Standards for Organization and Conduction of Immunoprophylaxis of Infectious Diseases in the Republic of Uzbekistan SanRaS №0132-02 and e-07, approved by the Main Sanitary Doctor RUz (2003 and 2007).

In 1995 by the Order MoH Uz the Main Department on Quality Control of Drugs and Medical Equipment was established in the MoH. Within this Department the State Center for Drug Expertise and Standardization was established including four experimental laboratories (three of which participate in vaccine control) as well as Certification Authority and Pharmacological and Pharmacopeia committees. These subdivisions are involved into vaccine registration. Laboratory of Vaccines, Sera and Microbiological Research is responsible for vaccine control during registration. Pharmacopeia Committee provides expertise of regulatory document (requirements for vaccines and appropriate control measures) and considers control findings of vaccine lot presented for registration. Pharmacopeia Committee sends its conclusion to the Pharmacological Committee. MIB Commission of Pharmacological Committee considers materials of pre-clinical and clinical vaccine researches, conclusion of Pharmacopeia Committee as well as control findings of vaccine presented for registration and sends its conclusion to the Expert Council of the MoH RUz. Based on its recommendations MoH RUz registers vaccines.

Certification Authority certifies (controls) each lot of vaccine imported and produced in Uzbekistan under the Law about Drugs and the Law about Certification and on the basis of control findings obtained from experimental laboratories of the State Center for Drug Expertise and Standardization. Issuance of certificate is a ground for vaccine import. Separate permit for release of vaccine lot is not issued, consolidated protocol of vaccine manufacturing and control is not considered. Licensing Department under the MoH licenses medical activity.

Investigation of adverse events following immunization is under responsibility of Immunoprophylaxis Department of the Republican State Center of Sanitary and Epidemiological Surveillance (RCSSES).

### **3.5 PROGRAMME MANAGEMENT**

National immunization program as part of wider surveillance and prevention activities is overall managed by the Deputy Minister of Health, Chief Sanitary Doctor of Uzbekistan. The day-to-day management is implemented by NIP Manager who is the Lead specialist in the Chief Department of State Epidemiological Surveillance of the MOH.

Surveillance, vaccine procurement, storage and distribution are being implemented by RCSSES through network of CSSSES branches in each province and district. The head epidemiologists in provincial and district RCSSES act as local EPI managers. RCSSES has cold stores at each level.

Administration of vaccine is implemented by staff in health facilities who report to MCH department or Curative department of MOH.

The **Interagency Coordinating Committee** (ICC) represents an essential body to coordinate the support of all agencies involved in the National Immunization Program. The ICC is chaired by the Deputy Minister of Health, Chief Sanitary Doctor of Uzbekistan. The ICC includes lead officials from the MOH, representatives of major academic and research institutions and representatives of major international partners in health: WHO, UNICEF, USAID, the World Bank, JICA, TIKa. Unfortunately, due to limited presence of international donors in Uzbekistan or their limited interest in immunization issues, the international partners are really underrepresented in ICC and only WHO and UNICEF participate in all meetings. During 2009, participation of MOF was also quite limited.

be a component on implementation of the basis of immunization programme in curricula of medical universities, National Institute of Health and medical colleges. Such an initiative will be essential for future trainees and should be properly defined.

#### 4. IMMUNIZATION PROGRAMME STRATEGIES AND KEY ACTIVITIES

Strategies and key activities necessary to achieve the above-mentioned objectives are presented in table below:

**Table 5: cMYP Objectives, Strategies and Key Activities**

Area	Problem or priority	NIP objectives	Implementation strategies	key activities	timing (year)
Sustaining polio-free status	Risk of wild polio virus importation	Maintaining polio-free status; through 95 % coverage for OPV3 at national and 90% at each district level by 2012, sustaining AFP rate of 1/100000 under 15 years and providing supplemental vaccination to susceptible populations, if needed	Strengthening AFP surveillance (epidemiological and laboratory)	Review national AFP surveillance guidelines in line with WHO recommendations	2011
				Conduct refresher training on AFP surveillance to major reporting site staff	2011-12
				Supply lab reagents, kits and equipment for measles-rubella analysis (WHO)	2011-15
			Improving active surveillance	Conduct training for district epidemiologists with focus on active surveillance	2011 -12
				Conduct regular active surveillance to major reporting sites (with special focus to high risk / silent areas)	2011-15
				Conduct supportive supervision to district epidemiologists	2011-15
			Arising awareness of reporting site staff	Refresh knowledge of hospital staff on AFP surveillance	2011
				Provide feedback to district level and reporting sites on AFP surveillance	2011-15

			Providing additional opportunity of OPV to <5 populations in border areas	Conducting two rounds of supplementary polio vaccination to susceptible populations (targeting app. 100,000 children under 5 years of age)	2011, 2013
Measles and Rubella elimination and congenital rubella infection control	No actual CRS surveillance, underreporting of cases, poor implementation of case-based surveillance	Elimination of measles and rubella and control of congenital rubella infection	Strengthening lab based measles and rubella surveillance	Review national measles-rubella surveillance guidelines (and forms) in line with new WHO guidelines	2011
				Conduct refresher training to health staff on measles-rubella surveillance	2011 -15
				Provide continuous operational support for specimen transportation	2011 -15
				Supply lab reagents and supplies for MR testing	2011 -15
				Provide training to designated staff for case investigation, specimen collection and transportation at district level	2011-12
			Strengthening measles and rubella case-based surveillance	Introduction of MRSM software for use at national and province levels	2011
				Conduct training for staff on MRSM	2011
				Conduct active surveillance at reporting sites	2011 -15
				Accumulation of susceptible population	

	Low routine coverage MCV2		Ensure high coverage with routine vaccines	Ensure adequate financing from the government side for routine vaccines procurement	2011
Elimination of diphtheria	Accumulation of susceptible population due to insufficient coverage in-schools	Elimination of diphtheria	Providing additional dose of diphtheria containing vaccine to susceptible age groups	Conduct supplementary immunization activities for adults	2014?
			Improve performance of diphtheria surveillance to enable lab confirmation of all suspected cases	Conduct refreshing training to district level staff on diphtheria control	2012
New and underutilized vaccines introduction		Provide additional immunological protection for population	Introduce rotavirus vaccine nation-wide	Submit application to GAVI, conduct assessment of cold-chain capacity, obtain commitment of the government for co-financing	2012
			Introduce pneumococcal vaccine nationwide	Submit application to GAVI, conduct assessment of cold-chain capacity, obtain commitment of the government for co-financing	2014
	Insufficient evidence	Collect evidence for decision-making for introduction of new and underused vaccines		Conduct evaluation of Hib-containing vaccine introduction in two years after the vaccine is introduced.	2011
Routine immunization	20% of districts have DTP3 coverage below 95%	Ensure <95% coverage at sub-national and <98% coverage at national level	Implement RED strategies	Update microplanning figures at least twice a year  Organize mobile sessions in the hard to reach areas at least 4 times a year .  Conduct outreach immunization sessions in each district	2011-15



				Implement AEFI and coverage surveillance protocols for hard to reach areas  Conduct advocacy sessions with community leaders to increase immunization uptake	
Immunization quality and safety	Insufficient provision of safe injection supplies	National immunization safety policy implementation	Review of injection supplies procurement policies	Place orders for vaccines using bundling policy	2011-15
	Inadequate management of vaccine stores			Introduction of EVM practices at national and provincial levels	2011
Immunization financing	Insufficient state allocation for vaccine procurement	Ensuring sustainable financing for immunization		Continue procurement of routine vaccines through UNICEF	2011-15
	National currency inconvertibility			Advocate with the government of easing the currency conversion procedures for vaccine procurement	2011
Programme management	Passive ICC with limited representation of international partners and state financing institutions	Strengthening partnership and coordination for immunization		Develop annual workplan for immunization at national and sub-national levels; Prepare a calendar of major events; Advocate for active participation of all immunization partners in coordination of activities; ensure transparency of the programme	2011-15

## **5. IMMUNIZATION PROGRAMME COSTS AND FINANCING (CURRENT AND FUTURE)**

### **5.1 OVERVIEW**

The health care system in Uzbekistan has undergone profound reforms since latest 90<sup>th</sup>. One of the main focuses of these reforms was to shift away from hospital-based assistance in favor of primary health care. The reforms called for the multiple-tiered structure of health establishments to be reduced to a leaner, two-level structure, particularly in rural areas. As a public good the health care services are provided free of charge except for pharmaceuticals for the non-poor. The national government is responsible for the financing of specialized medical centers, research institutes, emergency care centers and national level hospitals. Local governments (at oblast, rayon and urban level) are responsible for expenditure related to all other hospitals, primary care units, sanitary-epidemiological units and ambulance services in the respective areas under their administrative jurisdiction. However, pooling of primary health care funds at the oblast level and their reallocation among primary health care providers on the basis of a unified per capita rate set for the oblast is followed under the ongoing reforms of the primary health care sector.

Immunizations and vaccinations are carried out by public primary care providers (policlinics, "rural medical centers" (SVPs the Russian acronym) and FAPs) and are coordinated and controlled by *rayon* health authorities and sanitary-epidemiological units. The Ministry of Health together with the Republican Center of State Sanitary and Epidemiological Surveillance (RCSSSES) has developed a protocol for mandatory immunization and vaccination, which is strictly monitored and controlled.

### **5.2 DETAILED INFORMATION ON PROGRAMME COST BY CATEGORIES**

#### **5.2.1 Macroeconomic indicators**

The major macroeconomic indicators for 2009 as well as projected data were provided by the Ministry of Economy and Statistics, with exception of one indicator, Government Health Expenditures as percentage of Total Health Expenditures that are derived from the National Health Accounts. Indicators are presented in US\$.

#### **5.2.2 Demographic information**

Source for demographic and health related indicators and other target group is Ministry of Economy and Statistics, Ministry of Health (MOH) and Republican Center of State Sanitary and Epidemiological Surveillance (RCSSSES). IMR for the baseline year corresponds to the JRF while projections of population growth, birth rate and IMR for 2011-2015 as well as the size of birth cohort and surviving infants (absolute numbers) were defined by the MoH officials.

#### **5.2.3 Vaccines & Injection Supplies**

**Table 1.3 Immunization schedule, Target population, Vaccine prices and other vaccine reference information**

Information on doses per schedule, vial sizes, past coverage and projected coverage and wastage rates were provided by the EPI manager and RCSSSES.

DTP- Hep B-Hib vaccine was introduced in 2009 and was classified as underused vaccine for the purpose of costing exercise in accordance with widely used practices.

Wastage rate for vaccines in one dose presentation, such as Hep B and DTP- Hep B-Hib, is 5%.

The Government has started to purchase vaccines **through the UNICEF procurement mechanism** since 2010. Thus, the prices for each vaccine were calculated based on UNICEF recommended price per dose and estimated freight cost to Uzbekistan was added (20% of vaccine price). Freight cost estimates were provided by the UNICEF.

**Table 1.1 Baseline expenditure on vaccines and injection supplies**

Expenditures on vaccines and injection supplies as well as other supplies in 2009 were given by the economists of MOH and RCSSES.

Calculation regarding the expenditure on cotton was made as following: the total weight of the used cotton was multiplied by the total number of vaccinated children and by the unit cost of cotton.

**Table 0.1 Past and future DTP coverage and 1.4 Coverage and wastage**

The data for this section was provided by the EPI manager and RCSSES.

### **5.2.4 Personnel Cost**

Data on staff categories of the personnel involved in the immunization program, total number and gross monthly salary at the national, oblast, rayon and health care facility levels was given by the MOH and RCSSES economist.

The percentage of the time spent on immunization activities for the personnel is diverse and depends on the position they occupy.

No outreach activities are provided by the staff at the national, regional and district levels. Outreach activities are only provided by the staff of primary health care facility level. Supervision activities are conducted by the personnel at the national and oblast levels; per-diem per supervision visit is 3USD.

### **5.2.5 Vehicles and transport cost**

**Table 3.1 Average prices and utilization of vehicles.**

The information regarding the vehicles was provided by the EPI manager and RCSSES economist.

Information of the types (categories) of vehicles used by the immunization program, average unit price including all taxes for new vehicles in 2009, average number of kilometers traveled per year, average fuel consumption per 100 km for vehicles were entered in the table. Prices of the vehicles entered into the tool are assumed as of new vehicles, although majority of them, particular at rayon and health care facility levels, were purchased during previous years. For national and oblast levels vehicles were procured in 2009 by the Government.

The average useful life year of cold chain equipment was defined as 7 years.

Projections of additional vehicles needed in future were made by EPI manager and RCSSES economist.

**Table 3.3 Other transport needs not elsewhere covered**

The total amount of transportation of vaccines and safe injection supply from the Central level to the regional level and from the regional to the rayon level and transport maintenance are covered from the Government budget.

### **5.2.6 Cold chain equipment**

Information on the types of the cold chain equipment and their average unit prices was given by the RCSSES.

The average useful life year of cold chain equipment was defined as 8 years.

## 5.2.7 Program Activities, Other Recurrent Costs and Surveillance

### Table 6.0 Total Spending and Future Needs for Program Activities

These elements of the program are financed by Government and the external donors (UNICEF and WHO). The total amount of expenditures under these categories was summarized and entered in the respective cells categorizing by donor and Government expenditures.

Budget for future training needs and other program activities were provided by EPI and RCSSES. Future budget needs for other activities (IEC/social mobilization, disease surveillance, and program management) include donors' possible funding and Government's commitment for these activities for projection years.

## 5.2.8 Other Equipment Needs and Capital costs

### Table 7.1 Average Prices of Other Equipment Needs

Information on the total number, types and average prices including all taxes of other equipment needs were given by the EPI manager and RCSSES economist.

## 5.2.9 Building and Building Overhead

Information on the total number and type of building by administrative levels was given by the RCSSES and MOH. For estimating the value of buildings cost of the construction of a similar new building was used. Prices of buildings entered into the tool are assumed as new building price. Allocation of space devoted to immunization activities served as a base for the calculation of the buildings' capital costs. For all levels cost of entire building was calculated and the percentage of the space used for immunization was estimated and entered.

## 5.2.10 Past Costs by categories

The total cost of the National Immunization Program in 2009 was \$ 64.5 million including shared costs that comprising 41% (

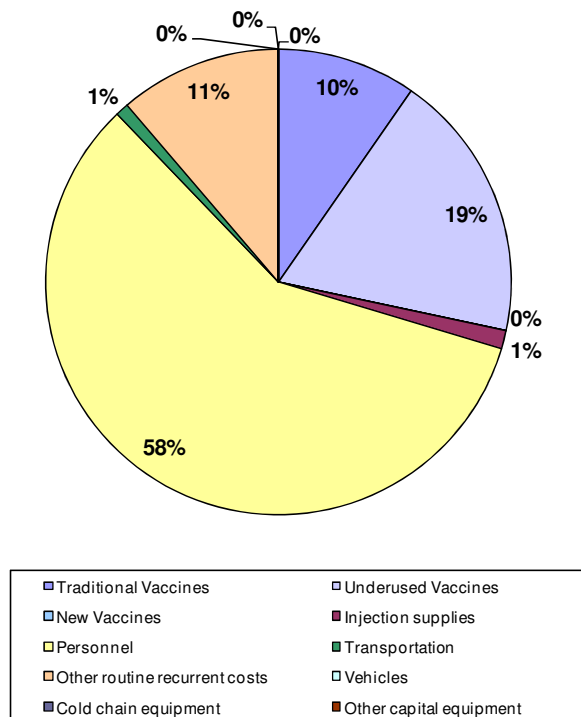
Figure 10 below) of total immunization cost and consisting of shared personnel, transportation and building maintenance and overhead costs. No campaigns were run in 2009 and the figures represent exclusively routine immunization.

Figure 10: Baseline indicators (including shared costs)

Baseline Indicators	2009
Total Immunization Expenditures	\$37,967,961
Campaigns	
Routine Immunization only	\$37,967,961
per capita	\$2.3
per DTP3 child	\$101.9
% Vaccines and supplies	17.5%
% National funding	76.5%
% Total health expenditures	4.6%
% Gov. health expenditures	9.2%
% GDP	0.20%
Total Shared Costs	\$26,512,506
% Shared health systems cost	41%
TOTAL	\$64,480,466

The breakdown of the total routine immunization expenditures, which equals to \$37,967,961 excluding shared costs, is shown in Figure 11.

Figure 11: Structure of the NIP costs – only routine immunization (2009)



Personnel costs were the major cost driver of the NIP in 2009 – its share was as high as 58% it was followed by “vaccines” and “other recurrent cost” constituting 29% and 11% of the total cost respectively. Other cost categories accounted for the remaining 2% of the total cost.

As to the high share of personnel cost it is partially explained by the salary of 5,574 GPs that spent 50% of their time on immunization services and 11,148 vaccinators (fully dedicated to the vaccination services).

Underused vaccine (DTP-HepB-Hib) constituted 66% of total expenditures on the vaccines for routine immunization.

### 5.3 DETAILED INFORMATION ON PROGRAMME FINANCING

#### 5.3.1 Financing sheet

Immunization financing for traditional vaccines, syringes, payroll and other recurrent costs at all levels of the immunization program comes from the republican (national) and local (sub-national) budgets. Traditional and underused vaccines for the children under 2 years old are purchased centralized via Republican budget; local authorities are responsible to purchase the vaccines (DT, OPV2, MMR2, BCG2) administered to the children over 2 years old . The local authorities only purchased DT vaccine for revaccination of children at age over 2 years old in 2009.

Distribution of the national and sub-national governments funds on a) vaccines, b) personnel, (salaries of full time immunization health workers as well as of shared personnel) c) cold chain maintenance and overhead, d) building overheads is base on the following: proportion of national and sub-national costs from the total on above mentioned items was calculated (calculation sheet was used). The same ratio was used for estimating national and sub-national government financing.

For 2009 expenditures on vaccines provided as humanitarian aid by Government of Georgia and TICA (Turkish International Cooperation Agency) was provided by RCSSES economist. Data about the WHO secure financing was provided by the national technical officer WHO CO UZB.

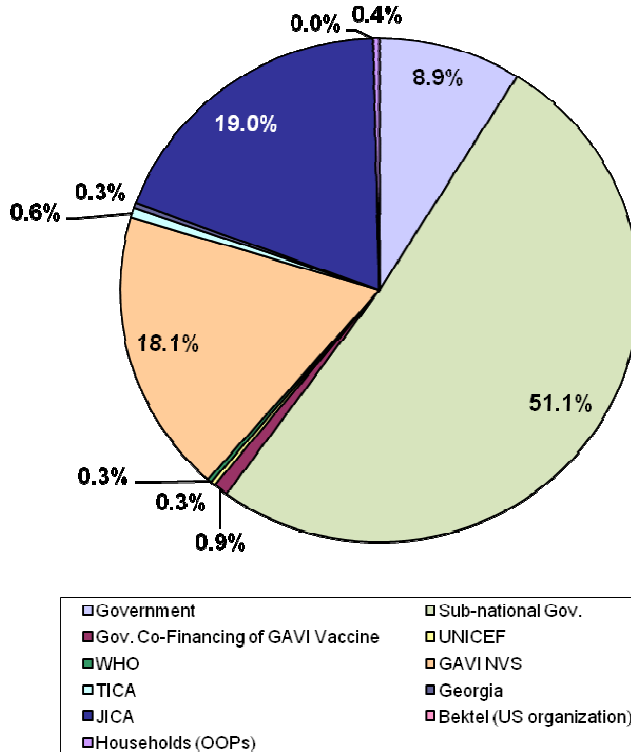
Data about UNICEF secure financing was provided by the UNICEF.

Private out of pocket expenditures (OOPs) on synergies were calculated as a difference between Government, Sub-national government and GAVI NVS expenditures, the gap was identified as OOPs. It was agreed and confirmed by RCSSES economists.

### 5.3.2 Past Financing

Without considering shared health system costs the government financed almost two thirds of the NIP in 2009. JICA and GAVI contributed almost the same amount and financed 30% of the NIP. The remaining 10% of costs were financed from other sources including private out-of-pocket expenditures (OOP) of end users as presented in Figure below.

Figure 12: Structure of financing in 2009 (baseline financing profile – routine only)



The National Immunization program in Uzbekistan was financed mainly by the Sub-national Government in 2009. Mainly it covered personals' salary, transportation and other recurrent costs. There was only one DT vaccine for revaccination of children at age over 2 years old purchased by the Sub-national Government in 2009. However, if the health system shared costs are considered, the share of the national government financing (\$30 million) was 60% vs. 40% of the sub-national government (\$19 million).

Uzbekistan experienced shortage in traditional vaccines for the children under 2 years old in 2009 because the funds planned by MOF were not enough to cover the MOH needs. This shortage of funds happened due to the complication faced the Government related to the conversion of local currency (Sum) into USD while purchasing vaccine through the UNICEF

procurement mechanism; it is a long and time consuming procedure. Therefore MOH had to purchase some vaccines from the local companies at higher prices that makes public spending less efficient and ultimately leads to the deficit of traditional vaccines.

The Government of Georgia provided MR vaccine for routine immunization as a humanitarian aid to the Government of Uzbekistan in 2009.

TICA via WHO provided BCG and HepB vaccines for routine immunization as humanitarian aid to the Government of Uzbekistan in 2009.

The GAVI vaccine fund (GAVI NVS (New Vaccines Supports)) offered financial assistance for the procurement of DTP+ HepB+Hib vaccine, which was introduced in 2009. The Government co-financed about 9.7% of the cost of pentavalent vaccine. The reconstruction syringes (BCG/Hib) for pentavalent vaccine were supplied together with the vaccines by GAVI NVS.

Children's parents (households) purchased some part of AD syringes at the point of services because the sub-national governments failed to purchase adequate amounts of AD syringes..

The UNICEF provided financial support for a) the procurement of part of vaccines for routine immunization, and b) community mobilization activities.

The WHO provided financial support for diseases surveillance, program management, short-term trainings, cold boxes (before 2009) and provided technical assistance.

JICA and Bechtel (US company) provided financial support to purchase some equipment for cold chain before 2009.

#### **5.4 FUTURE RESOURCE REQUIREMENTS, FINANCING AND FUNDING GAP**

In the baseline scenario the program only sustains current activities and does not imply any changes in the immunization calendar.

The following campaigns are planned:

Polio campaign for children under 5years old group for 2011 and 2013;

Diphtheria campaign for adolescence group for 2011;

MR campaign for children from 6 -10 years old group in 2012.

#### **5.4.1 Future resource requirements**

Estimated total resource requirement for 2011-2015 is \$ 383.4 million as shown in Figure below.

*Figure 13: Future resource requirements by program components (in thousands US\$)*

<b>Program components</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>Total</b>	<b>%</b>
Vaccine Supply and Logistics	22,135	18,577	17,616	17,472	17,179	92,978	24.3
Service Delivery	23,052	23,607	24,175	24,693	25,187	120,713	31.5
Advocacy and Communication	138	68	69	71	72	418	0.1
Monitoring and Disease Surveillance	249	254	259	264	269	1,295	0.3
Program Management	3,159	3,222	3,287	3,353	3,420	16,441	4.3
Supplemental Immunization Activities	6,631	2,297	1,818	,	,	10,746	2.8
Shared Health Systems Costs	27,113	27,584	28,135	28,698	29,272	140,802	36.7

		75,60		74,55	75,39		
<b>Total</b>	<b>82,477</b>	<b>9</b>	<b>75,359</b>	<b>0</b>	<b>9</b>	<b>383,392</b>	<b>100</b>

“Shared Health Systems costs” absorb the highest share (36.7%) of the total resource requirements, the second largest component is “Service delivery” (31.5%) and the third largest component is “Vaccine supply and logistics” (24.3%). For “Program management” is planned to be spend about 4.3% and for “Supplemental immunization activities” – 2.8%.

Figure illustrates distribution of future resources required by components of the immunization program for the period of 2011-2015.

Figure 14: Projection of Future Resource Requirements (baseline scenario)

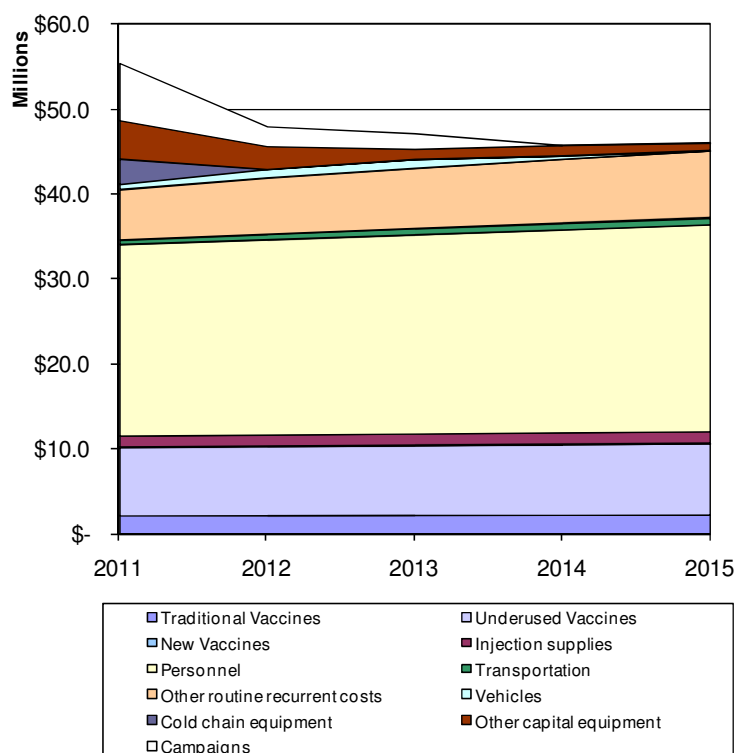


Figure 15 presents donors’ commitments to secure and probable financing in 2011-2015. It is important to mention that among donors secure funds are committed by UNICEF for short-term trainings, IEC/social mobilization and programme management base that is covered by the bi-lateral agreement for the following 5 years signed by the Government of Uzbekistan and UNICEF. In addition, GAVI NVS secures to provide financial support to procure DTP-HepB-Hib vaccine to Uzbekistan. Probable funds for short-term trainings (in and out-side country) and surveillance activities are available from WHO.

Figure 15: Future secure and Probable Financing (US\$)

	2011	2012	2013	2014	2015	Total
<b>Secure</b>						
UNICEF	100,950	100,950	100,950	100,950	100,950	504,750



WHO

GAVI NVS	5,238,445	5,100,683	5,155,492	5,212,203	5,269,537	25,976,361
<b>Probable</b>						
UNICEF	70,000	,	,	,	,	70,000
WHO	180,000	180,000	180,000	180,000	180,000	900,000

The National Government including co-financing of GAVI vaccine and Sub-national Government are supposed to provide 88% of secure and probable financing. The donor secure and probable financing is estimated at about \$28.5 million in total for entire projection period (Figure 16 below).

If shared costs are not considered, the funding gap amounts to 10.6 % with secure financing and only 3.3 % with secure and probable financing as shown in Figure 16 below.

*Figure 16: Funding gaps by type and source of financing and years (without shared cost and financing), in thousands US\$*

	2011	2012	2013	2014	2015	Total
<b>Total resource requirement</b>	<b>55,364</b>	<b>48,024</b>	<b>47,224</b>	<b>45,852</b>	<b>46,127</b>	<b>242,590</b>
<b>Total Secure Financing</b>	<b>42,346</b>	<b>42,016</b>	<b>43,358</b>	<b>44,049</b>	<b>45,057</b>	<b>216,825</b>
Government incl. co-financing GAVI vaccine	6,230	4,672	4,639	4,611	6,066	26,219
Sub-national Government	30,591	31,939	33,255	33,915	33,408	163,107
Others (including GAVI NVS)	5,524	5,406	5,464	5,523	5,583	27,499
<b>Funding gap</b>	<b>13,018</b>	<b>6,008</b>	<b>3,866</b>	<b>1,803</b>	<b>1,070</b>	<b>25,765</b>
	23.5%	12.5%	8.2%	3.9%	2.3%	10.6%
<b>Total Secure and Probable Financing</b>	<b>50,777</b>	<b>45,938</b>	<b>45,819</b>	<b>45,852</b>	<b>46,127</b>	<b>234,513</b>
Government incl. co-financing GAVI vaccine	6,230	4,672	4,639	4,611	6,066	26,219
Sub-national Government	30,591	31,939	33,255	33,915	33,408	163,107
Others	5,804	5,586	5,644	5,703	5,763	28,499
<b>Funding gap</b>	<b>4,586</b>	<b>2,087</b>	<b>1,404</b>	<b>0</b>	<b>0</b>	<b>8,077</b>
	8.3%	4.3%	3.0%	0.0%	0.0%	3.3%

*Figure 17: Future Secure Financing structure and Funding Gap (without Shared Health Systems Costs)*

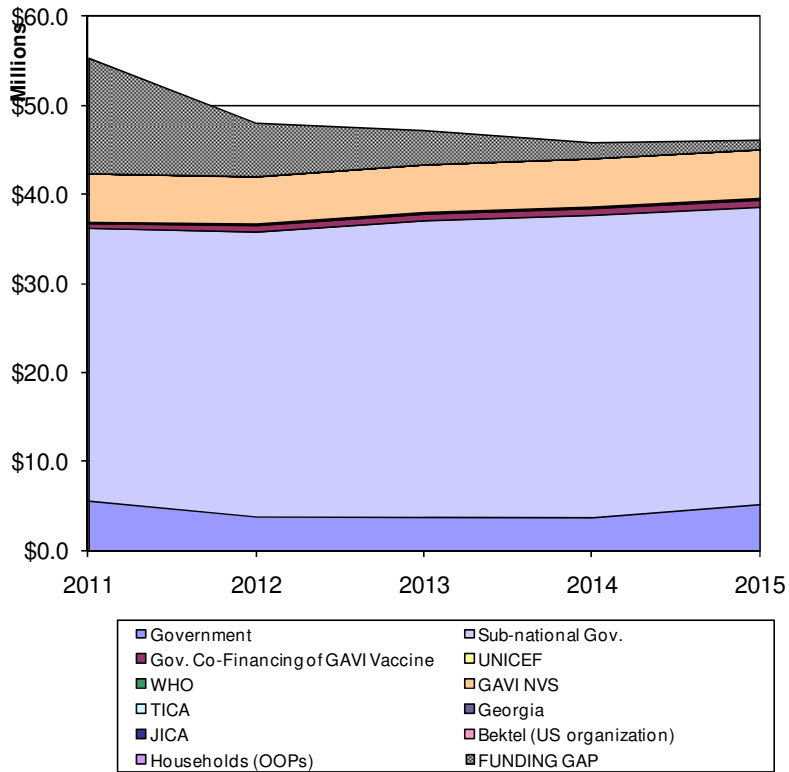
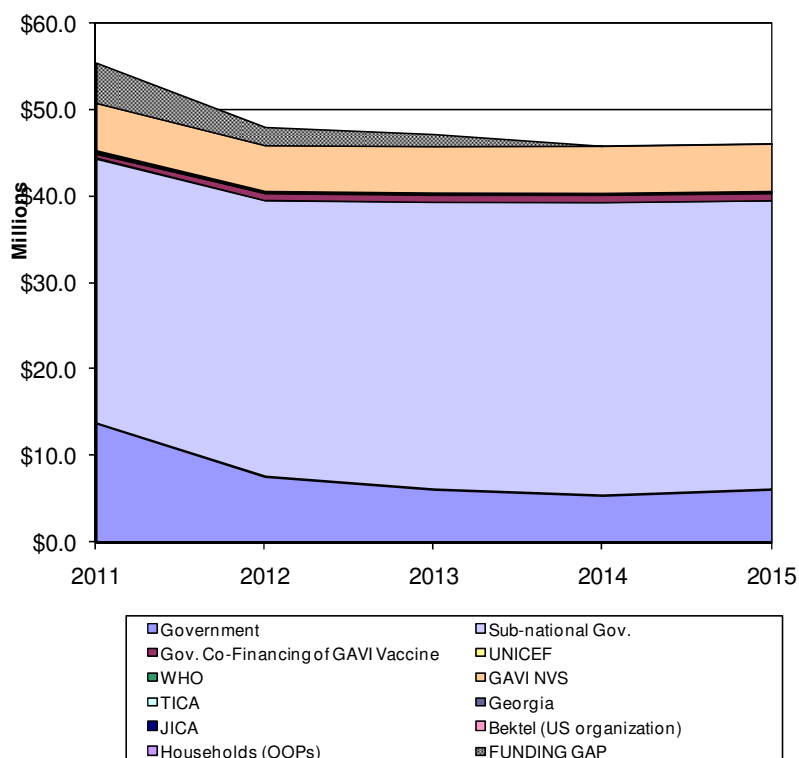


Figure 18: Future Secure + Probable Financing structure and funding gap (Shared Health Systems Costs)



When shared health system costs and financing is considered, the funding gap is lower and constitutes 6.7 % with secure financing and only 2.1 % with secure and probable financing for entire projection period (Figure 29 below).

Figure 29: Funding gaps by type and source of financing and years (including shared cost and financing) in thousand US\$

	2011	2012	2013	2014	2015	Total
<b>Total resource requirement</b>	<b>82,477</b>	<b>75,608</b>	<b>75,359</b>	<b>74,550</b>	<b>75,399</b>	<b>383,392</b>
<b>Total Secured Financing</b>	<b>69,388</b>	<b>69,600</b>	<b>71,493</b>	<b>72,747</b>	<b>74,329</b>	<b>357,557</b>
Government incl. cofinancing GAVI vaccine	33,273	32,255	32,775	33,309	35,338	166,950
Sub-national Government	30,591	31,939	33,255	33,915	33,408	163,107
Others	5,524	5,406	5,464	5,523	5,583	27,499
<b>Funding gap</b>	<b>13,088</b>	<b>6,008</b>	<b>3,866</b>	<b>1,803</b>	<b>1,070</b>	<b>25,835</b>
	15.9%	7.9%	5.1%	2.4%	1.4%	6.7%
<b>Total Secured and Probable Financing</b>	<b>77,820</b>	<b>73,521</b>	<b>73,955</b>	<b>74,550</b>	<b>75,399</b>	<b>375,244</b>
Government incl. cofinancing GAVI vaccine	33,273	32,255	32,775	33,309	35,338	166,950
Sub-national Government	30,591	31,939	33,255	33,915	33,408	163,107
Others	5,804	5,586	5,644	5,703	5,763	28,499
<b>Funding gap</b>	<b>4,657</b>	<b>2,087</b>	<b>1,404</b>	<b>0</b>	<b>0</b>	<b>8,148</b>
	5.6%	2.8%	1.9%	0.0%	0.0%	2.1%

Figure 20 on page 36 describes the financing gaps (with secure financing) in terms of immunization program components for each year.

The analyses of the funding gap structure for the entire projection period (excluding shared costs) with secure financing shows that \$16.7 million of the total \$ 25.765 million gap is constituted by “logistics” (vehicles and equipment for cold chain), the second component is “campaigns” (Polio, MR, Diphtheria) in the amount of \$ 8.1 million and the last category is ‘activities and other recurrent costs’ – about \$1 million.

*Figure 20: Structure of the funding gap (with secure financing and without shared cost and financing in thousand US\$) by immunization system components and years*

<b>Composition of the funding gap</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>Total</b>
Vaccines and injection equipment						
Personnel						
Transport						
Activities and other recurrent costs	280	180	180	180	180	<b>1,000</b>
Logistics (Vehicles, cold chain and other equipment)	8,152	3,742	2,281	1,623	890	<b>16,688</b>
Campaigns	4,586	2,087	1,404	0	0	<b>8,077</b>
<b>Total Funding Gap</b>	<b>13,018</b>	<b>6,008</b>	<b>3,866</b>	<b>1,803</b>	<b>1,070</b>	<b>25,765</b>

The analysis of the financing gap with secure and probable financing (Figure below) shows that if secure and probable funds are available still the funding gap for “campaigns” remains the same (about \$ 8 million for the entire projection period).

*Figure 21: Composition of funding gaps (with secure and probable financing without shared costs in thousand US\$)*

<b>Composition of the funding gap</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>Total</b>
Vaccines and injection equipment						
Personnel						
Transport						
Activities and other recurrent costs						
Logistics (Vehicles, cold chain and other equipment)						
Campaigns	4,586	2,087	1,404	0	0	<b>8,077</b>
<b>Total Funding Gap</b>	<b>4,586</b>	<b>2,087</b>	<b>1,404</b>	<b>0</b>	<b>0</b>	<b>8,077</b>

### **5.5 IMPLICATION OF PROGRAMME STRATEGIES ON FUTURE RESOURCE REQUIREMENTS**

In accordance with the National program strategies three scenarios were generated to estimate resource requirements and their implications on financial sustainability.

*Figure 3: Comparison of scenarios by calendar (vaccines and year of introduction)*

<b>Calendars / vaccines</b>	<b>Scenarios</b>			
	<b>Basic</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Traditional and Underused</b>	+	+	+	+
<b>Rota</b>		2012		2012
<b>PCV</b>			2014	2014

Alternative scenarios imply introduction of new vaccines as shown in

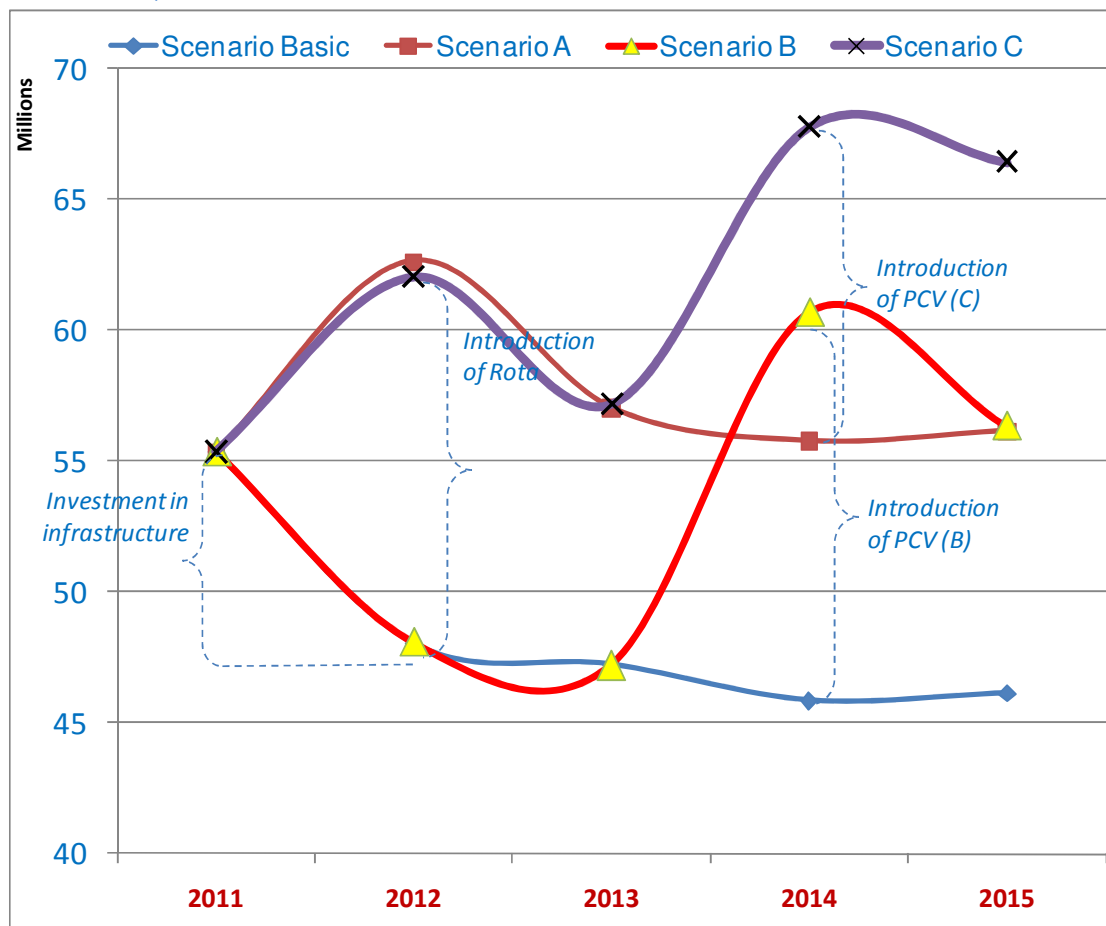
Figure 3 above. Detailed description of vaccination calendars by each scenario is provided in Annexes.

Figure 23: Future resource requirements of the National Immunization Program by scenarios and years excluding shared costs (in thousands US\$)

	2011	2012	2013	2014	2015	Total
<b>Scenario Basic</b>	55,364	48,024	47,224	45,852	46,127	<b>242,590</b>
<b>Scenario A</b>	55,364	62,655	57,058	55,795	56,180	<b>287,052</b>
<b>Scenario B</b>	55,364	48,051	47,226	60,701	56,339	<b>267,680</b>
<b>Scenario C</b>	55,364	62,055	57,178	67,789	66,423	<b>308,810</b>

Scenario A implies an increase in future resource requirements from \$243 to \$287 million as shown in Figure 23 above. One could observe a drop of NIP resource requirements in 2012 in Scenario Basic and B - it is explained by the fact that in all scenarios country intends to heavily invest in storage and transportation infrastructure. The aforementioned decline in 2012 is "overridden" by the introduction of Rota in Scenarios A and C, therefore .

Figure 244: Comparison of total resource requirements across scenarios by years (in millions US\$)



As expected, the major increase in the resource requirements happens in 2014 for scenario B and C as shown in Figure 244 above.

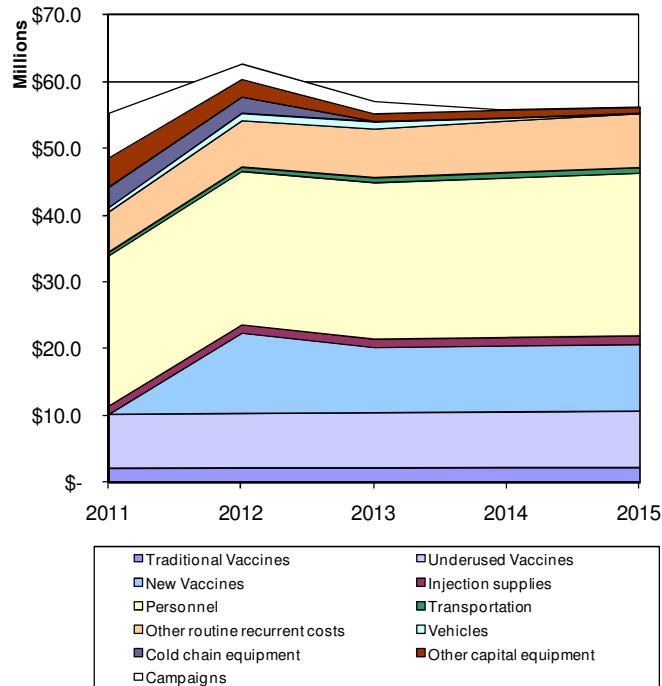
### 5.5.1 Alternative Scenario A

The alternative scenario A assumes that country introduces a new Rota vaccine in 2012.

Figure below illustrates future resource requirements for this scenario.

It is obvious that introduction of new Rota vaccine in 2012 requires more financial recourses for Vaccine, but also it is need to strengthen the existing cold chain and procurement of vehicles. Moreover, additional funds needed for “other program activities” such as social mobilization, trainings and program management.

Figure 25: Projection of Future Resource Requirements (Alternative scenario A)

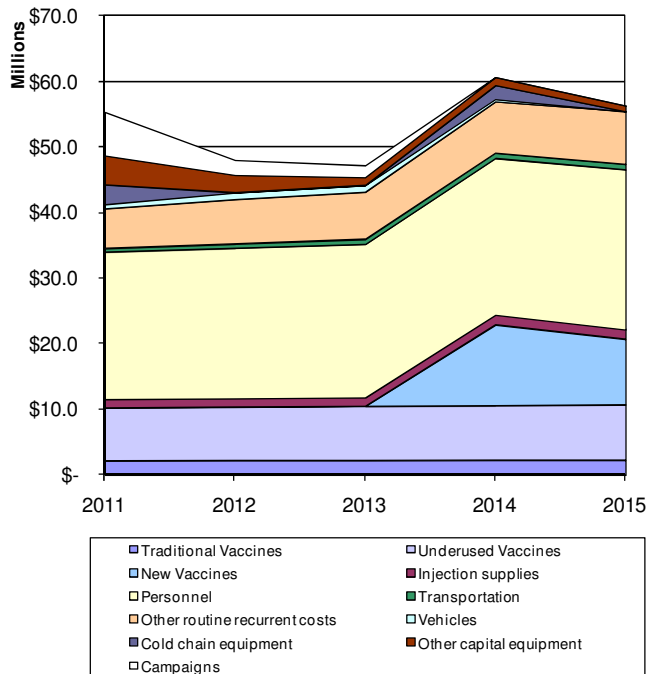


Financial analysis for routine immunization (vaccines and supplies) shows that introduction of Rota vaccine increases the total recourse requirements from \$ 242.6 million to \$ 287.1 million during the whole five year period and with the same level of government financing the funding gap increases from \$8.1 million to \$10.5 million (secured and probable financing).

### 5.5.2 Alternative Scenario B

The alternative scenario B assumes that country introduces PCV vaccine in 2014.

Figure 26: Projection of Future Resource Requirements (Alternative scenario B)

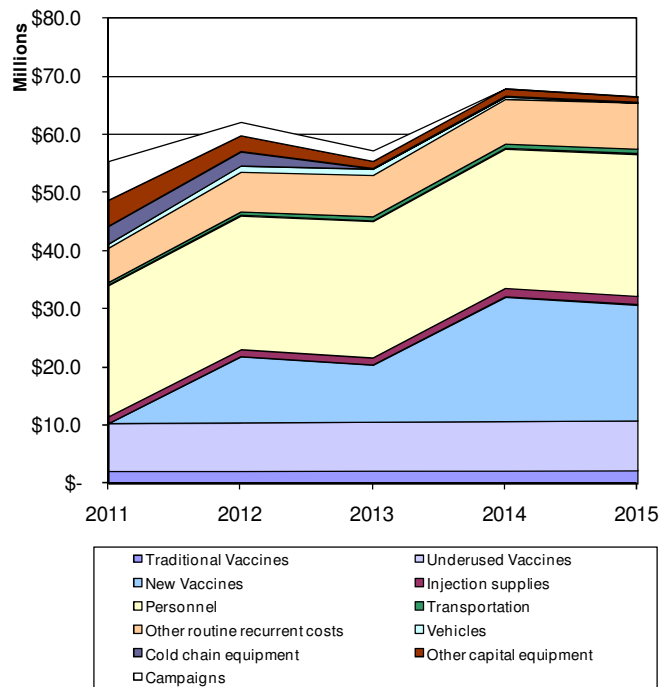


Introduction of new PCV vaccine into vaccine calendar increases the budget for immunization program from \$242.68 million to \$267.7 million during the whole five year period. This increase due to procurement of vaccines and injection supplies, strengthening of cold chain and other program activities occurred while introducing new vaccines, such as trainings, social mobilization and program management. The funding gap increases from \$8.1 million to \$10.2 million considering the same level of government financing including secured and probable funding.

### 5.5.3 Alternative Scenario C

The alternative scenario C assumes that country introduces a new Rota vaccine in 2012 and PCV vaccine in 2014 into vaccine calendar.

Figure 27: Projection of Future Resource Requirements (Alternative scenario C)



In this scenario both new Rota and PCV vaccines are introduced consecutively. If Rota vaccine is introduced in 2012, the equipment for cold chain and vehicles should be purchased in order to deliver them from the national to oblast and rayon levels; and store them. When we introduce the next new vaccine (PCV) in two years latter there is no need to strengthen cold chain and purchase additional vehicles as it has been procured in 2012. The increase of the NIP budget in 2014 will be for programmatic activities, such as trainings, social mobilization and program management.

From the financial point the introduction of third new vaccine will increase the NIP budget from \$242.6 million to \$312.2 million for the whole 5 year period (excluding shared costs) and funding gap will be \$10.5 million considering secure and probable funding.



## 6. Financial sustainability

### 6.1 REVIEW OF MAJOR FINDINGS

#### 6.1.1 Basic scenario

The analysis revealed that for baseline scenario funding gap for vaccines and injection supplies does not exist and the overall financial sustainability of the program is not under the risk. The funding gap exists only for additional required vehicles and equipment for cold chain, and planned additional program activities such as campaigns and KAP survey in case the donors committed funds are not available.

It is important to highlight that the NIP in Uzbekistan costs between the range of \$1.6-\$1.9. If the government fully finances the immunization program (assuming no donor support) the total cost of the program will represent approximately 6-7% of the government health budget and 3-4% of total health expenditures as shown in Figure below.

Figure 28: Sustainability Analysis (basic scenario)

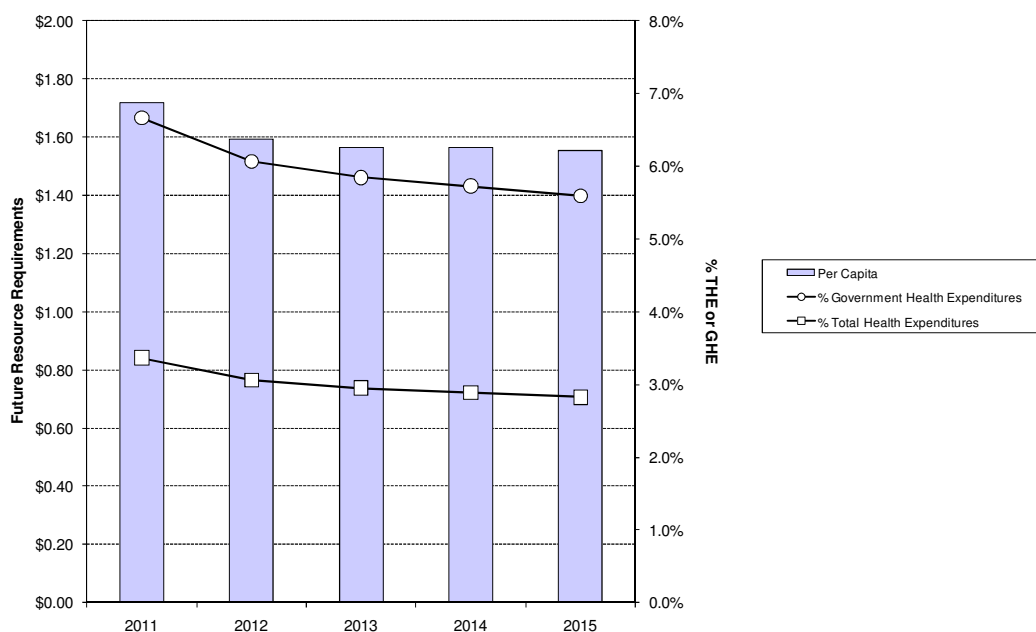


Figure presents some macroeconomic and sustainability indicators regarding the financial requirements of the immunization program. Below presented macroeconomic situation illustrates that no (or very small) threat to the financial sustainability of the NIP.

Figure 29: Macroeconomic and Sustainability indicators without shared costs

Macroeconomic and Sustainability Indicators	2011	2012	2013	2014	2015
<b>% Total Health Expenditures</b>					
Resource Requirements for Immunization					
Routine and Campaigns	3.8%	3.2%	3.1%	2.9%	2.8%
Routine Only	3.4%	3.1%	3.0%	2.9%	2.8%
Funding Gap					
With Secure Funds Only	0.9%	0.4%	0.3%	0.1%	0.1%
With Secure and Probable Funds	0.3%	0.1%	0.1%		0.0%
<b>% Government Health Expenditures</b>					
Resource Requirements for Immunization					
Routine and Campaigns	7.6%	6.4%	6.1%	5.7%	5.6%
Routine Only	6.7%	6.1%	5.8%	5.7%	5.6%
Funding Gap					
With Secure Funds Only	1.8%	0.8%	0.5%	0.2%	0.1%
With Secure and Probable Funds	0.6%	0.3%	0.2%		0.0%
<b>% GDP</b>					
Resource Requirements for Immunization					
Routine and Campaigns	0.1%	0.1%	0.1%	0.1%	0.05%
Routine Only	0.1%	0.1%	0.1%	0.1%	0.05%
<b>Per Capita</b>					
Resource Requirements for Immunization					
Routine and Campaigns	\$1.95	\$1.67	\$1.63	\$1.56	\$1.56
Routine Only	\$1.72	\$1.59	\$1.57	\$1.56	\$1.56

## 6.1.2 Financial sustainability strategy

If only vaccine and injection equipment resource requirements are taken into account, the comparison of these four scenarios can be summarized as presented below in Figure below.

*Figure 30 Summary of the comparison of resource requirements and funding gaps (secure + probable financing without shared costs) between three scenarios (in thousands US\$)*

Scenarios	Resource requirements	Funding gap	
<b>Basic Scenario</b>	242,590	8,077	3.4%
<b>Scenario A</b>	287,052	10,478	3.7%
<b>Scenario B</b>	267,680	10,229	3.9%
<b>Scenario C</b>	312,168	10,478	3.4%

Introduction of two new vaccines would increase the future resource requirements by \$69.6 million. In terms of the funding gap, Figure shows that there is no substantial variation in the proportion of funding gap to future resource requirements remaining within the range of 3.4%-3.9%.

Figure 31: Structure of the funding gaps(total for the projection period) with secure and secure + probable financing (without shared costs) by scenarios and immunization system components

Composition of the funding gap	Basic Scenario		Scenario A		Scenario B		Scenario C	
	\$	%	\$	%	\$	%	\$	%
<b>With Secure Financing</b>								
Vaccines and injection equipment	0	0	39,921	59	8	43	60,346	68
Personnel	0	0	0	0	0	0	0	0

Composition of the funding gap	Basic Scenario		Scenario A		Scenario B		Scenario C	
	\$	%	\$	%	\$	%	\$	%
Transport	0	0	0	0	0	0	0	0
Activities and other recurrent costs	1,000	4	1,100	2	1,100	2	1,200	1
Logistics (Vehicles, cold chain and other equipment)	16,688	65	19,089	28	18,864	38	19,089	2
Campaigns	8,077	31	8,077	12	8,077	16	8,077	9
<b>Total Funding Gap</b>	<b>25,765</b>	<b>100</b>	<b>68,187</b>	<b>100</b>	<b>49,400</b>	<b>100</b>	<b>88,712</b>	<b>0</b>
<b>With Secure + Probable Financing</b>								
Vaccines and injection equipment	0	0	0	0	0	0	0	0
Personnel	0	0	0	0	0	0	0	0
Transport	0	0	0	0	0	0	0	0
Activities and other recurrent costs	0	0	0	0	0	0	0	0
Logistics (Vehicles, cold chain and other equipment)	0	0	2,401	23	2,152	21	2,401	2
Campaigns	8,077	100	8,077	77	8,077	79	8,077	7
<b>Total Funding Gap</b>	<b>8,077</b>	<b>100</b>	<b>10,478</b>	<b>100</b>	<b>10,229</b>	<b>100</b>	<b>10,478</b>	<b>0</b>

The fact that funding gap proportion to the future resource requirement remains almost the same across scenarios may lead to an impression that introduction of new vaccines does not affect financial sustainability. However, comparison of the nature of financial deficit in Figure above gives us interesting insight in the implication of introduction of new vaccines on financial sustainability of the NIP.

If we look at the structure of funding gaps with secure and probable financing we discover that:

All scenarios face lack of financing for campaigns (the same absolute amount)

Scenarios with new vaccine introduction additionally suffer from funding deficit in logistics component of the immunization system (\$2.1-2.4 million).

Does these elements of the funding gaps pose threat on the financial sustainability?

Because of the nature of the funding gap they should be considered as financial barriers to the adoption of alternative scenarios rather than threats to financial sustainability requiring corresponding sustainability strategies:

If necessary financing is not secured the country would not be able to carry out campaigns. That of course would have negative impact on the programmatic targets but financial sustainability of the NIP simply could not be affected

Similarly, even if the country secures enough financial resources to pay for new vaccines and injection supplies (i.e. covering the funding gap for vaccines with probable financing varying between \$21 to \$60 million), introduction of the vaccines would be impossible without upgrading cold chain storage and transportation capacity; moreover, installation of an adequate storage capacity is a prerequisite to mobilization of the financial support from the GAVI.

Therefore, there is no need in financial sustainability strategies per se:

There is no funding gap and threat to financial sustainability if country follows basic scenario  
If country fails to mobilize necessary resources for storage capacity and new vaccines transition to alternative scenarios would not happen

Other way around, the introduction of new vaccines (Alternative Scenarios A, B and C) depends on:

Economic prosperity of the country that allows to fulfill financial commitments of the government

The success of additional advocacy efforts to secure financial support from donors (\$2.1-2.4 million) for the upgrade of storage and transportation capacity

