Government of
AZERBAİJAN

Comprehensive Multi-Year Plan for Immunization Programme 2011-2015

May 2010

CONTENTS

Abbreviations and Acronyms

AEFI Adverse Events Following Immunization
ANC Antenatal Care
APR Annual Progress Reports
BBP Basic Benefits Package
BCG Bacillus Calmette-Guerin (tuberculosis vaccine)
DHIS Department of Health Information and Statistics under MOH
DSSES Department of State Sanitary Epidemiological Service
DTP Diphtheria-Tetanus-Pertussis Vaccine
DT- Diphtheria-Tetanus
FAP Feldsher-Midwife Point
GAVI Global Alliance for Vaccines and Immunization
GoAz Government of Azerbaijan
HEC- Hygiene and Epidemiology Center
Hib - hemofilus influensae type B
HSRP Health Sector Reforms Project
HSCC Health Sector Coordinating Committee
ICCIP Intersectional Coordination Committee on International Projects
IMR Infant Mortality Rate
MCH Maternal and Child Health
MOH Ministry of Health
MOF Ministry of Finance
NGO Non Governmental Organization
NIP National Immunization Program
PHC Primary Health Care
PHCSP Primary Health Care Strengthening Project
PHRC Public Health and Reforms Centre
PIU MOH/WB Health Sector Reforms Project Implementation Unit
RCHE Republic Center of Hygiene and Epidemiology
SMMIA State Mandatory Medical Insurance Agency
SSC State Statistical Committee
SVA Village Doctor Ambulatory
SUB Village Hospital
UNICEF United Nations Children's Fund
USAID United States Agency for International Development
WB World Bank
WG Working Group
WHO World Health Organization

1. BACKGROUND

1.1.GENERAL INFORMATION

Figure 1- Map of Republic of Azerbaijan

Geographical situation

Azerbaijan is situated in the eastern part of the South Caucasus on the Caspian Sea shore; in 44o and 52o of east longitude, 38o and 42o of north latitude. The distance from capital to North Pole is 5550 km, to equator is 4440 km. Territory of Azerbaijan Republic is 86.6 thsd. square km^2, from that 12% of area forests, 1.6% water, 54.9% agricultural lands, of which 31.1% pastures, 31.5.9% other lands. State borders in the south with Iran 765 km and Turkey in the south 15 km , Russia in the north 390 km, Georgia in the north- west 480 km, Armenia in the west 1007 km. The length of widest area of the Azerbaijan section of Caspian sea is 456 km. Baku is the capital of Azerbaijan. Azerbaijan is divided into 78 districts, 11 cities, and one autonomous republic of Nakhchivan subdivided into 8 districts and a city[1].

Population composition and demographic indicators

In 2009, the population of Azerbaijan was 8,730,300 where 51.8% urban and 48.2% rural [1]. The ethnic composition of Azerbaijan as registered in the 1991 census reveals (recent one) that the majority of the population is ethnic Azerbaijani (90,6 percent), followed by Lezguins-2.2%, Russian-1.8%, Armenians-1.5%, Talyshs-1%, Avars-0.6%, Turks-0.5%,

[1] State Statistical Committee of Azerbaijan Republic, 2007, www.azstat.org

Tatars-0.4%, Ukrainians-0.4%, Sakhurs-0.2%, Georgians-0.2%, Kurds-0.2%, Tats-0.13%, Jews-0.1%, Udins-0.05%. Other ethnic groups make up 0,12 percent of the population. The overwhelming majority of Azerbaijani are affiliated with the Muslim religion.

Table 1. Etnic composition of the population
(According to the 1999's census enumeration)

	Thousand people	%
Whole population	**7953.4**	**100.0**
Including		
Azerbaijanis	7205.5	90.6
Lezgins	178.0	2.2
Russian	141.7	1.8
Armenians	120.7	1.5
Talyshs	76.8	1.0
Avars	50.9	0.6
Turks	43.4	0.5
Tats	10.9	0.13
Tatars	30.0	0.4
Ukrainians	29.0	0.4
Sakhurs	15.9	0.2
Georgians	14.9	0.2
Kurds	13.1	0.2
Jews	8.9	0.1
Udins	4.1	0.05
Other nations	9.6	0.12

Table 2 shows the ratio of births, deaths and natural increase of population. The data show that for last 5 years natural increase of population has been growing from 8 to 11.7. Births cohort has been increased by 2 500 approximately.

Table 2. Total ratio of birth, death and natural increase

Years	Person			Per 1000 population		
	Births	Deaths	Natural increase	Births	Deaths	Natural increase
1999	117539	46295	71244	14.9	5.9	9
2000	116994	46701	70293	14.8	5.9	8.9
2001	110356	45284	65072	13.8	5.7	8.1
2002	110715	46522	64193	13.8	5.8	8
2003	113467	49001	64466	14	6	8
2004	131609	49568	82041	16.1	6.1	10.0
2005	141901	51962	89939	17.2	6.3	10.9
2006	148946	52248	96698	17.8	6.2	11.6
2007	151963	53655	98308	18	6.3	11.7
2008	152086	52710	99376	17.8	6.2	11.6

In 2008 the age-composition of the population comprises the following age-classes: people of 0-14 years of age make up 23,2% of the population, 15-64 years-69,9%, 65 and above-for 6.9 %. The average age of the population is 31 years.

Figure 2- Structure of population of Azerbaijan Republic by age groups in 2008

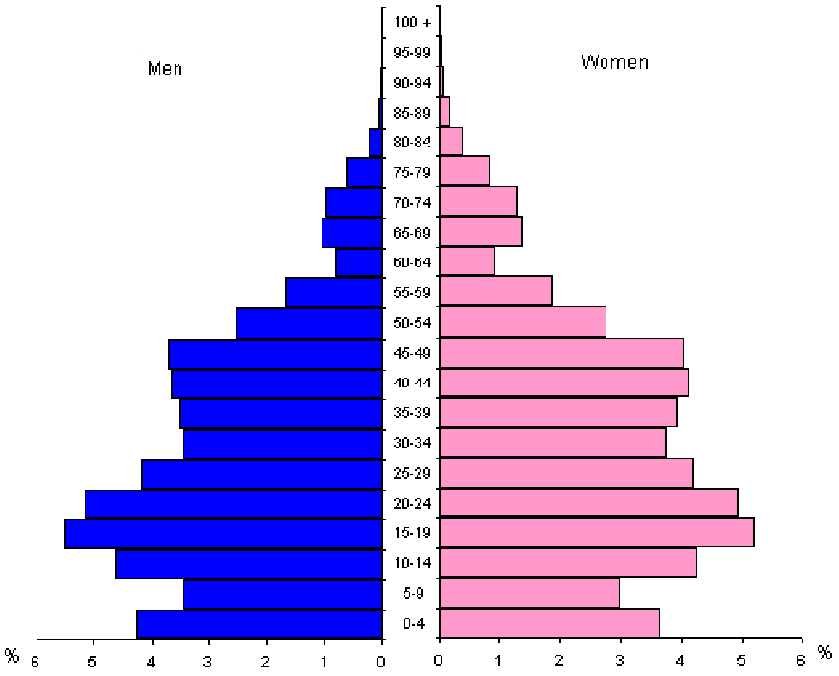


Table 3. Age structure of population

Age groups	1999[1)]	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
0-4	8.9	8.2	7.6	7.1	6.8	6.8	6.9	7.5	7.9	7.9
5-9	11.6	11.2	10.7	10.1	9.3	8.5	7.8	6.7	6.4	6.4
10-14	11.3	11.4	11.5	11.5	11.3	11.1	10.8	9.6	8.9	8.9
15-19	9.5	9.8	10.1	10.4	10.6	10.9	11.0	10.9	10.7	10.7
20-24	8.2	8.3	8.5	8.6	8.9	9.1	9.4	9.9	10.1	10.1
25-29	7.9	7.8	7.5	7.6	7.6	7.8	7.9	8.2	8.4	8.4
30-34	8.6	8.4	8.2	8.0	7.9	7.5	7.4	7.2	7.2	7.2
35-39	8.8	8.8	8.6	8.5	8.3	8.2	8.0	7.6	7.4	7.4
40-44	6.7	7.1	7.7	8.0	8.3	8.3	8.3	8.0	7.8	7.8
45-49	4.3	4.6	4.9	5.3	5.7	6.3	6.7	7.5	7.8	7.8
50-54	2.5	2.9	3.3	3.6	3.9	4.0	4.3	5.0	5.3	5.3
55-59	2.7	2.3	1.9	1.8	1.9	2.3	2.6	3.3	3.5	3.5
60-64	3.5	3.5	3.5	3.2	2.9	2.4	2.0	1.6	1.7	1.7
65-69	2.5	2.6	2.6	2.8	2.9	3.0	3.0	2.7	2.4	2.4

70 and over	3.0	3.1	3.4	3.5	3.7	3.8	3.9	4.3	4.5	4.5
at working age [2)]	56.8	59.7	60.7	61.9	63.0	64.2	65.2	66.9	67.5	68.3

[1)] By population census.

[2)] in 1999 - male at age 16-60, female at age 16-55; in 2000 - male at age 15-60, female at age 15-55; in 2001-2006 male at age 15-61, female at age 15-56;

The country is known for the relatively low and stable birth rates. However, due to the military attack of Armenians in 1992-1994, which caused deaths of many people, figure increased during that period. After a ceasefire regime was introduced between Azerbaijan and Armenia the death rates decreased significantly down to 6 per 1,000 people last year. The death rates are reflected in the indicators of the average life expectancy. In 2008 the average life expectancy totaled 72.4 years, with men living in average for 69.7 years, women-for 75.1 years.

Figure 3- Population dynamics

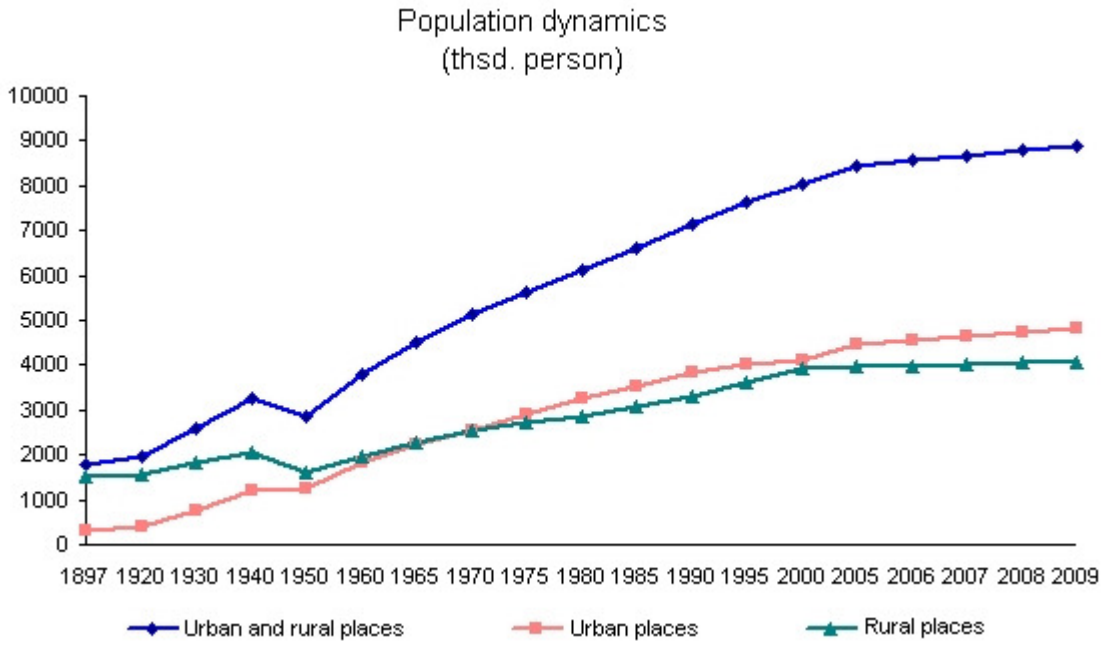


Table 4. Main Indicators

Indicator	Value	Information source
Population, 2009	8,730,300	State Statistical Committee
Annual Birth Cohort, 2008	152,086	State Statistical Committee
Surviving Infants*, 2008	150,371	State Statistical Committee
Infant mortality rate, 2008	11.4/ 1000	State Statistical Committee
Under five mortality rate, 2006	50/ 1000	AZDHS
Maternal mortality rate, 2008	26.3/ 1000	State Statistical Committee

1.2. POLITICAL AND SOCIO-ECONOMIC TRENDS

Political situation

Azerbaijan received independency from the Soviet Union on August 30, 1991. The establishment of political system structure has been completed by adoption of new constitution through universal referendum on November 12, 1995. The Constitution of the Azerbaijan is the supreme law of the country. The Legislative Authority of the Azerbaijan Republic is realized by the National Assembly of the Republic of Azerbaijan (Milli Mejlis). Milli Mejlis is a one chamber Parliament that consists of 125 deputies elected on the basis of a majority and proportional electoral system and general, equal, direct elections for 5 years term. The recent election to the Milli Mejlis was conducted in 2005. The system of government administration of Azerbaijan is based on the principles of separation of powers: legislative, executive and judicial. The head of state is the President. The executive power is vested in the President. The President is elected for a 5 year term by direct elections. The supreme body of the executive power of the President is the Cabinet of Ministers, headed by the Prime Minister. The judicial power is vested in independent courts of Azerbaijan: Constitutional Court, Supreme Court and High Economic Court. Since 1992 Azerbaijan Republic has joined to United Nations (UN) and Organization on Security and Cooperation in Europe (OSCE) and since 2001 to European Council. For time being Azerbaijan is a member/collaborating with 32 International and regional organizations: CIS (September 1993), Organization of Islamic Conference (1992), European Union (Agreement on partnership and cooperation, 1996), OEC (Organization of Economic Cooperation, 1992), Organization of Black Sea Economic Cooperation (1992), European Bank of Reconstruction and Development (1992), World Bank (1992), UNESCO, UNICEF, World Health Organization, International Federation of Red Cross and Red Crescent (IFRCRC), Interpol, the International Olympic Committee, etc.

Conceptual basis of Foreign policy of Azerbaijan aims to preserve and strengthen national independence and territorial integrate, develop equal mutually beneficiary relations, establish friendly links with all countries of the world. The Republic has signed a number

of international agreements and treaties joined such important conventions as Convention on Children Rights, Convention on the Liquidation of All Forms of Discrimination against Women.

Conflict affected areas

Azerbaijan continues to be plagued by an unresolved 15-year-old conflict with Armenia over the Nagorno-Karabakh region of Azerbaijan. A ceasefire accord was signed between Armenia and Azerbaijan in 1994, following two years of armed conflict. As a result of the conflict, there are 1 million refugees and internally displaced persons (IDPs) in Azerbaijan, of whom about 650 000 are IDPs from Nagorno-Karabakh and the nearby territories[1]. The better part of diplomatic effort of Azerbaijan is focused on the search for ways to regulate the Armenian - Azerbaijan conflict. Four resolutions (822, 853, 874, 884) were adopted by the UN Security Council demanding release and return of all refugees to the places of their settlements on the territories of Azerbaijan that are still under Armenian occupation.

Economy

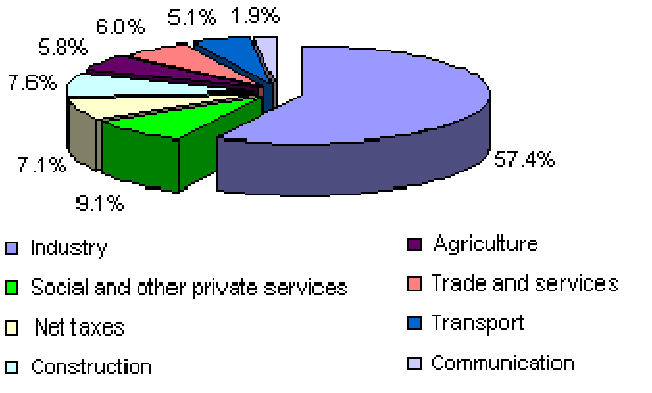
The history of the socio-economic development of Azerbaijan since its independence can be divided into two distinct periods. The first period (1991-1994) was characterised by disastrous economic collapse, hyperinflation, impoverishment of population and a virtually uncontrollable economy, whilst the second period (1995-2000) saw macroeconomic stabilisation, restructuring and revival of economy, and improvement of people's living conditions, this radical turn being achieved through a policy of fundamental economic reform. The collapse of the Soviet Union had a major impact on economic and social indicators in Azerbaijan. Intense political, military and financial turmoil in the early years of independence alongside the inefficient and often crumbling remains of the Soviet-era state systems prevented the implementation of reforms in most areas and made any prospect of immediate economic prosperity almost impossible[1]. Efforts were made to enhance interaction with major international economic and financial institutions, whose technical assistance was essential for the design and implementation, in 1995-1999, of three successful government programs aimed at strengthening macroeconomic stability, restructuring and reviving the economy and improving the living standards of the people. Privatisation, land reform and policies designed to encourage the development of private businesses facilitated the growth of the non-public sector share in GDP to 68% in 2000, as compared to 29% in 1994; this share increased to 44% (against 2.1% in 1994) in industry, 98% (57%, respectively) in agriculture, 52% (39%) in investment, 85.6% (14.3%) in passenger transport, 98% (83%) in trade, 20% in education, 38% in health, and 79% in utilities. n important achievement has been the increase in foreign investment flows over the last eight years. Whereas in 1993 Azerbaijan's economy received no foreign capital at all, during 1994-2000 the country attracted $5.5 billion of direct investment, including $3.3 billion (60%) allocated to the oil sector and $2.2 billion for infrastructure development in other industries. In parallel with foreign capital, investments from local sources have been growing steadily during recent years. Thus, in 1995-2000, total investment in industrial and servicing facilities and residential buildings from the state budget, domestic companies and individuals exceeded 9.7 trillion manat ($2.3 billion), which included 52% allocated for

industries, 29% for residential buildings and utilities, 9% for transport and communications, and 10% for trade and cultural facilities, services, hotels, etc. As results of these interventions, through 1995 to 2008 Gross Domestic Product (GDP) per capita increased 16 times (282.1 manat in 1995 to 4 439.9 manat in 2008).

Table 5. Gross Domestic Product

YEARS	MLN. MANAT	MLN. US $	PER CAPITA	
			MANAT	US $
1995	2133.8	2415.2	282.1	319.3
1996	2732.6	3180.8	357.5	416.1
1997	3158.3	3960.7	409.2	513.2
1998	3440.6	4446.4	441.5	570.6
1999	3775.1	4583.7	480.1	582.9
2000	4718.1	5272.8	595.1	665.1
2001	5315.6	5707.7	665.2	714.3
2002	6062.5	6235.9	752.9	774.4
2003	7146.5	7276	880.8	896.8
2004	8530.2	8680.4	1042	1060.3
2005	12522.5	13238.7	1513.9	1600.4
2006	18746.2	20983	2241.1	2508.5
2007	25228.1	29399.9	2980.9	3473.9
2008	38005.7	46258.2	4439.9	5403.9

Figure 4 -GPD by sector



The government budget in 2010 is AZN 12,6 bln., which represents a nominal increase by 40% as compared with 2008. According to latest estimates, 3.6% of total government

expenditure was allocated to health in 2006, and the share of health in total government budget expenditure increased to 4.3% in 2010 (Ministry of Finance). The table 6 shows main socio-economic indicators 7,4

Table 6. Main socio-economic indicators [1)] (million manat)

	2000	2005	2006	2007	2008	2009
Number of population (end of the year), thsd. person	8 114.3	8 553.0	8 665.9	8 779.8	8 896.9	8 997.4
Gross domestic product	4 718.1	12 522.5	18 746.2	28 360.5	40 137.2	34 578.7
Industrial products	3 639.5	9 290.5	15 509.4	22 441.4	29 697.6	22 203.7
Investments	967.8	5 769.9	6 234.5	7 471.2	9 944.2	7 365.0
Agricultural products	1 072.6	1 752.1	1 991.5	2 793.0	3 333.2	3 466.7
Freight turnover in transport sector, mln.ton-km	15 948	26 534	43 294	78 007	88 607	97 704
Retail trade turnover	2 119.9	4 622.2	5 760.3	7 591.4	10 876.0	11 828.5
Paid services for population	477.2	960.7	1 400.7	2 348.3	3 393.0	4 088.2
Volume of foreign trade, mln. US dollars	2 917.3	8 558.4	11 638.9	11 771.7	54 925.5	20 818.2
of which:						
export	1 745.2	4 347.2	6 372.2	6 058.2	4 7756.0	14 698.5
import	1 172.1	4 211.2	5 266.7	5 713.5	7 169.5	6 119.7
Revenue of state budget	714.6	2 055.2	3 868.8	6 006.6	10 762.7	10 325.9
Expenditure of state budget	764	2 140.7	3 790.1	6 086.2	10 774.2	10 567.9
Income of population	4 047.3	8 063.6	10 198.5	14 558.2	20 735.4	22 396.1
Income per capita, manat	508.9	962.2	1 201.3	1 692.2	2 378.3	2 537.2
Average nominal monthly wage, manat	44.3	123.6	149	215.8	274.4	298
Number of registered unemployed, person	43 739	56 343	53 862	50 651	44 481	41 100
Consumer goods price and tariff indices of services:						
in comparison with the previous year, %	101.8	109.6	108.3	116.7	120.8	101.5
Wholesale index of industrial production (average annual, in comparison with to the previous year, per cent)	127.4	118.9	117.7	108	111.6	80.8

[1)] **Information in value is given in current prices.**

1.3. HEALTH CARE SYSTEM

Organizational structure (administrative management)

Despite economic challenges and scarcity of resources in transition period, the government has managed to preserve the health system network. The current structure of the health system is still characterized by structures and financing mechanisms inherited from the Soviet era not now suitable to meet the current and emerging disease burden and resulting for instance in fragmentation, inefficient resource allocation and inherent inequalities. Also, according to modern standards, the system is overly oriented towards inpatient care which causes inefficiencies. Most primary health institutions are staffed and still provide certain basic services. However, there has been little change in the distribution and service mix of these institutions and they continue to deliver only a narrow scope of services. Hence, the health system is in need of restructuring with a reorientation of public health interventions and service delivery in line with the current and emerging disease burden. Development of the healthcare sector and protection of public health have been identified by the President of Azerbaijan as one of the priorities for the country's long-term development. On December 27th 2007, the President approved the establishment of a "State Mandatory Medical Insurance Agency" under the Cabinet of Ministers and issued a decree on approval of a "Concept for Reforming Health Financing System and Introduction of Mandatory Medical Insurance in the Republic of Azerbaijan" on January 10th 2008. The latter represents a major commitment to system reform as it involves the implementation of the purchaser/provider split, a reduction of fragmentation in financing and the piloting of new provider payment schemes – all of which are likely to become important drivers of change. The gradual introduction of output-based payment schemes starting from pilot districts (per capita payments for primary care and case based payments for inpatient care) represents a critical step towards successfully implementing a redefined package of state guaranteed services as outlined in the Concept for Health Care Reform.

Financial management

The government budget for health in 2010 is AZN 604 million as compared to AZN 331 million (2008) and AZN 278 million (2007). This represents a nominal increase of 104% from 2008 to 2010 (Ministry of Finance) while the real increase is lower due to inflation. According to latest WHO estimates, 3.6% of total government expenditure was allocated to health in 2006, which corresponds to 1.13% of GDP. The share of health in total government budget expenditure increased to 4.3% in 2010 (Ministry of Finance). Yet,

despite recent increases in health budget, health system performance experience problems because of both financial and inherent system constraints[2]

Health care reform process or structural changes

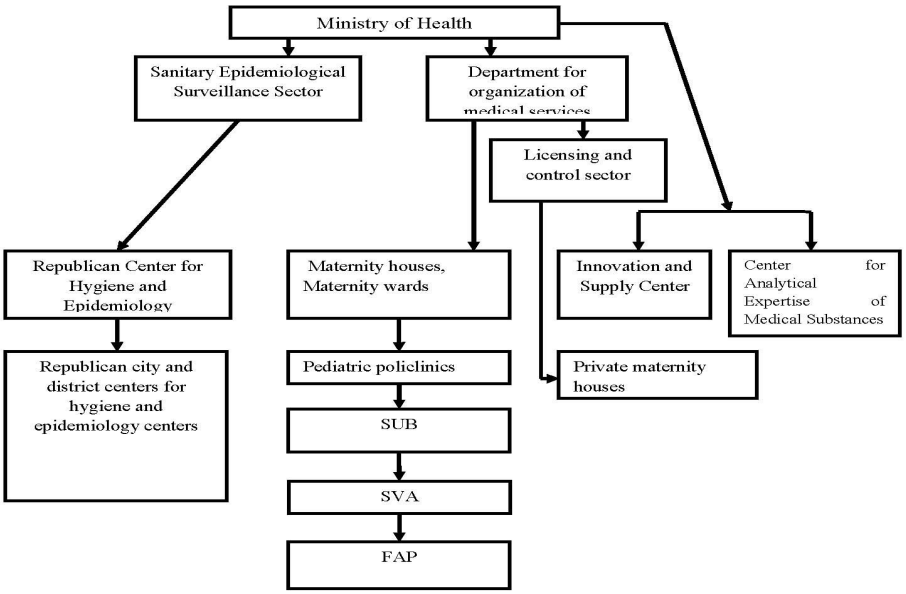
The Ministry of Health formulated its health strategy in a Concept for Health Care Reform in 2006. In early 2008, an updated and expanded version of this Reform Concept has been finalized by the Ministry of Health based on a stakeholder consultation process. The Concept for Health Care Reform outlines directions for strengthening primary health care involving the development of adequate skills, organizational forms and new structures. A new approach to primary care service delivery will be developed which broadens the scope of services provided at the primary level while making best use of existing capacities and structures of ambulatory care, including polyclinics. By this, access to a broad range of preventive and curative services of adequate quality shall be ensured also during the transitional phase. Other parts of the Concept outline reform directions for specific parts of the health system which will enable a shift towards strengthened PHC provision, including reforms of physical and human resources new incentives through health financing reforms. In terms of implementation, the Ministry of Health, with support from the government and international organizations (World Bank, USAID, WHO, UNICEF), launched the Second Health Sector Reform Project (2006-2012) under World Bank loan agreement in 2006. The Project gives an opportunity to pilot new principles in organizing and financing health services in five districts. While certain reform measures are immediately planned and implemented at the national level, a substantial share of the reforms outlined in the overall health care reform concept and the health financing concept will be initially piloted in these five districts. The gradual introduction of output-based payment schemes will be also starting from pilot districts (per capita payments for primary care and case based payments for inpatient care) represents a critical step towards successfully implementing a redefined package of state guaranteed services as outlined in the Concept for Health Care Reform.

1.3.IMMUNIZATION SERVICES WITHIN THE HEALTH CARE SYSTEM

Figure 5– Organizational structure of Immunization Program

[2] WHO country information - http://www.who.int/nha/country/aze.xls

Organigram of National Immunization Program



National immunization programme within national health policy

The National Immunation program is being carried out on under Law of the Republic of Azerbaijan, dated April 14, 2000, on "Immunological Prevention of communicable Diseases" had set the legal and economic basis of the state policy, implemented in the field of immunological prevention of communicable diseases with the purpose of protection of the health of population of the republic and ensuring the sanitary and epidemiological well-being.

According to the law, that citizens of the country have the right to:

- obtain full and objective information on the necessity of immunization, consequences of refusal and possible adverse effects following immunizations,

choose medical facility regardless of the type of ownership,

- have medical check-up and examination in state and municipal medical facilities before immunization and get immunization based on epidemiological indication, etc..

The National Immunization Program ("Program on Immunoprophylaxis of communicable diseases") of the Republic of Azerbaijan, approved by Cabinet of Ministers in 2006 and has been covering 2006-2010. This program supported by the President and the Government of the country, is aimed at limited the spread over of communicable diseases, reducing disablement and mortality caused by preventable infection. The main principles of the state policy in the field of immunization are as follows:

- necessity to conduct vaccination for all citizens of the country;
- free immunization and vaccination activities in state and municipal medical facilities;
- implementation of targeted state and regional programs;
- use of efficient medical immune-biological medications for immunization activities;
- training of medical staff in the field of immune-prevention;
- social protection of population in case of adverse events following immunization;
- improvement of statistic monitoring systems;
- creating conditions for humanitarian organizations to participate in immunization programs;
- development of the international cooperation.

The national immunization program is one of the 9 different state programs currently implemented by the Ministry of Health, jointly with other state and international organizations. These are following programs:

- State Program on Chronic Renal Failure
- State Program of Diabetes Mellitus
- State Program on Congenital Blood Diseases of Thalasemia and Hemophilia
- State Program on Protection of Mother and Child Health.
- State Program on Oncological Diseases and Provision of Main Oncology Medications.
- State Program on Immunoprophylaxis of Communicable Diseases.
- State Program on Blood Component Donation and Blood Service Development.
- State Program on E-Health Card
- State Program on Medical Check up/Records Card

Having contributing to the protection of health and ensuring the stable sanitary and epidemiological well-being of population, the state immunization service, in the course of implementation of the main State Program on Immunoprophylaxis of Communicable Diseases, is involved in to cooperation and partly in to implementation of the Program on Protection of Mother and Child Health. The main goals and objectives of the program on protection of mother and child health are as follows:

- Improvement of supply of medications to obstetric clinics;
- Improvement of obstetrical and gynecological and neonatal services;

- Improvement of material and technical basis and supply with medical and diagnostic equipment of pediatric and obstetric-gynecological facilities;
- Organization of national and regional perinatal centers;
- Organization of reproductive health service and ensuring safe motherhood.

One of the items of the objectives for organization of protection of reproductive health of population and ensuring safe motherhood is the immunization status of children under five, including management of vaccine preventable diseases. Also all active maternity houses and wards conduct primary Hepatitis B vaccination within first 12 hours after delivery, followed by BSJ and OVP during following 4-7 days.

Another state program under the implementation, that also cooperates with immunization service is the "E-Health Card" Program, approved by the Cabinet of Ministers in 2006. The E-database, established under the Ministry of Health of the Republic of Azerbaijan, contains and accumulates all health status data of the entire population over the course of life. The database and the e-card store the following data:

- personal identification data (place of birth, living, time of sickness, medications used, medical insurance, etc.);
- medical facility;
- immune/vacination status;
- other information related to medical legislation

Since 2008 e-health card for children under 6 of age is implemented by Ministry of Health. Upon completion of implementation of all components, envisaged under the program, whole information on the immunological status of a child since birth will be available for all medical facilities of the country. Starting 2010 the Ministry of Health moved to implementation of e-health card for children above age of 6 and adults.

All three programs, approved by the Cabinet of Minister: on protection of mother and child health, immunological prevention of communicable diseases and "E-Health Card", have a strategic value, with long-term, rational and self-complementary development. With the achievements already made, they allow coordinated surveillance of diseases in the field of view of RPI, improving the system for surveillance and notification on cases, target group planning for obtaining vaccines, ensuring uninterrupted supply of quality vaccines, as well as sustainable financing.

Financing of National Immunization Program

According to Program on Immunoprophylaxis of Communicable Diseases, a planned amount of money is allocated every year based on the national immunization schedule for ensuring the sustainable financing. The amount of allocation as approved by the Cabinet of Ministers is as follows:

Table 7. Funds allocated for Immunization Program (direct line; in thousands AZN)

2006	2007	2008	2009	2010
530	1100	1160	1180	1200

WHO, GAVI, UNICEF and Vishnevskaya-Rostropovich Foundation provided a significant support in conducting the immunization campaigns, supplying Hepatitis B and MMR vaccines. In 2006 GAVI and Vishnevskaya-Rostropovich had supplied 60% and in 2007 40% of total required vaccines. Starting 2008 immunization program expenses is covered by Government budget. Budget resources allocated to immunization activities for last year had covered 100%, with 80% of cost of vaccines.

Along with anti-epidemic activities on preventable infections, the state budget plan on annual basis the procurement of vaccines required against rabies, anthrax, tularemia, plague, etc. and for the purpose of implementation of programs on elimination of measles, rubella and control of congenital rubella infection, maintaining the cold chain, safe injection, organization of trainings for the staff of immunological service and high coverage of population.

Coordination of Immunization Program

Coordination between partners is conducted by Inter-sectional Coordination Committee on International Projects (HSCC alternate). Meetings of the ICCIP are conducted not less that once every three months. Along with immunization related issues, the Committee deals with determining and coordinating other major strategic directions of international projects in the field of healthcare reforms, their review, approval and harmonization with Healthcare Development Concept of Azerbaijan, approved National Strategy and the State Program, as well as developing their implementation plans.

Immunization Program Management

The National Immunization Program had centralized management by the Ministry of Health, which units and coordinates all resources and activities. The Ministry of Health controls the implementation of population immunization program till 2010.

Being a part of the Cabinet of Ministers, the Ministry of Health is an executive body with functions on development and implementation of the state policy in health sector, including organization of medical prophylaxis, prevention of communicable diseases, medical aid and medical rehabilitation, pharmaceutical activities, quality, effectiveness and safety of medication, including medical-biological substances, sanitary-epidemiological well-being, medical and sanitary supply for the staff involved in activities in specially dangerous environment, medical and biological assessment of impact of different physical and chemical substances on to the health of a human. The Ministry of Health is guided by the Constitution of the Republic of Azerbaijan, the Law on Health of Population, on Sanitary and Epidemiological Well-Being of Population, on Immunoprophylaxis of Infectious Diseases and other legislation in the course of own activities. MoH does the organization and methodological work, state control over the implementation of the legal regulations during immunization activities on the territory of the country, as well as issues licenses for vaccination in private sector (maternity houses).The Republican Epidemiology and Hygiene Center supervises the organization and implementation of immunization activities through the net of city and district centers. It tracks the collection of statistical data on dissemination of communicable disease at all levels, determination of target groups and

procurement planning for vaccines. It coordinates supply of vaccines to medical facilities and points based on their plans-requests, ensures the stock of vaccines on site, sufficient for 3 months in cold storages and writes request for the procurement of vaccines. Procurement of medications, including medical and biological medications, is conducted by the Center for Innovations and Supply, which is also responsible for its storage and distribution till final destination users. A dedicated staff member is responsible for all vaccines. Vaccines of famous international producers, required for expanded immunization program, are purchased not through UNICEF, but through local tenders conducting by Government among companies. Since 2008 the "WHO prequalification" is one of major requirements included into ToR for the local procurement. The Center for Analytical Expertise of Medications is a national regulatory authority controls the retail market and is responsible for the quality of imported medications. According to the regulation on the Center, it is responsible for the quality of immuno-biological medication. Starting March 2008 all medicines imported to country has to be officially registered by Center for Analytical Expertise of Medications. Importation of unregistered medicines, including vaccine is prohibited by law of Republic of Azerbaijan. At the operational level, vaccines, delivered to District Epidemiology and Hygiene Centers is distributed among medical facilities - child policlinics, SUB, FAP, based on plans -requests. These facilities undertake the planed vaccination of children under 6 based on the national plan. This activity of medical facility is regulated by relevant legislation, regulations and methodological guidelines, with additional license required for private sector. According to current stage of health care sector reforms the present phc facilities at rural areas are replaced by doctor points and medical points. Each doctor points covers about 2000 population, and supervises up to 5 medical points. Medical points provide mainly basic health care services through outreach.

In order to improve management of immunization program at national and sub- national level the Ministry of Health in collaboration with WHO has adopted & officially endorsed for local use Immunization in Practices guidelines. Since 2006 Immunization in Practices trainings has been conducted for national and middle level management, including staff of Republican Center for Hygiene and Epidemiology, Innovation and Supply Center, Center of Analytical Expertise of Medicines as well district pediatricians and epidemiologist.

Immunization services at operational level

The maternity house, child policlinic, doctor points and medical points are in charge of vaccination related services. Registration at pediatric policlinic or other facilities takes place right after dismissal from maternity house. Immediately upon registration a new born child gets ambulatory card and e-health card. Ambulatory card and e-health card tools are primary tools for registration of vaccination status. Twice a year home visits are conducted to identify target group. An area pediatrician and a patronage nurse inform parents in advance on the necessity of the vaccination. Each facility responsible for providing vaccination services should have separate vaccination room (for permanent/fixed vaccination posts). The objective of the vaccination room/vaccination teams in the out-

patient medical facility are: to achieve the target level of vaccination (at least 95% of target group), to reduce of morbidity and mortality caused by VPD by introducing new means of organizing prevention vaccinations, to raise awareness among population, as well as to monitor adverse effect following immunization and their prevention.
Today, the national immunization schedule on EPI includes following vaccines and dates:
Table 9.National Immunization Schedule

Vaccine	**Age of a child for the vaccination moment**
Hepatitis B	12 hours after birth, 2 and 4 months
BCG	4-7 days after birth
Polio	4-7 after birth, 2, 3, 4 and 18 months
DTP	2, 3, 4 and 18 months
MMR	12 months and 6 years
DT	6 year

Due to country decision on introduction of Hib content vaccine the following changes on immunization schedule is expected on earliest future, starting 2011.

Vaccine	**Age of a child for the vaccination moment**
Hepatitis B	12 hours after birth
Hib-HepB-DTP	2,3,4 months
BCG	4-7 days after birth
Polio	4-7 after birth, 2, 3, 4 and 18 months
DTP	18 months
MMR	12 months and 6 years
DT	6 year

Also country considers the possibilities to introduce IPV and pneumococcal vaccine in 2012 and 2014 accordingly.

The management of the medical facility approve regulations on setting up and conducting vaccination activities, determines roles and responsibilities of the staff, in charge of vaccination activities, receiving, storing and use of medical immuno-biological medication, use of cold chain, collection, temporary storage and utilization of medical wastes after immunization, as well as approves regulations on mobile vaccination team.
The set of standard equipment for vaccination room includes:

- a refrigerator with marked shelves for storing vaccines;
- a separate shelf for anti-shock therapy medications (0.1% solution of adrenaline or nor-adrenaline), 5% solution of efedrine; glucocorticosteroid – prednizolone, dexamethazone or hydrocortizone, 1% olustion of tavegil, 2.5% solution of suprastine,

2.4% solution of euphiline, cardiac glycosides (strophantine, corglicone), 0.9% solution of sodium chlorine;

- ammonia spirit, eathyl alcohol, the mixture of ether with alcohol;
- single use syringes with additional stock of needles, thermometer, sphygmomanometer, electric suction, and sterile forceps (dressing forceps);
- tanks for disinfections solutions and storage of used instruments;
- sterilizer boxes with sterile materials;
- individual marked tables by types of vaccines;
- a diaper table and/or medical couch;
- a table for storage of documentation and records;
- basin to wash hands;
- sterilization lamp.
- instruction on use of all materials, used during immunization (in a separate folder);
- instructive-methodological documentation on immunization;
- a register on records and use of vaccines and other medications;
- a register of vaccinations made (by type of vaccines);
- a register for registration of temperature regime of the refrigerator;
- a register for registration of work of sterilization lamp;
- a register for general clean-up activities.

In cities and district centers the supply of vaccination rooms and performance of medical personnel is satisfactory. However it has to be mentioned that there are certain shortcomings in this field. Among others, one can mentionthe existence of out-dated medical facilities with poor cold chain equipment (refrigerators) not sufficient for fixed vaccination points, that have not been rehabilitated for quite a long time and are under the authority of local self-governance bodies. Also in some cases there are shortage or expired anti-shock therapy medication and lack of qualified personnel at mid level.

2. DISEASE TRENDS AND VACCINATION COVERAGE

2.1 MORBIDITY AND MORTALITY TRENDS FOR VACCINE PREVENTABLE DISEASES

Table 10. Morbidity trends

Year / Diseases	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Measles	1338	1972	825	1278	264	0	5	0
Rubella	1137	1910	5796	1025	137	4	0	0
Parotitis	5158	779	508	303	162	129	82	232
Diphtheria	0	0	0	0	0	4	3	2
Pertussis	3	1	2	2	60	12	5	5
Tetanus	1	0	2	0	2	2	6	1
Poliomyelitis	0	0	0	0	0	0	0	0
Rotavirus								116

As
it is seen from the table, the decrease of incidence of diseases is observed for all VPD, but pertussis.

No polio case is registered in the country since 1996. Effective of 1997, to keep the situation stable, the MECACR and MECACAR Plus started to be implemented by WHO in countries considered being endemic for polio (including Azerbaijan). In 2002 Azerbaijan had received a certificate on polio free status as part of WHO European Region.
According to the Plan for 2005-2010 on elimination of measles and rubella, the Ministry of Health had conducted, with support from Vishnevskaya-Rostropovich Foundation, UNICED and USAID, a National Immunization Campaign against measles and rubella on February - March and as follow up on October-December 2006. As a result of these interventions, measles and rubella morbidity rates have been dramatically decreased from 5 796 cases of rubella and 1 278 cases of measles in 2004-2005 up to 0 registered cases n 2009.

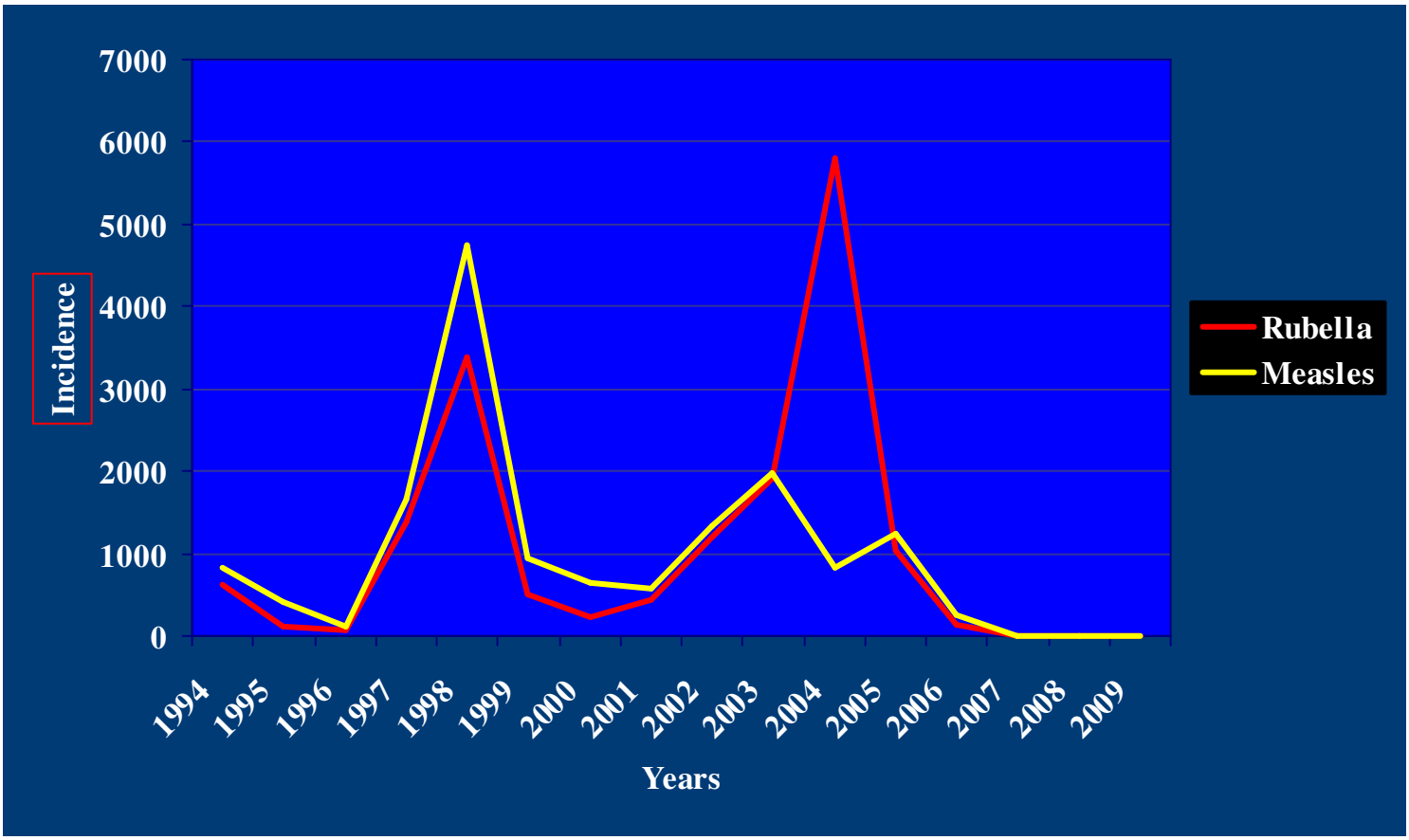


Table 11. Mortality caused by preventable diseases

Years / Diseases	2005	2006	2007	2008	2009
Measles	1	-	-	-	-
Rubella	-	-	-	-	-
Mumps	-	-	-	-	-
Diphtheria	-	-	-	-	1
Pertussis	-	-	-	-	-
Tetanus	1	-	1	-	-
Poliomyelitis	-	-	-	-	-

In 2006, UNICEF, USAID and SSC had jointly conducted a DHS survey. The number of mortality cases caused by infections diseases and registered diseases was verified during the survey.

2.2 VACCINATION SCHEDULE

List of preventable diseases included in national immunization schedule consists of:
- Tuberculosis
- Poliomyelitis
- Diphtheria
- Tetanus
- Pertussis
- Measles
- Rubella
- Mumps
- Hepatitis B
- Hib

Table 12. National Immunization Schedule

Age	Vaccines
Within 12 hours after birth	Hepatitis B
4-7 day	BCG, OPV
2 months	DTP, OPV, Hepatitis B, Hib- starting from 2011
3 months	DTP, OPV, Hib- starting from 2011
4 months	DTP, OPV, Hepatitis B, Hib- starting from 2011
12 months	MMR, vitamin A
18 months	DTP, OPV, vitamin A
6 year	MMR, DT, vitamin A

The National Immunization Schedule had been prepared and approved by the Ministry of Health based on WHO recommendation of 1994. Due to introduction of Hib contained vaccine related changes in the national immunization schedule have been planned for 2011. It is considered to add 5 component DTP+Hepatit B+Hib vaccine. According to updated calendar, children get 4 doses of Hep B, one dose of BCG, 4 doses of OPV until 1 year, 3 doses of Hib and AGDT, 1 dose of MMR at 1 year, 1 dose of OPV and DTP until 2 years, 1 dose of ADT and MMR until 6 years. Vitamin A also considered as part of vaccination + calendar for children at 12 and 18 months and 6 years. Next changes in vaccination schedule are considered for 2012 and 2014- by adding IPV (inactivated polio vaccine) and pneumococcal vaccine accordingly.

2.3 VACCINATION COVERAGE

Table13 . Vaccine coverage on national level

Years	2003	2004	2005	2006	2007	2008	2009
BCG	98,9%	98,6%	98,0%	98,0%	97,8%	98,2%	98,1%
OPV-3	98,4%	97,1%	96,5%	97,1%	97,0%	97,5%	95,7%
Hep.B-1	99,1%	98,8%	98,2%	96,8%	98,9%	98,5%	99,0%
Hep.B-3	97,8%	97,0%	95,5%	93,1%	97,2%	97,2%	96,7%
DTP-1	98,1%	97,6%	97,4%	97,0%	97,1%	97,3%	95,9%
DTP-3	97,4%	96,2%	95,9%	95,2%	95,0%	95,0%	95,9%
DTP-4	97,6%	97,6%	94,1%	94,9%	94,6%	95,0%	93,5%
Measles -1d	98,0%	98,4%	98,2%	95,9%	97,4%	97,3%	98,3%
Measles -2d	96,8%	97,8%	97,6%	94,8%	97,4%	97,0%	96,3%

As it is reflected in the table 13 the vaccination coverage at national level meets WHO recommended rates for target diseases. However it's important to note that the coverage data provided by statistic department of the Ministry of Health based on administrative reports received from district level and accuracy of vaccination coverage is subject for concern.. The main constrain still is the discrepancy between birth cohorts provided by the statistic department of the Ministry of Health and State Statistic Committee. Thus in 2007, the number of newborns according for SSC was 149000 whereas, the Health Information and Statistics Department of the Ministry of Health points 129000 newborns. A significant deviation of demographic information provided by the State Statistical Committee and the Statistics of the Ministry of Health suggested that the official immunization target group used for measuring and monitoring coverage undercount the actual number of newborns. This problem has been addressed by implementation relevant strategies, including e-health card project, immunization in practices supportive supervision as well as indicated as major component of GAVI HSS. As result of the primary interventions in 2009 the discrepancy between the State Statistic Committee data and Ministry of Health statistic department data decreased in half. In fact according to State Statistic Committee data in 2009 birth cohort is 151 034 and surviving infant is 149 312. For the same year the Ministry of Health statistic department data on birth cohort is 141 891 and surviving infants is 138 075. Vaccination coverage re calculated based on denominators provided by State Statistic Committee remains about 90% mainly for the first doses of antigens and below WHO recommended rates for the 3rd and latest doses (completed vaccination). It specially affects DTP vaccination coverage.

Table 14. Vaccine coverage on sub-national

	2003	2004	2005	2006	2007	2008	2009
DTP-3							
<50%	-	-	-	-	-	-	-
50-79%	-	-	2	-	1	-	-
80-89%	1	6	6	-	2	1	3
>90%	63	58	56	61	60	63	61
MMR-1							
<50%	-	-	-	-	-	-	-
50-79%	2	1	3	-	-	-	-
80-89%	5	5	12	6	2	3	-
>90%	57	58	49	55	61	61	64
MMR-2							
<50%	-	-	-	-	-	-	-
50-79%	1	1	1	-	-	-	-
80-89%	2	-	-	1	2	-	1
>90%	61	63	63	60	61	64	63
Hep.B-3							
<50%	-	-	-	-	-	-	-
50-79%	-	-	2	3	-	-	-
80-89%	-	8	2	4	1	-	2
>90%	64	56	60	54	62	-	62
OPV-3							
<50%	-	-	-	-	-	-	-
50-79%	-	-	-	-	1	-	-
80-89%	1	-	-	-	2	1	1
>90%	63	64	61	61	60	63	63

IMMUNIZATION PROGRAMME CHARACTERISTICS (ACHIEVEMENTS, PROBLEMS AND OBJECTIIVES)

3.1 SERVICE DELIVERY

Currently the activities against preventable diseases are undertaken based on the National Immunization Program and the National Strategy adopted by the Government and the Ministry of Health:

- "The Program on Immunoprophylaxis of Communicable Diseases" approved by Cabinet of Ministers of the Republic of Azerbaijan;
- The National Action Plan for 2008-2010 on maintenance the Polio Free Status on the territory of the Republic of Azerbaijan; previous one covered 2006-2008
- National strategy on elimination of measles and rubella;
- National Plan on pandemic H1N1 vaccine deployment

In addition to that the guideline on prevention of diphtheria was prepared based on WHO recommendation with special focus to true and false counter-indications to vaccination based and distributed locally to health manager and big health facilities and national & sub national levels.

These documents provide comprehensive approaches in management of targeted vaccine preventable diseases, focusing mainly on routine immunization and supplementary immunization issues. Based on the national plan on maintenance the Polio Free Status on the territory of the Republic of Azerbaijan in 2007 the supplementary immunization activities were conducted among children of 2-3 years old in areas with low coverage of polio vaccine. One of key components of national strategy on elimination measles and rubella was mass vaccination against measles and rubella, conducted during 2006 first among population of 7-23 years (7-29 in Baku), than 23-35 and finally women above 35. During 2009- 2010 Azerbaijan has been conducting vaccination of target groups on pandemic H1N1 by WHO donated vaccine. Total 98 468 persons have been covered during first phase. Vaccination of target group will continued till end of 2010 with focus on pregnant women, people with underline medical conditions and school children. Since Azerbaijan does not provide public vaccination on seasonal influenza and national immunization schedule covers only children till age of 7 the organization of immunization among target groups required additional efforts on arrangement of vaccination points at adult policlinics, training of vaccinators, social mobilization etc.

The routine vaccination according to the national immunization schedule is conducted by trained personnel of pediatric policlinic, maternal houses, SUBs, doctor points and medical points. At cities and district centers vaccination provided at fixed vaccination rooms of child policlinics, at rural area at fixed vaccination points as well as by outreach services. The main challenges are migration of population, false contraindications as well as fixed

vaccination days due to use of multi doses vials. According to verbal information from pediatricians and epidemiologists, children getting 1 dose of DTP get 2-3 doses by DT vaccine. This mostly happened due to refusals as a result of lack of awareness of parents on AEFI caused by DTP. DT and MMR vaccinations are usually conducted in certain/fixed days due to use of multi dose vials. In 2010 this issue has been addressed through procurement of mono doses MMR vaccine for whole target group. In medical points covered remote areas with difficult access (winter pastures, among cattle breeders, etc.) vaccination is conducted on a certain day by outreach teams. Missed opportunities may appear in facilities with no refrigerator. Thus, during immunization on a fixed day parents may not be able to bring their children for vaccination due to different reasons as there is a time constrain. It is planned to include 5 component DTP+HepatitisB+Hib in to the calendar in 2011. Vaccines is applied on 2, 3 and 4th months. Before applying new vaccine, epidemiologists and pediatricians all over the country will receive trainings for them to act as trainer at their own locations to train other medical staff involved in to vaccination. Also country considers possibilities to switch to combined IPV-OPV vaccination on polio in 2012 and introduce pneumococcal vaccine by GAVI support in 2014. These changes also require additional trainings of national and sub national staff up to filed level.

3.2 ADVOCACY AND COMMUNICATION

Advocacy campaigns are conducted by HECs in each city and districts, as well as by pediatric service. Also since 2007 the Public Health and Reform Center established by the Ministry of Health has been leading social mobilization and public awareness activities at national level.

During the National Immunization Campaign against measles and rubella, the advocacy activities were supported by WHO, UNICEF, USAID and VRF. For mass vaccination activities against measles and rubella in March-February 2006, the Cabinet of Minister had instructed the State TV and Radio Broadcast Company, AzerTAC and local executive power to undertake all necessary preparation activities. Thus, in addition to statements through mass media, the representatives of executive power, together with health officials, conduct meetings with public and religions figures and provided information on the significance and the value of these activities. Starting from 2007 Azerbaijan has joined to European Immunization Week (EIW) Initiative, conducted by WHO EURO member states in April of every year. Over that week all advocacy activities (mass media, parents, medical staff, etc.) were conducted on the account of resources allocated by the state and stakeholders. First EIW in Azerbaijan was launched by First Lady and had very big success in the mobilization of resource and public attention. This initiative is considered by Government as one of the best opportunities to achieve high vaccination coverage through sustainable public awareness campaigns on immunization. Along with current achievements there are significant gabs in the area of social mobilization. The recent experience with pandemic vaccination among target groups showed unmet demand of

population on capable and reliable immunization web resource at national level. The second major problem is absence of comprehensive long term collaboration strategy with mass media. Despite the established relations between mass media and Press department of the Ministry of Health there are still unused opportunities from point of timeliness and efficiency. In terms of further perspective there is an Intersectional Coordination Committee on International Projects which used also as communication tool for partners working on immunization related components. The representatives of the Ministry of Health, Center of Public of Health and Reforms, Republican Epidemiology and Hygiene Center, Center for Analytical Expertise of Medicines, WHO Country Office, Country office of UNICEF and Vishnevskaya-Rostropovich Foundation, USAID and Ministry of Finance and Ministry of Economic Development are the members of this Committee. This mechanism has not been used enough during 2009 and requires further efforts to became more functional in 2010.

3.3 SURVEILLANCE

One of the deputy Ministers of Health is the Chief State Sanitary Doctor in charge of Sanitary Surveillance Sector which is responsible for implementation of orders by the Ministry of Health to Republican Center of Hygiene and Epidemiology (RCHE). Similar kind of supervision is conducted by Republic center over district epidemiology and hygiene centers. RHEC is immediately notified in case of detection of any infection disease. The surveillance of vaccine-preventable diseases is conducted in accordance with WHO accepted standards. The official statistic report #1 on communicable and parasitic diseases is submitted to RCHE every month. This monthly report is developed on the basis of urgent notifications (form # 058) and aggregate data collected for selected infection diseases. In 2009 the diarrheal caused by rotavirus infection and meningitis caused by Hib and pneumococcal infections has been added as separate lines in the form #1.

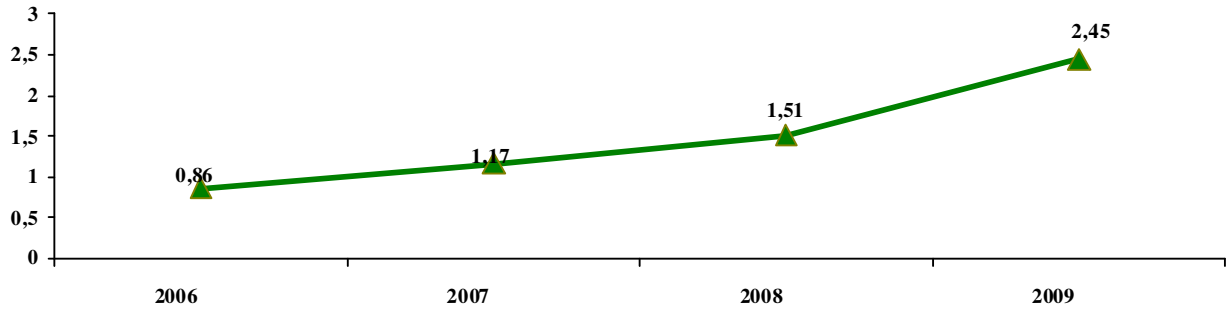
In March 2007 MoH- WHO- UNICEF-UNFPA- USAID-VRF- joint team conducted rapid assessment of surveillance system. Based on rapid assessment results & recommendations and for the purpose of improvement of the surveillance system the Ministry of Health, is initiating the development of Electronic Integrated Disease Surveillance System (EIDSS) together with DTRA and in collaboration with WHO and VRF. Upon MoH decision and support from DTRA, WHO and VRF the software and related e-forms is developed for infections included in state statistic form#1. During 2008-2009 the Ministry of Health in framework of surveillance component of health sector reform project and in close collaboration with WHO & DTRA has prepared national guideline on surveillance of infectious diseases, which includes basic standards to detection, investigation and reporting through unified approaches to case definitions, case classifications, laboratory confirmation. The guideline covers all vaccine preventable diseases, as well as other case based reportable diseases. Based on guideline e-form on case investigation and reporting have been elaborated for Electronic Integrated Diseases Surveillance System. Since April 2010 EIDSS is fully functioning. Specialists, who are responsible for epidemiological investigations and reporting, were trained on this software and computers were installed in

all cities and districts. The data base ensures immediate transfer of information on any infections disease from any district to national level and its epidemiological analysis and monitoring the dynamics of diseases at national level.

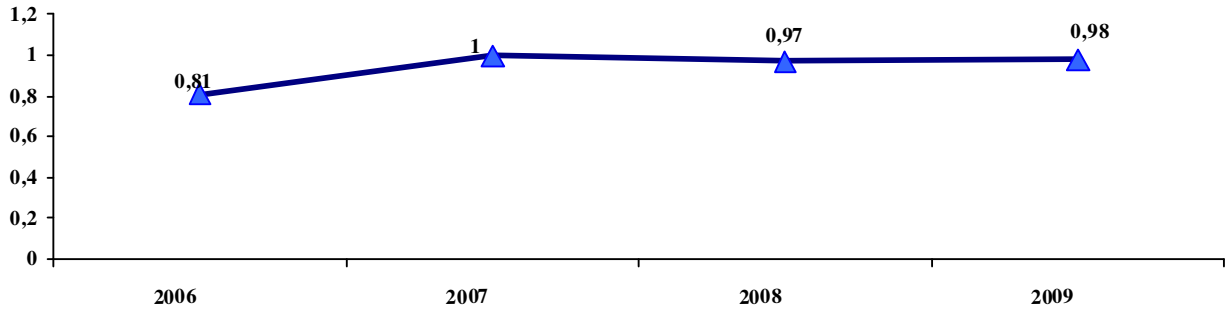
Beside this within the laboratory component of agreement on biological treat reduction signed between DTRA and Government of Azerbaijan the MOH has elaborated design of national reference laboratory with both virology and bacteriology sections. According to plan it will be fully equipped laboratory with biosafety level 2 as minimum. SOP, laboratory guidelines and trainings for staff with be provided by support of DTRA, CDC, WHO and WB "Health Sector Reform Project".

Beside the activities directed to strengthening overall surveillance system the Ministry of Health of Azerbaijan has been implementing active surveillance and special strategies for targeted diseases, as polio, measles, rubella. Since 2002 Azerbaijan performed AFP and environmental surveillance as part of activities directed on polio free status maintenance. There are two main indicator evaluation polio surveillance status at country level- these are non polio AFP rate and AFP surveillance index. Since 2007 Azerbaijan meets WHO recommended targets for both indicators. During last years owing to effective coordination and supportive supervision visits to districts non polio AFP rate has been increased from 0,86 in 2006 to 2.45 in 2009.

Non polio AFP rate in dynamic 2006-2009 (under 15 years old/100,000 population- target >1.0)



AFP surveillance index in dynamic 2006-2009 period (target >0.8)



Since end of 2008 Azerbaijan has moved to case based surveillance on measles and rubella. In 2009 the surveillance index for measles was 0,2 and for rubella 0,075. The main challenges on measles rubella surveillance has been identified and discussed during special directed round table events. Among of barriesrs is poor reporting from districts due to low level of acceptance & impelementation of dry drop methods in some districts; limited information and involving of specialist from allergic clinics etc/

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

National Regulatory Authority (or its functions)

The statutory basis of the national regulatory system is included in the following laws, rules and orders:

- The Law on Sanitary-epidemiological welfare (November 1992).
- The Law on Immunoprophylaxis (April 2000)
- Multi-year Immunization program for 2007-2011 approved by the Cabinet of Ministers in July 2006.
- The Law on Pharmaceutical Drugs (February 2007),
- The Rules on Registration of Pharmaceutical Drugs (approved by the Cabinet of Ministers in July 2007)
- Set of orders on AEFI surveillance

The functions of national regulatory body on immunization program are distributed mainlyamong the Center for Analytical Expertise of Medical Substances, which is the main regulatory body, the Republican Epidemiology and Hygiene Center and partly the Center for Innovations and Supply. The licensing and control unit of the NRA part of the MoH should license medical practice. Also there is a national commission for the review of AEFI cases, under MoH.

The Center of Analytical Expertise of Medical Substances was established under the Ministry of Health in June 2007. Its activity is based on Regulations approved by the Ministry of Health. According to the Regulation Center of Analytical Expertise of Medical Substances, the center is responsible for the safety and quality of all imported and used medications, their substances, medical-biological substances etc. This Center has its own website http://pharma.az/ , which gives explanations on the rules for registration, lists the document required, and delineate the application review mechanism. The provision on confidentiality is covered in the documents of the Center of Analytical Expertise.

Based on personal inquiries and requests of legal entities, it conducts laboratory examination of production and medications; provides organizational and methodic support to pharmacy service in terms of laboratory and analytical control; collects information on medications received by medical facilities and pharmacies.

It organizes the expertise and control over the used and imported medications and medical sunstances (medical substances, medicinal herbs, immuno-biological substances,

disinfection materials, laboratory chemicals, medical cosmetics, optics, etc.). Since 2008 center not limited by registration only and performs laboratory testing of vaccines& biologicals, pharmaco-vigilance in internal market, including AEFI monitoring through the well established certification, post-registration control, recalling the series of vaccines and disposal procedures.

The **Republican Epidemiology and Hygiene Center** was established in 1988 with 73 subordinate district and city center, located all-over the country in administrative units, and epidemiology and hygiene center on marine transport. The Republic Epidemiology and Hygiene Center in the course of implementation of activities aimed at ensuring the sanitary-epidemiological well-being of the population of the REpublic of Azerbaijan, fulfils following responsibilities:

- conducting state sanitary surveillance and epidemiological investigation;
- development and approval accordingly of sanitary and hygiene norms and regulations;
- registration, statistics and social-hygienic monitoring of environmental impact on to the health of population;
- development of programs aimed and sanitary-epidemiological health of population, we well as their implementation and supervision;
- strengthening and improvement of health of population, prevention and elimination of infectious and parasitic diseases and food poisoning, organization and conducting sanitary-hygienic and anti-epidemic activities in case of emergencies;
- setting up norms and regulations on environmental hazardous substances;
- reviewing sanitary-epidemiological situation, demographic processes, quality of environment, physical development of and morbidity among population and development of programs and activities on improvement of health of population and other social activities;
- promoting healthy life style, improvement of sanitary education of population and dissemination of sanitary knowledge.

Center for Innovations and Supply was established based on the order of the Ministry of Health in November 2005. The Center functions on the basis of relevant regulations. According to regulation, based on requests from state medical facilities, approved by the Ministry of Health, the Center compiles annual plan for procurement of medical equipment, inventory, medications and vaccines in accordance with the Law on State Procurement and Regulations, approved by the President of the Republic of Azerbaijan in February 2003. Based on this legislation, the Center invites private individuals and legal entities with relevant capacity, to participate in open tender, financed on account of the budget resources. Participants should consider all taxes and deductibles in their bids. Bid are given scores. Assessment criteria are: best price, high quality and timely delivery according to the schedule. Participants should submit following documents:

- written application for participation;
- bank check to confirm the payment of participation fee;
- information on financial status for last year, from the bank;

- documents confirming legal status – copy of registration certificate, charter and license, country of registration and bank details.
- technical information on capacity of bidder;
- Compliance and origin certificates;
- information from tax authorities on no tax debts in the Republic of Azerbaijan;

Bidders provide bids and bank guarantees in the amount of 2% of the tender price in sealed envelops to the Center.1 original bidding documents and 1 cope shall be submitted in closed double envelopes to the commission. Tender is conducted in accordance with the Law on State Procurement. Winner purchases relevant items from famous producers and imports them to the country, including medical equipment, medications, vaccines, etc.

After customs procedures, all medical equipment and inventory, including medications and vaccines, are stores in warehouses of the Center for future distribution to final destination based on requests. Vaccines are delivered by special refrigerators truck vehicles to district epidemiology and hygiene centers based on delivery schedule and distribution list, developed by RCHE and approved by the MoH .

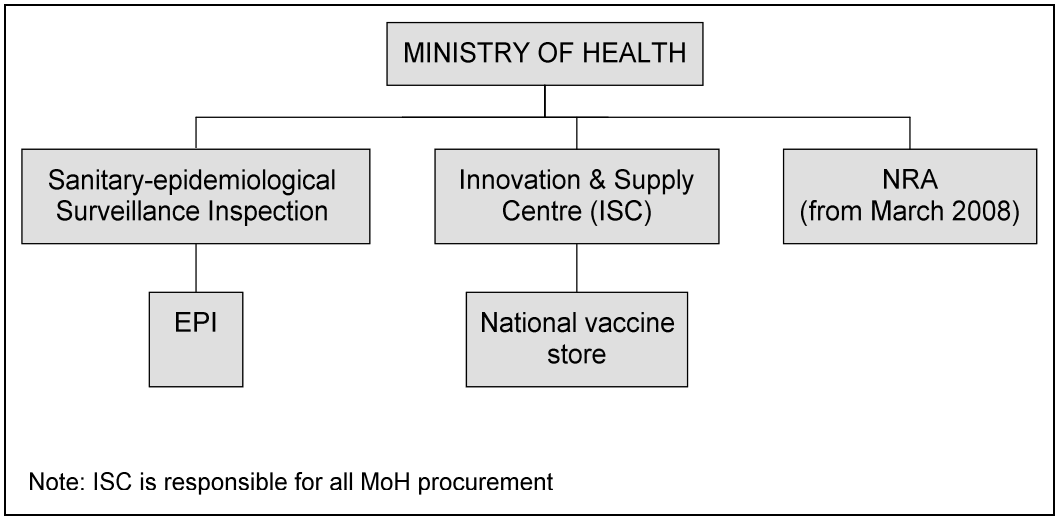
Last NRA assessment was conducted by WHO on October, 2007 and provide detailed recommendations for each agency. The main recommendations done during assessment has been implemented, including establishment of lot release procedures, performing parmaco-vigilance at internal market, formalize the structure on the AEFI surveillance system with involving of RCHE and Center for Analytical Expertise of Medicine.

Cold Chain

The Cold Chain system included: 1) specially trained team, trained to maintain cooling equipment, right storage and transportation of vaccines; 2) cooling equipment for storage and transportation of vaccines at required temperature; 3) mechanism for ensuring temperature environment at all stages of storage and transportation of vaccines.

In Azerbaijan, the point of origin in the functioning system of organization and practical activities, ensuring optimal storage temperature environment and similar environment for transportation of immuno-biological substances at all stage of transportation till district epidemiology and hygiene center is the cold storage of the Innovations and Supply Center.

Figure 7- Organigram of national vaccine store



The Center was established in 2007 and still in the process of development. The store is under the direct control of the Innovation and Supply Centre (ISC) which has recently been made responsible for all Ministry of Health procurement. When EPI wishes to order vaccines or other supplies it must apply directly to the Ministry, who then approve the request and pass it down to the ISC for implementation. The ISC obtains its funds directly from the MoH budget. In the case of immunization supplies, the allocated funds are used for the purchase of vaccines, vitamin A, syringes and safety boxes. Immunization services at Rayon level and below are funded independently of the Ministry of Health.

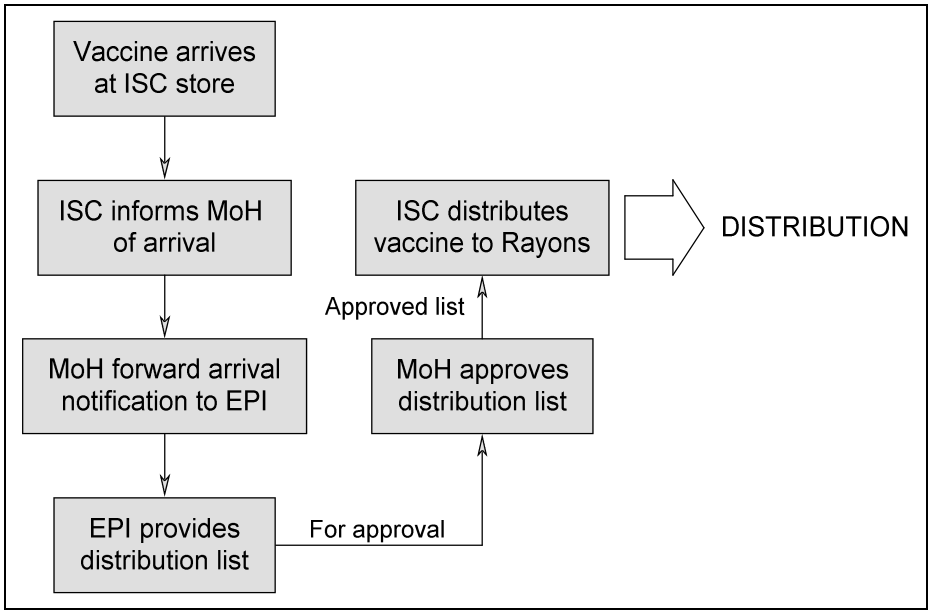
The Innovation and Supply Center is located in Hojasan (Baku City). Store building at the Hojasan site is approximately 17.6 x 12.1 metres with an internal height of 4.3 metres. In the I&SC complex, a garage building is adapted to be the cold store building. It contains one large cold room gross volume 120 000 litres, eastablished in 2008 and two smaller cold rooms of 20 000 litres gross volume each. The large cold room, where the vaccines are stored, has two cooling units. All the cold rooms are backed up with a diesel generator, which supplies the entire complex with electricity in case of electrical power failure.The generator turns on automatically in case of electrical power failure. The fuel tank is within the generator and the capacity of the fuel tank allows 12 hours of work without refueling.

The building accommodating the cold rooms is not air-conditioned. A packing area is not prepared yet, but will be inside the building with cold rooms. Freezers are kept in the office building of the I&SC, in the store-keeper's office, which is air-conditioned. The freezer for icepacks is also in the store-keeper's office. A voltage stabilizer exists and its capacity is sufficient for the entire I&SC complex. Transportation of vaccines to the districts is properly ensured by 3 new refrigerated Hyundai trucks and one new insulated Hundai truck (all three purchased this year). There is also an older refrigerated truck. Regardless if the refrigerated trucks are used or not, cold boxes are always used to transport the vaccines. The refrigerated trucks are not supplied with electrical power outlets to ensure cooling of

the refrigerated area when the engine is not running.Trucks are used for deliveries outside of Baku.The rayons within Baku city come to pick up the vaccines from the cold store on thei own. In such cases vaccines are packed into cold boxes with icepacks. There is no designated storage place for diluents, so they are currently kept in the cold room with vaccines, which is not a problem due to large cold store volume.Warm clothing for the staff is available, while entering the cold room. IT equipment is new and functioning properly. During 2008-2009 important improvements have been made in the ISC. Besides establishment of new cold store and procurement of refrigerator truck major improvements are made in documenting pre-shipment and arrival procedures, by introducing a vaccine arrival report improving stock management, by introduction of a new computerized inventory system at the primary store.

Cooling capacity to district epidemiology and hygiene centers allow storing 2 months stock of vaccines. Growing economic capacity excludes long term power cut offs almost all over the country. This condition increases reliability of vaccine storage at local levels. Starting from 2006, during the preparation of the campaign on vaccination against measles and rubella, all district epidemiology and hygiene centers that stores at least quarterly stock of vaccines were supplied with additional freezers, generators and thermo-containers for temporary storage and transportation.

Figure 8- Vaccine distribution



EPI are notified when vaccine arrives in the national store. They then provide a distribution list, which is approved by MoH and passed back to ISC. The current practice is to distribute the vaccine to the Rayon stores as soon as possible thereafter. The official system for vaccine distribution is by refrigerated truck from the primary vaccine store to the Rayon vaccine stores, on a quarterly basis. Vaccine is transported in used insulated shipping containers, with icepacks. Because the refrigeration unit operates only when the vehicle's engine is running it cannot provide cooling when the vehicle is offloading, or when it is parked for the night.

Vaccine carriers, cold boxes and refrigerators have been supplied to all medical facilities provided immunization services. Refrigerators, as they all are for domestic use, were supplied with additional thermometers for temperature monitoring during storing vaccines. Over the period of 2006-2008 there were 400 refrigerators and freezers, 80 generators and 2000 thermo-containers and back for vaccine transportation purchased.

The process of further equipping and maintaining the cold chain, with regular substitution of depreciated equipment and supply with autonomous power supply of vaccination points continues. The temperature in the refrigerator (freezer) at storage locations definitely is monitored 2 times a day. All changes is recorded in the log or on the chart.

From district epidemiology and hygiene centers vaccines are transported by thermo-containers.

Vaccines require strict compliance with temperature regime during transportation & storage and the violation can lead to partial or complete loss of immunogenic activity of vaccines, thus affecting the efficiency of immunization and trust of population to vaccination. The control over compliance with cold chain requirements is regulated by number of instructions and norms. However, lack of thermo indicators and temperature monitoring equipment hampers this compliance.

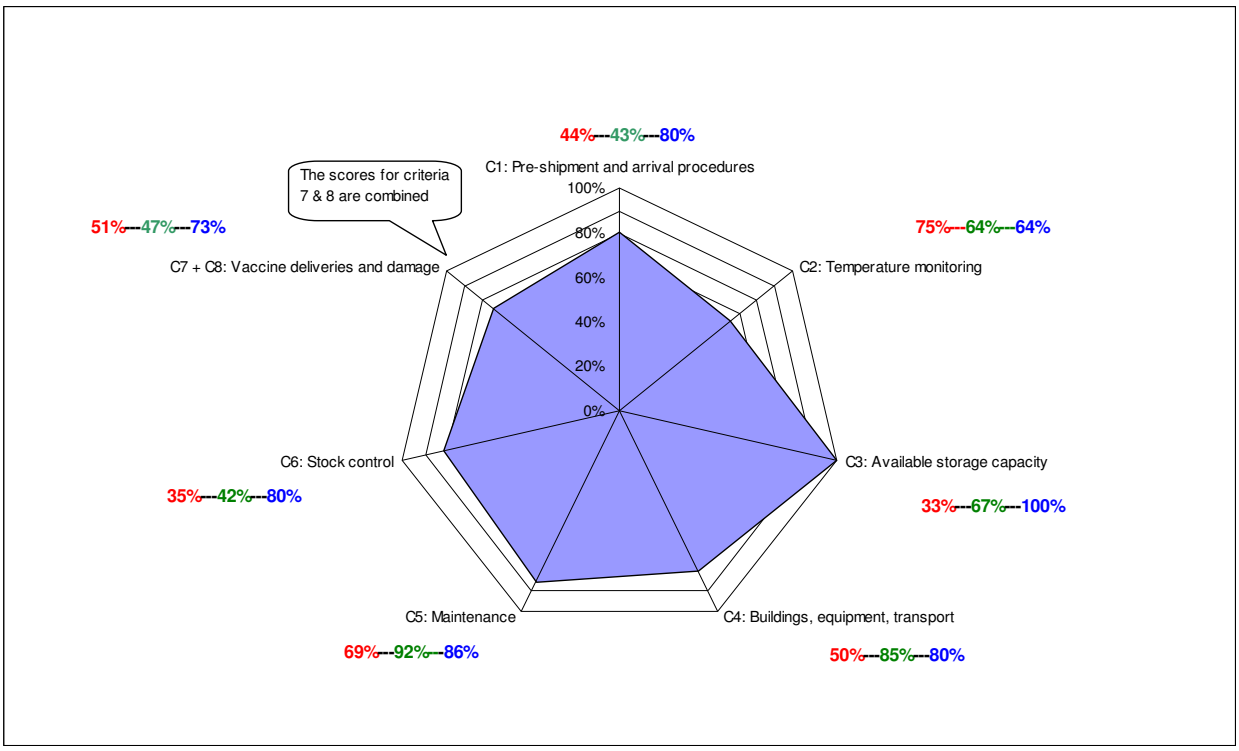
REHC had conducted a number of training for cold chain staff within expanded Immunization Program.

There are 2 specialists in our country who had been trained in vaccine and cold chain management.

While assessing the status of "cold chain" in Azerbaijan it should be mentioned that although there is a big progress in this field, there is still a space for improvement at all levels of healthcare management and from operation point of view, in terms of training the staff, supply of cooling and temperature monitoring equipment in state medical facilities and sanitary-epidemiological service.

External EVSM evaluations have been carried out in September 2004, April & December 2007 and last one is August 2009. Results on assessment clearly showed significant improvement in pre-shipment and arrival, stock management, vaccine delivery and minimizing damage, effective maintenance, building and equipment capacities, cold storage capacities. But there are still problem in temperature monitoring and recording.

Figure 9- EVSM assessment results 2004-2007-2009



Based on findings of assessment in 2009 WHO consultant has drafted missed SOP and provided a list of recommendations for achieving EVSM standards.

List of main recommendations includes:

- Lot release certificates issued by the National regulatory agency should be requested from the supplier in advance for each bach of each vaccine.
- Store staff should receive a training on EVSM initiative and effective cold store management
- Electronic temperature recorders, with an alarm and auto-dialer system, should be installed in the cold room and freezers. Models of automatic temperature recorders can be found in WHO website under http://www.who.int/immunization_standards/vaccine_quality/pis/en/index.html. The temperature record of all cold rooms and freezers should be filed and kept for at least 3 years by the central store.
- A written contingency plan for cold chain breakdowns which is being prepared should be rehearsed once a year to check its effectiveness.
- A packing area should be ensured in the building with the cold rooms. The building should be air-conditioned.
- A plan for preventive maintenance should is being prepared and a specific budget for the plan should be allocated .

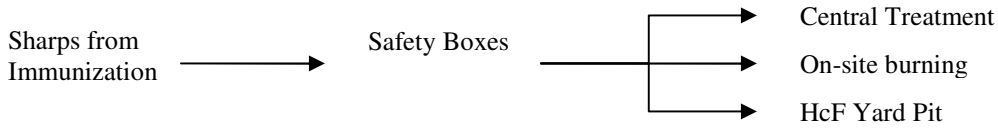
- The stock management system should record diluents separately from lyophilized vaccines. Same as for the vaccines, amounts of diluents should be recorded by presentation and batch number.
- VVMs are be requested in the vaccine technical specifications, but they are not delivered. The contracts for vaccine procurement should specify instruments for ensuring the contract is fulfilled (e.g. penalties if VVMs are not attached or the vaccine does not arrive in time and with all the requested documentation).
- Electronic freeze indicators should be purchased and used during storage and transportation of all freeze sensitive vaccines.
- A vaccine temperature monitoring study should be done to identify vaccine freezing risks.

Currently the warehouse works at normal regime and stage by stage covers all recommendations of WHO experts. National quality plan has been approved and the main Standard operating procedures have been finalized. Lot release certificate is collected by ISC staff for each batch of vaccine.

Waste management and disposal

According to main principles of injection safety the Immunization Programm continues use of safety boxes for disposal of immunization materials.

Figure 10- Scheme on immunization waste disposal



However there is a lack or regulatory documentation and guidelines on processing and disposal of medical wastes. In majority of cases these are documents inherited from Soviet Union and are not endorsed by the Government of the Republic of Azerbaijan. The policy in the field of waste collection and disposal is basically absent.

Currently medical waste collection and disposal conducted on the base of the following normative document:

1. National Plan of Actions on Environmental Protection, 2000.
2. Draft National Strategy on Waste Management in the Republic of Azerbaijan until 2020.
3. Law on Industrial and Domestic Wastes.
4. Decision of the Cabinet of Ministers #74 “On Approval of Rules on Decontamination of Constructions and Premises in Accordance With Sanitary-Epidemiological Norms, Temperature Regime for Urban Wastes, its Transportation and Documentation”

5. Guideline on Immunization Program, 02.01.1999

In December 2007, the Cabinet of Ministers of the Republic of Azerbaijan had approved the Program on "Waste Management Requirements". According to the Basil Convention, all types of medical services were referred to 4 categories of dangerousness (A-safe, B-dangerous, C-specially dangerous and D-close to industrial) and the mechanisms for collection, storage and disposal of medical wastes were determined. At the same time, regardless of the level of detail in the descriptive part of medical waste management requirements for all categories, currently there are tangible gaps in legislation and norms in term of management and disposal of wastes and medical wastes in particular. One of the major problems is the allocation of budget resources for separate collection of medical wastes and their utilizations (this is especially important for medical facilities, financed from municipal budgets), lack of specialized state services and established market of services.

Nowadays the level of the environmental safety of the state is determined on the basis of level of dissemination of socially important diseases and by the set of sanitary-hygienic and anti-epidemic activities with regards to these infections. In case of new epidemic and pandemic the requirements with regards to increasing the level of secured decontamination increase and this requires the introduction of new technologies on prevention of infection dissemination and decreasing the contact with dangerous and specially dangerous medical wastes with medical personnel and patients in medical facilities. As the majority of medical-prophylaxis facilities fail to fully comply with norms there is a real danger of dissemination of infectious diseases and the annual decreasing of environmental/infection safety level is observed. In Azerbaijan there is no integrated technology for medical waste processing and disposal. This is at the level of negotiations yet.

There is also lack of incinerators in the country and at local level the incineration of medical wastes is going on in incinerators of donor organizations, but frequently also in improvised incinerators (tanks) or just in holes. The temperature in such arrangements doesn't exceed 400 degrees, whereas this doesn't provide safe protection from infection for category B and C wastes.

The rest of wastes, depending on the status of waste management services (city of district) fall under more or less appropriate disinfection conditions because being taken to fill out of the city.

During 2007-2008 the National Policy on Health care waste management has been developed by the Ministry of Health in close collaboration with WHO and WB Health Sector Reform Project. The new policy includes international principles and standards on health care waste management including overall structure of health care waste management system, unified frameworks and approaches to sorting and flow of medical wastes, collection and transportation of medical wastes within medical facilities, intermediary storage of medical wastes, processing of medical wastes within medical facilities, transportation of medical wastes outside of medical facility, centralized processing and

disposal of medical wastes, data management (records), professional safety, actions in case of exposures to medical wastes, recycling, reducing volumes and processing of medical wastes, strengthening the capacity of medical waste collection and disposal system – training for personnel and monitoring, control check-ups & reprimands. Policy has been submitted to the Cabinet of Ministers for further approval.

Adverse Events Following Immunization

Based on the decision of the Cabinet of Ministers 177, dates 2006 on the "State Program on Immunoprophylaxis of Coomunicable Diseases" in Azerbaijan there is a system for monitoring and controlling the AEFI. The relevant actions to prevent AEFI had been covered in individual articles of following regulatory documents:

1. Order of MoH №139 of 1998 "On Actions to Ensure the Vaccination Safety" (the order lists actions on controlling AEFI).
2. Orders of the MoH in Conducting Immunization Days against
a) Measles and Rubella (2005);
b) Polio (2003 and 2007);
c) Diphtheria (2005).
4. Order # 04-17/1727 of 09.11.06 on Observance of National Vaccination Schedule, Subject to Indications and Counter-Indications.

At the same time there is no code of rules on AEFI surveillance in the country.

That is why the existing system proved to be effective in terms of conducting additional immunization campaigns; however, it is not sufficient for routine immunization. Thus in 2006, in the course of measles and rubella immunization campaigns about 3 million persons were vaccinated with more than 800 AEFI reports, i.e. 30 cases per 10 thousand vaccinated patients. At the same time AEFI are not identified during routine immunizations. According to WHO experts, this may be explained by two reasons: lack of analysis and respectively, wrong conclusions, as well as insufficient training of personnel, participating in routine immunization, including district pediatricians that supervise children after vaccination.

AEFI reporting forma are available at all levels. However, there are no mechanisms for review of collected data and response actions. District and RCHE are responsible for AEFI surveillance. The staff of vaccine quality examination laboratory is not engaged to AEFI investigations.

The analysis of AEFI is done by the commission with not clearly defines responsibilities and authorities. The review mechanism is described in orders of MoH. REHC representatives are actively involved to the work of the commission, however this is not envisaged by the Regulations on REHC, as well as it is not indicated in the Regulations on the Center on Analytical Expertise of Medical Substances. Information materials and training of personnel of all levels is conducted only at the stage of preparation of campaign

on additional vaccination.

3.5 PROGRAMME MANAGEMENT

According to the Decision of the Cabinet of Ministers #177, of July 19, 2006, On Approval of the "Programm on Immunoprophylaxis of Communicable Diseases" the financing of the program is envisaged until 2010..Apart from that Vishnevskaya-Rostropovich Foundation, Global Alliance for Vaccination and Immunization and Inter-sectional Coordination Committee are involved in running the program. Deputy Director of RCHE is the Coordinator of the Immunization Program (Manager of the Expanded Immunization Program).The National Immunization Program has organizational structures at national, rayon/municipality and local level.

One of the main factors for the efficiency of the healthcare system in Azerbaijan is the ability to supply high quality human resources. Ensuring optimal balance of processes for renewal and maintaining human resources in accordance with need happen in the healthcare system in accordance with existing legislation through high and vocation medical education facilities that are:

Azerbaijan Medical State University

8 medical schools (2 in capital + 6 in cities and district I the country)

In-Service Training Institution for Doctors

In-Service training courses within Medical School #2

Today there is no private education facility that provides high of vocational medical education with further attestation.

Every year the Azerbaijan Medical State University produces 1020- 1150 medical personnel with different qualifications.

This figure for medical schools is 1800

Vacancies in state medical facilities in Baku city are practically full. There is lack of doctors and mid-level medical staff in cities and district of the country and MoH is implementing a policy on filling that gap. For this purpose the official web-site of the MoH always has advertisements on vacancies for different specialties. However low financial motivation and remote location of the facility does not always allow to reach the desired effect. Issue related with in service training of nurses has been addressed in GAVI HSS application as well as through Immunization In Practices training cycles piloting at medical schools in Baku city. There is a real need to follow up on the IIP training cycle by WHO support until it became fully functioning and sustainable at national level.

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

5.1.OVERVIEW

Health Sector Analysis

The health care system in Azerbaijan has not undergone any substantial reform since the country regained independence in 1991. The Government remains by far the largest single official payer in the public system wherein services are rendered by public providers. This is not to deny a rapid development of private healthcare sector, which however, remains at the moment outside public financing schemes as well as does not render any substantial impact on the immunisation trends in the country.

Started from 2007, the Government of Azerbaijan has been mounting healthcare system reform efforts being assisted in the endeavour by the World Bank HC Reform Project, intended first of all to improve management, resource use efficiency and infrastructure of the HC sector. Possible impacts of the imminent reforms for the National Immunisation Program are hard to predict at the moment.

As it stands now, vaccination in the country is administered by the government–employed staff of either children or general clinics. Immunization coverage remains to be one of the major performance indicators for the healthcare facilities.

The process of vaccine procurement, transportation, storage and distribution is operated by the National Centre of the Hygiene and Sanitary/Epidemiology Surveillance (HSES) and its around 80 municipal (rayon and city) branches. The whole HSES system is financed from the State budget. The HSES branches are also responsible for epidemiological surveillance as well as monitoring and evaluation of the Immunization Programme

Vaccination within the National immunization schedule is free for the country residents.

One of the major problems for the NIP of Azerbaijan, in terms of correct reporting, is substantial population migration. Thus, for example, around 2 million Azerbaijanis are currently residing in the Russian Federations remaining at the same time citizens of Azerbaijan.

Significant problems with financing National Immunization Programme in the 1990-ies were subdued by the rapid economic growth starting from 1998 while the progress of the NIP may still benefit from improved planning and correct prognosis of the NIP needs in current and capital financing.

Financing of the immunization services in Azerbaijan comes from central Government, local governments and donors (national and international). Since 2008 central Government allocates funds for the immunization activities every year based on the National Immunization Program (5-year plan) and national immunization schedule. National Immunization Program secures funds for vaccines, injection supplies, cold chain and laboratory equipment.
Vaccinations are conducted in the primary health care facilities, in village policlinics and doctors ambulatories, and on the rayon level in the City/Rayon Policlinics and maternity hospital/departments. Payroll and other recurrent costs for the vaccination activities on this level of service delivery come from sub-national governments.

5.1 DETAILED INFORMATION ON PROGRAMME COST BY CATEGORIES

5.1.1 Macroeconomic indicators

The major macroeconomic indicators were obtained from the following data sources: GDP, GDP forecast, Total Health Expenditures (THE) – from State Statistical Committee (SSC), GHE and forecast – from the Ministry of Health and SSC. Differences in the annual GDP figures in the baseline year and in the projected years correlate to the expected trends for the oil prices.
According to SSC data Government Health Expenditure constitute 47.7% of the THE (link: http://www.azstat.org/publications/azfigures/2010/en/020.shtml) and (http://www.azstat.org/publications/azfigures/2010/en/004.shtml). This figure is used in the Tool for baseline year and as a forecast. Private health expenditures are based on the findings of the household budget survey conducted by the State Statistical Committee annually. The results of this year's figures have not been published yet, so it was unable to calculate this indicator for 2009.
According to the Ministry of Health, in 2009 Government Health Expenditures in Azerbaijan were AZN 402, 4 million (USD 503 million) for 2009. Indicators are presented in US Dollars (USD).

5.1.2 Demographic information

Data on demographic and health-related indicators is from the State Statistical Committee and Ministry of Health (MoH). General demographic data is renewed according to the preliminary results of the Census 2009. Estimations for the main target groups are developed according to the most recent official health statistics.

5.1.3 Vaccines & Injection Supplies

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

Vaccination schedule for 2010 includes BCG (1st week), OPV (1st week and at 2, 3, 4 and 18 months), MMR (at the age of 1 and 6 years), DTP (at 2, 3, 4 and 18 months), DT (at the age of 6 years), Hep B (after birth and at the age of 2 and 4 months.

Starting from 2011 Vaccination schedule will include DTP-HepB-Hib vaccine liquid which will replace 2nd and 3rd HepB vaccination (at the age of 2 and 4 months) as well as DTP (at the age of 2, 3 and 4 months). This transition is addressed in the Basic Scenario.

Scenario A repeats Basic Scenario and additionally introduces 1 dose of inactivated polio vaccine (IPV) from 2012 to the immunization schedule.

Pneumococcal vaccine (PCV) introduction from 2014 is described in the Scenario B. It repeats Scenario A IPV in the schedule.

Government of Azerbaijan (GoA) procures most of the vaccines on the open tenders, administrated by Innovations and Supply Center (ISC) under MoH. Procurement prices on vaccines and other supplies (2009) are used in the tool for all scenarios. UNICEF prices were used for the newly introduced vaccine (DTP-HepB-Hib). Prices on the 13-valent IPV (polio inactivated) for Scenario A were assumed based on available market prices. Price of PCV for Scenario B is based on the UNICEF projections, however the share which is expected to be funded by GoA should be estimated based on market price.

Table 1.1 Baseline expenditure on vaccines and injection supplies

Expenditures on vaccines and injection supplies as well as other supplies in 2009 came from ISC.

In 2009 expenditures on vaccines and injection supplies were covered by GoA.

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

The data for coverage and wastage rates was provided by MoH.

5.1.4 Personnel Cost

Data on staff categories, gross monthly salary of the personnel involved in the immunization program on the national level was obtained from economic and accounting departments of each institution – Ministry of Health, Republican Center of Hygiene and Epidemiology (RCHE), and ISC. Salaries for rayon centers of hygiene and epidemiology were obtained from RCHE. Salaries for staff at the health care facilities were obtained from MoH.

Data on number of health care facilities was provided by MoH. There are several types of health care facilities delivering immunization services on the rayon level - Maternity Hospitals/Departments (72 facilities of this type – 64 rayons + rayons at the Nakhichevan and Baku + 6 neonatal cross-rayon centers) - 1 Doctor and 2 Nurses per facility are immunization-related; Rayon/City Policlinics (100 facilities of this type) – 1 doctor and 2 nurses/vaccinators. On the municipal level immunization services are provided by Village Policlinics (119 facilities of this type) and Doctor's Ambulatories (779 facilities of this type). 1 Doctor and 1 Nurse are immunization-related staff in these primary HC facilities.

All the PHC-level staff, as well as staff at Maternity hospitals/Departments, Rayon and City Policlinics (even 100% immunization-related FTEs) is paid from the local budgets and is not included in the targeted financing of the National Immunization Program.

For each type of staff certain percent of immunization-related time is assumed. The percentage of time spent on immunization activities for the personnel is diverse and depends on the position they occupy.

The routine immunization delivery in Azerbaijan currently is based on fixed site strategy, no outreach activities are provided by the personnel.

Supervision activities are conducted by the personnel at the national level; per-diem per supervision visit is 45 AZN.

5.1.5 Vehicles and transport cost

Table 3.1 Average prices and utilization of vehicles.

Information regarding the vehicles was provided by the ISC as responsible institution for the delivery of vaccines, supplies and equipment to rayons (once in 3 months). Rayon Centers of Hygiene and Epidemiology are responsible for the delivery of the equipment to the facility level. Vaccines are being delivered to the HC facilities by doctors or epidemiologists. No per diem or other expenses are paid for this level of delivery.

There are three types of vehicles used by the immunization program: All-road vehicle 4X4 (with refrigerators), cars with thermostat and All-road vehicle 4X4 UAZ.

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 as per ISC information. Prices of the vehicles entered into the tool are assumed as of new vehicles, although majority of them were purchased during previous years.

Current market prices were used for the All-road vehicles 4X4 UAZ. For All-road vehicle 4X4 (with refrigerators) and cars with thermostat were used 2009 prices – when the last procurement of these items happened.

Projections of additional vehicles needed on the national level in future were made by the immunization program manager.

Table 3.3 Other transport needs not elsewhere covered

The total amount of other transport costs including the transportation of vaccines and safe injection supply from the central level to the rayon level and transport maintenance cost are covered from the GoA budget.

5.1.6 Cold chain equipment

Information on the types of the cold chain equipment, average unit prices for each type of cold chain equipment listed in the table was given by the ISC. Existing cold chain inventory on the rayon level was obtained from RCHE and ISC. Data on the existing cold chain equipment on the Primary HC facilities level is insufficient. Such assessment (passportization of existing equipment) is planned in the Programmatic activities (Table 6.0) for 2011 in all Scenarios.

Certain amount of the cold chain equipment was procured and supplied by UNICEF in 1991 and in 2005. This is addressed in Existing No. of equipment for 2009 in the Table 4.2. However, due to amortization this equipment should be renewed in 2011 and the next years of the Program implementation.

Part of cold chain equipment was renewed in 2009. This was taken into consideration when future cold chain needs were planned. Planned volumes for the vaccine storage in Scenario B are based on the WHO-recommended cold chain capacity 111sm^3 per child which includes traditional vaccines, Hib and pneumococcal vaccine. Estimated current country capacity at the national level is sufficient for the introduction of the new vaccines in the schedule with some equipment renewal required esp. at the Rayon and Primary HC facilities level.

The average useful life years of cold chain equipment was defined as 10 years.

5.1.7 Program Activities, Other Recurrent Costs and Surveillance

Table 6.0 Total Spending and Future Needs for Program Activities

Program activities mentioned in the Table 6.0 come from national documents, e.g: ongoing National Immunization Plan (ends in 2010). Volumes of funding from external sources (WHO, UNICEF, USAID, GAVI) for the mentioned activities are still under discussion. Expected donors' financial coverage is marked as Probable in the Financing section of the Tool.

5.1.8 Other Equipment Needs and Capital costs

Table 7.1 Average Prices of Other Equipment Needs

Total number, types and average prices including all taxes of other equipment needs was estimated by MoH, ISC and RCHE.

5.1.9 Building and Building Overhead

Figures for the value of buildings and building overheads were taken from the previous costing exercise (based on 2006 estimations) as well as allocation of space devoted to immunization activities. Central and local government budgets cover all building maintenance and overheads.

5.1.10 Past Costs by categories

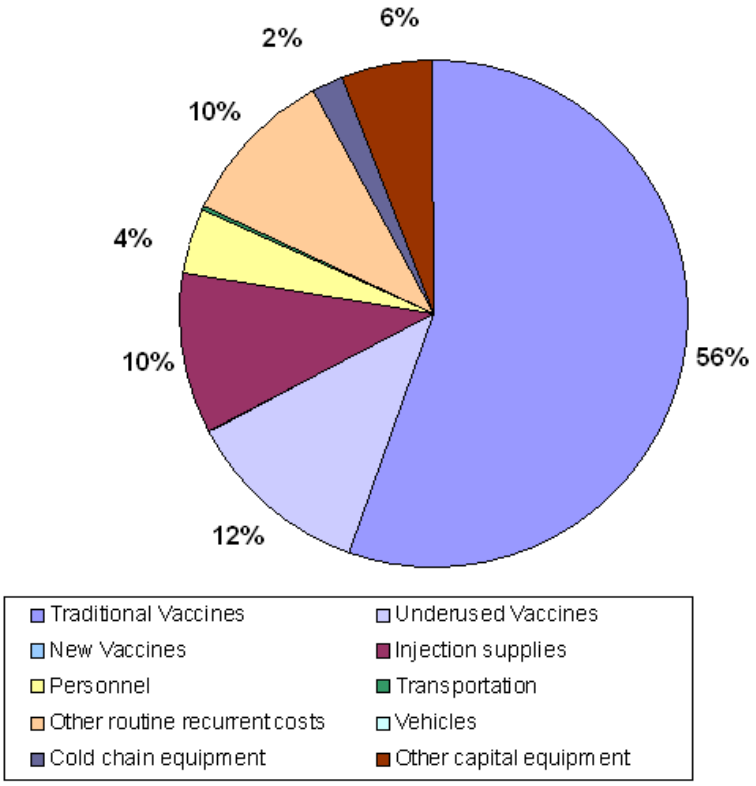
The total cost of the immunization activities in Azerbaijan in 2009 was nearly 7 million USD. This amount is immunization-specific only and does not include any health system shared costs. 94,6% of the immunization activities in 2009 were funded by the national public sources.

Figure 1: Total Immunization Expenditure, 2009

Baseline Indicators	2009
Total Immunization Expenditures	$6,944,913
Campaigns	
Routine Immunization only	$6,944,913
per capita	*$0.8*
per DTP3 child	*$55.0*
% Vaccines and supplies	*77.6%*
% National funding	*94.6%*
% Total health expenditures	*0.8%*
% Gov. health expenditures	*1.6%*
% GDP	*0.01%*
Total Shared Costs	
% Shared health systems cost	
TOTAL	$6,944,913

More detailed overview of the cost 2009 is presented in Figure 2 below. Shared costs are not included.

Figure 2: Baseline cost profile, 2009 (without shared costs)



Spending on the traditional vaccines was the key driver of the cost in 2009, representing 56% of the overall spending. Together with the expenditures on the underused vaccines (12%) and injection supplies (10%) vaccine supply and logistics represents 2/3rds of the cost profile. 10% of funds targeted Other routine recurrent costs, 4% - cost of Personnel, involved in the delivery of immunization services, 2% - cold chain equipment.

5.2 DETAILED INFORMATION ON PROGRAMME FINANCING

5.2.1 Financing sheet

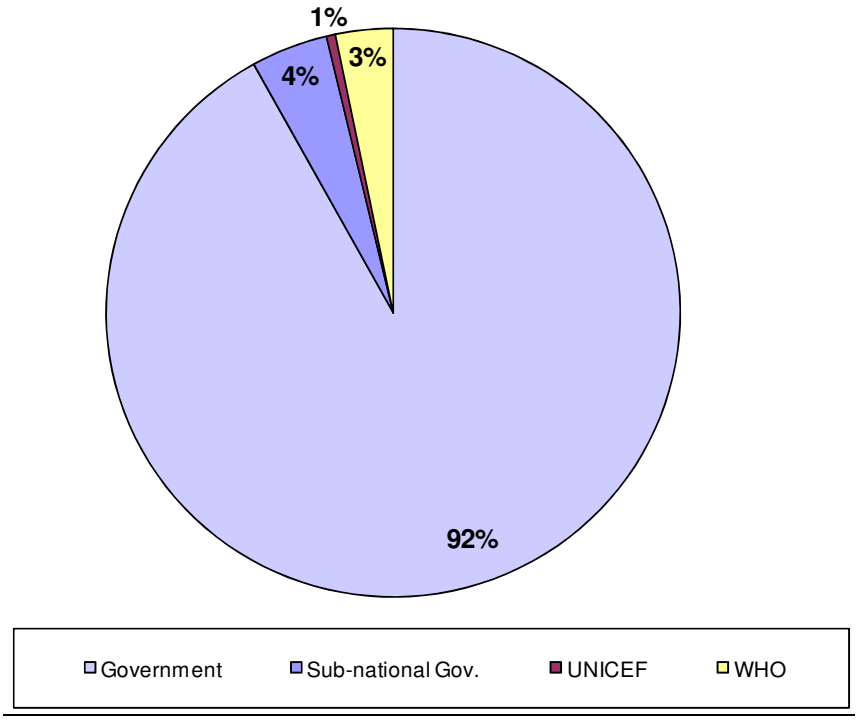
Financing of the national immunization activities at the present time come mainly from public sources, however donors provided immunization-related financial and technical support throughout previous years. Large number of the existing cold chain, laboratory and office equipment were provided by UNICEF, WHO, World Bank, Vishnevskaya-Rostropovich Foundation etc. Donor support was also channeled to program activities, surveillance and training.

It is expected that GAVI will contribute to the introduction of penta-valent vaccine starting from 2011 - this transition is addressed in all three scenarios -, and of PVC from 2014 in Scenario B.

5.2.2 Past Financing

The main funding source for the immunization program is the Government of Azerbaijan (90% of total funding). From 2009 GoA became the key financing source for the implementation of the immunization activities in Azerbaijan.

Figure 3: Baseline financing profile, 2009



Rayon and municipal governments participate in the financing of immunization activities through the regular budgets for health care, covering staff salaries, building maintenance and overheads at the service delivery level etc.

5.3 Future Resource Requirements, fınancıng and funding gap

Estimated total resource requirements to implement routine immunization program in 2011-2015 amount over 35 million USD, main part of which (over 83%) is related to vaccine supply. Program management (6,12%) is the second biggest line in the expected financial needs in the Baseline Scenario.

Figure 4: Future Resource Requirements, in thousand USD

Program components	2011	2012	2013	2014	2015	Total	%
Vaccine Supply and Logistics	5,803	5,746	5,858	5,928	6,167	29,502	**83,37**
Service Delivery	307	313	319	326	332	1,597	**4,51**
Advocacy and Communication	36	52	5	0	6	99	**0,28**
Monitoring and Disease	56	57	58	60	61	292	**0,82**

Surveillance							
Program Management	458	415	423	430	438	2,164	**6,12**
Shared Health Systems Costs	333	340	347	354	361	1,735	**4,90**
Total	**6,993**	**6,924**	**7,011**	**7,097**	**7,365**	**35,389**	

Nearly 5% goes to Service delivery, 0,28% - to Advocacy and Communications, 0,82% - to Monitoring and Disease Surveillance.

Figure 5 below illustrates future resource requirement for the Basic scenario. In the basice scenario the program only sustains current activities and does not imply any changes in the current immunization calendar.

Figure 5: Projection on Future Resource Requirements – Baseline Scenario

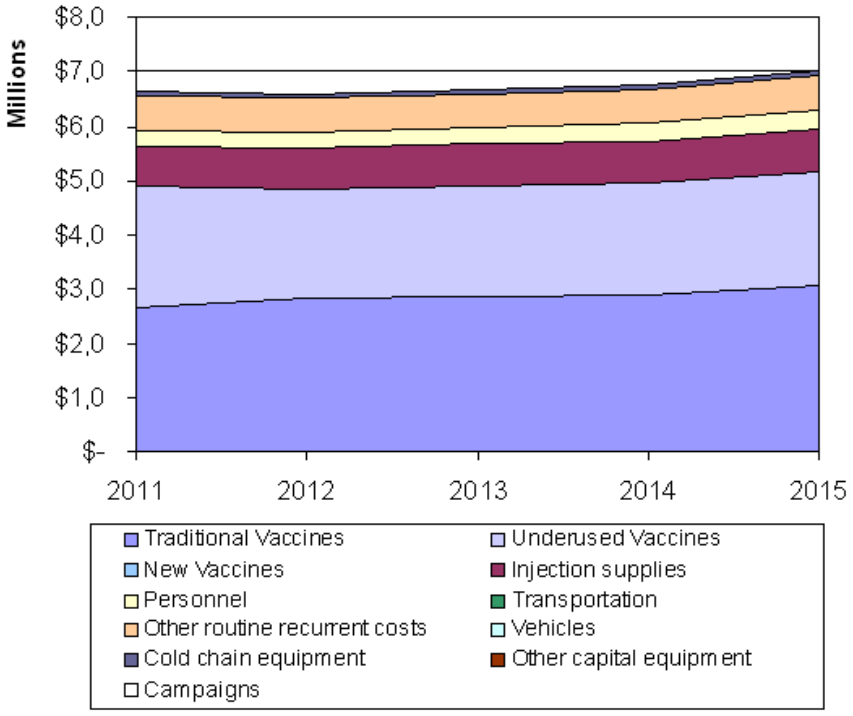


Figure 6 below illustrates resource requirements by sources of financing and funding gaps. Shared costs are not included here.

Most of the funding for the implementation of this scenario is secured due to its Government origin. Resources expected from GAVI are also mentioned as secured. Although the areas of other donors' support if defined, financing amounts need to be confirmed each year. This financing is marked as Probable in the Financing worksheet.

Figure 6: Resource Requirements, Financing and Gaps – Baseline Scenario (without shared costs) in thousands US$

	2011	2012	2013	2014	2015	Total

Total Resource Requirements	**6,659**	**6,583**	**6,664**	**6,743**	**7,004**	**33,654**
Total Secured Financing	**6,578**	**6,401**	**6,510**	**6,591**	**6,724**	**32,803**
Government	3,735	3,845	3,868	3,926	3,913	19,287
Sub-national Gov.	692	715	738	762	695	3,602
Gov. Co-Financing of GAVI vaccine	174	150	208	209	209	951
WHO	31	16	0	0	0	47
GAVI (NVS)	1,927	1,673	1,693	1,693	1,906	8,894
GAVI (HSS)	18	2	2	0	0	22
Funding Gap	**82**	**183**	**155**	**152**	**280**	**851**
	1.2%	2.8%	2.3%	2.3%	4.0%	2.5%
Total Probable Financing	**82**	**183**	**155**	**152**	**280**	**851**
Government	5	0	0	0	27	32
Sub-national Gov.	0	68	70	71	164	373
UNICEF	0	52	5	0	6	63
WHO	76	63	80	81	83	383
Funding Gap	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Secured funding from public sources covers 72% of total financial needs for 2011-2015 for routine immunization, which is also 74% of the overall secured funding for this program.

There is no funding gap for the Baseline Scenario, most of the financial needs coverage is secured.

The composition of the funding gap considering only secure financing is described in Figure 7. The rest of Logistics (vehicles, cold chain and other equipment) and other recurrent costs are covered with Probable funding.

Figure 7: Composition of the Funding Gap (with Secured Fund only) in US$

Components	2011	2012	2013	2014	2015	Total
Vaccines and injection equipment						
Personnel	5,482					5,482
Transport						
Activities and other recurrent cost	76,340	114,525	85,019	81,183	207,268	564,335

Logistics (Vehicles, cold chain and other equipment	68,278	69,643	71,036	72,457	281,414
Campaigns					
Total Funding Gap	**81,822**	**182,803**	**154,663**	**152,219**	**279,725**	**851,232**

Figure 6 and Figure 7 (above) clearly show that the most of future financial requirements are addressed with public financing. However, the financial sustainability analysis of the program should be done each year of implementation. According to budget allocations for 2010, the amount of funding for the procurement of vaccines is not enough to sustain immunization at the level of previous year. Even though Innovation and Supply Center (MoH procurement agency), managed to reduce the price for some vaccines this year, it is not clear how the rest of the funding gap will be covered.

5.4 IMPLICATION OF PROGRAMME STRATEGIES ON FUTURE RESOURCE REQUIREMENTS

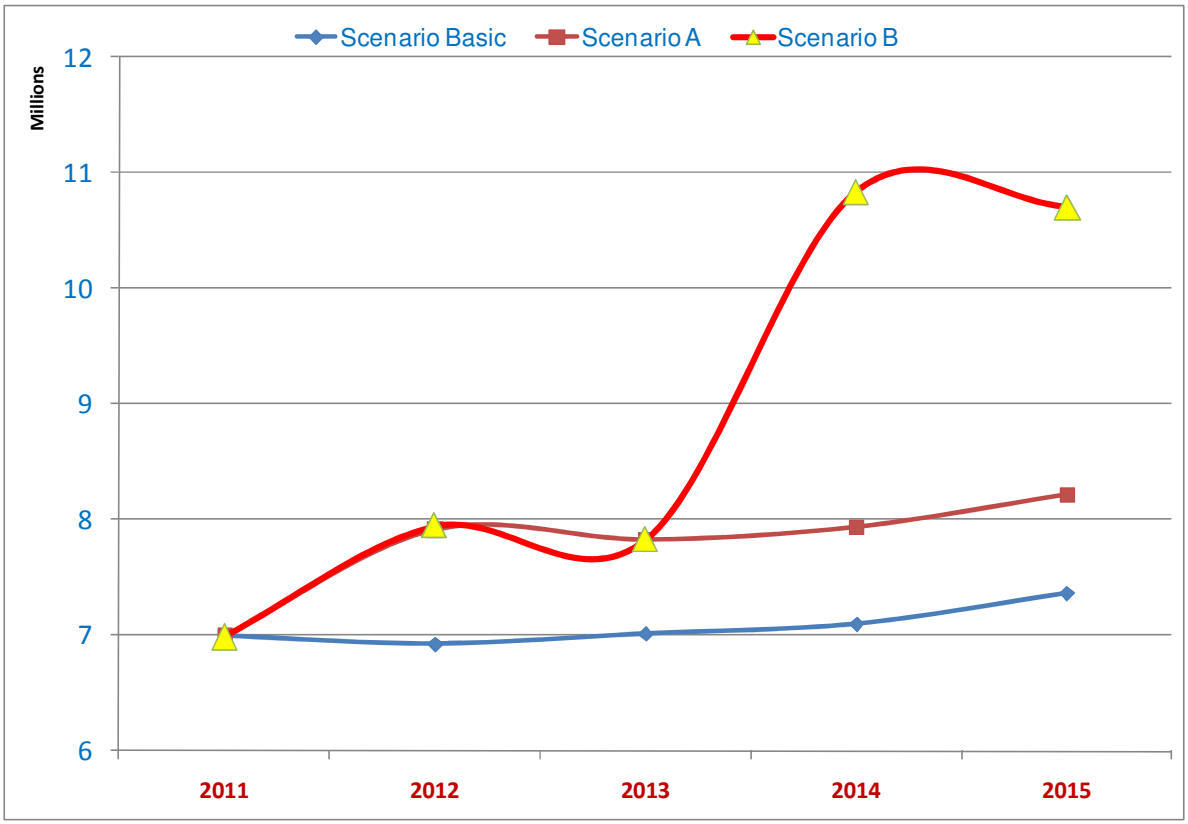
Three scenarios were developed in accordance with the program strategies. Scenario A implies replacement of 1 OPV dose with 1 IPV in 2012, while Scenario B introduction of PCV in 2014.

Figure 8: Future resource requirements of the National Immunization Program by scenarios and years (in thousands US$)

	2011	2012	2013	2014	2015	Total
Scenario Basic	6,993	6,924	7,011	7,097	7,365	**35,389**
Scenario A	6,993	7,913	7,828	7,937	8,218	**38,889**
Scenario B	6,993	7,944	7,828	10,837	10,703	**44,304**

Comparison of resource requirements for three scenarios (Figure 8 above) demonstrates that Scenario A is almost 10% more expensive than Baseline Scenario. Introduction of PCV will require over $5 million additional funding in 2011-2015 compared to Scenario A.

Figure 9: Comparison of future resource requirements by scenarios and years (in US$)



Scenario A implies $1 million increase in resource requirements in 2012 and afterwards in follows the growth pattern of the Basic Scenario (see Figure 9 above).

Scenario A

Scenario A foresees introduction of inactivated polio vaccine (IPV) from 2012 (1 new doses in the Vaccination Schedule at the age of 2 months replaces 2 OPV vaccinations – at birth and at 2 months). Resources required for implementation of this Scenario are presented in Figure 10 below.

Figure 10: Future Resource Requirements for Scenario A in thousands US$

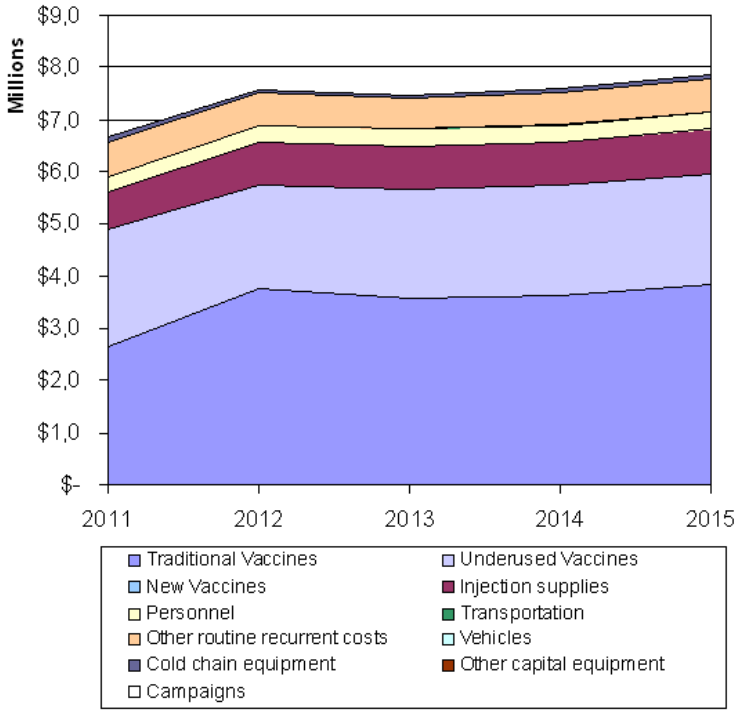
	2011	2012	2013	2014	2015	Total	%
Vaccine Supply and Logistics	5,803	6,735	6,675	6,763	7,021	32,997	85
Service Delivery	307	313	319	326	332	1,597	4
Advocacy and Communication	36	52	5	0	6	99	<1
Monitoring and Disease Surveillance	56	57	58	60	61	292	1
Programme Management	458	415	423	435	438	2,169	6

Shared Health Systems Costs	333	340	347	354	361	1,735	4
TOTAL	**6,993**	**7,913**	**7,828**	**7,937**	**8,218**	**38,889**	**100**

Distribution of the component shares stays almost the same compared to Baseline Scenario. Total financial needs increase from 35,4 million USD in the Baseline Scenario to almost 39 million USD in the Scenario A. Replacement of two OPV doses by one IPV gives over 1 million USD increase in overall vaccines cost.

It is expected that Government will cover all expenditures related to the transition into IPV vaccine. Additional support for program activities and technical assistance is expected from WHO, UNICEF and other donors. GAVI does not co-share IPV vaccine introduction. Figure 9 illustrates how the introduction of this vaccine causes the increase in the overall resource requirements starting from 2012.

Figure 11: Projection of Future Resource Requirement for Scenario A (without shared costs)



Scenario B

Introduction of PCV from 2014 is described in the **Scenario B**. Together with pentavalent DTP-HepB-Hib, PCV will be the second vaccine to be supported by GAVI in the future years.

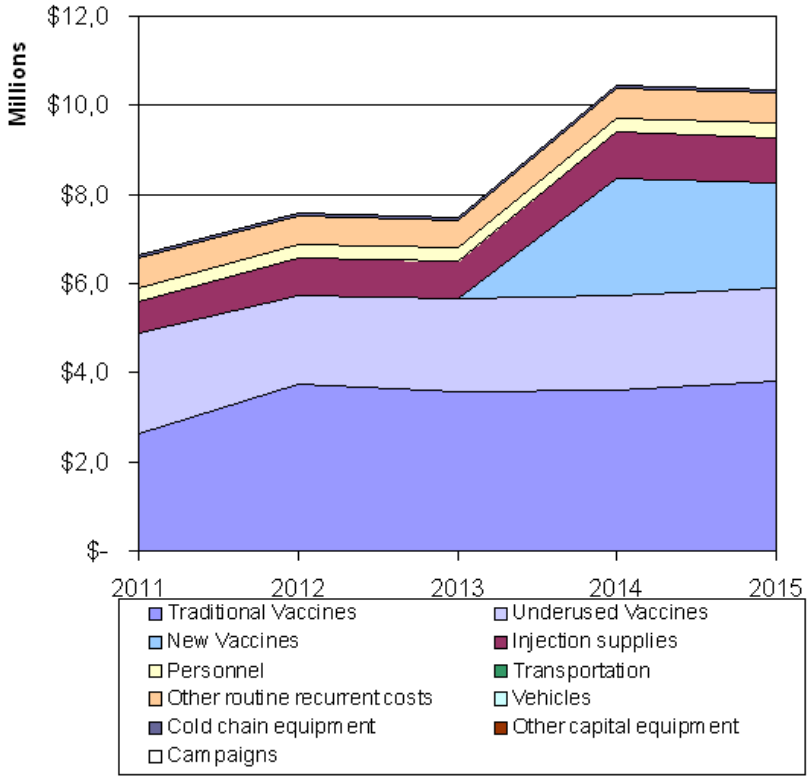
Figure 12: Future Resource Requirements for Scenario B in thousands US$

	2009	2011	2012	2013	2014	2015	Total	%

Vaccine Supply and Logistics	5,803	6,735	6,675	9,593	9,505	38,310	5,803	86
Service Delivery	307	313	319	326	332	1,597	307	4
Advocacy and Communication	36	68	5	27	6	141	36	<1
Monitoring and Disease Surveillance	56	57	58	60	61	292	56	1
Programme Management	458	431	423	478	438	2,228	458	5
Shared Health Systems Costs	0	0	0	0	0	0	0	4
TOTAL	**333**	**340**	**347**	**354**	**361**	**1,735**	**333**	**100**

The overall cost of the program increase in 2014-2015 is vaccine supplies driven. As shown in Figure 13 below, the new vaccine will add up one third to the overall share of vaccine cost in the Scenario B.

Figure 13: Projection of Future Resource Requirements – Scenario B (without shared costs)



Scenario B shows the largest funding gap considering only secured funds, when comparing to other scenarios, as the introduction of PCV is not yet confirmed (Figure 14 below).

Figure 14: Total Funding Gap (Secured funds only) – comparison of three Scenarios

	2011	2012	2013	2014	2015	Total
Baseline Scenario	81,822	182,803	154,663	152,219	279,725	**851,232**
Scenario A	81,822	114,526	154,662	157,631	279,725	**788,366**
Scenario B	81,822	130,132	154,662	3,017,996	2,721,677	**6,106,289**

6. Financial sustainability

6.1.1 REVIEW OF MAJOR FINDINGS

6.1.1.1 Basic scenario

The costing exercise shows that immunization is an inexpensive program that only costs around 90 cents in per capita terms (including vaccines, injections, and operational costs).

If the government fully finances the immunization program (assuming no donor support) the total cost of the program will only represent approximately 1.4-1.5% of the government health budget and 0.7% of total health expenditures as shown in Figure 15 below.

Figure 15: Sustainability Analysis – Baseline Scenario

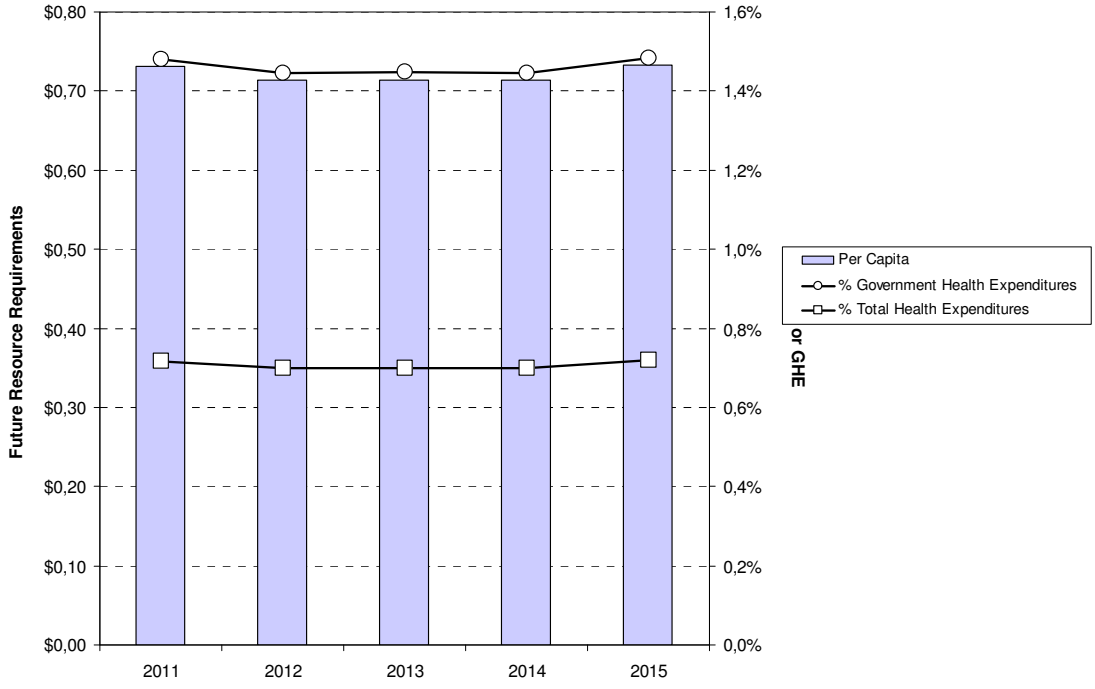


Figure 16 below presents some macroeconomic and sustainability indicators regarding the financial requirement of the immunization program.

Figure 16: Macroeconomic and Sustainability indicators without shared costs

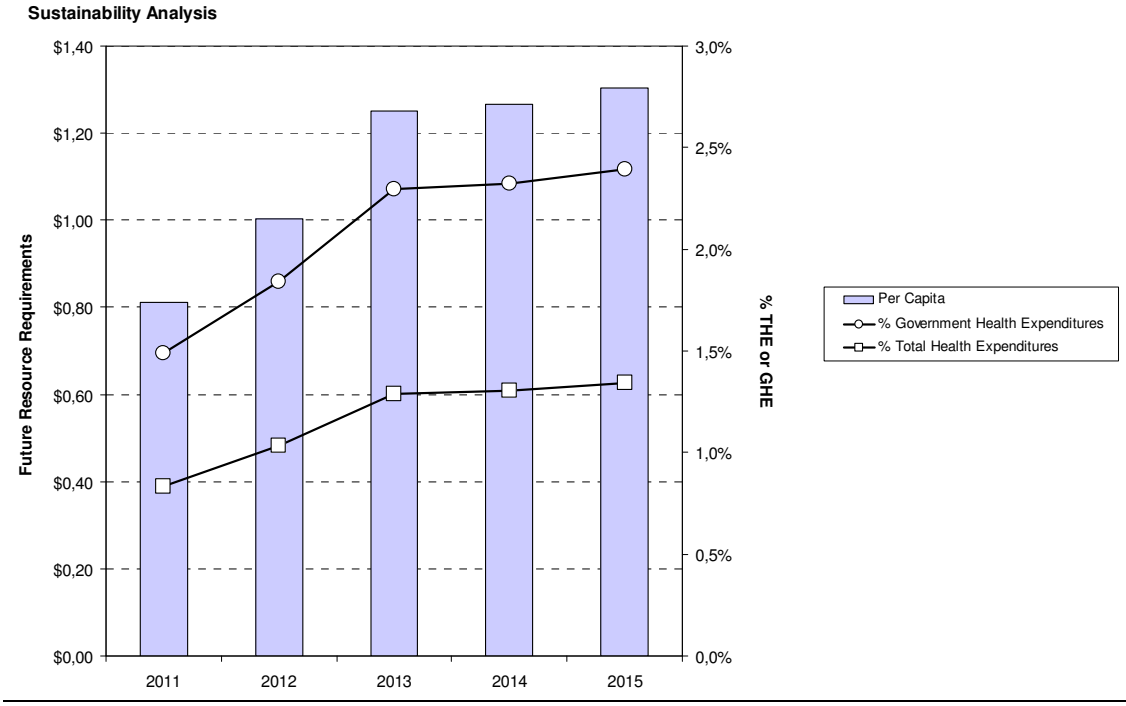
Macroeconomic and Sustainability Indicators	2011	2012	2013	2014	2015
% Total Health Expenditures					
Resource Requirements for Immunization					
Routine Only	0,7%	0,7%	0,7%	0,7%	0,7%

Macroeconomic and Sustainability Indicators	2011	2012	2013	2014	2015
Funding Gap					
With Secure Funds Only	0,0%	0,0%	0,0%	0,0%	0,0%
With Secure and Probable Funds	0,0%	0,0%	0,0%	0,0%	0,0%
% Government Health Expenditures					
Resource Requirements for Immunization					
Routine Only	1,5%	1,4%	1,4%	1,4%	1,5%
Funding Gap					
With Secure Funds Only	0,0%	0,0%	0,0%	0,0%	0,0%
With Secure and Probable Funds	0,0%	0,0%	0,0%	0,0%	0,0%
% GDP					
Resource Requirements for Immunization					
Routine Only	0,02%	0,01%	0,01%	0,01%	0,01%
Per Capita					
Resource Requirements for Immunization					
Routine Only	$0,81	$0,84	$0,91	$0,92	$0,95

6.1.1.2 scenario A

Scenario A expects increase in government-originated funding. GAVI does not provide any support for introduction of IPV.

Figure 17: Sustainability analysis – Scenario A

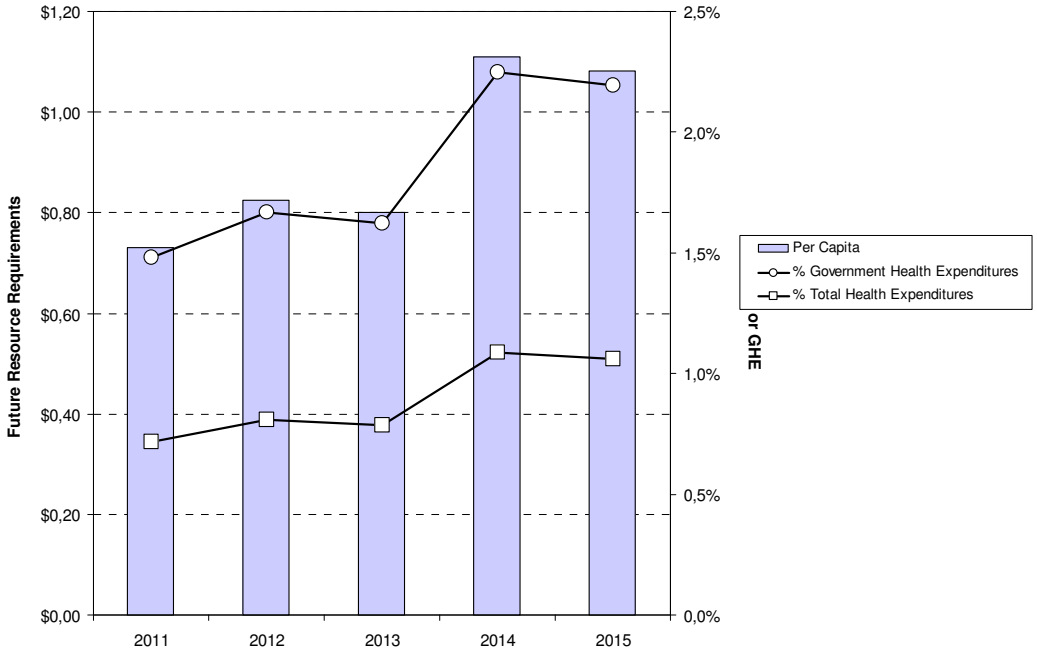


Even though this Scenario requires more resources for its implementation – 1,5-2.4% of government health spending and 0,8-1,3% of total health spending – it will remain sustainable if no major changes happen. It is planned, that introduction of the new vaccine will not require additional resources for the cold chain. Currently available cold chain capacity allows safe storage and other logistics. Also additional space for vaccine storage will be available because of the replacement of two doses of OPV in the vaccination schedule.

6.1.1.3 scenario B

Sustainability analysis in Figure 18 below relates to the implementation of Scenario B, when besides vaccinations mentioned in the Scenario A, additional vaccine is to be introduced to the vaccination schedule from 2014.

Figure 18: Sustainability analysis – Scenario B



As it is clearly seen in the graph, financial burden on the government budget of the new scenario increases in 2014-2015, when PCV is introduced. In the last two years of the program, its share in the government health spending goes up to 2,2%, and up to 1,1% in the total health spending in Azerbaijan. Resource requirements for the implementation of Scenario B are less secured from both GAVI and Government sides. Projections done for 2014-2015 are based on current prices on PCV suggested by UNICEF. In future changes in prices on this vaccine may cause higher or lower burden on the government budget. Also, due to the current procurement practices, stated in the national legislation, it is most likely that the state will spend more money on the procurement the same number of doses.

6.1.2 Financial sustainability strategy

There is not funding gap in all three scenarios when both secure and probable financing is considered.

Considering macroeconomic trends, low share of the NIP in the Governments health expenditures and stability in economic development threats to the financial sustainability of the NIP are not expected.