Foreword

With a view to meeting the public’s priority health needs, Benin has introduced, from 1987 onwards, the necessary strategies to revitalize the health system on the periphery, thereby anticipating the thrust of the Bamako Initiative. The ensuing restructuring of primary health care (PHC), using the Expanded Program on Immunization as an entry point, has been firmly supported by the development partners. This marked the beginning of the Expanded Program on Immunization integrated into Primary Health Care (EPI-PHC), the first version of a sustainability plan before its time.

As our world changes constantly and as the discovery of new vaccines helps us better counter threats to children, the cost of introducing high-quality services is constantly rising. To guarantee that children in Benin will always have access to these services that are essential to their survival, the ministers in charge of health and finance have developed, in close cooperation with the development partners, a Financial Sustainability Plan of the Expanded Program on Immunization (EPI).

EPI in Benin is a major priority. It is a key element in the set of tools developed by the Government to promote a state of mental, physical and social wellbeing. Mindful of the urgent need to ensure EPI’s sustainability, the Government of Benin urges GAVI to continue its efforts to ensure that the new combined vaccines are available and affordable. The introduction of the new combined vaccines will facilitate not only program management in the health groups but also and above all the management of the doses to be administered to families.

The following Financial Sustainability Plan is thus of paramount importance for the survival of children. This is why the Government has attached high priority to its preparation. It was discussed on the Inter-agency Coordinating Committee for EPI (ICC-EPI). Subsequently, it was the focus of constructive criticism by the technical staff of the bilateral and multilateral agencies.

The Government takes the opportunity provided by the presentation of this Financial Sustainability Plan to express its gratitude to GAVI for the latter’s efforts to ensure the availability of high-quality vaccines for Benin, to convey its gratitude and satisfaction to all of its technical and financial partners with whom it is prepared to work to guarantee the sustainability of the Expanded Program on Immunization.

The Ministers for Health and Finance of Benin do hereby declare that they support this Financial Sustainability Plan, as attested by their signatures affixed below.

(signed)        (signed)
Mrs Yvette Céline SEIGNON KANDISSOUNON Mr. Grégoire LAOUROU
Minister of Public Health    Minister of Finance and the Economy
[seal]        [seal]
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Les signataires, membres du Comité de Coordination Interagences pour le PEY (CCLIA-PEY), approuvent ce plan de viabilité financière du PEY Bénin.

Les membres du CCLIA-PEY confirment que leurs commentaires ont été pris en compte dans cette version finale du plan, par conséquent ils s'engagent à soutenir le Bénin dans sa mise en œuvre.

<table>
<thead>
<tr>
<th>Agence/Organisation</th>
<th>Nom/Function</th>
<th>Commentaires</th>
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Abbreviations

BCG : Bacille de Calmette et Guérin
CC : Cold chain
CDC : Centers for Disease Control and Prevention
MTSF : Medium-term Spending Framework
DHC : Departmental Hospital Centre
CPOED : Central Purchasing Office for Essential Drugs
DMC : District Management Committee
CMC : Community Management Committee
PNC : Prenatal consultation
CSP : Centre for Social Promotion
DDHD : Departmental Public Health Directorate
NDEPI-PHC : National Directorate of the Expanded Prog. on Immunization and Prim. Health Care
PRSD : Poverty Reduction Strategy Document
DFMR : Directorate of Financial and Material Resources
DTP : Diphtheria Tetanos Pertussis
DTP/HepB/Hib : Diphtheria Tetanos Pertussis/Hepatitis B/Haemophilus influenzae
HZST : Health Zone Supervisory Team
WCA : Women of childbearing age
CF : Community Funding
CDF : Community Development Fund
PW : Pregnant women
BI : Bamako Initiative
VII : Vaccine Independence Initiative
NID : National Immunization Days
MPD : Ministry for Planning and Development
MPH : Ministry of Public Health
WHO : World Health Organization
NGO : Non-governmental organizations
GAP II : 2nd Governmental Action Program
SPDHZ : Support Program for the Development of Health Zones
SAP : Structural Adjustment Program
ICDC : Intergrated Childhood Disease Coverage
PIP : Public Investment Program
NHDP : National Health Development Plan
AFP : Acute Flaccid Paralysis
HIPC : Heavily Indebted Poor Countries
PSHR : Project for Strengthening Human Resources
GPHC : General Population and Housing Census
NHIMS : National Health Information and Management System
MNT : Maternal and neonatal tetanus
WAMEU : West African Economic and Monetary Union
UNICEF : United Nations Children’s Fund
USAID : United States International Development Agency
YF : Yellow fever vaccine
MEAS : Measles vaccine
TT : Tetanus vaccine
OPV : Oral polio vaccine
HZ : Health zone
WB : World Bank
Executive summary

Benin is a country in West Africa that is bordered to the north by Niger and to the south by the Atlantic Ocean. Its neighbour to the northwest is Burkina Faso, and to the west there is Togo. To the east it shares more than 700 kilometres of a common border with Nigeria, a neighbouring country and the world's leading reservoir for wild polio strains. Its overall surface area, according to the latest estimates (1998) of the National Geographic Institute, is 114,763 square kilometres with a population estimated at 6,973,905 inhabitants\(^1\) in 2003.

Benin’s epidemiological profile is characterized by the predominance of endemo-epidemic disorders such as malaria, diarrhoeal illnesses, gastroenterological disorders, respiratory infections and certain vaccine-preventable diseases such as measles, maternal and neonatal tetanus and polio.

EPI in Benin has been relatively successful in terms of implementation and its impact on mother and child health indicators. Nevertheless, EPI coverage is not satisfactory because it is only 49% nationwide (based on immunization cards only) with variations ranging from 36% to 63%. The departments with coverage below 50% are Couffo, Atacora, Borgou, Atlantic, Alibori and Collines. However, based on cards (available for 85% of children) and on boosters for mothers, coverage per antigen was 94% for BCG, 78% for OPV3, 79% for DTP3 and 72% for measles. EPI utilization in Benin is quite good because the utilization rate for BCG varies from 87% to 100%, with a nationwide average of 94%.

Growth rates have been falling since 2003, from 4.5% in 2003 to only 3% in 2004. On the other hand, inflation has been rising, increasing from 1.5% in 2003 to 2% in 2004.

Benin is heavily indebted (37.1% of GDP in 2001). However, some debt relief has been provided because the country was declared eligible in July 2000 to benefit from the Heavily Indebted Poor Countries (HIPC) initiative.

The budget for vaccine procurement has increased steadily since 1996 to a total of 837 million CFA francs, which means that vaccine procurement is entirely covered. This was possible thanks to the commitment of the government and to support from the HIPC fund.

Total program cost in 2001 (before utilization of GAVI funding) and in 2003 (with utilization of GAVI funding) was evaluated respectively at USD 4.3 million and USD 6.9 million, an increase of 60.18%. The main reasons for the cost increases between 2001 in 2003 are as follows:

- The introduction of new vaccines (HepB) and under-used vaccines (YF);
- The purchase of some thirty vehicles, a refrigerating truck and the strengthening of cold chain equipment throughout the country;
- The expansion in 2003 of the measles campaign from two to four departments (out of six)
- Internal funding increased from USD 1.72 million in 2001 to USD 2.11 million in 2003, a rise of 22.67%.
- External funding tripled, swelling from USD 1.89 million in 2001 to USD 6.05 million in 2003.

\(^1\) Estimated population on the basis of data from the GPHC-3, INSAE, March 2004.
Consequently, the share of internal funding declined from 47.6% in 2001 to 25.85% in 2003, a drop of nearly half. By way of comparison, the share of external funding rose from 52.4% in 2001 to 74.15% in 2003.

Overall resource requirements are USD 80.3 million for 2004-2013, i.e. an annual average of USD 8.03 million.

- Resource requirements have been increasing from year to year, with peaks seen in 2005 (introduction of the pentavalent vaccine, replacement of cold chain equipment, four polio NID passages and a measles immunization campaign), in 2006 (polio campaign) and in 2011 (replacement of cold chain equipment)

Vaccines’ share of total routine EPI requirements

- The share of routine vaccines out of total routine EPI costs went from 24% in 2004 to 58% in 2005, and is expected to stay at the same proportion until 2013.

The main factors for these changes are as follows:

- The introduction of the pentavalent vaccine in 2005 with a 94% increase in resource requirements;
- The organization of additional immunization campaigns in 2005 with four polio NID rounds and a CAR round countrywide;
- The replacement of cold chain equipment and supervisory vehicles in 2005, 2010 and 2012;
- The natural increase in the target population (3.23% per year).

In terms of financial sustainability, EPI shows a surplus for 2004 to 2007, which implies that resources are adequate and EPI is sustainable. From 2008 to 2013, however, a deficit appears, hence the need for a strategic plan to overcome this deficit by reallocating excess resources. Thus, for 2080 to 2013, the surplus will decrease and the gap will narrow.

The EPI financial sustainability plan maps out the strategy for achieving financial sustainability and ensuring “EPI financial independence” over the long term. It takes into consideration the assets and constrains, opportunities and risks linked to future funding. It proposes short- and medium-term steps to be taken by the government and its partners. Consequently, the strategy chosen is adapted both to the situation of Benin and to its possibilities.

The expected impact is to secure the necessary funding for the implementation of activities. This will make it possible to improve immunization coverage, thus reducing mortality and morbidity linked to vaccine-preventable diseases.

The future strategic plan primarily focuses on:

- Mobilizing additional resources from national and foreign sources;
- Minimizing uncertainty with regard to resource provision;
- Streamlining resource utilization;
- Improving program efficiency and effectiveness.
Introduction

Like most of the African countries, Benin signed the Alma-Ata convention in 1978. The challenge of "HEALTH FOR ALL BY THE YEAR 2000" was set out in the Primary Health Care (PHC) strategy aimed at combating the main causes of mortality/morbidity using simple, valid and acceptable technologies available to all at an affordable cost for the community.

With a view to meeting the public’s priority health care needs, in 1987 Benin began to take steps to overhaul the peripheral health system, thereby anticipating the main thrust of the Bamako Initiative. The restructuring of PHC with immunization activities as an entry gate was firmly supported by UNICEF. This marked the beginning of the Expanded Program on Immunization incorporated into Primary Health Care (EPI-PHC).

Since the beginning of the eighties, immunization efforts worldwide have led to unprecedented strides. Efforts have focused on six vaccine-preventable diseases (polio, diphtheria, pertussis, measles, tetanus and tuberculosis). In 1998, an average of 74%\(^2\) of children worldwide had been vaccinated against these six diseases, as against < 5% in 1974\(^3\). However, in the developing countries very few children had access to vaccines that could protect them against such infections as HepB, Hib and yellow fever. Despite the fact that more and more children are immunized, some three million children continue to die yearly from vaccine-preventable diseases. This means that every minute, somewhere in the world, some six children die from one of these illnesses; indeed, measles alone kills a child a minute. Access to immunization throughout the world varies considerably. A child living in a developing country is 10 times more likely to die of a vaccine-preventable disease than a child living in an industrialized country. In Africa, where public health needs are greatest, more than 40% of all infants are not immunized against measles, the leading child killer\(^4\).

Accordingly, 1999 marked the founding of the Global Alliance for Vaccines and Immunization (GAVI), a body aiming to close this gap with the help of a world network of international development organizations, multilateral development banks, philanthropic organizations, private-sector leaders and other economic actors desirous of enlisting support worldwide for the production of vaccines and for immunization. Accordingly, Benin has received GAVI funding since 2002, after submitting to that body in 2001 a strategic five-year plan for 2001 to 2005.

With a view to securing funding for its Expanded Program on Immunization, Benin drafted a financial sustainability plan. The present plan, drawn up by a multidisciplinary and multisectoral team with the support of health development partners, is the outcome of a long process. Workshops were organized and the four sections were pre-reviewed by the team responsible for financial sustainability planning at WHO/Geneva.

The relevant observations made were taken into consideration in the process of finalizing this document. It has been presented to the signatory members of the Inter-agency Coordinating Committee for EPI (ICC-EPI) and comprises six sections:

- Impact of the status of the health system on EPI costs, funding and management;
- EPI characteristics, goals and strategies
- Basic and present EPI expenditure and funding
- Future program resource and funding requirements/gap analysis
- Strategies, actions and indicators with regard to financial sustainability
- Comments of the participating parties.

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\(^2\) WHO/V&B/99.17 WHO Vaccine Preventable Diseases Monitoring System, 1999 Global Summary

\(^3\) World Health Organization, World Health Report 1998: The view to the 21st Century – A Prospect For All

\(^4\) World Health Organization, World Health Report 1999: For a real change
SECTION 1: IMPACT OF COUNTRY AND HEALTH SYSTEM CONTEXT

1.1- Overall impact

1.1.1- From a geographic and demographic perspective

Benin is a West African country that runs from Niger in the north to the Atlantic Ocean in the south. It is bounded to the northwest by Burkina Faso and to the west by Togo. On the east, it shares more than 700 kilometres of a common border with Nigeria, a neighbouring country and the world's largest reservoir for wild polio strains. Its total land area, according to the latest estimates (1998) of the National Geographic Institute, is 114,763 square kilometres with an estimated population of 6,973,905 inhabitants\(^5\) in 2003. The breakdown of this population by health zone and by department can be found in annex No. 1. Socio-medical indicators remain unsatisfactory and similar to those found in low-income countries (see attached box No. 1). Women account for 51.5% of overall population, which is distributed unevenly throughout the country. Nearly 61.1% of the country's inhabitants live in rural areas. Average population density is 59 inhabitants per square kilometre inhabitants. This density varies from 20 to 8,419 inhabitants per square kilometre. In 2003, there were 1,118,280 children aged 0 to 4, or 16.3% of the overall population.

<table>
<thead>
<tr>
<th>Box N°1: Socio-medical indicators, Benin-2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gross birthrate (GBR)…………………………… ...41.17%o</td>
</tr>
<tr>
<td>2. Gross mortality rate (GMR)……………………..12.3%o</td>
</tr>
<tr>
<td>3. Infant mortality rate (IMR) ……………………...90%o</td>
</tr>
<tr>
<td>4. Infant/child mortality rate …………………….146.4%o</td>
</tr>
<tr>
<td>5. Maternal mortality rate (MMR)………………….474.4 deaths per 100,000 live births</td>
</tr>
<tr>
<td>6. Life expectancy at birth………………..………...59.2 ans</td>
</tr>
<tr>
<td>7. Men’s life expectancy at birth…………………57.2 ans</td>
</tr>
<tr>
<td>8. Women’s life expectancy at birth………………61.3 ans</td>
</tr>
<tr>
<td>9. Consolidated fertility index (CFI)…………………5.53 children per woman</td>
</tr>
</tbody>
</table>

Source: INSAE DED GPHC3 2002, Cotonou, December 2003

The country is relatively flat. After the lagoonal coast come plains and crystalline plateaux which rise gradually to the north without reaching any significant height until the northeast, in the Atacora chain which peaks at 641 metres. Owing to this topography, several villages in this region are hard to reach. Arrangements have been made to equip immunizers with motocross motorcycles to help them reach villages located more than five kilometres away from the immunization station, according to a timetable agreed with the local inhabitants.

Benin is watered by many rivers belonging to two major basins: the Niger basin and the coastal basin. All of the rivers from these basins, apart from the Niger River, follow the tropical model with flooding during the rainy season (July-October) and low water levels at the end of April. During the rainy season, many villages are cut off. Boats have been purchased to make it easier for teams to reach these lakeside villages and overcome their isolation.

1.1.2- From a linguistic and religious perspective

There are many different linguistic and ethnic groups in Benin (around 60) with various religious communities. At present, there is a proliferation of sects and religious denominations. In some places, groups are reluctant to allow immunization owing to cultural or religious factors. This problem, which was particularly pronounced during the mass immunization campaigns, came in for special attention

\(^5\) Estimated population on the basis of data from the GPHC-3, INSAE, March 2004.
during the third and fourth passage in 2004. Thanks to awareness-building and social mobilization efforts, progress was made in most of the zones in Borgou, Donga, Ouémé and Mono.

1.1.3- From an administrative perspective
Benin has set up a legislative system based on the reform of the territorial administrative system⁶ which sets aside a special level for deconcentration, the department, and a special level for decentralization, the commune (formerly the urban circumscription and the sub-prefecture).

However, the reform of the territorial administration came 10 years after the Ministry of Public Health (MPH) had introduced internal decentralization reforms leading to the restructuring of basic health services. The health zone now forms the operational unit for the planning, management and implementation of the health system under the guidance of a health zone supervisory team (HZST). There are 34 health zones in all. State funds are allocated to health sectors by means of health zones that are responsible, inter alia, for systematically organizing EPI activities.

1.1.4- From a political and legal perspective
Benin is a republic, a democratic State with a Constitution (Law No. 90-032 of 11 December 1990 on the Constitution of the Republic of Benin). Elections are held regularly to renew the institutions of the Republic, and offer a guarantee of peace and political stability. The country has ratified several conventions and has adopted a number of laws to improve mother and child health, in particular the decree on the functioning of the National Directorate of the Expanded Program on Immunization and Primary Health Care (NDEPI-PHC).

1.1.5- From a health education and training perspective
Benin has several vocational schools that train health workers (midwives, nurses, laboratory technicians, health agents and doctors). Many of these persons currently work in the private sector and have virtually no contact with immunization. However, the Ministry of Public Health, working through the Ministry of Civil Service, recruits various staff on a contractual basis. However, they lack motivation owing to the precarious nature of their administrative status.

1.2- Macroeconomic impact
1.2.1- From an economic perspective
On the whole, Benin's economy has tended to improve in recent years. From 1996 to 2001, the country posted average growth rates of 5.3%. Owing to this strong showing, the government was able to shore up its finances and step up its health-sector investments (from 11.6% in 1996 to 37.7% of overall government spending in 2001)⁷. Spending⁸ on high-priority sectors, including the Ministry of Public Health, averaged 245.83 billion for 2002 to 2005, i.e. 11.6% of GDP.

However, growth has been falling since 2003, declining from 4.5% to around 3% in 2004. Moreover, installation is on the rise, in creasing from 1.5% in 2003 to 2% in 2004.

Benin is heavily indebted (37.1% of GDP in 2001). However, debt relief is available because in July 2000 the country was declared eligible to benefit from the Heavily Indebted Poor Countries (HIPC) initiative. Within this framework, development partners have undertaken to forgive some or all of the country’s debt they hold. The debt relief thus obtained amounted to 38.9 billion CFA francs between

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⁷ Health Expenditure Review, MPH.
⁸ SPRD, Cotonou, December 2002, p. 70.
2000 and 2002 and has essentially been allocated to education and health\(^9\). In the first half of 2004, Benin received 7.65 trillion CFA francs in the form of debt relief. These funds have helped to finance social spending and in particular immunization (funding of traditional vaccines and injection supplies).

The Poverty Reduction Strategy Document (PRSD) advocates, with regard to improving macroeconomic management, better control of public spending from 2005 onwards and the improvement of resource mobilization mechanisms by 2006.

1.2.2- From a government financing perspective

The following table shows tax revenue as a percentage of GDP for 1998 to 2002:

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<th>Indirect taxes</th>
<th>Other taxes</th>
<th>Total tax burden</th>
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<td>0.0</td>
<td>12.6</td>
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<td>1999</td>
<td>3.2</td>
<td>9.8</td>
<td>0.0</td>
<td>13.0</td>
</tr>
<tr>
<td>2000</td>
<td>3.3</td>
<td>10.6</td>
<td>0.0</td>
<td>13.9</td>
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<tr>
<td>2001</td>
<td>3.4</td>
<td>10.0</td>
<td>0.0</td>
<td>13.5</td>
</tr>
<tr>
<td>2002</td>
<td>3.7</td>
<td>10.7</td>
<td>0.0</td>
<td>14.4</td>
</tr>
</tbody>
</table>

Source: Ministry of Finance

With regard to spending, the reforms were aimed at ensuring greater control over wages. The reforms were also designed to ensure better control of other overheads, leading to an increase of spending on materials, better sectoral allocation of spending to the benefit of health, education, rural development and transportation; and a streamlining of the number of projects qualifying as Public Investment Programs (PPP).

Moreover, as the EPI is an essential tool of national health policy, the government has since 1996 provided funding for vaccine procurement, within the framework of the Vaccine Independence Initiative (VII).

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned amounts (in CFAF mill.)</td>
<td>30</td>
<td>30</td>
<td>187.3</td>
<td>299</td>
<td>337</td>
<td>837</td>
</tr>
<tr>
<td>Govt’s share of vaccine procurement</td>
<td>0%</td>
<td>10 %</td>
<td>50 %</td>
<td>80 %</td>
<td>90 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Amounts disbursed (in CFAF mill.)</td>
<td>30</td>
<td>30</td>
<td>187</td>
<td>210</td>
<td>337</td>
<td>837</td>
</tr>
</tbody>
</table>

Source: External EPI review 2001, MPH.

Since 1996, the budget for vaccine procurement has gradually increased to reach 837 million CFA francs, as a result of which vaccine procurement is entirely covered. This was possible thanks to the commitment of the government and funding from the HIPC initiative.

Implementing EPI since 2000 has required considerable means. The level of funding plummeted in 2001, subsequently stabilizing in 2002 and 2003 before falling once again in 2004. Despite all of the government’s efforts, it has not been able to contribute the same share as in 2000. Nevertheless, HIPC funding has covered all traditional vaccines since 2000.

---

1.2.3- Medium-term spending framework (MTSF)

The medium-term spending framework for the health sector calls for regular annual increases of some 5 billion in order to meet the major challenges with regard to the fight against poverty. Spending was evaluated at 37.75 trillion CFA francs in 2002; 41.89 trillion in 2003, and 47.64 trillion in 2004. Funding comes from both from internal and external resources.

The cost of high-priority campaigns for 2002, 2003 and 2004 was, respectively, 16.13 billion, 22.7 billion and 26.60 billion CFA francs, as can be seen from the attached table entitled Medium-term Spending in Benin for 2002 to 2004 (amounts in mill. of CFA francs).

1.2.4- The budgetary process

Ever since 2001, the ministers have directly managed credits allocated to them through both the national budget and external resources, via the Integrated System for the Management of Public Funds (SMPF), centralized in the Ministry of Finance. They are empowered to allocate their credits, taking into account the priorities in the sector and the needs expressed by their technical directorates. Within this framework, the NDEPI receives its credits directly, thereby enabling it to ensure permanent budget headings for vaccine procurement.

At the intermediate and peripheral levels, from 2004 onwards, the direct allocation of credits to the departmental health directorates and the health zones by delegation has led to a drop in delays and overly hasty spending. The peripheral structures now have resources to maintain cold chain equipment, carry out outreach strategies and supervise immunization activities.

1.3- Socio-medical impact

1.3.1- Health problems

Benin’s epidemiological profile is characterized by a predominance of endemo-epidemic disorders, such as malaria, diarrhoeal illnesses, gastroenterological disorders, respiratory infections, and certain vaccine-preventable diseases like measles, maternal and neonatal tetanus and polio.

The latter disorders are declining overall. This is the case for measles, where the rate of incidence fell from 3626 cases per 1000,000 children under 5 in 1978 to 15 per 100,000 in 2003 (see graph below). This is also the case for polio, where the total declined from 9 cases in 1990 to 0 cases in 2001 before rising again to 6 cases imported from Nigeria in 2004.

Graph 1: Measles cases from 1974 to 2003 (per 100,000 children under five)

![Graph 1: Measles cases from 1974 to 2003 (per 100,000 children under five)](image)

Source: Based on SSDRO/MPH, Benin, 2003.

1.3.2- National health goals

The mission of the Ministry of Public Health has changed as a result of efforts to combat poverty. It now includes “improving the socio-medical conditions of families on the basis of a system that includes the poor”. Efforts are designed to improve health indicators by, inter alia, strengthening the...
Expanded Program on Immunization between now and 2006. Plans call for increasing the rate of DTP3 coverage from 83% in 2001 to 90% in 2006 and measles coverage from 81% in 2001 to 91% in 2006. The relevant steps to be taken include improving the outreach strategy to reach the most remote villages; strengthening EPI management capacity; ensuring a strong community commitment to immunization; and improving health coverage and the quality of nutritional care available to vulnerable groups.

The new approach, which is reflected by efforts to identify priorities and focus on specific goals, consists of the drafting and the implementation of policies that are in tune with the Millennium Development Goals (MDG)\textsuperscript{10}. Benin’s report on the MDG placed the emphasis in mother and child health and efforts to combat high-priority diseases. It therefore sets the following goals:

\begin{itemize}
  \item Reducing mortality for children under 5 from 166.5 per 1000 in 1996 to 90 per 1000 by 2015;
  \item Improving maternal health by reducing the maternal mortality rate from 498 in 1996 to 390 per 100,000 live births by 2015;
  \item Combating HIV/AIDS, malaria and other diseases by reducing the prevalence of STD/HIV/AIDS and by controlling malaria and other major epidemics so as to reverse present trends by 2015.
\end{itemize}

### 1.3.3- Resources made available to the health sector

#### 1.3.3.1 Human resources

There are two major problems with regard to personnel management in the health sector: staff are concentrated in urban centres, in particular at Cotonou, Porto-Novo and Parakou, to the detriment of rural centres, and current staff are aging. At the national level, the ratios of “number of inhabitants per health workers” are 15,347 per doctor, 4,933 per nurse and 2,638 women of child-bearing age per midwife\textsuperscript{11}.

#### 1.3.3.2 Material resources

According to the external EPI review conducted in 2001\textsuperscript{12}, some 94% of all immunization centres have effective vaccine storage facilities; these primarily consist of refrigerators (90% of all cases) and freezers (14% of all cases). Storage cold chambers at the central level are equipped with two generators that switch on automatically.

With regard to the drafting of the Financial Sustainability Plan, the inventory of cold chain and EPI equipment showed the following\textsuperscript{13}:

\begin{itemize}
  \item At the central level, storage capacity was 26 cubic metres of positive volume and 30 cubic metres of negative volume for a required volume of 11 cubic metres of positive volume and seven cubic metres of negative volume, in accordance with the frequency of half-yearly deliveries. However, once the pentavalent vaccine is introduced, requirements will increase respectively to 15 cubic metres of positive volume and seven cubic metres of negative volume.
  \item At the intermediate level, storage capacity is 21 cubic metres of positive volume and 16.7 cubic metres, including a positive cold chamber (15 cubic metres) and a negative one (15 cubic metres) in Parakou.
  \item In the peripheral health units, there are 19 cubic metres of positive storage capacity.
\end{itemize}

Overall, in anticipation of the introduction of the pentavalent vaccine, storage capacities have been made secure at the central level. However, 18% of the equipment surveyed had broken down on the peripheral level, and the storage level could prove inadequate. Consequently, there is a need to adjust the storage scheme.

\textsuperscript{10} Annual health sector review, MPH, June 2004.
\textsuperscript{11} Policy for the management of human resources in the health sector, MPH, July 2003
\textsuperscript{12} External review of the Expanded Program on Immunization, Final Report, September 2001
\textsuperscript{13} Report on the inventory of cold chain and EPI equipment in Benin, MPH, September 2004
SECTION II: PROGRAM CHARACTERISTICS, GOALS AND STRATEGIES

The first phase of EPI, which was introduced during a recession, hence with insufficient funds and relatively ineffective strategies (mobile strategy), made it possible after much effort to increase the immunization coverage rate to 11.5% over a four-year period (1982 to 1985). EPI has since become a priority goal and now enjoys the support of the government and the commitment of both health agents and development partners. Subsequently, EPI’s inclusion in primary health care in 1987 in connection with the Bamako Initiative gave it a boost, and it was broadened to include the entire health system. Since then, immunization coverage rates have risen rapidly.

2.1- Program characteristics

2.1.1 EPI policy

La Constitution of 11 December 1990 stipulates that « the State shall protect the family and more particularly the mother and child ». Immunization is free and compulsory for all children. The State thus does its utmost to mobilize sufficient resources to guarantee the procurement of vaccines and injection supplies. It relies on the expertise and facilities of its partners, in particular UNICEF, which specializes in vaccine procurement. The government’s commitment can be seen at different levels:

- Complete vaccine independence from 2000 onwards;
- The utilization of AD syringes and safety boxes from 2002 onwards;
- The introduction in August 2002 of two new vaccines (HepB and yellow fever) with GAVI support; and soon
- The changeover to the pentavalent vaccine (DTP-HepB+Hib), planned for April 2005.

2.1.2 Program goal

The EPI aims overall to improve family health. With regard to objectives pursued worldwide, its ultimate goals are to:

- Eradicate polio;
- Eliminate maternal and neonatal tetanus;
- Control measles, yellow fever and HepB.

2.1.3 Program implementation: institutional framework and management

2.1.3.1 Institutional framework

The health system in Benin is a decentralized pyramidal structure with a central level consisting of the Cabinet of the Ministry of Public Health and the central and technical directorates; and an intermediate level with a departmental health directorate and its technical services. The peripheral level is composed of health zones which bring together one or more administrative communes, the operational unit of the health system.

2.1.3.2. EPI management and administration

- Functional organization

EPI is implemented by the National Directorate of the Expanded Program on Immunization and Primary Health Care (NDEPI-PHC), the executing arm of State policy for immunization. It consists of four technical services: the Immunization Service, the Logistics Service, the Primary Health Care Service and the Cost Reimbursement Service.

The organization of EPI activities is based on the health system. For example:
At the national level, EPI comes under the Minister of Public Health. Coordination is provided by a public health doctor, the National Director for EPI and Primary Health Care.

At the departmental level, EPI coordination is provided by the Director of the Health Protection and Promotion Service, who is assisted by the Director of the Immunization Division.

At the health zone level, EPI is coordinated by the Health Zone Supervisory Team (HZST) under the responsibility of the Health Zone Coordinating Doctor (HZCD).

At the communal level, EPI is handled by the Chief Commune Doctor seconded by an EPI Officer.

At the neighbourhood district level, EPI activities are carried out under the guidance of the EPI Station Director or Officer.

The ICC’s role, functions and responsibilities with regard to EPI

The Inter-agency Coordinating Committee for EPI provides a framework for partnership between the government of Benin and development cooperation agencies with a view to the programming, implementation and follow-up of immunization activities. In this respect, it is responsible for:

- Supporting efforts to define the policy of the Expanded Program on Immunization;
- Assisting with the preparation of EPI strategic plans and annual plans;
- Mobilizing the necessary internal and external resources for the implementation of the programs prepared;
- Monitoring the implementation of these programmes;
- Periodically reviewing the program implementation reports;
- Ensuring the efficient use of the resources mobilized;
- Assisting the National Directorate of EPI-PHC in organizing periodic program reviews.

The main ICC-EPI members are internal partners (government, NGOs, private sector and communities), and external partners consisting of multilateral bodies such as WHO, UNICEF, World Bank, European Union through the FED ARIVA/CATR project; and bilateral bodies such as USAID, development cooperation agencies from Japan (JICA), Belgium (CTB) and Switzerland; NGOs or various institutions such as Rotary, CDC Atlanta, AMP, Benin Plan and the Red Cross.

2.1.4 EPI performance

EPI has gone through four stages:

- 1982 – 1986, the phase of boosting immunization coverage. The first EPI operational plan aimed to achieve 80% immunization coverage in five years. Its evaluation in 1985 revealed an immunization coverage rate of 11.5%;
- 1987 – 1990, the universal immunization stage. EPI incorporated into PHC and launched in 1987 made it possible to reach the goal of 80% immunization coverage by 1990;
- 1990 – 1995, the intermediate goal stage. EPI was to reach coverage rates of 90% for BCG, 85% for DTP3 and 95% for measles and TT;
- 1995-2000, the goal evaluation phase, for elimination or eradication, which require coverage rates of at least 95% (measles, tetanus, polio).

In Benin, EPI has been relatively successful with regard to both its implementation and its impact on mother and child health indicators.

2.1.4.1 Systematic EPI

Results of the external EPI review, March 2001

Program coverage

EPI coverage in Benin is unsatisfactory because at the national level, it only amounts to 49% (based solely on immunization cards) with variations ranging from 36% to 63%. Departments with coverage under 50% are Couffo, Atacora, Borgou, Atlantic, Alibori and Collines. However, based on immunization cards (available for 85% of all children) and boosters for mothers, coverage per antigen works out to 94% for BCG, 78% for OPV3, 79% for DTP3 and 72% for measles.

Program utilization
EPI in Benin is used properly because the BCG utilization rate varies from 87% to 100%, with a nationwide average of 94%. Departments with utilization rates under 90% are Atacora, Donga, Borgou and Alibori.

**Program continuity**

Much remains to be done as far as program continuity is concerned. Drop-out rates between BCG and measles vary between 16% and 36%, with a nationwide average of 23%. Between DTP1 and DTP3, drop-out rates range from 7% to 24%, with a nationwide average of 14%. Departments with the highest drop-out rates are Couffo, Atlantic, Borgou and Alibori.

**Compliance with the EPI immunization schedule**

The immunization schedule is followed relatively closely because the proportion of invalid doses nationwide is only 6% for DTP1 and measles. Departments with the highest proportion of invalid DTP1 doses are Littoral, Atacora, Borgou and Collines. For measles, the relevant departments are Atacora, Couffo, Mono and Donga.

**Program capacity to reach children under 1 year**

This capacity is 88% nationwide, with variations ranging from 80% to 95%. There is still much to be done in the departments of Atacora, Borgou, Plateau and Donga.

2.1.4.2 Additional immunization

The results for additional immunization activities are set out in the attached tables.

- **Polio eradication**

  Household surveys have shown that coverage following National Immunization Days is satisfactory (in the neighbourhood of 95%). On the basis of data collected during operations, some coverage rates exceed 100%. This is primarily due to errors in calculating the target population and to immunization of non-target subjects (children over five).

- **Measles control**

  In 2001, the mass measles immunization campaigns organized in the departments of Atacora/Donga and Zou/Collines, then in 2003 in the rest of the country, made it possible to immunize children aged nine months to 14 years. The post-survey results were 98% in 2001 and 97% in 2003, which reflects the quality of the operations conducted.

2.1.4.3 Epidemiological surveillance

Epidemiological surveillance is an integral part of EPI. In 1997, these efforts were stepped up to accelerate the process of eradicating polio and eliminating tetanus and measles, with an emphasis placed on the laboratory: reporting and collection of samples for all suspected cases.

### 3.2 Results

**Table 2.1 : Number of cases of EPI target diseases from 1997 to 2003**

<table>
<thead>
<tr>
<th>Year</th>
<th>Polio</th>
<th>Measles</th>
<th>Yellow fever</th>
<th>Maternal and neonatal tetanus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suspected</td>
<td>Confirmed</td>
<td>Suspected</td>
<td>Confirmed</td>
</tr>
<tr>
<td>1997</td>
<td>4</td>
<td>2</td>
<td>11316</td>
<td>-</td>
</tr>
<tr>
<td>1998</td>
<td>16</td>
<td>2</td>
<td>4134</td>
<td>-</td>
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<td>1999</td>
<td>71</td>
<td>9</td>
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<td>-</td>
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<td>2000</td>
<td>80</td>
<td>1</td>
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<td>-</td>
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<tr>
<td>2001</td>
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<td>0</td>
<td>12345</td>
<td>-</td>
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<tr>
<td>2002</td>
<td>115</td>
<td>0</td>
<td>3913</td>
<td>168</td>
</tr>
<tr>
<td>2003</td>
<td>68</td>
<td>2</td>
<td>227</td>
<td>58</td>
</tr>
</tbody>
</table>

Source: NHIMS – BENIN
2.2. EPI goals

Program activities are divided into three main areas: routine immunization, additional immunization and epidemiological surveillance.

2.2.1 General goal

Help reduce infant and child morbidity and mortality due to EPI target diseases.

2.2.2 Specific goals

2.2.2.1 Specific goal for systematic EPI

- Increase nationwide immunization coverage for infants aged 0-11 months and for pregnant women to the following rates by the year 2013:

Table 2.2: Annual immunization coverage goals per antigen for 2004-2013 (goals projected on the basis of current EPI performance in Benin)

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</tr>
</thead>
<tbody>
<tr>
<td>Vit A Infants (&gt;6 months)</td>
<td>50%</td>
<td>60%</td>
<td>80%</td>
<td>85%</td>
<td>85%</td>
<td>90%</td>
<td>95%</td>
<td>95%</td>
<td>96%</td>
<td>96%</td>
</tr>
<tr>
<td>Vit A Mothers (&lt;8 wks after delivery)</td>
<td>30%</td>
<td>50%</td>
<td>70%</td>
<td>75%</td>
<td>80%</td>
<td>85%</td>
<td>90%</td>
<td>91%</td>
<td>92%</td>
<td>92%</td>
</tr>
<tr>
<td>BCG</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>DTP3</td>
<td>93%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPV3</td>
<td>93%</td>
<td>95%</td>
<td>95%</td>
<td>96%</td>
<td>96%</td>
<td>97%</td>
<td>97%</td>
<td>98%</td>
<td>98%</td>
<td>98%</td>
</tr>
<tr>
<td>HepB3</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTP-HepB+Hib3</td>
<td></td>
<td>85%</td>
<td>85%</td>
<td>90%</td>
<td>90%</td>
<td>93%</td>
<td>95%</td>
<td>95%</td>
<td>96%</td>
<td>96%</td>
</tr>
<tr>
<td>MEAS</td>
<td></td>
<td>86%</td>
<td>90%</td>
<td>91%</td>
<td>92%</td>
<td>93%</td>
<td>94%</td>
<td>95%</td>
<td>95%</td>
<td>96%</td>
</tr>
<tr>
<td>YF</td>
<td></td>
<td>86%</td>
<td>90%</td>
<td>91%</td>
<td>92%</td>
<td>93%</td>
<td>94%</td>
<td>95%</td>
<td>95%</td>
<td>96%</td>
</tr>
<tr>
<td>TT2+</td>
<td></td>
<td>73%</td>
<td>75%</td>
<td>75%</td>
<td>76%</td>
<td>76%</td>
<td>77%</td>
<td>78%</td>
<td>80%</td>
<td>80%</td>
</tr>
</tbody>
</table>

- Introduce in 2005 the DTP-HepB+Hib vaccine (Diphtheria, Tetanos, Pertussis, Hepatitis B and Hemophilus influenzae b) into systematic EPI throughout the country

- Reduce vaccine wastage rates by 2013 to:
  - 35% for reconstituted vaccines (BCG, MEAS and YF);
  - 15% for non-reconstituted vaccines (based on packaging options) (OPV and TT);
  - 10% for DTP-HepB+Hib (pentavalent vaccine)

Table 2.3: Annual goals for wastage rates as a % for 2004-2013

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<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>60%</td>
<td>50%</td>
<td>45%</td>
<td>40%</td>
<td>40%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>DTP</td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTP-HepB+Hib</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>MEAS</td>
<td>50%</td>
<td>60%</td>
<td>45%</td>
<td>40%</td>
<td>40%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>OPV</td>
<td>35%</td>
<td>30%</td>
<td>25%</td>
<td>25%</td>
<td>23%</td>
<td>23%</td>
<td>20%</td>
<td>19%</td>
<td>17%</td>
<td>15%</td>
</tr>
<tr>
<td>TT</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>23%</td>
<td>23%</td>
<td>20%</td>
<td>18%</td>
<td>18%</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>YF</td>
<td>50%</td>
<td>50%</td>
<td>40%</td>
<td>40%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>HepB</td>
<td>35%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

- Reduce drop-out rates between PENTA 1 and PENTA 3 to 8% by 2013
2.2.2.2 Specific goals for additional immunization

- **Specific goals for the additional immunization campaigns for polio:** administer two drops of OPV to each child aged 0-59 months
  - Organize two additional immunization campaigns for polio in 2005 and one campaign in 2006 (each campaign consisting of two rounds);
  - Organize immunization ripostes for polio if cases of wild polio strains are detected.

- **Specific goals for additional immunization campaigns for measles:**
  - Immunize at least 95% of all children aged 0-59 months for measles during the follow-up campaigns in 2006, 2009 and 2012
  - Organize ripostes for measles at the source of epidemics.

- **Specific goals for additional immunisation campaigns to combat maternal and neonatal tetanus (MNT):**
  - Reduce the incidence of maternal and neonatal tetanus to <1 per 1000 live births per year and per commune by 2013;
  - Reduce the proportion of high-risk communes for MNT from 23.4% to < 10% by 2013 by immunizing at least 90% of all women of childbearing age;
  - Organize immunization ripostes for tetanus in response to each case of MNT detected.

2.2.2.3 Specific goals relating to epidemiological surveillance of EPI target diseases

- **Goal for AFP surveillance:** by 2013,
  - Reach a rate of non-polio AFP above 1 in 90% of all communes;
  - Ensure that two stool samples are collected within 14 days in 90% of all communes in 80% of AFP cases;
  - Make sure that all communes stay at 100% with regard to monthly reporting on systematic EPI.

- **Goal for measles**, by 2013,
  - Increase the share of communes that have reported at least one suspected case of measles from 52% to 80%;
  - Take samples in 100% of all suspected measles cases;
  - Reduce to 10% the positivity rate for suspected measles cases confirmed by the laboratory;
  - Investigate 100% of detected epidemic sources for measles.

- **Goal for maternal and neonatal tetanus**
  - Achieve at least an 80% reporting rate for MNT cases in 80% of the communes
  - Investigate 100% of MNT cases detected;
  - Train traditional midwives to use the material provided (with the help of the Family Health Directorate);
  - Organize community-based surveillance of MNT cases, relying on the network of community focal points.
2.2.2.4 Specific goals for injection safety
   - Ensure that all immunization injections administered are safe by 2013;
   - Reduce AEFI to less than 1/1,000,000 by 2013;
   - Strengthen active surveillance of AEFI in health groups and in the communes;
   - Eliminate used immunization supplies according to the standards set (incineration) in all communes by 2013;
   - Considerably increase awareness of the dangers of unsafe injections among both health workers and in the community;
   - Ensure that all health groups have an adequate and regular supply of AD syringes and safety boxes by 2013.

2.3. Program strategies and fields of action

2.3.1 Basic strategies

2.3.1.1 Strengthening of routine immunization
   Every child must receive the required vaccine doses before his or her first birthday according to the schedule in use. Immunization sessions are conducted according to various strategies:
   - Immunization at fixed posts and on a daily basis in all health groups;
   - Immunization upon every contact following verification of the child’s immunization status in accordance with ICCD guidelines;
   - Outreach strategy in every village more than 5 km from a health group, in accordance with a program drawn up together with the inhabitants of these villages;
   - Active searches, with the help of community focal points, for children not brought in by their parents;
   - Mopping-up (mass immunization sessions in zones with low immunization coverage or zones where polio or measles viruses or the tetanus bacillus circulate).

2.3.1.2 The organization of additional immunization in the form of national or local immunization days and special campaigns focuses on high-risk regions, villages and populations, as recommended by the World Health Organization (WHO). It constitutes a supplementary strategic approach in achieving the world goals with regard to the eradication, control and elimination of high-priority diseases.

2.3.1.3 Integrated disease surveillance and riposte (IDSR) consists of:
   - Reporting cases and deaths linked to potentially epidemic diseases;
   - Collecting and forwarding samples;
   - Investigated cases reported;
   - Confirming suspected cases with the help of the laboratory;
   - Training surveillance staff and other actors to use IDSR modules.

2.3.1.4 Strengthening funding and community involvement helps, inter alia, to increase the number of people who visit health groups by ensuring ongoing availability of essential drugs. It also helps to reduce the number of those left out by means of the gradual introduction of a system of mutual insurance and coverage for the destitute.

2.3.2 Support strategies

2.3.2.1 The introduction of resources to ensure the availability of services. All avenues are explored, in particular the State, local authorities, partners, the community and families.

2.3.2.2 The introduction of a more effective logistics system for human and material resources. The equipment used is authorized by WHO and UNICEF, in accordance with the PIS (catalogue listing specifications for EPI supplies and equipment).

2.3.2.3 Training, supervision, follow-up, evaluation and operational research, organized on a systematic and regular basis, support and guide the implementation of EPI.
2.3.2.4 Communication aimed at encouraging behavioural change makes it possible to involve and mobilize the community at all stages, from planning to evaluation. It relies on various media available in the community, including neighbourhood radio.

2.3.2.5 Intra- and intersectoral collaboration, particularly with other programmes in the sectors such as the ICCD, the PNLP, the PNT, the PEVG, etc. Such collaboration is strengthened through institutions like the Inter-agency Coordinating Committee (ICC) for EPI at all levels.

2.3.2.6 International cooperation is coordinated in the ICC-EPI, making it the management board for national and international resources earmarked for immunization, including those of the World Vaccine Fund for Children within the framework of the Global Alliance for Vaccines and Immunization (GAVI).
SECTION III: PRE-VACCINE FUND AND VACCINE FUND YEAR PROGRAM COSTS AND FUNDING

3.1 Methodology

The methodology used is primarily based on the following documents:


The new vaccines were introduced into EPI in Benin on 2 August 2002. Consequently, the years 2001 and 2003 were chosen, respectively, as the year prior to support from the Vaccine Fund\(^{14}\) and the first complete budgetary year with the support of the Vaccine Fund\(^{15}\).

The exchange rates of 1 USD for 732.4 CFA francs in 2001 as against 581.9 CFA francs in 2003 were used, respectively, for the calculations in this section. These exchange rates were obtained through the UNDP office in Cotonou. The calculations to arrive at the exchange rates are based on the yearly average for monthly rates for 2001 and 2003.

Moreover, differences between methods of collection and calculation in the determination of costs and funding could explain the gaps between costs and funding.

3.1.1 Methodology for determining past and present costs

- The shared costs for the staff involved in immunization on all levels were determined based on the time devoted to EPI activities depending on structure. The time that the staff spent on EPI activities varied: from 76.8% at the national level to 27.4% at the department level, 20% at the health zone level and 25.8% at the communal level. With regard to immunization activities using an outreach strategy in the neighbourhood districts, the estimate of time spent was 53.1%.
- On the basis of the salary grid in use in Benin, average payment indices were determined for each staff category. This made it possible to evaluate the annual financial impact, taking into consideration both wages and contributions to the National Retirement Fund (NRF).
- No information on the salaries of the WHO and UNICEF staff who act as focal EPI focal points within those two institutions was provided by the institutions concerned.
- A lump sum of 500 CFA francs was paid as compensation for immunizers operating in connection with outreach strategies targeting villages.
- As far as equipment is concerned, a national inventory was conducted of vehicles and cold chain facilities in September 2004 (within the framework of the drafting of the FSP).
- With regard to cost calculation (depreciation), the life\(^{16}\) of cold chain equipment is estimated at five years.
- Building costs and overheads were not taken into consideration (optional costs).
- Cost estimates for injection supplies in 2001 are based on available data on stock movements within the NDEPI (the data show an amount of 112,335,462 CFA francs, i.e. 3.2% of the cost of EPI).

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\(^{14}\) Year prior to VF support: the most recent budgetary year for which data is available on actual expenditure and EPI funding prior to reception of GAVI aid

\(^{15}\) Year with VF support: the most recent budgetary year for which data is available on total expenditure and EPI funding after start of GAVI aid

\(^{16}\) Life: the amount of time the equipment is expected to last
3.1.2 Methodology for determining past and present funding

In addition to the above-mentioned tools, the working group drew up specific questionnaires for the ministries and the partners concerned with a view to collecting information on the funding allocated by each body from 2001 to 2003, by cost item.

In terms of funding sources, no account was taken of funding from local authorities, the amount of which is not known. However, the community contributes via community funding (CF). The bodies in charge of managing these resources are called management committees and are structured by level of the health pyramid. For the country as a whole, community financing is estimated at 5% of local CF income:

- Data from the NHIMS and the results of the half-yearly follow-up
- Interviews with zone coordinating doctors (zones are equivalent to districts) and zone supervisory teams (ZST)

Internal funding is defined as the national budget, community funding and “HIPC” funds. External funding is defined as funds allocated by GAVI/VF and external partners (bilateral and multilateral bodies and NGOs/associations).

3.2 Quantitative data on costs and funding for the “pre-Vaccine Fund year” (2001)

3.2.1 EPI costs in 2001

Total program cost for 2001 before the use of GAVI funding, that is the base year, is evaluated at USD 4.3 million, that is 3.9% of total health expenditure.

Out of this total of USD 4.3 million:

- 13.2% are shared costs,
- 10.4% are capital costs.
- 38% are routine EPI (static and outreach strategies), whereas campaigns account for 39.87% of total EPI spending in Benin.

- Routine EPI vaccines and injection supplies accounted for 13% of overall EPI expenditure in 2001. If the costs of vaccines and injection supplies for campaigns are included, this share rises to 49.7%.
- In routine EPI, staff costs are the most important budget item: they accounted for 17.3% of total EPI expenditure in 2001 (including shared personnel costs).
Overall cost of routine EPI per child immunized with DTP3 is USD 13.11.

3.2.2 EPI funding in 2001

According to information gathered for 2001 from various partners and ministeries by means of questionnaires, 82% of program funding needs were met. In 2001, internal funding accounted for 47.6% of total funding, as against 52.4% for external funding. Internal funding covers staff salaries, procurement of traditional vaccines, maintenance of cold chain equipment, motorcycle maintenance, fuel for the outreach strategies and part of the operational costs of additional measles immunization campaigns. For their part, the other partners financed the procurement of traditional vaccines for campaigns with their injection supplies, supervisory vehicles and cold chain equipment. Moreover, disease control and surveillance, supplementary immunization and capacity-building were also covered by the other partners.

3.3 Quantitative data on costs and funding for the “Vaccine Fund year” (2003)

3.3.1 EPI costs in 2003

Total program cost in 2003 with the use of GAVI funds is evaluated at USD 6.9 million, or 4.93% of total health expenditure. Out of this 6.9 million:

- 11.5% are shared costs,
- 8.57% are capital costs.

The share of routine EPI is evaluated at 62.71%, while the share of campaigns accounted for 37.29% of total EPI spending in 2003.

- Routine EPI vaccines and injection supplies accounted for 18.7% of overall EPI expenditure in 2003. If the costs of vaccines and injection supplies for campaigns are included, this share would be 60%.
- In routine EPI, staff costs are the most important budget item: they accounted for 14.85% of total EPI expenditure in 2003 (including shared personnel costs).
- Overall cost of routine EPI per child immunized with DTP3 is USD 18.64 in 2003.
3.3.2 EPI funding in 2003

Total program funding came to USD 8.2 million in 2003\textsuperscript{17}. This means that funding exceeded EPI cost requirements. This surplus is mainly due to a donation, from a Japanese development cooperation body, of traditional vaccines and injection supplies, on a scale far superior to needs.

In 2003, internal resources accounted for 25.85\% of total program funding, as against 74.15\% for external partners.

Internal funding covered staff salaries, supervisory vehicles, injection supplies, maintenance of cold chain equipment, motorcycle maintenance, fuel for outreach strategies and part of the operational costs of additional measles immunization campaigns. GAVI funds paid for new vaccines and related injection supplies.

The other partners financed the procurement of traditional vaccines for campaigns with their injection supplies, supervisory vehicles, and cold chain equipment. Moreover, disease control and surveillance, additional immunization and capacity building were covered by the other partners.

3.4 Qualitative analysis of costs and funding

3.4.1 Cost comparison for 2001 and 2003

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{costs_comparison.png}
\caption{Profile des Coûts par Rubriques (US$ Millions)}
\end{figure}

Total program cost in 2001 (before utilization of GAVI funding) and in 2003 (with GAVI funding) is evaluated, respectively, at USD 4.3 million and USD 6.9 million, an increase of 60.18\%. The main causes for cost increases between 2001 and 2003 are as follows:

- The introduction of new vaccines (HepB) and under-used vaccines (YF);
- The procurement of some 30 vehicles, a refrigerating truck and the strengthening of the cold chain throughout the country;
- The extension in 2003 of the measles campaign from two to four departments (out of a total of six)\textsuperscript{18}

\textsuperscript{17} This corresponds to a funding level of 117\% of EPI costs.
\textsuperscript{18} In 2001, the measles campaigns targeted 2/6 of the country’s departments. In 2003, the measles campaign targeted the remaining four departments not covered by the 2001 campaign.
This explains the increase in routine EPI costs per child immunized with DTP3, which rose from USD 13.11 in 2001 to USD 18.64 in 2003.

3.4.2 Funding comparison for 2001 / 2003 Benin’s EPI status in terms of financial sustainability

- Internal funding rose from USD 1.72 million to USD 2.1 million, an increase of 22.67%.
- External funding tripled, increasing from USD 1.89 million to USD 6.05 million in 2003.
- As a result, the relative share of internal funding plummeted from 47.6% in 2001 to 25.85% in 2003, a 50% decrease. During the same period, the relative share of the external funding rose from 52.4% in 2001 to 74.15% in 2003.
- This situation is to the fact that:
  (i) The State, which funded traditional vaccines in 2001, was replaced by a Japanese development cooperation body in 2003,
  (ii) The new and under-used vaccines\(^{19}\) were funded by GAVI/VF. This funding for new vaccines, to the tune of USD 757,643, accounts for 12.5% of external program funding.

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\(^{19}\) Introduction in August 2002 of HepB and YF vaccines into routine EPI.
SECTION IV: FUTURE RESOURCE REQUIREMENTS, FINANCING, GAP ANALYSIS

4.1. Methodology

4.1.1. Methodology for projecting resource requirements

From a methodological perspective, resource estimates are primarily based on:
- The five-year EPI plan for 2004-2008;
- The application files submitted to GAVI « Plan for the introduction of the pentavalent vaccine (DTP/HepB/Hib) into EPI in 2005 » covering the period 2002-2007 and

The EPI performance goals for 2009-2013 were set taking present EPI performance into consideration.

Resource estimates also take the following into consideration:
- The target population based on a February 2002 GPHS census and the level of immunization coverage to be reached each year;
- The nationwide introduction, on 1 April 2005, of the pentavalent vaccine (DTP3 and HepB combined with Hib);
- The desire of the programme coordinators to help reduce risks tied to unsafe injection practices and to the unsafe destruction of used injection supplies throughout the country by 2007;
- Campaigns to be organized between 2004 in 2013 for polio, tetanus and measles;
- Salaries that were estimated on the same basis as in section 3, taking into consideration the increase in the number of fixed immunization centres;
- The calculation of the miles travelled to provide vaccine supplies and conduct outreach strategies in estimating the cost of fuel and other maintenance costs;
- The replacement of vehicles and cold chain equipment programmed according to intervals ranging from five to 10 years, based on their nature and life (however, additional equipment procurement is envisaged every year);
- The exchange rate used was one USD for 536.8 CFA francs (average exchange rate for 2004). It was obtained based on the foreign exchange table provided by the United Nations.

4.1.2 Methodology for projecting funding requirements

In addition to the above-mentioned tools, the working group prepared specific tools (questionnaires and maintenance guides) to collect funding data from the ministries and partners concerned.

- The State's contribution was estimated on the basis of prior allocations and on the principle that the State would continue to pay wages and ensure equipment maintenance, program functioning and part of the cost of replacing equipment (via the PIP).
- HIPC funds would continue to finance the bulk of the procurement of vaccines and injection supplies, with the possibility of increasing the volume of necessary resources from year to year.
- It was not possible to evaluate the contribution of local authorities.
- With regard to estimated CF, the projection maintained a contribution in the neighbourhood of 5% of annual total income.
- It was assumed that outside funding from the main technical and financial partners would be renewed.
- GAVI/VF is funding the new vaccines and injection supplies, as well as injection safety according to the modalities defined in the various plans drafted to this end and approved by GAVI.
With regard to the assessment of funding risks:
- Internal funding is deemed reliable
- GAVI/WVF funding is also deemed reliable
- External funding is deemed probable

4.2 Quantitative data and projected resource and financing requirements (2004-2013)

4.2.1. Estimated EPI resource requirements (2004-2013)
- Total resource requirements amount to USD 80.3 million for 2004-2013, which works out to an annual average of USD 8.03 million;
  - Resource requirements increase from year to year, with peaks observed in 2005 (introduction of the pentavalent vaccine, replacement of cold chain equipment, of four polio passages and one measles immunization campaign), in 2006 (polio campaign) and in 2011 (replacement of cold chain equipment);
- Changes in the share of vaccines out of total routine EPI requirements;
  - The share of routine vaccines out of total routine EPI costs rose from 24% in 2004 to 58% in 2005, and is expected to remain stable up until 2013;
- The main reasons for this resource shift are as follows:
  - The introduction of the pentavalent vaccine in 2005 with a 94% rise in resource requirements (see table above);
  - The organization of additional immunization campaigns in 2005 with four polio NID passages and one CAR passage nationwide;
  - The replacement of cold chain equipment (in 2006 and 2011) and supervisory vehicles (partial in 2005, 2007 and 2012; then complete in 2010 and 2013)
  - The natural increase in the target population (3.23% per year).

4.2.2. Estimated EPI funding (2004-2013)
- Total reliable and probable funding comes to USD 68.04 million for the entire period, of which 76.4% is reliable funding.
- From 2004 to 2013, the share of internal funding (assured and likely) out of total funding will average 51.65%. For 2004-2007, the share is lower than this average and varies between 34.68% in 2005 and 45.42% in 2004. However, for 2008-2013, this share is above average, rising from 31.06% in 2008 to 80.62% in 2013.
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4.3. Quantitative data and analysis of funding gap (2004 – 2013)

4.3.a. Quantitative data on the funding gap

- The overall gap with secure funding only is USD 28.34 million. It falls to USD 12.27 million if likely funding is also included.
- The size of the gap is expected to change during the period under review:
  - The overall surplus during the period with funding from the Vaccine Fund (2004 - 2007) is USD 2.69 million.
  - The deficit after the phasing-out of funding from the Vaccine Fund (2008 - 2013) is USD 14.96 million.
- Vaccines’ share (USD 42.35 million) of the overall gap is 345%.
  - Vaccines’ share (USD 27.06 millions) of the gap (USD 14.96 million) after the phasing-out of funding from the Vaccine Fund is 181%.

4.3.b. Analysis of the funding gap

The funding gap is due to various factors. The introduction of the pentavalent vaccine into EPI is, as we have seen, a major factor behind cost increases.

As far as 2004 to 2007 is concerned, the surplus is due to the following:
- Part of the vaccines and injection supplies that were completely funded out of internal resources (out of HIPC funds) within the framework of the VII are now covered by GAVI, as follows:
  - DTP vaccines and injection supplies are now funded by GAVI via funding for the pentavalent vaccine
  - Injection supplies for all vaccines funded by GAVI (in connection with the injection safety plan)
- New vaccines and under-used vaccines are entirely funded by GAVI during the period under review. Accordingly, they do not generate a deficit.

On the other hand, there is a deficit for 2008 – 2013. This is due to the following:
- The phasing-out of GAVI funding
- The maintenance of internal funding at the present level
- The renewal of present levels of funding from the main technical and financial partners.
4.3.c. Characterization of status in terms of financial sustainability and impact of the prospects of carrying out programmed EPI activities

For 2004 to 2007, EPI status in terms of financial sustainability shows a surplus, which reflects the fact that resources are adequate and that as a result EPI is sustainable (according to the short-term definition of financial sustainability). However, EPI funding for 2004 to 2007 is marked by dependency on external funding.

Beyond 2007, internal funding accounts for a larger share than external funding. However, there is a funding gap that must be covered by means of the steps outlined in the strategic plan. The deficit for 2008-2013 will require Benin to mobilize more internal resources and lobby partners with a view to ensuring that the activities programmed are executed.
SECTION V: SUSTAINABLE FINANCING STRATEGY, ACTIONS, INDICATORS

The strategic plan is the main component of the financial sustainability plan. This document sets out the strategy to be followed to achieve financial sustainability and, over the long-term, ensure "EPI financial independence". It takes into account the assets and constraints, opportunities and risks linked to future funding (cf chapter 5.2). It proposes short- and medium-term measures that the government and its partners can take. Accordingly, the strategy chosen is suited both to the situation of Benin and its possibilities.

The desired outcome is to secure the necessary funds for the execution of activities. This in turn makes it possible to improve immunization coverage, thereby reducing mortality and morbidity linked to vaccine-preventable diseases.

This strategic plan is primarily centred round the following:
- Mobilizing additional resources from national and external partners (cf. chapter 5.2);
- Enhancing the reliability of the resources provided (cf. chapter 5.3);
- Increasing program effectiveness so as to require only a minimum amount of additional resources (cf. chapter 5.4).

5.1. Benin's assets and constraints in terms of EPI financial sustainability

5.1.1. Assets
- With regard to the VII, Benin has been financing vaccines and injection supplies out of the State budget since 1996 (specific budgetary line item for vaccine procurement).
- Benin has been receiving HIPC funds since the year 2000. Since then, some of the funds have been earmarked for funding the procurement of traditional vaccines and injection supplies (in lieu of the national budget).
- Within the framework of the Bamako Initiative (community funding and involvement), Benin has been earmarking part of the resources generated by the sale of essential drugs to fund EPI (funding of preventive medicine via curative medicine). This level of funding is relatively significant given the amounts generated.
- EPI in Benin has since 1996 benefited from the existence of a foundation, called the “Fondation PEV Bénin”, which collects donations from State companies with a view to funding EPI activities (primarily NIDs).
- Since 2002, Benin has been benefiting from support from GAVI/VF for the introduction of new vaccines (HepB) and under-used vaccines (YF). Moreover, from April 2005 onwards it will also enjoy yet GAVI/VF support for the introduction of the pentavalent vaccine (DTP-HepB-Hib) and support for injection safety (until 2007).
- EPI has had an active ICC-EPI since 1998. Moreover, numerous partners provide financial and technical backing for EPI.

5.1.2. Constraints
- Prospects for economic growth are deteriorating. This could lead to a drop in tax revenue and thus a decline in the national budget’s contribution to the various programmes.
- GAVI/VF support is due to end in 2007. Accordingly, Benin will have to identify new strategies for funding the vaccines and injection supplies currently funded by GAVI/VF, in particular for the pentavalent vaccine, the cost of which is relatively high (cf section 3).
- Partners’ commitment over the medium and long-term cannot be viewed as secure.
5.2. Strategies and steps to mobilize additional resources

The strategies pertain to both internal and external resources.

5.2.1. Strategies to mobilize internal resources

5.2.1.1 Steps pertaining to the contribution from the national budget
The likelihood of a downturn precludes increasing the contribution from the national budget. However, given that EPI is a priority, the national budget’s contribution to EPI will at the least be increased to keep pace with inflation and the economic growth rate.

More generally, to meet all of the sector’s needs, the State absolutely must increase the share of the budget earmarked for health from 7% to 10%, as recommended by WHO. In so doing, EPI would receive priority.

5.2.1.2 Steps pertaining to the contribution from HIPC funds
HIPC funds must continue to finance the procurement of traditional EPI vaccines and injection supplies. Moreover, HIPC funds will have to, from 2006 onwards, gradually take over funding for the pentavalent vaccine (as HIPC funds take over from GAVI/VF for the pentavalent vaccine). The mid-term DSRP evaluation in 2006 will provide an opportunity to work out new guidelines with regard to support for EPI.

5.2.1.3 Steps pertaining to local authorities/communes
Within the framework of administrative decentralization, development efforts by local authorities form part of the communes’ development plans. These decentralized structures play a decisive role in terms of social mobilization of the public. However, it is not possible to ascertain their financial contribution to EPI. Accordingly, advocacy efforts must be undertaken in order to ensure that communes incorporate EPI at requirements into their development plan. A study will have to be conducted to ascertain the contribution of the local authorities to EPI.

5.2.1.4 Steps pertaining to internal non-governmental sources

Community funding (CF) helps cover the cost of replacing equipment (via depreciation accounts set up in Benin within the framework of the Bamako Initiative) and funding immunization activities in connection with outreach and mobile strategies (per diems, fuel, maintenance-repairs). In this connection, the share of community financing for EPI activities is to be increased from 5% to 10%, in particular with a view to ensuring that per diems are generally paid in connection with outreach strategies and that the centres help defray the cost of replacing equipment and purchasing spare parts.

In addition, the Fondation PEV Bénin will be asked to help more in lobbying companies in order to find routine and additional immunization activities.

5.2.2. Strategies to mobilize external resources

5.2.2.1 Steps pertaining to the contribution from GAVI/VF
In anticipation of the shift in funding for the pentavalent vaccine from GAVI/VF to HIPC funds, GAVI support is to stretch out over an 8-year period (instead of 5 as initially planned).
The short-term impact of stretching out GAVI contributions over 8 years is a drop in the surplus predicted for 2004-2007, followed by a narrowing of the gap for 2008-2013.

5.2.2.2 Steps pertaining to the level of contributions from EPI partners
Advocacy efforts will be made, at ICC-EPI meetings, to:
- Ensure that partners help fund the EPI activities programmed, in particular with regard to the funding of additional activities, equipment replacement and integrated disease surveillance;
- Reallocate the resources budgeted by partners as need be.

5.2.3. Strengthening of intra- and intersectoral collaboration
Intra-sectoral collaboration is to be strengthened to secure the resources needed to execute activities, particularly with regard to staff and equipment in relation to additional immunization.

Intersectoral collaboration will also be strengthened in order to ensure that sufficient resources are allocated in time and that the public gets involved.

The ICC-EPI and the partners’ meetings will provide a framework for coordinating efforts.

Plan of action to mobilize sufficient resources (cf. table 5.1)

The following tables define the main strategy, actions, persons in charge of implementation, estimated cost of implementation, progress indicators and current indicator status.
Table 5.1: Plan of action for specific steps aimed at mobilizing sufficient resources

<table>
<thead>
<tr>
<th>Main strategy</th>
<th>Actions</th>
<th>Responsible</th>
<th>Start date</th>
<th>Estimated cost of implement’n</th>
<th>Progress indicator</th>
<th>Present status of the indicator</th>
<th>Expected results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steps pertaining to the contribution from the national budget: Lobby for an increase in the State’s budget share earmarked for EPI</td>
<td>Prepare a summary of the EPI Financial Sustainability Plan with program costs and funding gaps</td>
<td>NDEPI-PHC</td>
<td>January 2005</td>
<td>0.00</td>
<td>% increase in share of State budget earmarked for EPI</td>
<td>Already done</td>
<td>The contribution of the national budget to EPI will be at least increased to keep pace with inflation and the rate of economic growth</td>
</tr>
<tr>
<td></td>
<td>Draw up a statement for the presentation of the FSP in the Council of Ministers</td>
<td>NDEPI-PHC</td>
<td>January 2005</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Present the FSP in the Council of Ministers</td>
<td>Minister of Health</td>
<td>February 2005</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Present the FSP in the National Assembly</td>
<td>Minister of Health</td>
<td>February 2005</td>
<td>USD 1000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steps pertaining to the contribution from HIPC funds: lobby for an increase in the share earmarked for EPI</td>
<td>Participate in the SPRD mid-term review</td>
<td>NDEPI-PHC</td>
<td>June 2006</td>
<td>0.00</td>
<td>% increase in share of HIPC funds earmarked for EPI</td>
<td></td>
<td>Procurement of pentavalent vaccine out of HIPC funds effective from 2006 onwards</td>
</tr>
<tr>
<td></td>
<td>Draft the advocacy document</td>
<td>FMRD</td>
<td>February 2005</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th><strong>Main strategy</strong></th>
<th><strong>Actions</strong></th>
<th><strong>Responsible</strong></th>
<th><strong>Start date</strong></th>
<th><strong>Estimated cost of implement’n</strong></th>
<th><strong>Progress indicator</strong></th>
<th><strong>Present status of the indicator</strong></th>
<th><strong>Expected results</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steps pertaining to local authorities/communes:</strong></td>
<td>Lobby for an increase in the contribution from local authorities&lt;br&gt;Present the EPI’s FSP with program costs and funding gaps to local authorities (mayors and prefects)</td>
<td>NDEPI&lt;br&gt;SG/MPH</td>
<td>July 2005&lt;br&gt;September 2005</td>
<td>USD 10,000&lt;br&gt;USD 5,000</td>
<td>% of communes benefiting from the contribution from the local authorities</td>
<td>NA</td>
<td>90% of the communes benefit from contribution for EPI</td>
</tr>
<tr>
<td><strong>Steps pertaining to internal non-governmental sources:</strong></td>
<td>Lobby for an increase in CF for EPI&lt;br&gt;Present the EPI’s FSP with EPI costs and funding gaps to the DDPH, members of the HZST and the DMC/CMC</td>
<td>NDEPI-PHC&lt;br&gt;SG/MPH</td>
<td>July 2005&lt;br&gt;September 2005</td>
<td>USD 10,000&lt;br&gt;USD 10,000</td>
<td>% of CF’s contribution to EPI</td>
<td>On average 5% for the entire country by estimate</td>
<td>Increase CF’s share of EPI from 5% to 10%</td>
</tr>
<tr>
<td><strong>Steps pertaining to the contribution from GAVI/VF</strong></td>
<td>Incorporate the new timetable for GAVI/VF contributions into the FSP&lt;br&gt;Notify the GAVI secretariat in writing of the request signed by the ICC-EPI members</td>
<td>NDEPI-PHC&lt;br&gt;MPH</td>
<td>January 2005&lt;br&gt;April 2005</td>
<td>0.00&lt;br&gt;0.00</td>
<td></td>
<td>Already done</td>
<td>Support spread out over 8 years</td>
</tr>
</tbody>
</table>
Table 5.1: Plan of action for specific steps aimed at mobilizing sufficient resources (cont.)

<table>
<thead>
<tr>
<th>Main strategy</th>
<th>Actions</th>
<th>Responsible</th>
<th>Start date</th>
<th>Estimated cost of implementation</th>
<th>Progress indicator</th>
<th>Current indicator status</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steps pertaining to contributions from EPI partners</strong></td>
<td>Revitalize the functioning of the ICC-EPI</td>
<td>SG/MPH</td>
<td>January 2005</td>
<td>0.00</td>
<td>% of meetings held</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Continue with the quarterly ICC-EPI meetings</td>
<td>NDEPI-PHC</td>
<td>January 2005</td>
<td>USD 1000</td>
<td>% of health zones capable of funding EPI</td>
<td>75% (estimate)</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Enlarge the ICC to increase other partners and General Directorates</td>
<td>Minister of Health</td>
<td>March 2005</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Look for financial partners for EPI funding for health zones without partners</td>
<td>HZ Coordinating Doctors</td>
<td>June 2005</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main strategy</td>
<td>Actions</td>
<td>Responsible</td>
<td>Start date</td>
<td>Estimated cost of implementation</td>
<td>Progress indicator</td>
<td>Current indicator status</td>
<td>RESULTS</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------</td>
<td>------------</td>
<td>-----------------------------------</td>
<td>--------------------</td>
<td>--------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Strengthening of intra- and intersectoral collaboration</td>
<td>Organize weekly meetings of the ICC-EPI technical group</td>
<td>NDEPI-PHC</td>
<td>January 2005</td>
<td>0.00 USD 18,000 (USD 4,500 x 4 meetings)</td>
<td>% weekly meetings held</td>
<td>50%</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>Organize quarterly nationwide follow-up/evaluation meetings for EPI activities and SIMR</td>
<td>NDEPI-PHC</td>
<td>January 2005</td>
<td>USD 6,000 (USD 250 x 4 meetings x 6 departments)</td>
<td>% quarterly meetings held</td>
<td>50%</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>Organize quarterly departmental meetings of the Departmental Management Committee for EPI activities and SIMR</td>
<td>Prefects</td>
<td>January 2005</td>
<td>USD 72,000 (USD 2,000 x 6 meetings x 6 departments)</td>
<td>% bi-monthly meetings held</td>
<td>0 % (Structures set up in January 2005)</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>Organize bi-monthly departmental follow-up/evaluation meetings for EPI activities and SIMR</td>
<td>DDPH</td>
<td>January 2005</td>
<td>USD 30,800 (USD 100 x 4 meetings x 77 communes)</td>
<td>% quarterly meetings held</td>
<td>50%</td>
<td>90%</td>
</tr>
<tr>
<td></td>
<td>Organize quarterly communal meetings of the Management Committee for EPI activities and SIMR</td>
<td>Mayors</td>
<td>January 2005</td>
<td></td>
<td></td>
<td>0 % (Structures set up in January 2005)</td>
<td>80%</td>
</tr>
</tbody>
</table>
5.3. Strategies and steps to enhance resource reliability

5.3.1. Strategies linked to budgeting
Here, the aim is to ensure compliance with the recently introduced budgetary procedures so as to guarantee that funds are available on time at the periphery and used rapidly.

5.3.2. Strategies linked to fund disbursement and cash flow management
The complexity of national budgetary procedures and those of development partners makes it difficult to access funds and ensure their disbursement. Accordingly, the following steps are proposed:

- Lobby partners with a view to the organization of an information workshop for the staff of financial and accounting departments and program directors of the Ministry of Health on the accounting and financial procedures used by their institutions.
- Have the FMRD organize training and refresher workshops on procedures for the implementation of public expenditure.

Moreover, the payment to UNICEF of invoices relating to vaccine procurement regularly poses problems owing to the unavailability of funds in State coffers or slow fund disbursement. The steps proposed to solve this problem are as follows:

- Ensure better planning of payment of expenses (disbursement) with a view to payment vaccine procurement invoices on time;
- Set up within the General Directorate of the Treasury a body responsible for executing priority disbursements.
Table 5.2: Plan of action for specific steps to enhance resource reliability

<table>
<thead>
<tr>
<th>Main strategy</th>
<th>Actions</th>
<th>Responsible</th>
<th>Start date</th>
<th>Estimated cost of implementation</th>
<th>Progress indicator</th>
<th>Current indicator status</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategies linked to budgeting</td>
<td>Support Health Zone Coordinating Doctors while respecting newly introduced budgetary procedures, in order to facilitate credit use.</td>
<td>FMRD</td>
<td>January 2005</td>
<td>USD 5000</td>
<td>% credit use per health zone</td>
<td>75% (per estimate)</td>
<td>100%</td>
</tr>
<tr>
<td>Strategies linked to fund disbursement and cashflow management</td>
<td>Lobby partners to exert greater control over accounting and financial procedures. Organize information workshops for financial and accounting staff and program coordinators from the Ministry of Health on the accounting and financial procedures of the partner institutions of the sector. Organize FMRD training and retraining workshops on procedures for the execution of public expenditure</td>
<td>NDEPI, FMRD, WHO, UNICEF, USAID, WORLD BANK</td>
<td>February 2005</td>
<td>0.00</td>
<td>% staff briefed</td>
<td>40% (per estimate)</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Organize information workshops for financial and accounting staff and program coordinators from the Ministry of Health on the accounting and financial procedures of the partner institutions of the sector. Organize FMRD training and retraining workshops on procedures for the execution of public expenditure</td>
<td>WHO, USAID, WORLD BANK</td>
<td>March 2005</td>
<td>USD 4000</td>
<td>% staff trained</td>
<td>75% (per estimate)</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Organize FMRD training and retraining workshops on procedures for the execution of public expenditure</td>
<td>FMRD</td>
<td>February 2005</td>
<td>USD 4500</td>
<td>% staff trained</td>
<td>75% (per estimate)</td>
<td>100%</td>
</tr>
</tbody>
</table>
5.4. Strategies and steps to optimize resource utilization

1. Reducing wastage rates

Wastage rates are high at present:

- OPV: 40% (2003)
- DTP: 26% (2003)
- HepB: 35% (2003)
- YF: 56% (2003)
- MEAS: 50% (2003)
- BCG: 60% (2003)

Plans call for reducing vaccine wastage rates to the following by the year 2013:

- 35% for reconstituted vaccines (BCG, MEAS and YF);
- 15% for the other vaccines (OPV and TT);
- 10% for the pentavalent vaccine in accordance with the standards set by GAVI.

2. Applying the open vial policy

Ensuring that the main EPI actors master the open vial policy offers a means of considerably reducing vaccine wastage rates. This will help lower the cost of procuring additional vaccines and improve vaccine availability.

As regards capacity-building for the main EPI actors, training/retraining sessions with the WHO’s MLM modules are to be organized systematically for new health centre agents, on EPI management and the open vial policy in particular. This will provide an effective means of reducing vaccine wastage rates.

3. Training immunizers to maintain and use cold chain equipment

Cold chain equipment is an essential program link. Implementing the cold chain equipment maintenance plan will help improve cold chain operation, thereby ensuring optimum vaccine conservation conditions and high-quality immunization.

Priority will be given to training EPI actors in how to use and perform preventive maintenance on cold chain equipment.

4. Improving the quality of planning and management at all levels

The key to these strategies is building actors’ capacity to prepare strategic plans and operational plans of action (PTD, program budgets and micro-plans) at the level of the health zones and communes. The emphasis will be placed on getting the beneficiaries involved so as to guarantee effective ownership and implementation of these plans.
5. Mobilizing the public to ensure greater involvement in immunization activities, particularly with regard to the outreach strategy

Mobilizing the actors in the field, in particular local elected officials, the CMC/DMC, the community focal points and associations, will help ensure that mothers participate more in immunization sessions.

6. Mastering the introduction of the pentavalent vaccine (DTP-HepB-Hib)

As of 1 April 2005, the pentavalent vaccine will be introduced nationwide. A successful launch will require above all the following:

- Training of health workers
- Adaptation of management tools
- Adjustment of storage capacity wherever necessary.
- Social mobilization
- Tighter supervision at all levels
- Closer supervision of adverse events following immunization (AEFI)

7. Reducing drop-out rates

In 2003, the drop-out rate between DTP1 and DTP3 was 15.28%. This rate must be reduced to less than 8% by 2013. In order to do so, the following steps will have to be taken:

   a. Step up the social mobilization strategy

   Strengthening the social mobilization strategy should help to increase the coverage rate by reducing the drop-out rate. This strategy should be aimed at the target communities, administrative structures and their divisions.

   b. Combining static and outreach strategies

   With regard to both static and outreach immunization, synergies will be sought through day-to-day immunization activities, in all contacts and in an active search for those who have dropped out of sight.

   c. Actively looking for those who have dropped out of sight

   The key to actively looking for those who have dropped out of sight is censuses and the introduction of a search system (notebook, immunization schedule, and registry) in all health groups performing immunization.

   These activities could be carried out by the members of the CMC/DMC, the association structures, the Village Administrative Delegates, and the community focal points.

   d. Reducing missed opportunities

   At this level, the strategy consists of verifying and updating the immunization status of all children and all women of childbearing age who visit a health group, regardless of the reason for consultation. Implementing this strategy can lead to the loss of vaccines, particularly lyophilized vaccines. As far as liquid vaccines are concerned, however, the open vial policy can help to reduce losses.

8. Ensuring proper vaccine stock management

   a. Stock shortages

   Shortages of vaccine and injection supplies can be avoided via diligent implementation of the plan for the supply and distribution of vaccines and injection supplies from the central level to the peripheral health groups. This plan should respect the delivery frequency selected for each level. The refrigerating truck will give priority to supplying departments and regional outposts.
b. Ensuring cold chain suitability
The following table shows that current cold chain utilization covering all vaccine requirements for 2004 represents a 44%\textsuperscript{20} occupation of useful volume. Efforts will be made to:

- Build the capacity of agents at various levels to determine storage capacity in terms of volume
- Periodically assess vaccine storage capacity in terms of the volume occupied per level

Table 5.3: Volume occupied/vaccine for 2004

<table>
<thead>
<tr>
<th>Antigen</th>
<th>Quantity x volume-dose</th>
<th>Volume occupied</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>730,400 x1.2</td>
<td>876 480 cm\textsuperscript{3}</td>
</tr>
<tr>
<td>OPVO</td>
<td>1 701.000 x 1.5</td>
<td>2 551 500 cm\textsuperscript{3}</td>
</tr>
<tr>
<td>DTP</td>
<td>480 000</td>
<td>1 440 000 cm\textsuperscript{3}</td>
</tr>
<tr>
<td>MEAS</td>
<td>529 000</td>
<td>1 587 000 cm\textsuperscript{3}</td>
</tr>
<tr>
<td>TT</td>
<td>5 043 300</td>
<td>15 129 900 cm\textsuperscript{3}</td>
</tr>
<tr>
<td>YF</td>
<td>718 200</td>
<td>1 436 900 cm\textsuperscript{3}</td>
</tr>
<tr>
<td>HepB</td>
<td>108 4000</td>
<td>412 920 cm\textsuperscript{3}</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23 433 200 cm\textsuperscript{3}</td>
</tr>
</tbody>
</table>

\textsuperscript{20} Plan for the introduction of the pentavalent vaccine (DTP/HepB/Hib) into EPI in 2005, MPH, April 2004.
<table>
<thead>
<tr>
<th>Main strategy</th>
<th>Actions</th>
<th>Responsible</th>
<th>Start date</th>
<th>Estimated cost of implementation</th>
<th>Progress indicator</th>
<th>Current indicator status</th>
<th>Expected results</th>
</tr>
</thead>
</table>
| Reduce antigen wastage rates | Train/retrain actors at the intermediate and decentralized levels in EPI management, epidemiological surveillance and cold chain management  
- Regularly supervise immunization structures | NDEPI-PHC  
-DDEPI-PHC  
-DDPH  
-HZST | January 2005 | USD 68,809 | Antigen wastage rates | Antigen wastage rates in 2003:  
-OPV: 40%  
-DTP: 26%  
-YF: 56%  
-MEAS: 50%  
-TT: 25%  
-BCG: 60%  
-OPV: 15%  
-DTP Hib-HepB: 10%  
-YF: 35%  
-MEAS: 35%  
-TT: 15%  
-BCG: 35% | By 2013, antigen wastage rates will be reduced to:  
-OPV: 15%  
-DTP: 10%  
-YF: 35%  
-MEAS: 35%  
-TT: 15%  
-BCG: 35% |
| Master vaccine stock management | Validate monthly the table for monitoring the management of stocks of vaccines and injection supplies with the ICC-EPI technical sub-committee | NDEPI-PHC | January 2005 | 0.00 | Antigen shortage rates during a given period | -DTP: 0%  
-YF: 0%  
-MEAS: 0%  
-TT: 0%  
-BCG: 0% | EPI antigens are available at all levels of the health pyramid |
<table>
<thead>
<tr>
<th>Main strategy</th>
<th>Actions</th>
<th>Responsible</th>
<th>Start date</th>
<th>Estimated cost of implementation</th>
<th>Progress indicator</th>
<th>Current indicator status</th>
<th>Expected results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master vaccine stock management (cont.)</td>
<td>Introduce computerized management tools for vaccines and injection supplies at the national and departmental level and in regional outposts</td>
<td>NDEPI</td>
<td>January 2005</td>
<td>USD 1000</td>
<td>% of computerized departments and regional outposts</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Collect and analyse monthly data on consumption of vaccines and injection supplies</td>
<td>NDEPI</td>
<td>January 2005</td>
<td>USD 0.00</td>
<td>Rate of data completeness by HZ</td>
<td>30%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Supply departments and regional outposts with vaccines and injection supplies according to a pre-determined schedule</td>
<td>NDEPI</td>
<td>January 2005</td>
<td>USD 2500</td>
<td>% of health groups with stock shortages</td>
<td>10% (per estimate)</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Ensure suitability of cold chain equipment via periodic assessments of vaccine storage capacity expressed in terms of volume occupied by level</td>
<td>NDEPI</td>
<td>January 2005</td>
<td>USD 0.00</td>
<td>% of HZ capable of evaluating volume</td>
<td>20% (per estimate)</td>
<td>100%</td>
</tr>
<tr>
<td>Main strategy</td>
<td>Actions</td>
<td>Responsible</td>
<td>Start date</td>
<td>Estimated cost of implementation</td>
<td>Progress indicator</td>
<td>Current indicator status</td>
<td>Expected results</td>
</tr>
<tr>
<td>---------------</td>
<td>---------</td>
<td>-------------</td>
<td>-------------</td>
<td>----------------------------------</td>
<td>---------------------</td>
<td>--------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Master the introduction of the pentavalent vaccine</td>
<td>Adapt management aids for vaccine and injection supplies</td>
<td>NDEPI SSDRO</td>
<td>January 2005</td>
<td>USD 0.00</td>
<td>% of aids adapted</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Organize trickle-down training/retraining workshops for immunizers</td>
<td>NDEPI</td>
<td>February 2005</td>
<td>USD 100,000</td>
<td>% of immunizers trained</td>
<td>25%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Strengthen routine EPI via social mobilization activities</td>
<td>NDEPI</td>
<td>March 2005</td>
<td></td>
<td>% of populations covered</td>
<td>10%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Conduct quarterly supervision of EPI activities by level</td>
<td>NDEPI</td>
<td>January 2005</td>
<td></td>
<td>% of HZ covered</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Main strategy</strong></td>
<td>Actions</td>
<td><strong>Responsible</strong></td>
<td><strong>Start date</strong></td>
<td><strong>Estimated cost of implement’n</strong></td>
<td><strong>Progress indicator</strong></td>
<td><strong>Current status of indicator</strong></td>
<td><strong>Results</strong></td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>----------------</td>
<td>----------------</td>
<td>---------------------------------</td>
<td>-----------------------</td>
<td>-------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Reduce drop-out rates between DTP1 and DTP3</td>
<td>Activate the system of active searches for those who drop out of sight</td>
<td>Head Station Nurse</td>
<td>January 2005</td>
<td>USD 500,000 (USD 1000 x 50 priority communes x 10 years)</td>
<td>Drop-out rate between DTP1 and DTP3</td>
<td>Drop-out rate between DTP1 and DTP3 = 8%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continue half-yearly monitoring of EPI and CF activities</td>
<td>Head Station Nurses</td>
<td>January and July of each year</td>
<td>USD 1,020,000 (USD 1200 x 85 communes x 10 years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strengthen searches for those who drop out of sight by using census sheets or any suitable aid</td>
<td>Head Station Nurses</td>
<td>January 2005</td>
<td>USD 0.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strengthen the three traditional immunization strategies and the other strategies to ensure immunization of targets while respecting the programs worked out together with populations (ACD Approach) in the 50 priority communes</td>
<td>Head Station Nurses</td>
<td>January 2005</td>
<td>USD 0.00 (Action combined with “Activate the system of searching for those who drop out of sight“)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Drop-out rate between DTP1 and DTP3 = 15.28% in 2003
CONCLUSION

Immunization is one of the most effective steps in the field of public health. It helps to reduce poverty and is a government priority. As new vaccines are introduced, the immunization of children is a difficult undertaking that requires long-term planning and above all the mobilization of the resources needed to implement the activities planned. In this respect, the FSP is an ideal tool to ensure the long-term survival of EPI. The FSP’s effectiveness depends on how committed the various parties are to mobilizing the resources needed for its execution. One key step is identifying an official responsible for implementation. For example, the coordinator of the working group for the preparation of Benin’s FSP has already been selected.

In terms of assets, within the framework of the VII, Benin has since 1996 been financing vaccines and injection supplies out of the State budget (a specific budget line item for vaccine procurement). The EPI has been receiving HIPC funds since 2000. Some of these funds have been used to purchase traditional vaccines and injection supplies (in lieu of the national budget). Since August 2002, Benin has been receiving GAVI/VF support for the introduction of new vaccines (HepB) and under-used vaccines (YF). Moreover, from April 2005 onwards, it will also enjoy GAVI/VF backing for the introduction of the pentavalent vaccine (DTP-HepB-Hib) and for injection safety (up until 2007).

On the constraints side, however, prospects for economic growth have worsened. This could lead to a drop in tax revenue, and hence a decline in budgeted funding for the various programs. GAVI/VF support is due to end in 2007. Benin must therefore identify new funding strategies for the vaccines and injection supplies funded by GAVI/VF, particularly for the pentavalent vaccine, which is relatively expensive.

In terms of financial sustainability, the EPI shows a surplus for 2004-2007, which proves that there is adequate funding and that EPI is therefore sustainable. From 2008-2013, however, it predicts a deficit, hence the need to prepare a strategic plan to fill this gap by reallocating surplus resources. As a result of the situation, for 2008-2013, the surplus is set to decline and the gap is due to narrow.

To enhance EPI financial sustainability and ensure its independence over time, the strategic plan primarily hinges on the following:

A. Mobilizing additional resources from national and external sources;
B. Enhancing the reliability of the resources made available;
C. Enhancing program effectiveness so as to reduce the need for additional resources to a minimum.
Section VI. COMMENTAIRES ET SIGNATURES DES PARTENAIRES

Les signataires, membres du Comité de Coopération Interagences pour le PEY (CCIA-PEY), approuvent ce plan de viabilité financière du PEY Bénin.

Les membres du CCIA-PEY confirmant que leurs commentaires ont été pris en compte dans cette version finale du plan, par conséquent, ils s’engagent à soutenir le Bénin dans sa mise en œuvre.

<table>
<thead>
<tr>
<th>Agence/Organisation</th>
<th>Nom/Function</th>
<th>Commentaires</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation Mondiale de la Santé (OMS)</td>
<td></td>
<td>Objectif réaliste. Tout a fait à noter</td>
<td>28.01.05</td>
<td>[Signature]</td>
</tr>
<tr>
<td>Fonds des Nations Unies pour l’Enfance (UNICEF)</td>
<td>Philippe Daniels, Représentant</td>
<td>Réussi, bien fait</td>
<td>29.01.05</td>
<td>[Signature]</td>
</tr>
<tr>
<td>ROTARY International</td>
<td></td>
<td></td>
<td>29.01.05</td>
<td>[Signature]</td>
</tr>
<tr>
<td>Union Européenne</td>
<td>Théo Stolz, CHARGÉ DE PROGRAMME SANTÉ, DCE</td>
<td></td>
<td>29.01.05</td>
<td>[Signature]</td>
</tr>
<tr>
<td>Banque Mondiale</td>
<td></td>
<td>manque accord pour les nouveaux financements de notre institution</td>
<td>29.01.05</td>
<td>[Signature]</td>
</tr>
<tr>
<td>Association pour l’Aide à la Médecine Préventive</td>
<td>LEB Dorothy, chef du bureau AMP au Bénin</td>
<td>Tous les efforts sont appréciés à la santé</td>
<td>29.01.05</td>
<td>[Signature]</td>
</tr>
<tr>
<td>Fondation PEY Bénin</td>
<td>Josephine Adjebi, président PEY Bénin</td>
<td>Travail apprécié des partenaires</td>
<td>29.01.05</td>
<td>[Signature]</td>
</tr>
<tr>
<td>Ministère chargé du Plan de la Prospetive et du Développement</td>
<td>GLOSSOGETE, directeur national des écoles de la République</td>
<td>Travail apprécié des partenaires</td>
<td>29.01.05</td>
<td>[Signature]</td>
</tr>
</tbody>
</table>
### Annex - 1: Population breakdown by health zone and by department

<table>
<thead>
<tr>
<th>Department</th>
<th>Health zone</th>
<th>Total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alibori</td>
<td>Banikoara</td>
<td>156,609</td>
</tr>
<tr>
<td></td>
<td>Gogounou/ Ségbana</td>
<td>234,724</td>
</tr>
<tr>
<td></td>
<td>Malanville/ Karimama</td>
<td>145,462</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>536,795</strong></td>
</tr>
<tr>
<td>Atacora</td>
<td>Kouandé/ Péhunco/ Kérou</td>
<td>203,940</td>
</tr>
<tr>
<td></td>
<td>Natittingou/ Boukoumbé/ Toucountouna</td>
<td>171,354</td>
</tr>
<tr>
<td></td>
<td>Tanguïéta/ Cobli/ Matéri</td>
<td>190,677</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>565,971</strong></td>
</tr>
<tr>
<td>Atlantique</td>
<td>Abomey-Calaví/ Sôava</td>
<td>395,632</td>
</tr>
<tr>
<td></td>
<td>Allada/ Toffo/ Zè</td>
<td>246,520</td>
</tr>
<tr>
<td></td>
<td>Ouidah/ Kpomassé/ Tori-Bossito</td>
<td>153,687</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>795,839</strong></td>
</tr>
<tr>
<td>Borgou</td>
<td>Bembérèkè/ Sinendé</td>
<td>162,712</td>
</tr>
<tr>
<td></td>
<td>Nikki/ Përèrè/ Kalalé</td>
<td>249,465</td>
</tr>
<tr>
<td></td>
<td>N’Dali/ Parakou</td>
<td>223,743</td>
</tr>
<tr>
<td></td>
<td>Thaourou</td>
<td>110,072</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>745,992</strong></td>
</tr>
<tr>
<td>Collines</td>
<td>Dassa-Zoumè/ Glazoué</td>
<td>190,000</td>
</tr>
<tr>
<td></td>
<td>Savalou/ Bantè</td>
<td>192,509</td>
</tr>
<tr>
<td></td>
<td>Savè/ Ouessè</td>
<td>169,563</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>552,072</strong></td>
</tr>
<tr>
<td>Couffo</td>
<td>Aplahoué/ Dogbo/ Toviklin</td>
<td>299,425</td>
</tr>
<tr>
<td></td>
<td>Klouékamè/ Lalo/ Toviklin</td>
<td>240,967</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>540,392</strong></td>
</tr>
<tr>
<td>Donga</td>
<td>Djougou/ Ouaké/ Copargo</td>
<td>286,944</td>
</tr>
<tr>
<td></td>
<td>Bassila</td>
<td>73,66</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>360,610</strong></td>
</tr>
<tr>
<td>Littoral</td>
<td>Cotonou 2 &amp; 3</td>
<td>214,229</td>
</tr>
<tr>
<td></td>
<td>Cotonou 1 &amp; 4</td>
<td>107,081</td>
</tr>
<tr>
<td></td>
<td>Cotonou 5</td>
<td>182,519</td>
</tr>
<tr>
<td></td>
<td>Cotonou 6</td>
<td>181,311</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>685,140</strong></td>
</tr>
<tr>
<td>Mono</td>
<td>Comè/ Bopa/ Grand-Popo/ Houéyogbé</td>
<td>250,828</td>
</tr>
<tr>
<td></td>
<td>Lokossa/ Athiémé</td>
<td>120,058</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>370,886</strong></td>
</tr>
<tr>
<td>Ouémé</td>
<td>Adjohoun/ Dangbo/ Bonou</td>
<td>156,751</td>
</tr>
<tr>
<td></td>
<td>Akpo-Misséré/ Avankou/ Adjarra</td>
<td>219,589</td>
</tr>
<tr>
<td></td>
<td>Porto-Novo/ Sémè-Kpodji/ Aguégué</td>
<td>376,451</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>752,791</strong></td>
</tr>
<tr>
<td>Plateau</td>
<td>Pobè/ Kétou/ Adj-Auèrè</td>
<td>272,888</td>
</tr>
<tr>
<td></td>
<td>Sakété/ Ifangni</td>
<td>146,495</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>419,383</strong></td>
</tr>
<tr>
<td>Zou</td>
<td>Bohicon/ Zakpota/ Zogbodemè</td>
<td>280,716</td>
</tr>
<tr>
<td></td>
<td>Covè/ Ouinhi/ Zangnanado</td>
<td>112,817</td>
</tr>
<tr>
<td></td>
<td>Djidja/ Abomey/ Aghbangnizoun</td>
<td>224,499</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>618,032</strong></td>
</tr>
<tr>
<td>Benin</td>
<td></td>
<td><strong>6,973,905</strong></td>
</tr>
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</table>
Annex – 2: Table 1.3 :  EPI funding (in 000s of CFA francs)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>National budget&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>375,800,000</td>
<td>414,063,000</td>
<td>478,730,000</td>
<td>490,306,000</td>
<td>547,767,000</td>
</tr>
<tr>
<td>Health budget&lt;sup&gt;(2)&lt;/sup&gt;</td>
<td>33,659,497</td>
<td>38,138,867</td>
<td>35,622,354</td>
<td>36,724,634</td>
<td>45,639,126</td>
</tr>
<tr>
<td>Health budget&lt;sup&gt;*&lt;/sup&gt; allocated to EPI under the Public Investment Program (3)</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
<td>100,000</td>
<td>80,000</td>
</tr>
<tr>
<td>EPI budget (vaccine procurement – HIPC funds) (4)</td>
<td>837,000</td>
<td>837,000</td>
<td>878,850</td>
<td>900,000</td>
<td>900,000</td>
</tr>
<tr>
<td>Partners&lt;sup&gt;**&lt;/sup&gt; (5)</td>
<td>...</td>
<td>...</td>
<td>624,000</td>
<td>655,000</td>
<td>881,000</td>
</tr>
<tr>
<td>% Health/State (2)/(1)</td>
<td>8.96</td>
<td>9.21</td>
<td>7.44</td>
<td>7.49</td>
<td>8.33</td>
</tr>
<tr>
<td>% EPI/State (3)+ (4)/(1)</td>
<td>0.25</td>
<td>0.23</td>
<td>0.20</td>
<td>0.20</td>
<td>0.18</td>
</tr>
<tr>
<td>% EPI/Health (3)+ (4)/(2)</td>
<td>2.78</td>
<td>2.46</td>
<td>2.75</td>
<td>2.72</td>
<td>2.15</td>
</tr>
</tbody>
</table>

(*) This budget does not include staff-related expenditure and the operating budget earmarked for NDEPI-PHC.

Annex – 3: Immunization schedule in use

1) AGE AND ANTIGEN

For children:

<table>
<thead>
<tr>
<th>AGE</th>
<th>VACCINE introduction of pentavalent</th>
<th>VACCINE after introduction of pentavalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>BCG, OPV 0</td>
<td>BCG, OPV 0</td>
</tr>
<tr>
<td>6 weeks</td>
<td>DTP1, OPV1, HepB1</td>
<td>DTP-HepB-Hib1, OPV1,</td>
</tr>
<tr>
<td>10 weeks</td>
<td>DTP2, OPV2, HepB2</td>
<td>DTP-HepB-Hib2, OPV2,</td>
</tr>
<tr>
<td>14 weeks</td>
<td>DTP3, OPV3, HepB3</td>
<td>DTP-HepB-Hib3, OPV3,</td>
</tr>
<tr>
<td>9 months</td>
<td>MEAS, YF</td>
<td>MEAS, YF</td>
</tr>
</tbody>
</table>

For women

<table>
<thead>
<tr>
<th>DOSE</th>
<th>IMMUNIZATION DATE AND INTERVAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT1</td>
<td>At first contact during first prenatal visit</td>
</tr>
<tr>
<td>TT2</td>
<td>At least 4 weeks after TT1</td>
</tr>
<tr>
<td>TT3</td>
<td>At least 6 months after TT2</td>
</tr>
<tr>
<td>TT4</td>
<td>At least 1 year after TT3 or during following pregnancy</td>
</tr>
<tr>
<td>TT5</td>
<td>At least 1 year after TT4 or during following pregnancy</td>
</tr>
</tbody>
</table>
### Annex – 3: Administration site and mode for EPI vaccines before introduction of pentavalent

<table>
<thead>
<tr>
<th>ANTIGEN</th>
<th>DOSE</th>
<th>SITE</th>
<th>ADMINISTRATION MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>0.05 ml</td>
<td>Outside 1/3 &gt;left forearm</td>
<td>Intradermal</td>
</tr>
<tr>
<td>OPV0</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>DTP1</td>
<td>0.5 ml</td>
<td>Deltoid left arm</td>
<td>IM</td>
</tr>
<tr>
<td>HepB1</td>
<td>0.5 ml</td>
<td>Left thigh</td>
<td>IM</td>
</tr>
<tr>
<td>OPV1</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>DTP2</td>
<td>0.5 ml</td>
<td>Deltoid left arm</td>
<td>IM</td>
</tr>
<tr>
<td>HepB2</td>
<td>0.5 ml</td>
<td>Left thigh</td>
<td>IM</td>
</tr>
<tr>
<td>OPV2</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>DTP3</td>
<td>0.5 ml</td>
<td>Deltoid left arm</td>
<td>IM</td>
</tr>
<tr>
<td>HepB3</td>
<td>0.5 ml</td>
<td>Left thigh</td>
<td>IM</td>
</tr>
<tr>
<td>OPV3</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>MEAS</td>
<td>0.5 ml</td>
<td>Right arm</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>YF</td>
<td>0.5 ml</td>
<td>Thigh</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>DTP booster</td>
<td>0.5 ml</td>
<td>Deltoid left arm</td>
<td>IM</td>
</tr>
<tr>
<td>OPV booster</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>HepB booster</td>
<td>0.5 ml</td>
<td>Left thigh</td>
<td>IM</td>
</tr>
</tbody>
</table>
Annex – 4: Administration site and mode for EPI vaccines after introduction of pentavalent

<table>
<thead>
<tr>
<th>ANTIGEN</th>
<th>DOSE</th>
<th>SITE</th>
<th>ADMINISTRATION MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>0.5 ml</td>
<td>Outside 1/3 &gt; left forearm</td>
<td>Intradermal</td>
</tr>
<tr>
<td>OPV0</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>DTP–HepB-Hib1</td>
<td>0.5 ml</td>
<td>Deltoid left arm</td>
<td>IM</td>
</tr>
<tr>
<td>OPV1</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>DTP–HepB-Hib2</td>
<td>0.5 ml</td>
<td>Deltoid left arm</td>
<td>IM</td>
</tr>
<tr>
<td>OPV2</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>DTP–HepB-Hib3</td>
<td>0.5 ml</td>
<td>Deltoid left arm</td>
<td>IM</td>
</tr>
<tr>
<td>OPV3</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
<tr>
<td>MEAS</td>
<td>0.5 ml</td>
<td>Right arm</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>YF</td>
<td>0.5 ml</td>
<td>Thigh</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>Booster DTP–HepB-Hib</td>
<td>0.5 ml</td>
<td>Deltoid left arm</td>
<td>IM</td>
</tr>
<tr>
<td>OPV booster</td>
<td>2 drops</td>
<td>Mouth</td>
<td>Oral</td>
</tr>
</tbody>
</table>

Annex 5: Immunization coverage rates for children aged 0-11 months in Benin, from 1987-2003
### Annex 6: EPI performance

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Standards</th>
<th>Base situation 1987</th>
<th>Routine EPI in 2001</th>
<th>EPI review in 2001</th>
<th>Routine EPI in 2003</th>
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</thead>
<tbody>
<tr>
<td>Presence of maps</td>
<td>100%</td>
<td></td>
<td></td>
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<tr>
<td>Program coverage</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Program utilization</td>
<td>100%</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Program continuity (drop-outs)</td>
<td>10%</td>
<td></td>
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</tr>
<tr>
<td>Compliance w/ immum schedule (% invalid doses)</td>
<td>10%</td>
<td></td>
<td></td>
<td>6%</td>
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</tr>
<tr>
<td>Program capacity to reach children under one</td>
<td>90%</td>
<td>11.5%</td>
<td></td>
<td>88%</td>
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</tbody>
</table>

### Annex 7: Results for Polio NIDs from 1996 to 2003 in Benin

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>First passage (administrative data)</td>
<td>12%</td>
<td>110%</td>
<td>116%</td>
<td>120%</td>
<td>129%</td>
<td>100%</td>
<td>103%</td>
<td>103%</td>
</tr>
<tr>
<td>Results surveys between 1st and 2nd rounds</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>92%</td>
<td>96%</td>
<td>95%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second passage (administrative data)</td>
<td>15%</td>
<td>111%</td>
<td>111%</td>
<td>116%</td>
<td>135%</td>
<td>99%</td>
<td>105%</td>
<td>105%</td>
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</tbody>
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