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**Financial Sustainability Plan for the
Expanded Program of Immunization in
MADAGASCAR**

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ACRONYMS AND ABBREVIATIONS

- ABD	African Development Bank
- AD	Auto-destruct (syringe)
- AFP	Acute flaccid paralysis
- ARI	Acute respiratory infection
- AWP	Annual work plan
- BCG	Bacillus Calmette and Guérin (tuberculosis vaccine)
- BHC	Basic health center
- DHC	District hospital center
- DHS	District health service
- DTP Hep B	Combined diphtheria – tetanus – whooping cough – hepatitis B vaccine
- DTP Hib	Combined diphtheria- tetanus-whooping cough-haemophilus influenza B vaccine
- EPI	Expanded Program of Immunization
- GAVI/VF	Global Alliance for Vaccines & Immunization / Vaccine Fund
- GDP	Gross domestic product
- GPHC	General Population and Housing Census
- ICC	Inter-Agency Coordinating Committee
- IEC	Information Education Communication
- IMCI	Integrated management of childhood illnesses
- IMF	International Monetary Fund
- IHIPC	Initiative for the Highly-Indebted Poor Countries
- JICA	Japan International Cooperation Agency
- JSI	Jereo Salama Isika
- KAP	Knowledge, attitude, practice
- MAR	Monthly Activity Report
- MEAS	Measles vaccine
- MLM	Mid-Level Management (Training course for EPI Managers)
- MMIS	Medical management information system
- MNT	Maternal and neonatal tetanus
- MPA	Minimum package of activities
- MPI	Madagascar Pasteur Institute
- NGO	Non-Governmental Organization
- NID	National Immunization Day
- OPV	Oral polio vaccine
- PHO	Provincial health office
- PHS	Permanent Household Survey

- PIP Public Investment Plan
- PRSP Poverty Reduction Strategy Paper
- PVARs Post-vaccinal adverse reactions
- RED Reach Every District
- SB Safety box
- SPA Supplementary package of activities
- TT Tetanus toxin vaccine
- UNICEF United Nations Childrens Fund
- USAID American Cooperation
- VAT / IDL Value-added tax / import duties and levies
- VVM Vaccine vial monitor
- WHO World Health Organization

EXECUTIVE SUMMARY

The Government of Madagascar's immunization program has been implemented following a well-defined policy:

- since 1976, children under the age of two have been immunized against diphtheria, tetanus, whooping cough and tuberculosis;
- in 1982, tetanus vaccine was introduced for pregnant women and polio vaccine for children;
- in 1985, measles vaccine was added to the vaccination schedule.

The pace of the program picked up between 1988 and 1990, as vaccination activities became routine at all health units. As the program evolved, its many operational structures started to serve as gateways for other programs to reduce infant mortality. Enormous progress was made in terms of vaccination coverage.

The Government of Madagascar wanted to signal its commitment to improving access to health services by making mother and child health a priority within the framework of its poverty reduction strategy. That commitment has taken the tangible form of an increase in the State's participation in the payment of health costs since 1997. The increase was especially significant (19%) between 2002 and 2003.

In spite of this, the Expanded Program of Immunization (EPI) relies heavily on external funding. For this reason, a memorandum was signed in May 2000 covering the period 2000-2003 and defining cooperation between the Ministry of Health and its partners in terms of support for the EPI. The aim was to make rational use of resources with a view to providing effective support for and building the capacity of the national component, thereby promoting a properly functioning and sustainable national immunization program.

The arrival of GAVI on the scene gave the EPI fresh impetus. GAVI (the Global Alliance for Vaccines and Immunization) is an initiative that aims to reduce infant and child mortality by reinforcing immunization strategies and by introducing new vaccines. Madagascar fulfilled the eligibility criteria, which are:

- GDP < 1,000 US\$
- POPULATION < 150 million
- Criteria for assessing implementation capacity:
 - ✓ the number of patients
 - ✓ DTP3 coverage > 50%
 - ✓ the assessment of vaccination services
 - ✓ the existence of a national coordination mechanism
 - ✓ government commitment

Like all countries receiving GAVI support, Madagascar must submit a financial sustainability plan to improve the coordination and sustainability of the Expanded Program of Immunization. In December 2002, therefore, under GAVI's guidance, the Ministry of Health and its partners, meeting as the Inter-Agency Coordinating Committee (ICC), conducted an in-depth study of immunization costs and funding in Madagascar, or financial sustainability plan (FSP) for the program, of which the present draft is the outcome.

The objectives of the study were as follows:

- to estimate the present and future costs of the EPI in Madagascar;
- to define strategies and activities for sustainable funding;
- to collect recommendations on the means of enhancing funding strategies.

The analysis and recommendations of the study are presented with a view to improving financial sustainability. The costs and funding data used in the analysis were drawn from official documents and interviews conducted by the FSP team in the public and private sectors. The financial analysis is based both on estimated costs and on actual spending in order to take better account of all the resources mobilized. It includes spending projections for the next ten years for each of the options proposed (four scenarios in all) in the areas of program planning, management, evaluation, research, supply of vaccines and funding, the aim being to improve the sustainability of the EPI in Madagascar.

The four scenarios proposed are outlined below.

1. Scenario A:
 - vaccination coverage target of 80% in 2004-2013 for all antigens
 - maintenance of DTP-HepB in 2006
 - vaccine wastage 20-15%
2. Scenario B:
 - rapid increase in coverage from 88 to 98% between 2004-2013 for all antigens
 - maintenance of DTP-HepB
 - no Hib in 2006
 - vaccine wastage 15-5%
3. Scenario C:
 - moderate increase in vaccination coverage from 78 to 92% between 2004-2013 for all antigens
 - option of DTP-Hib and HepB in monovalent form in 2006
 - vaccine wastage 15-5%
4. Scenario D:
 - moderate increase in vaccination coverage from 78 to 92% between 2004-2013 for all antigens
 - option of DTP-HepB
 - no Hib
 - vaccine wastage 15-5%

Scenario C was chosen because:

- it introduced Hib vaccine;
- vaccine wastage was low (2%) in 2013;
- it cost less than scenario A.

SUMMARY

The Expanded Program of Immunization launched in Madagascar in 1976 enabled the country to achieve encouraging results in the fight against morbidity and mortality due to vaccine-preventable illnesses for at least 2 decades. Although a slight drop in coverage was observed in 2000- 2001, the Government's efforts to reverse that trend recently are highly visible.

With the support of its partners, vaccination is central to the national strategy to combat poverty. This strategy of major economic recovery is based in fact on actual growth of some 8% a year until 2013 so as to reduce by a half a poverty rate estimated to be 63% of the population. This fight against poverty is being implemented in a context in which the country benefits from the Initiative for the Highly-Indebted Poor Countries and a domestic economic recovery centered on the priority sectors of grassroots development.

Cooperation in health matters has expanded greatly with the arrival on the scene of such global initiatives as GAVI, HIV/AIDS, Action to Combat Malaria, etc. The Ministry of Health, when preparing this financial sustainability document for the EPI, was working on this assumption of economic growth and of changes in the approach to health, while exploring the other opportunities currently available and proposing a monitoring mechanism that allows adaptation to new possibilities in the future.

Despite the ruggedness of the country's topography, there is sufficient medical infrastructure to make it possible to improve the results of the EPI through better organization and planning and funding of activities in DHCs and DHSs. The availability of vaccination staff could be a handicap in some cases, but the measures proposed in the PRSP will enable the removal of these bottlenecks in the very near future by recruiting new staff and opening more health centers.

Madagascar joined the global current by submitting a request for support to GAVI/VF in 2001. That support made it possible to introduce Hepatitis B vaccine into the national vaccination calendar. Also as a result of support from its partners, the country has continued to improve vaccination as a whole by instituting a system of epidemiological surveillance, starting with AFP. Other innovations have been introduced - such as the use of auto-destruct syringes for all vaccination activities, or are being contemplated - like the introduction of Hib vaccine in 2006, measures to reduce vaccine wastage, etc.

The program is intended to increase present coverage significantly by implementing measures to improve the management system and boost capabilities by training and supervision. The country intends to take action to control measles and maternal and neonatal tetanus during the next decade. These campaigns and the specific surveillance measures accompanying them will be capitalized on to improve the routine program and increase coverage and monitoring at all levels.

Where funding of the program is concerned, the Government's budget process offers an opportunity for a better allocation of resources. The existence of a detailed budget right down to the decentralized District Health Service (DHS) level makes a direct allocation of funds to the health districts possible. However, a dedicated budget line for vaccines at the central level would make the action of the Ministry of Health more visible. The Ministry of Health is planning to use other channels for transferring funds in addition to the current procedure on a

case-by-case basis so as to prevent any delays in funds reaching the periphery. Measures discussed with the partners in the ICC will speed up the release of funds, budgeting and the search for additional funds. Implementation of the recommendations that emerged from the program review, the inventory of the cold chain and transport, and the data quality audit will make it possible to put the program on an upward course.

The data collected for the period 2000-2002 on program costs emphasize the need for better accounting of the contributions of both sides. They also show that the Government is involved in program costs, mainly through the payment of staff salaries. The Government also participates in the funding of running costs. For vaccines, the Government plays a limited role during the years examined. Over 90% of vaccine funding comes from the partners.

The State's commitment to health funding is embodied in an increase in the budget of the Ministry of Health, which rose from 252.8 to 443.6 billion FMG between 1997 and 2001. The health budget was 10.3% of the national budget in 2001 and accounted for 1.9% of GDP in 2000. The health sector received almost 57 billion FMG (or 8,769,230 USD) from IHIPC funds. Some of this was allocated to the BHCs.

Examination of the data collected for 2000-2003 shows that the highest cost per child vaccinated was 15.75 USD in 2002. This figure has to be increased by the program costs shared by the other services or programs but is nevertheless below the international norm of 20 to 25 USD for every child fully vaccinated with the routine vaccines.

Preparation of the Financial Sustainability Plan produced projections of resource requirements for the next ten years. From 2003 to 2013, the program will need 152,783,524 USD funding, 80,952,983 USD (53%) of which is secured or probable, with a real gap of 72,830,541 USD (47%). The gap varies from year to year and depending on the type of category to be funded. However, vaccines deserve special attention, particularly if GAVI/VF were not to lend its support to the country for the introduction of Hib.

Specific proposals on possible action are being made to manage the gap. The Ministry of Health intends to explore the possibilities open to it to fund the gap identified. The action will first be internal at Government level while still involving the partners. The case will be argued strongly as an entry point for funding the gap, while the Ministry will stress the mobilization of the potential funds (IHIPC, CRESAN, European Union, IDA loan, etc.). This mobilization of all opportunities will occur as a result of greater Government commitment and with the contribution and participation of the partners through the ICC. Monitoring of the implementation of this strategy is one of the specific actions for which responsibility lies with national managers as well as with the partners.

SECTION I

IMPACT OF THE COUNTRY AND THE HEALTH SYSTEM CONTEXT ON COSTS AND FUNDING OF THE EPI

I.1 SOCIAL AND ECONOMIC SITUATION IN THE COUNTRY

Based on the 1993 general census, the estimated population of Madagascar is 17,416,174 in 2003 (PHS). With a 2.8% growth rate, the population is projected to increase to 16,485,800 inhabitants in 2003, 2,967,444 of whom will be children aged five and under.

The economic situation has evolved erratically for almost 3 decades. After its earlier positive economic growth, Madagascar has grown steadily poorer since 1970¹. The situation improved somewhat between 1997 and 2001, when the Human Development Index rose from 0.453 to 0.469. Between 1991 and 1996 per capita GDP shrank by an average of 2.7%; it improved only during the period from 1997-2000, with a positive growth of real per capita income of 1.5%. In 2001, growth reached 6.7% and inflation stood at 4.8% (MEF). The periods of decline and/or stagnation generally correspond to major political changes, which affected health to a greater or lesser extent, often with a fall in vaccination coverage.

Although the period from 1997-2001 was relatively stable, with hints of an economic recovery, the social impact was positive but limited. The measures taken, however, such as the lowering of customs barriers, the removal of tax exemptions, the adoption of budget restrictions and budget spending controls, and privatization allowed the economic equilibrium to be for the most part restored.

The political crisis that shook the country during the first six months of 2002 resulted in a situation of economic and social disorder characterized by a 12% fall in growth. This deepened the poverty and vulnerability of economic agents and certain sectors of the population (vulnerable sectors such as women, children, the elderly, the disabled, the homeless). In 2001, 69.6% of the population were living below the poverty line; that figure rose to 80.7% after the 2002 crisis (2002 PHS). Poverty remains essentially a rural phenomenon, with 86.4% of the poor living in the countryside. The situation is nevertheless equally disturbing in urban areas, where the poverty rate is 61.6%.

Debt service in 1992 was almost 152% of tax revenues. The absence of debt rescheduling agreements between 1991 and 1996 led to a substantial build-up of arrears in external payments. At the end of 2002, the outstanding debt owed to financial development institutions such as the World Bank, the IMF and the ADB amounted to 4,587 million USD, or 100.6% of GDP. The corresponding debt service amounted to 128 million USD, or 11.9% of revenues from exports of goods and non-factor services.

In 2001, however, in the context of the HIPC initiative, Madagascar benefited from a 50% reduction in debt service, making approximately 50 million USD available per year until the implementation after one year of the PRSP, under which debt relief will apply to stock and represent no more than 150% of annual export revenues at net current value.

In addition, the level of external debt should have been eased by 63.7% (Central Bank of Madagascar) by 2007 after the usual rescheduling. The projected average net discounted value in terms of exports is 99.1% between 2010 and 2019.

¹Per capita income fell by 40% between 1970 and 1995.

Having opted for rapid and sustainable development, Madagascar plans to slash the poverty rate in half in 10 years (by 2013). This will require average economic growth of about 8%, with an annual rise in per capita GDP of 5.2%. This EPI financial sustainability plan is a logical component of sustained economic growth and expects to benefit from its actual impact.

Within that context, public investment will be well conceived and well targeted to meet the expectations of the Malagasy people and of private investors. Much of the investment will therefore be directed at government priorities (governance, rural development, infrastructure, social welfare), with a view to improving the well-being of the Malagasy people.

The private sector is expected to invest in growth sectors and will have an impact in the social sector.

The changes in Madagascar's socio-economic situation are summarized in the table below.

Table 1: Madagascar's socio-economic situation

	<i>1993</i>	<i>1997</i>	<i>1999</i>	<i>2001</i>
<i>Life expectancy in years</i>	52.1	54.1	57.5	-
<i>Literacy rate in%</i>	47.2	47.2	51.3	52
<i>Net enrolment rate in%</i>	61.27	67.6	69.8	64.9
<i>Real per capita GDP in USD adjusted by PPP</i>	678	652	956	840
<i>HDI</i>	0.356	0.453	0.481	0.469

Source: 2001 PHS / 2003PRSP

Table 2: Main macroeconomic indicators for Madagascar

	<i>2000</i>	<i>2001</i>	<i>2002 (proj.)</i>	<i>2003 (proj.)</i>
<i>GDP growth</i>	4.8	6.0	-11.9	7.8
<i>Inflation</i>	8.7	4.8	13.7	6.2
<i>Expenditure</i>	15.9	17.6	14.8	17.6
<i>Current account balance</i>	-5.6	-1.3	-4.5	-5.7

Source: Interim Country Assistance Strategy for the Republic of Madagascar, 2003, World Bank

Problems of isolation and physical inaccessibility are an obstacle to Madagascar's economic development. Madagascar has a rugged topography and an area of 550,000 km². Combined with the high costs of transporting goods within the country, the production factor costs are relatively high. Thirty-three per cent of all *communes* have no access to a national road; 30% have no access to a provincial road. In spite of the uniformity of the population, development gaps exist between regions. These factors are also a burden on the immunization services because they limit access to them.

Madagascar's economic potential is also threatened by the worrisome degradation of its ecosystem and the high incidence of debilitating disease. The impact of natural disasters such as

cyclones, flooding and drought considerably hamstring efforts to improve the health situation. The poor are highly susceptible to any deterioration in environmental conditions.

Madagascar was once an educational leader in Africa, but the situation has gradually deteriorated. In 1999, almost half the population was illiterate. The proportion of people without schooling rose from 39.5% in 1993 (PHS) to 48% in 2001 (PHS) (Annex 1). Thirty per cent of school-age children do not attend school, and the number of those attending secondary schools remains too low.

The civil service is undergoing sweeping reform, chiefly as concerns salaries, allowances, and retirement and other benefits.

I.2. SITUATION OF THE HEALTH SECTOR

Generally speaking, the health situation in Madagascar is characterized by:

- high infant mortality (88 per 1,000 in 2000) that is nevertheless lower than in 1997 (96 per 1,000);
- under-five mortality of 159 per 1,000 in 1997, compared to 136 per 1,000 in 2000;
- morbidity (all diseases) of 14.5%, according to the 2002 PHS. This is significantly higher than the 2001 rate of 11.3%.

According to the social trends chart used to monitor poverty indicators, the main causes of morbidity in 2001 were:

Table 3: The main causes of morbidity in Madagascar

<i>Rank</i>	<i>Diseases</i>	<i>%</i>
<i>1</i>	<i>Fevers presumed to be malaria</i>	<i>50</i>
<i>2</i>	<i>Diarrhoeal diseases</i>	<i>12.2</i>
<i>3</i>	<i>Cough lasting more than 3 weeks</i>	<i>7</i>
<i>4</i>	<i>ARI (acute respiratory illnesses)</i>	<i>6.9</i>
<i>5</i>	<i>Dental and mouth disease</i>	<i>5.2</i>

Source: 2001 PHS

Among children under five, malaria, diarrhoeal diseases and ARI caused 61.5% of all health problems in 2000. Nearly half (48.6%) had stunted growth. The 12-23 month age group was the most at risk, with morbidity of 58.6%.

Table 4: The main causes of mortality in Madagascar among children under 5 years of age

<i>Rank</i>	<i>Disease</i>	<i>%</i>
<i>1</i>	<i>Diarrhea</i>	<i>22</i>
<i>2</i>	<i>Pneumonia</i>	<i>21</i>
<i>3</i>	<i>Asphyxia (neonatal)</i>	<i>10</i>
<i>4</i>	<i>Malaria</i>	<i>9</i>
<i>5</i>	<i>Premature birth</i>	<i>8</i>
<i>6</i>	<i>Severe infections</i>	<i>8</i>

7	<i>Neonatal tetanus</i>	2
8	<i>Measles</i>	1
9	<i>Other neonatal pathology</i>	5
10	<i>Other</i>	10

Sources : MMIS 2001

Vaccine-preventable illnesses such as measles and tetanus account for a large number of child deaths, as the table above shows. The causes include vaccination coverage that is still low, particularly in certain regions. The main reasons why children are not immunized are that they live in remote areas, the mother's ignorance, lack of time, or fear of side effects. Vaccination coverage for fully immunized children aged between 12 and 23 months fell from 43% in 1992 to 38.1% in 1999 (36.2% in 1997) and further to 36% in 2001, as shown in the table below.

Madagascar has a pyramidal health system with a base consisting of the Basic Health Centers (BHC: public health establishment) at the periphery. They are supervised by District Health Services (DHS). Hierarchically, the DHSs are subordinate to the Provincial Health Office, which reports directly to the Ministry of Health. For vaccination, there are 2,392 public BHCs (1,492 BHC1s and 900 BHC2s) where vaccination is mainly administered. There are 126 DHC1s and DHC2s².

Vaccination-related activities are part of the "minimum package of activities" (MPA) of each BHC. Generally speaking, the BHCs devote 5 to 20% of their time to EPI activities. Vaccination activities are supervised by the district management team (DMT), the provincial level and possibly the central level.

The private health establishments, in practice, are mainly non-profit and denominational NGOs that include vaccination among their health activities. The work of the private sector is often isolated and is not always part of vaccination policy.

Table 5: Vaccination coverage for children aged between 12 and 23 months

<i>Antigens</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1996</i>	<i>1997</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>
<i>BCG</i>	83	25	77	87	66	70	72	67
<i>DTP3</i>	59	54	49	55	48	63	55	46
<i>POLIO3</i>	59	54	49	55	48	58	58	50
<i>MEASLES</i>	56	54	51	52	46	44	55	71
<i>Full immunization</i>	-	43	41	41	36	38	44	36
<i>Newborns protected against NNT</i>	43	-	42	45	35	-	48	37

Source: survey data (with or without certificate)

The fall in vaccination coverage in 2000 and again in 2001 was the result of insufficient appropriate social mobilization for the routine program following three successful years of polio NIDs from 1997 to 1999. A KAP survey should be carried out to verify the real causes.

² A BHC1 has a paramedic in charge, while a BHC2 is headed by a doctor assisted by 1 or 2 health assistants. A DHC1 has no surgical facility, while a DHC2 has one.

Everything indicates, however, that the health situation is improving as far as the lower incidence of vaccine-preventable illnesses is concerned. (See table 6 below.)

The table below indicates the number of cases of EPI target diseases between 2000 and 2002.

Table 6: Number of cases of EPI target diseases between 2000 and 2002

<i>Diseases</i>	<i>Number of cases</i>		
	<i>2000</i>	<i>2001</i>	<i>2002</i>
<i>Diphtheria</i>	12	12	NA
<i>Measles</i>	32,256	14,721	12,784
<i>Whooping cough</i>	3,880	104	NA
<i>Polio (confirmed case)</i>	0	1 (VPDV/vaccine-associated)	4 (VPDV/vaccine-associated)
<i>Neonatal tetanus</i>	13	18	6
<i>Total tetanus</i>	54	76	30
<i>Flaccid paralysis</i>	22	32	65

Sources: joint WHO/UNICEF forms

The public services are used by 59% of patients nationwide, particularly by poor households (78% of the poorest households). Approximately 60% of the population lives within 5 km or one hour's walking distance of a public health service. Also, medical staff are not evenly distributed: 21% of the population, principally in urban areas, is served by 41% of the health staff.

As concerns health sector funding, the State's commitment has taken the form of an increase in the Health Ministry's budget allocation, which rose from 252.8 to 443.6 billion Malagasy francs between 1997 and 2001. The health budget accounted for 10.3 per cent of the national budget in 2001, and 1.9% of GDP in 2000. The health sector received almost 57 billion Malagasy francs (8,769,230 USD) from IHIPC funds that were used to renovate, reconstruct and equip several BHCs in 2001, and to recruit the requisite staff for them. For the EPI, it is Government policy to provide a free service to the whole target population, helped particularly by support from Program partners

One feature of the budgetary reform of the health system is the decentralization of the operating budgets of the DHSs. However, the Provincial Health Offices and the District Health Services can submit requests directly to the Immunization Service or certain partners (UNICEF) where necessary. However, the funds intended for those services are often delivered late.

I.3 PLACE OF HEALTH DEVELOPMENT IN THE CONTEXT OF ACTION TO COMBAT POVERTY

The PRSP devotes considerable space to the above situation. The Poverty Reduction Strategy Paper (PRSP), drafted in May 2003, serves as a frame of reference for all policies and action to combat poverty, including the health sector. The main aim is to promote rapid and sustainable development to cut poverty by half within 10 years (2004-2013) by maintaining sustained economic growth of at least 8% a year.

In implementing this approach, the Ministry of Health's task is to improve access for the Malagasy people and particularly the poor to the health services, and to protect them from diseases. The Expanded Program of Immunization is among the five general objectives to be achieved by the end of 2005.

Specifically, the aim will be to:

- reduce maternal mortality from 488 per 100,000 live births in 1997 to 285 in 2006, and infantile mortality from 96 to 72 per 1,000 and infant-juvenile mortality from 156 to 111 per 1,000 respectively for the same years.
- achieve coverage of 80% of infants aged from 0 to 1 year with all the EPI antigens and 80% of pregnant women with tetanus vaccine (TT 2 +).

It is in this context that DTP3 was adopted as the monitoring indicator of the macroeconomic situation. The National Immunization Policy is thus central to the National Health Policy and action to combat poverty. The Ministry of Health has already received IHIPC support and is still counting on those resources to implement this Financial Sustainability Plan for the Program successfully.

I.4 MANAGEMENT OF THE EPI

The immunization program is managed by the Immunization Service, which is run by the Health Ministry's Family Health Directorate. The Service is in charge of drawing up the main lines of national EPI policy and the rules for implementation, monitoring and assessment of implementation. It also provides health establishments with technical and logistical support, in cooperation with the development partners and NGOs.

The Immunization Service's operating costs are covered by the State budget, and assistance is provided by partners such as JICA, USAID, WHO, UNICEF and GAVI.

I.4.1 State financing

The State budget covers the operating costs of the Immunization Service and all intermediary and peripheral centers.

The Immunization Service manager manages funds at the central level, but disbursements must be authorized by the Ministry of Health's Financial and Administrative Directorate, which has its own Expenditure Control Service. For the peripheral services, there are also managers in each PHO and DHS.

The budget process starts with the establishment of each service's Annual Work Program (AWP) and corresponding budget. The budgets for these programs are centralized by the Ministry of Health, which aligns them within the framework established by the Ministry in charge of the budget. The draft budget is consolidated before being submitted to the Council of Ministers and to Parliament for adoption. The detailed State budget assigns a budget line at least to each DHS. As soon as the budget has been adopted, it can be drawn on by the managers at the central and peripheral levels. This process is a major asset for implementation of the Financial Sustainability Plan, which puts responsibility in the hands of each entity at different levels. It will be given a boost by the decentralization/deconcentration mechanism mentioned earlier. From 2004 onwards, there will be a steady reduction of the central level in favor of the health

districts so as to improve the implementation and extent of activities and produce better results and a tangible impact at the community level.

Some of the EPI running expenses (such as fuel) could be covered by the local communities, which receive State subsidies for the running of their social infrastructure. The amounts are allocated on an irregular basis, however, leading to delays and to reliance on the municipal authorities.

I.4.2 External resources

UNICEF

UNICEF covers the cost of supplies, material and equipment and of the immunization-related activities set out in the Three-year Cooperation Program and reiterated in the Immunization Service's Annual Work Plan.

In general, funding is provided on the basis of applications filed one month in advance. UNICEF can reimburse outlays that have already been made or advance funds. What is paramount is that activities proposed for funding or reimbursement must have been included in the AWP approved. As a rule, there is no delay in the payment if the one-month deadline is respected. Payments are made into a special account managed by the Immunization Service.

PHOs and DHSs can also submit applications directly to UNICEF if the expenses have been budgeted in the AWP. The manager submits a spending plan and undertakes to provide bookkeeping vouchers once the activities have been completed. There may be a delay in the availability of funds because of the way the bank system functions away from the capital. In all cases, the managers have six months to send in the vouchers; after that the account is blocked. The central authorities have an internal audit system that serves as a control.

WHO

WHO resources are used following the same procedures as those of UNICEF, but since 2002 the application must be signed by the Ministry of Health. The funds come from the country budgets and supplementary resources. They are used mostly to finance AFP epidemiological surveillance activities and to some extent to finance routine EPI activities.

USAID

USAID assistance is channeled through the NGO JSI and relayed by BASICS, which supplies mainly logistics, training and local social mobilization. The support provided does not, however, cover all provinces and districts.

JAPAN

Japan mainly provides contributions in the form of donations of material and equipment. In the past it has also financed the purchase of vaccines through UNICEF. A detailed plan for the distribution of equipment and material forms part of the agreement signed with the Government. The equipment is delivered to establishments determined in advance by both parties.

GAVI

GAVI funds are managed in a special account whose co-signatories are the Head of the Immunization service and the Family Health Director. The funds are obtained on submission of a proposal. The partners, who are members of the Inter-Agency Coordinating Committee, agree at their regular meetings on which activities are to be financed by the Fund. The 2002 crisis disrupted the budget implementation process, making it difficult for the State to reimburse vaccines purchased with UNICEF funds.

I.4.3 STRENGTHS OF THE FINANCIAL MANAGEMENT SYSTEM

Budget process:

The decentralized budget process is handled by a variety of actors. Past shortcomings have been corrected through training. The budget process is transparent and the subject of circular letters. The adoption of the budget and the release of funds pose no particular problems.

Release of funds:

Only in exceptional cases is there any delay in the release of funds. Furthermore, different sources of funding can be mobilized at the same time. However, regular monitoring in the Inter-Agency Coordinating Committee should enable the institution of a very flexible mechanism to take preemptive action and deal in advance with any problems of availability of resources.

Monitoring funds:

The foundations of the control system are in place because of the services of the Health and Finance Ministries. Some improvements could make it more effective. There are different levels of control at the central and decentralized levels. Coordination and better planning would allow for better use of funds. The FMIS (Financial Management Information System) is designed to perform well, although there are problems because in practice some of the information is unreliable.

I.4.4 WEAKNESSES IN FINANCIAL MANAGEMENT

Budget process:

The “normal” budget process does not allow for any increase in the State budget to cover the costs of the immunization program. There is also a discrepancy between the allocation for duties on UNICEF imports and the programming established by the project; this is because the period covered by the Public Investment Program does not correspond to the donor’s annual work program. This mismatch in budget availability could be corrected by joint supply planning.

Lack of familiarity with the real target group in terms of budget procedure has resulted in some trial and error in estimating requirements. The efforts to update information through the Birth Registration Project should be encouraged, promoted and extended to the whole country. Full participation in the ICC by a representative of the Ministry of Finance (in 2003) will help to speed up the release of funds and making them available to the DHSs.

Release of funds:

The release of funds for remote areas is subject to delays (bank). A system to provide information rapidly on transactions made at both the location of the receiving bank and the district concerned should be explored so as to minimize delays in making funds available.

The release of IHIPC funds may be subject to some problems of delays linked to the availability of the overall amount requested. There are also constraints on the use of the funds because it is difficult to make purchases outside the country (local expenditure). In some cases, the need for the Health Minister's signature could hold up operations, particularly those financed by WHO. The contribution expected from the *communes* is neither automatic, nor properly understood.

Control and management of funds and inventories

The system of producing vouchers at a later date leads either to the account being blocked or to delays in recording expenditure. The inventory accounting system has just been updated for the cold chain and logistics. An annual inventory including new acquisitions and withdrawals would provide an up-to-date picture of the situation. Changes of staff, particularly project managers, can result in equipment or funds disappearing because of lax inventory and handover procedures. Action will be taken to ensure that handing over a service includes an updated inventory.

Management of stocks, particularly vaccines, often causes losses because poorly trained health establishment managers are constantly afraid they will run short of vaccines and therefore tend to overstock. Many BHCs do not have a budget for collecting their vaccines or equipment from the DHS. Stocks and fuel supplies are managed sloppily, leading to overspending and a risk that refrigerators will malfunction and cause vaccine stocks to deteriorate. This situation shows that neither health workers nor users are properly aware of the high costs of immunization services. Late and often partial funding allows only 3 rounds of outreach strategy trips because only three months per year are covered. Because of the work overload in health establishments, staff invent figures for their monthly activity reports, including vaccination data.

I.4.5 RECOMMENDATIONS

Budget process:

The State budget should increase in line with population and economic growth. A plan should be presented to that effect. The State should cover at least current running costs and progressive funding of vaccines so that the partners can help the country with other aspects of health.

The Immunization service and the partners must coordinate more closely so that the funds provided under the PIP correspond to real needs. Planning efforts will make it possible to put this aspect in order.

Local efforts must be made in every health establishment to stabilize the problem of the denominator for population and vaccination data. Population figures are based on the last general census made in 1993 adjusted by an update coefficient. Pending the next general census, measures should be taken to ensure that the figures in the monthly activity reports are a reliable reflection of population growth by making use in addition of the local census system based on birth registration.

At the management and financial level, the Ministry of Finance is a member of the principal ICC, and its technical contribution should also be seen by its participation in the technical ICC..

Release of funds:

Since vaccination is an essential basic requirement for the country, the Ministry of Finance should give it priority in releasing funds so that it can carry out outreach strategies throughout the year. Funds should be released at regular intervals without blank periods. To get funds to the countryside faster, other channels should be explored (post office or express mail). The *communes* should be the target of a special IEC activity, because they have resources to hand that should be used.

Control and management of funds / inventories:

All managers should ensure that the system of providing vouchers after the funds have been committed is put in order so as to avoid blockages. This will be reviewed periodically at meetings of the ICC. A more rigorous approach should be adopted with a specific procedure and possibly penalties to avoid late justification of spending.

Setting up an inventory accounting system updated at regular intervals would make for better tracking of equipment. A handover procedure with tracking measures would prevent malfunctions. The vaccine management system must be assessed. Wastage could be reduced by improving training of health unit officials. An appropriate system of penalties would enhance vaccine stock management.

Once the new requirements have been identified in the annual work plan, the requisite inputs must be allocated without too much delay, particularly in the case of the fuel needed to run refrigerators, implementation of the outreach strategy, and the delivery of equipment - and sometimes vaccines - to the BHCs.

An exhaustive and detailed inventory must be made as soon as possible of all material and equipment and their condition.

SECTION II

II.1 PROGRAM CHARACTERISTICS, OBJECTIVES AND STRATEGIES

In Madagascar, the first vaccinations took place in 1976, when children under the age of two were immunized against diphtheria, tetanus, whooping cough and tuberculosis. Between 1982 and 1985, TT vaccine was introduced for pregnant women and polio and measles vaccines for children. In 1990, following a period during which the Expanded Program of Immunization picked up, vaccination activities became part of the routine activities of all health units. In 1998, the EPI policy was reviewed and updated. In 2000 and 2001, advocacy for the introduction of new vaccines such as the hepatitis B meant there was a need for support from new partners of the EPI and the Global Alliance for Vaccines and Immunization. The new vaccine was introduced in 2002; Hib vaccine is to be introduced in 2006.

1. Main characteristics of the EPI in Madagascar

A) **Current vaccination schedule** and vaccines used in Madagascar for the EPI:

Table 7: For children aged 0 to 11 months

Age	Vaccines	Protection
At birth	BCG, OPV	Oral vaccine against tuberculosis, oral vaccine against poliomyelitis, dose 0
At 6 weeks	DTP-HepB1, OPV 1	Combined vaccine against diphtheria - tetanus - whooping cough - hepatitis B, oral vaccine against poliomyelitis, dose 1
At 10 weeks	DTP2-HepB2, OPV	Combined vaccine against diphtheria - tetanus - whooping cough - hepatitis B, oral vaccine against poliomyelitis, dose 2
At 14 weeks	DTP3-Hep-B3, OPV	Combined vaccine against diphtheria - tetanus - whooping cough - hepatitis B, oral vaccine against poliomyelitis, dose 3
At 9 months	MEAS	Vaccine against measles

NB: after the age of six months, it is recommended that vitamin A be administered during vaccination sessions. The introduction in 2006 of Haemophilus influenza B vaccine (Hib) will follow the same schedule as for DTP-Hep B.

Table 8: For pregnant women

Vaccines	Schedule	Length of protection
TT 1	First contact	-
TT 2	≥ 4 weeks after TT 1	1-3 years
TT 3	≥ 6 months after TT 2	5 years
TT 4	≥ 1 year after TT3	10 years
TT 5	≥ 1 year after TT 4	Lifelong

B) Current vaccination schedule in the public sector:

The schedule was adopted as part of the new vaccination policy with a view to improving vaccination coverage and reducing vaccine wastage.

- In centers with refrigerators, OPV, TT, DTP and HepB vaccines must be administered every day in application of the opened vials policy, whereas measles and BCG vaccines are administered only once or twice a week, depending on the size of the population (10,000 to 20,000: twice a week; fewer than 10,000: once a week).
- In centers without refrigerators that cover fewer than 10,000 inhabitants, however, only one session is scheduled per week and all the antigens must be administered on the same day.

C) The main strategies of the new national immunization policy are:

- to provide routine vaccination, either as part of the stationary strategy of all health units or outside the health units as part of an outreach strategy;
- because of the high cost of pentavalent vaccine (DTP-HepB-Hib), it was decided, on the basis of a national epidemiological study, to introduce Hib in the combined DTP-Hib form, with hepatitis B vaccine administered separately. Introduction will cover the whole country so as to take advantage of the high level of DTP to increase Hib coverage quickly;
- to conduct mop-up activities as part of IMCI (Integrated Management of Childhood Illnesses), during which the child's vaccination status is systematically checked and topped up.

II.1.2 Changes in vaccination coverage in Madagascar

The results of the national survey (children from 12 to 23 months) are shown in table 5 of the health situation. There is a significant difference from the administrative data collected in the context of the Financial Management Information System (FMIS). A data quality audit carried out in July 2003 shows that the quality index of the administrative data system is 49%².

This nationwide unreliability of routine EPI data is a constant feature of the operation of the system put in place. A number of reasons have been identified, and corrective measures have been suggested, including training of health workers and a revision of the tools used for the Monthly Activity Reports (MAR).

There has also been a sharp fall in national coverage for all antigens from 2000 to 2001. The real causes of the fall still have to be identified.

2.1.3 Vaccine management

Vaccine wastage

Vaccine wastage by antigen between 2000 and 2002 was as follows:

Table 9: Wastage by antigen for the whole country

² Initial report on the 2002 data quality audit (DQA), Madagascar

	BCG	POLIO	DTP	MEAS	TT
2000	40.2	16.8	14.5	32.2	22.4
2001	43.3	17.0	19.0	31.7	26.9
2002	41.7	17.9	13.8	36.2	28.2

Source: MMIS

These figures are to be interpreted having due regard to the quality of the collection system and the organization of vaccination activities. They are fairly low because they include children outside the target population among the doses administered. This is a correction factor that has to be applied.

The above table shows a sharp increase in vaccine wastage from 2000 to 2002 for all antigens except BCG and DTP, the reason being the introduction of the 10-dose vial for combined DTP-HepB vaccine.

Wastage of TT, measles and BCG vaccine is more than 25%. The latter two, measles and BCG, are lyophilized vaccines to which the opened vials policy does not apply, which may explain the high wastage.

The figures are for wastage during vaccination sessions, but it is also important to reduce vaccine wastage during storage or during any other handling such as transport.

The following measures were adopted with a view to reducing vaccine wastage and loss:

- Knowing the required quantities of vaccine to order for the population to be covered. This requires strict management in terms of maintaining a proper cold chain and also of supervising the stacking of vaccines in the refrigerator, and keeping the temperature sheet and the stock sheets for all vaccines received. All these measures keep the risks of vaccine wastage during storage in the health establishment to a minimum.
- Application of the opened vials policy during subsequent vaccination sessions (DTP, HepB, OPV, TT). Vaccine quality is checked using various procedures such as the flocculation test for liquid vaccines, and above all by using vaccine vials with a vaccine vial monitor (VVM).
- Keeping to the recommended vaccination schedule: BCG and measles vaccines are administered only once or twice a week.
- The exclusive targeting of children between the ages of 0 and 11 months (vaccinating children who are more than one year old increases wastage).
- The maintenance of vaccine security: premises, logistics, cold chain maintenance, etc.
- To obtain tangible results, it is essential to improve training, monitoring and assessment activities at all levels, provide support for monthly reviews, and provide supervisory training visits. The Immunization Service and the provincial levels will draw up coordinated supervision plans. Sustained action in this area together with an improvement in the quality of services delivered to the population is crucial to the effectiveness of the program - a key factor in its financial sustainability.

II.2 MAIN GOALS OF THE EPI

To reduce infant and maternal mortality by 2010, the program aims in the coming ten years (2004-2013) to: increase vaccination coverage for all antigens throughout the country; introduce the new Hib vaccine in 2006 after a representative countrywide epidemiological study of the incidence/prevalence of Haemophilus influenza B in 2004; improve the quality of vaccination activities; boost integrated epidemiological surveillance of the EPI target diseases; run campaigns to reduce/eliminate measles and maternal and neonatal tetanus; and reduce vaccine wastage.

II.2.1 MAIN OBJECTIVES FOR THE PERIOD 2003 – 2013

II.2.1.1 GENERAL OBJECTIVES

- IMPROVE VACCINATION COVERAGE FOR EACH EPI ANTIGEN
- ERADICATE POLIOMYELITIS BY 2005
- ELIMINATE MATERNAL AND NEONATAL TETANUS
- CONTROL MEASLES
- ADD THE NEW VACCINES (HEPATITIS B, HAEMOPHILUS INFLUENZA B) TO THE VACCINATION SCHEDULE

II.2.1.2 SPECIFIC OBJECTIVES

1. Achieve vaccination coverage of at least 80% of children under the age of one with all EPI antigens, nationwide, as of 2005.
2. Reduce wastage to less than 15% for DTP-HepB, polio, measles and TT.
3. Provide 100% injection safety and waste management by 2013.
4. Provide effective cold chain coverage of at least 90% nationwide by 2005 and 100% in 2007, while ensuring cold-chain equipment is renewed at a certain rate.
5. Add the haemophilus influenza B vaccine to the immunization schedule as of 2006.
6. Conduct supplementary measles vaccination activities as of 2004, and maternal and neonatal tetanus activities as of 2005.
7. Improve surveillance of the EPI target diseases, particularly MNT, AFP and measles.
8. Improve the EPI management process, including the medical management information system at all levels.

II.3 PROGRAM STRATEGIES

II.3.1 Integration of services

Since the EPI is one of the programs whose activities reach the greatest number of people, it will serve as a gateway for the introduction/expansion of other community health programs. Increased vaccination coverage will be a key indicator of accessibility to services that could be carried out at the community level through the outreach strategy. For example, all under-fives receiving routine vaccination will systematically be given a dose of vitamin A. Maternity-related activities will be used to vaccinate pregnant women against tetanus. Combining the EPI with community malaria prevention strategies (impregnated mosquito netting, ad hoc

preemptive treatment for pregnant women) will help to achieve national objectives and spread implementation costs.

II.3.2 Social mobilization:

To optimize demand, a seven-year communication plan will be drawn up that takes account of the three aspects of communication (interpersonal, awareness, advocacy). Given the fact that most people live in rural areas and that the country has a strong oral tradition, the communication plan will give priority to the use of local channels and will highlight participation by the beneficiary community.

II.3.3 Improved surveillance

The components tackled will be:

- the improvement of active integrated surveillance of cases of AFP and tetanus and of epidemic outbreaks of measles, with a notification circuit;
- the implementation of surveillance activities for cases of measles, with serological confirmation in the laboratory;
- improved collection, analysis and use of EPI information by strengthening the MMIS.

II.3.4 Program funding

Four options were looked at to provide guidance for strategies to fund the Program for the period 2004-2013 (see annex 1). The differences between them depend mainly on the following factors:

1. The vaccination coverage target to be achieved for each antigen
2. The wastage reduction target to be achieved for each antigen
3. The dropout reduction target for multiple-dose vaccines
4. Whether or not to introduce Hib vaccine in 2006
5. The option of introducing combined or single-dose Hib vaccine
6. Maintaining the status quo (routine vaccines + combined DTP Hep B vaccine).

Although adjustments have to be made to the volume and operation of the cold chain, the outreach strategy, training of health workers, etc., it is the significant factors mentioned above that were considered in the proposed financial sustainability plan

The option selected by the Ministry of Health is to introduce combined DTP-Hib and single-dose Hep vaccination during 2006. This would involve changing the management of vaccination activities because of an additional injection of single-dose Hep B. The most significant implication would be the cost incurred in using that combination of vaccines and paying for it. The Ministry of Health, through the opportunities offered by the Business Plan and the HIPC Initiative, and above all the concept of budgetary support increasingly being used by the partners, will guarantee to assume the additional costs of the vaccines progressively in collaboration with the partners. A request to that effect will be sent to GAVI/VF in the course of 2004 after the epidemiological study. It will be accompanied by a rescheduling of GAVI support over 8 years instead of the current 5-year basis applied for Madagascar.

II.4 IMPLEMENTATION ACTIVITIES

II.4.1 To enhance the quality of immunization services

a. Improvement of vaccination coverage

The aim is to attain at least 92% coverage for all antigens.

- Steps will be taken to ensure that vaccines and injection supplies are constantly available and that trained human resources are to hand to deliver the service. The Government contribution must be increased to cover all requirements by 2013.
- The country's supplies of vaccines and injection equipment will be provided by the Government and international aid.
- Micro-planning of EPI activities both in health establishments and at the district level will be the starting point for putting the RED (Reach Every District) approach into effect. Funding of the activities planned in that area will be a program priority to ensure effective implementation. An effective transport system must be operational and adapted to the local context of the health establishment. Private health establishments within the service area of a health establishment will participate in implementation on the basis of a performance contract with the public health establishment.
- A standard number of staff will be assigned (at least two agents per vaccination post) as the Ministry starts regular recruitment.

Ambitious targets have been set simply with the aim of vaccinating as many Malagasy children and women as possible in a spirit of effective management of the Program so as to limit the overall cost of the Program. The strategy will therefore combine maximization of vaccination coverage and minimization of vaccine wastage with efficient management of all direct vaccination or associated activities.

b. Organization of National Immunization Days (NIDs)

- NIDs, while making it possible to vaccinate a maximum number of children in record time, should help to boost routine vaccination. Implementation of any planning of supplementary activities will take routine vaccination into account.
- In order to eliminate maternal and neonatal tetanus, supplementary vaccination activities will be carried out to reinforce routine vaccination, once high-risk districts have been evaluated and identified at the end of 2004. The activities will be carried out from 2005 to 2007.
- If measles is to be controlled by 2008, routine measles vaccination coverage of nine-month-old children must be increased to 90%. A single dose of anti-measles vaccine at 9 months is not sufficient to check the spread of the disease. A *mop-up campaign* will therefore be run countrywide in 2004 among children aged from nine months to fifteen years and will include a distribution of vitamin A. The aim is to vaccinate at least 95% of the target population. A *follow-up campaign* will be planned in 2008 for children aged between 9 and 59 months on condition that routine coverage reaches 90% and on the basis of epidemiological statistics on measles.

b) Injection safety and waste management

- Health personnel, in particular those performing injections, will be trained in the use of autodestruct (AD) syringes and safety boxes.
- Enough AD syringes and safety boxes will be provided in the health units performing vaccinations so that one dose of vaccine corresponds to one syringe. Orders for AD syringes and safety boxes will be systematically included in vaccine orders.
- A waste management plan will be prepared and implemented, with sufficient supplies to cover all 111 districts by 2006 (50% of DHS during the first year, 2004, rising to 100% in 2006), with a circuit for waste collection and disposal in incinerators purpose-built by the private partner.

II.4.2 Enhancing the capabilities of health staff

II.4.2.1 EPI management training (MLM) and grassroots micro-planning

All EPI managers will be trained in the RED “Reach Every District” approach. Training will be provided by a pool of trainers (“Task Force”) in 2003 and at the beginning of 2004. It will then be taken over by the National Institute of Public and Community Health which will train EPI managers at each level. It is assumed that the Institute will make the training part of basic training for health workers. The Institute will also provide training in vaccine and cold chain management for the EPI. The national training will be passed on by training provincial and district managers in cold-chain maintenance.

II.4.2.2 Training in Post-Vaccinal Adverse Reactions (PVARs) and social mobilization

II.4.2.3 Attendance at regional and international workshops on the EPI

II.4.3 Social mobilization and advocacy

- II.4.3.1 The main aim of social mobilization will be to create demand among the beneficiary population by implementing the EPI strategic communication plan.
- II.4.3.2 Publicizing the results of the program will be a tool for arguing the case with *political, financial and administrative decision-makers* at all levels as to the social and health impact of the EPI and the benefits in terms of reducing the cost burden on the State. This approach will be used to persuade those in charge to invest more in the program.
- II.4.3.3 With the *financial* partners, submission of a regular monitoring report on the state of progress of implementation of scheduled activities and the results of vaccination coverage will be tools for advocacy for raising additional funds for the program.

II.4.4 Program equipment (cold chain, means of transport and vaccination equipment)

II.4.4.1 To improve effective cold-chain coverage:

- a periodic inventory and assessment of the functional status of the cold chain and of logistics at least once a year will be the basis for ordering new cold-chain equipment, spares and maintenance kits.
- a distribution and maintenance plan will be drawn up for the purpose at the start of each year.

- II.4.4.2 *To improve supervision and surveillance work*, vehicles, e.g. all-terrain vehicles, motorcycles and bicycles for the operational levels (district, and health centers) will be acquired in accordance with the plan to renovate the vehicle fleet. The Government's contribution will have to be significant, since otherwise activities could be paralyzed for lack of resources.

II.4.5 Surveillance of diseases

Although surveillance is sometimes directed to specific diseases like AFP, measles or maternal and neonatal tetanus, the aim must be to include all the EPI target diseases, and tools and strategic approaches must aim to strengthen the routine EPI.

Close collaboration will be established with the MMIS-DVS-MPI to improve efficiency in the field through training courses and a review/update of data collection tools. Data consistency will be verified by periodic meetings of the committee of experts.

II.4.6 Monitoring and assessment

The assessments planned in the program will cover autodestruct syringes and safety boxes and also the impact of hepatitis B vaccine on the endemic nature of the disease. A representative epidemiological study of the country will be made in 2004 to facilitate the decision to introduce the vaccine in 2006 at the earliest.

II.5 RESPONSIBILITIES OF EPI PARTNERS

The activities of the health development partners involved in EPI support are complementary. The Memorandum on the program signed in May 2000 for the period 2000 to 2003 defines cooperation between the Ministry of Health and its partners (USAID, UNICEF, WHO, JSI, JICA, Rotary International, Pasteur Institute) regarding support for vaccination activities.

The purpose of collaboration between the EPI partners is to make sure resources are used rationally in order to provide effective support to and build up the capacity of the national partner, with a view to promoting a sustainable and effective National Immunization Program.

The Memorandum is updated every year to take account of the Immunization Service's Plan of Action. Other partners may associate themselves with the initiative. When the Memorandum expires, the partners will carry out an assessment of achievements by organizing an external review. The following responsibilities were defined in the Memorandum

II.5.1 Shared responsibilities

Each partner must:

- attend regularly the monthly meetings of the ICC convened by the Ministry of Health;
- maintain its financial support for the EPI;
- continue to mobilize external resources and additional funds for the EPI;
- take part in the supervisory activities organized by the Immunization service.

II.5.2 Specific responsibilities of some partners

- **MINISTRY OF HEALTH – IMMUNIZATION SERVICE – PROVINCIAL OFFICES**
 - Manage the immunization program.

- Coordinate implementation of the plan of action with the partners' support.
 - Increase the Government's contribution towards the purchase of routine EPI vaccines and contribute to the disbursement of funds for new vaccines as stipulated in the application submitted to GAVI.
 - Maintain the Government's contribution towards the running of the Program, including purchase of the fuel needed to run and maintain the cold chain, and general overheads (PIP funds, EPI management tools, etc.) .
 - Make provision in the Immunization Service budget for a gradual increase in the contribution towards the cost of implementing the outreach strategy and holding periodic reviews of health workers in the DHS.
 - Draw up instructions for the application of the new vaccination policy.
 - Improve the medical management information system to make data more reliable.
- **MADAGASCAR PASTEUR INSTITUTE**
 - Strengthen its support for epidemiological surveillance of the EPI target diseases.
 - Continue to conduct basic epidemiological studies of the EPI target diseases.
- **JEREO SALAMA ISIKA (JSI/USAID)**
 - Provide technical support for the EPI, especially with regard to the IEC plan of action.
- **WORLD HEALTH ORGANIZATION**
 - Provide the EPI with technical and financial support, especially for epidemiological surveillance.
 - Share international information on vaccination.
- **ROTARY INTERNATIONAL**
 - Take part in the supervisory activities organized by the Immunization Service.
- **UNICEF**
 - Step up advocacy on vaccine independence.
 - Provide the EPI with technical and financial support.
- **USAID**
 - Maintain its financial support for local partners involved in strengthening vaccination activities.
 - Provide technical support in the form of temporary assistance at the request of the Ministry of Health and its partners.
- **JICA (JAPAN)**
 - Continue to provide the EPI with financial and material support.

SECTION III

III.1 BASELINE AND CURRENT PROGRAM COSTS AND FUNDING

III.1.1 Financial analysis method

It is difficult to reconstitute information on program funding, particularly for expenditure in previous years. Not all the institutions and partners of the EPI were able to provide data on their funding for the previous period. It thus appears that some of the costs seem to have been underestimated given the results achieved by the Program. With the more recent data for 2003 and proper monitoring in the coming years, the situation will change significantly.

Initially, a comparative analysis will be made between expenditure in 2000 (base year) and in 2003 (current year). The choice of 2003 instead of 2001 or 2002 was made because GAVI's intervention in 2001 was only partial (new vaccines received only in December 2001) and vaccination activities were slow in 2002 because of the political disturbances in the country. Looking at the data available from 2000 to 2003, it can be seen that the quality has tended to improve the closer one gets to the current period. The more recent the data, the more they are in line with the normal trends of an EPI. However, the data for 2001 and 2002 will also be tackled in order to extract the trend of program expenditure. Although the budget system is designed to detail the budget by medical district (DHS), it will not be possible to make an analysis below the national level, because the accounting system currently in use does not allow systematic recording of expenditure incurred at that level.

The total cost of the National Immunization Program includes capital and recurrent costs for the year and the estimated costs of health staff involved in vaccination activities. Only the main cost headings will be analyzed. Recurrent costs for *routine vaccines, new vaccines, injection equipment, staff working directly for the EPI, transport (this will include the operational costs of transport, program operation and cold chain operation), training and social/IEC, and epidemiological control and surveillance* will be examined. For capital costs, the main items will be *the purchase of vehicles and other means of transport and of the cold chain*.

The only shared costs that could be taken into account are staff costs. The costs specific to the program consist of the variable recurrent costs of supplying vaccination services (vaccines, syringes, transport, maintenance, social mobilization costs, training, management tools, surveillance diseases, supervision, etc.). It was not possible to evaluate the contribution of departments other than Health to the NID/s (transport, staff, etc.). This reduces de facto the overall cost of the program and also the Government contribution.

The data presented in this Financial Sustainability Plan are not the same as those provided in the submission of Madagascar's Application to GAVI quite simply because a documentary review of the expenditure data of both the Government and some of the partners enabled the changes reflected in the new figures to be made. For example, at the Government level, staff costs were interpreted better on the basis of past government expenditure, and VAT and import duties as a Government contribution were included in the various items for which they were paid, e.g. vaccines, injection equipment, vehicles, the cold chain, etc. The data from the partners was also reviewed on the basis of the final expenditure documents that were made available to the FSP drafting team (e.g. UNICEF, USAID/JSI, etc.).

III.2 CURRENT COSTS OF THE NATIONAL IMMUNIZATION PROGRAM (EPI)

III.2.1 TOTAL ANNUAL COSTS OF THE ROUTINE EPI:

The estimated annual cost of the routine program for the 2003 financial year is 6,113,771 USD and 9,366,332 USD in 2002 including the polio campaign (5,942,665 USD for routine vaccination), while it is 2,855,015 USD in 2000 and 3,877,850 USD for 2001. The introduction of hepatitis B produces an increase of 209% (comparison between 2003 and 2000). Before the introduction of new vaccines, the Government contribution is 56% of program expenditure. After introduction, its share remains below 40%. The new vaccines alone account for 23% to 50% of the total, depending on the year.

III.2.1.1 Base Year: 2000

Recurrent and capital costs

In 2000, recurrent costs accounted for 83% of total costs, and capital costs 16%. For 2001, they were 97% and 3% respectively; and for 2002, 96% and 4% respectively. For 2003, investment makes up 7% of the total, with 93% as recurrent charges. The capital costs data for the program might give the impression that all requirements would be covered with minimal renewal but the cold chain and logistics inventory taken in September 2003 reveals in fact a more critical situation that will require substantial investment in the future.

Table 10

		Total	Recurrent costs	Capital costs	Cost of routine vaccines	Cost of new vaccines	Costs of injection equipment	Staff	Transport	Training Social mobilisation	Control and surveillance
2000	Cost	\$2,855,015	\$2,235,325	\$619,690	\$324,948	0	\$335,182	\$1,107,245	\$309,344	\$71,390	\$87,216
	(%)		78%	22%	11%	0%	12%	38%	11%	3%	3%
2001	Cost	\$3,877,850	\$3,763,292	\$114,558	\$593,346	\$573,990	\$529,571	\$1,300,011	\$504,939	\$205,031	\$ 56,404
	(%)		97%	3%	15%	15%	14%	33%	13%	5%	1%
2002	Cost	\$6,113,771	\$5,722,944	\$219,721	\$570,295	\$2,423,690	\$577,356	\$1,312,408	\$454,907	\$129,949	\$254,339
	(%)		96%	4%	10%	41%	10%	22%	8%	2%	4%
2003	Cost	\$5,961,518	\$5,885,491	\$228,280	\$771,663	\$1,946,057	\$784,273	\$1,471,205	\$520,591	\$50,909	\$228,280
	(%)		93%	7%	13%	31%	13%	24%	9%	1%	4%

Vaccines and injection equipment are by far the largest items. They accounted for 23% of total costs in 2000, 44% in 2001, 61% in 2002 and 57% in 2003. The level of funding of routine vaccines is still relatively low in comparison with the other expenditure categories. And if one looks at the cost per immunized child (see table 11), current data show in reality that other contributions are not recorded in the accounts. However, the data available for the time being give only this level of funding. For staff costs, direct and shared costs had to be combined to make the analysis. Moreover, since the shared costs for expenditure categories other than staff could not be calculated, the Government share of those costs is reduced.

3.2.1.2 Costs of the National Immunization Days (Polio NIDs) :

Information collected from the partners shows that the 2002 Polio NIDs cost 3,422,667 USD. There were no NIDs in 2000–2001 or 2003.

3.2.1.3 Current year: 2003

The total annual cost of the national immunization program in 2003 is 6,113,771 USD of which 93% is recurrent costs and 7% capital costs. Vaccines and vaccination equipment account for 57% of total costs incurred. Staff is the second largest cost item at 24% if direct and shared costs are combined. The other headings share the remainder. The total Government contribution fell from \$1,566,876 in 2000 to \$1,479,654 in 2001 and \$1,339,461 in 2002, then rose to \$2,245,180 in 2003. The political difficulties of 2002 were the underlying reason for the cut in the Government's share. The reduction is particularly significant in the supply of vaccines (excluding VAT paid on vaccines supplied by the partners). It was 76,923 USD in 2001, 57,402 in 2002 and 94,615 in 2003. However, the projections of the multi-annual plan sent to GAVI in 2000 are: 150,000 USD in 2001, 250,000 USD in 2002 and 350,000 in 2003 respectively. Efforts will be made to recover the pace as per the commitment made.

Table 11: Some indicators of program costs

<i>Indicator</i>	<i>Base year (2000)</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>
Population	15,535,000	15,970,000	16,417,000	16,877,000
Surviving children	571,633	588,782	608,446	624,378
DTP-3 coverage	55%	46%	62%*	83% **
Children vaccinated with DTP-3	314,398	270,840	377,237	518,234
Total cost	\$2,885,015	3,877,850	5,942,665	6,113,771
Cost/child vaccinated with DTP-3	\$9.18	\$14.32	\$15.75	\$ 11.80
Cost/inhabitant	\$ 0.19	\$ 0.24	\$ 0.36	\$0.36
Vaccines as % of total cost	23%	44%	61%	44%
Government funding %	55%	38%	14%	37%
Govt. vaccine funding %	42%	10%	2%	8%

* Administrative coverage data ** Target stipulated in the submission to GAVI

Table 11 shows the validity of the finding on the quality of the data for 2000 and even subsequently. They appear to have been assembled piecemeal and certainly do not take into account all the contributions received to vaccinate the children declared as having been vaccinated each year. Overall, one can easily conclude that not all program costs could be listed simply by looking at the cost per child vaccinated with DTP-3 or the cost per inhabitant. The results for Madagascar are very low compared with the internationally established averages. The data are undoubtedly a good starting point for improving the situation in the future by keeping more accurate accounts of the funds committed to the EPI.

Studies, reviews and assessments have been made over the year, like the vaccine management assessment, the rapid external review of the EPI, the data quality audit, and the review of integrated surveillance of diseases and of AFP. All these actions will help to improve the quality of data, including financial data. It is difficult to make a forward projection of trends in partner funding based on the costs of these 4 years. The traditional partners (WHO, UNICEF, USAID,

JICA) are still committed to the Program, but their previous contributions do not allow any conclusions to be drawn as to future funding potential. Those trends will in fact be set out in the funding strategies that follow.

SECTION IV

FUTURE PROGRAM RESOURCES AND FUNDING

IV.1 PROJECTED FUTURE FUNDING

Projections for 2004 to 2013 were calculated using an annual inflation coefficient estimated at 2% and on the basis of:

- the Immunization Service's three-year plan for 2003, 2004 and 2005 ;
- the financial plan agreed with the partners;
- the Immunization Service's business plan for 2003-2006.

To assess the resources required for the coming years, and bearing political orientations in mind, 4 scenarios were tested using different combinations of strategies and objectives. The explanation of the options of each scenario is annexed.

When the absolute figures for total projected annual costs are compared, a variation can be seen that is mainly due to supplementary vaccination activities and to investment (see Table 12). But when the costs of supplementary vaccination activities are excluded, it can be seen that there is a large increase, particularly from 2006 onwards, because of the introduction of Hib. This increase is of the order of 159% of the requirements of the year preceding introduction (comparison between requirements for 2005 and 2006 excluding campaigns).

The Government of Madagascar chose the scenario whereby Haemophilus influenza B vaccine in the combined DTP-Hib form and monovalent Hepatitis B vaccine would be introduced in 2006. An epidemiological study on incidence and prevalence in the country is scheduled and budgeted for 2004 and will determine whether introduction is necessary or not. The remainder of this section will be devoted to the future funding of this option.

IV.1.1 Resources required

Overall, according to the methodology used, program requirements increase steadily over the years. This steady increase is attributable to higher vaccination coverage targets, the inflation rate used and population growth.

Specifically, examination of annual requirements for the next 10 years shows a major increase that tends to be regular if costs related to campaign activities (measles and maternal and neonatal tetanus) are excluded. The irregular variations observed between 2004 and 2007 are due mainly to capital costs (between 2004 and 2006 and when Hib is introduced in 2006). A major effort on investment costs is in fact planned for this period. This is because of the need to renew the EPI cold chain and means of transport.

Table 12: Cost projections for the next 10 years (USD)

Year	2003	2004	2005	2006	2007
Recurrent costs	5,378,924	4,608,434	5,118,105	9,500,752	9,731,863
Equipment costs	1,252,773	2,605,720	850,475	883,323	316,295
Suppl. vaccination activities (SVA)	475,000	7,766,282	2,664,238	3,168,437	-

Optional information	837,738	2,177,042	2,222,928	2,634,848	2,696,949
Total requirements	7,944,435	17,157,477	10,855,746	16,187,360	12,745,107
Total excl. SVA		9,391,195	8,191,508	13,018,923	13,475,643

Year	2008	2009	2010	2011	2012	2013
Recurrent costs	10,357,756	10,233,894	11,590,825	10,684,166,	11,705,919	11,531,382
Equipment costs	360,239	765,822	163,906	298,130,	681,635,	430,700
Suppl. vaccination activities (SVA)	3,400,688		-	-	-	-
Optional information	2,757,647	2,817,646	2,881,031	2,949,021	3,019,629	3,094,025
Total requirements	16,876,331	13,817,362	14,635,762	13,931,317	15,407,183	15,056,107
Total excl. SVA	13,475,643					

The significant change occurs in 2006 with the introduction of Hib vaccine - an increase (4,827,415 USD) that accounts by itself for roughly 60% of requirements for 2005 (including investment costs). Comparing only the operations-related parts, the increase is 86% (excluding investment costs).

IV.2. ANALYSIS OF PROJECTED BUDGET AVAILABILITY

The aim of this section is to present the funding available for projected future needs and analyze the capability of the current funding system, and to generate requirements for the next ten years by extrapolating available funding and the gap between that funding and the requisite expenditure considered in section III.

IV.2.1 Projected secure and probable funding

The funds available in the coming ten years were calculated on the basis of the three-year plan and the 2003-2005 business plan, which includes projections for support from the partners.

The projections were updated using recent information provided by the partners. For 2004 to 2013, the amounts reflect the partners' latest declarations. They cover mainly the purchase of vaccines and injection supplies, the purchase of equipment for the cold chain and vehicles, and implementation activities such as social mobilization and the relevant supports, the training of personnel, and the outreach and mobile strategies. Follow-up and disease surveillance activities are also taken into account. Some of the partners have also said what their contributions will be to investment costs for equipment renewal.

IV.2.1.1 Government

The State has pledged to increase its contribution towards the purchase of vaccines from 100,000 USD in 2003 to 595,000 USD in 2013. That estimate is based on an annual increase of 20%.

The cost of fuel will for the most part be covered by the State and should increase from 150,000 USD in 2003 to 250,000 USD in 2013.

The salaries of full-time and part-time staff will be covered by the State, whereas the allowances for the outreach and mobile strategies will be shared by the partners. The State's contribution to the operations of the Immunization Service through the PIP is maintained, in accordance with changing needs.

Unless there is a major political crisis and/or a breakdown in relations with the donors, the risk that the Government will not contribute appears small. Since mother and child health is a Government priority, EPI indicators are among those of the PRSP used to measure progress made in poverty reduction.

Support for the EPI is included in the Public Investment Program (PIP) as part of Support for Family Well-being (with the Ministry of Finance).

It should also be noted that the amounts included in the multi-annual plan and in the country's submission to GAVI already approved by the Government are secure as part of the EPI sustainability effort. Those amounts are shown in the tables below:

Table 13: Vaccination sustainability strategies (thousand US\$)

Strategy title /Line	Partner	1998	1999	2000	2001	2002	2003	2004	2005
Vaccination independence (purchase of vaccines)	Government	43.7	55.911	76.9	150	250	350	450	550
Vaccination independence (purchase of fuel)	Government	200	200	200	200	200	200	200	200
Support for the EPI	UNICEF	400	895.284	850	1.100	1.050	1.050	1.050	1.050
Support for the EPI	USAID	400	500	250	200	TBD	TBD	TBD	TBD
Support for the EPI	JAPAN		278.6	136.9	120.456				
Support for the EPI	WHO	228	218	200					
Support for the EPI	Rotary International	61	129.698	68.8					
Support for the EPI	JSI			121.359					

Source : Submission to GAVI, multi-annual funding plan

For the new vaccines, the Government contribution will be made as follows:

Table 13 bis: Government contribution to new vaccines (in US\$)

		2002	2003	2004	2005	2006	2007
H	% of vaccines requested from the Vaccine Fund	100%	90%	80%	70%	70%	70%
	Amount in USD	0	260,277	507,413	832,440	857,935	884,146

SOURCE : Application submitted to GAVI: Revision of 3 August 2001

This would mean that the Government would cover the above amounts (cost baseline: 2003) for DTP-HepB.

IV.2.2.2 Partners

The following partners who contribute to the funding of the EPI have been able to make a firm commitment on future amounts of funding up to 2013: UNICEF, USAID, and WHO. The level of participation of each partner will depend on how the program develops and on the parameters of the domestic and external social and economic environment.

UNICEF:

UNICEF officials have confirmed their commitment to the Government of Madagascar for all items relating to mother and child health. The secured funds come from the Country Office's

own funds; probable funds will be drawn from the extra-budgetary fund and will increase at an annual rate of 10% until 2007. The amount will remain unchanged in subsequent years.

WHO:

For the 2004-2005 biennium, the amounts included in the regular budget plan of action can be considered to be secure. Those listed as extra budgetary should be regarded as probable. For subsequent years, the same amounts can be considered probable funding.

GAVI:

GAVI appears to be indicating that there are no problems that would threaten its contribution. The funds will probably be available for the next three years (2006).

USAID:

USAID has just finalized its next five-year plan (2003-2008). USAID officials have agreed to include the EPI in future activities, thereby securing the USAID contribution until 2008; after that date it is probable.

Japan:

Japan will not be funding vaccine purchases in 2003, 2004 and 2005. A protocol for the funding of the cold chain and vehicles was finalized in August 2003. The contribution is secure in 2004, and probable for vaccine purchases in 2006, 2007 and 2008, depending on the applications filed by the Government in coordination with the partners' support.

World Bank:

The World Bank proposes to fund some operations in the districts. If necessary, the program can submit applications. The contribution should be regarded as probable. The World Bank mission in Antananarivo has in fact already stated its agreement in principle should the Government so request. That option could release to the project an amount of some 1,500,000 USD a year, probably until 2010.

After looking at secure and probable future funding, the next step proposed is to address the options for the Government to assume responsibility for the gap. This is particularly important to ensure the availability of vaccines so as to maintain the program's achievements when GAVI/Global Vaccine Fund support comes to an end.

After 2006, in principle, Madagascar has to find other sources of funding, including an increase in its contribution to routine vaccines. Provision has already been made for this in the multi-annual plan submitted to GAVI. It is staged as follows:

IV.3 Analysis of the gap

The cost projection data show that the gap between secure and probable funding widens, particularly from 2006 onwards at the time of the introduction of Hib, the funding of which is neither secure nor probable. From that point on, the situation remains almost stationary, because the share of secure funding fluctuates between 30 and 40% of requirements. It does not reach the threshold of 50%. The strategic priority under those conditions is to seek ways to fund Hib vaccine. The table below gives an overview of the situation of the funding gap as a percentage of the total planned.

Table 14: Analysis of the gap (as% of total funding required)

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
% secure funding	66.5	68	49	39.5	30	34	32	35	33	35
% secure excluding SVA	88	88	57		33.5					
% secure + probable funding	70	75.5	58	51	39	44	43	46	43	45
% secure + probable excluding SVA	90	89	62		41					
% not funded	10	11	43	60.5	66.5	66	68	65	67	65
% not funded + SVA	33.5	32	51		70					

These gaps are grouped in absolute figures in table 15 below. They still show the specific situation of a funding shortfall from 2006 onwards, after the introduction of Hib and after GAVI/ Vaccine Fund support ends. Given the commitments assumed by the Government at the time of the submission of its project to GAVI, it is essential to ensure at least that vaccines are available if the program is to be able to continue. Making the contribution announced in the submission will be a very important signal that will persuade the outside partners to support the country to cover remaining vaccine requirements.

Table 15: Funding gap by major heading

Funding gap by category										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total gap	5,158,875	2,652,569	6,790,271	6,291,895	10,246,460	7,772,668	8,304,119	7,514,688	8,835,608	8,314,340
Gap for vaccines	0	0	4,239,170	6,141,011	6,631,642	6,160,955	7,086,493	7,044,838	7,258,005	7,636,395
% gap for vaccines	0%	0%	62%	98%	65%	79%	85%	94%	82%	92%
Total gap routine vaccination	1,140,351	982,353	4,938,498	6,291,895	7,928,383	7,772,668	8,304,119	7,514,688	8,835,608	8,314,340
Gap for SVA	4,237,579	1,754,828	1,850,773	0	2,320,077					

The largest gap is in the funding of vaccines, especially new vaccines from 2006 onwards. Starting in 2007, the first year after GAVI support ends, and subsequently, the major part of the gap is connected with the fact that no institution has made a firm or tentative pledge to assume the costs associated with the new vaccines and vaccination equipment. And from 2007 onwards, a probable gap also starts to appear for Government funding of recurrent costs.

Examination of the data by year shows that before 2006, the recurrent costs items for which there could well be a funding problem are: monitoring and surveillance of diseases, and other routine costs. It can also be seen that from 2006 onwards, in addition to the gap in funding for Hib, there is no donor for injection equipment or for outreach strategy staff, vehicles and cold-chain equipment. The campaign to eliminate maternal and neonatal tetanus also needs additional support.

On the investment side, the gap can be seen for vehicles and the cold chain throughout the period except in 2007. These items are however essential to the implementation of high-quality vaccination activities. They should be given special attention during negotiations with the development partners during the preparation of the annual action plans or vaccination programs / projects. There is also a gap for supplementary vaccination activities. The funding strategy for these activities does not in fact allow a precise determination of existing potential at this point.

Funding for construction should be examined very closely where the construction consists of the provision of cold chambers for vaccine storage at the national level and of the EPI office buildings. This is vital to the proper management of the program and is therefore a major priority for submission for inclusion in the public investment program for building, while requesting outside cooperation for specific equipment.

IV.4 Options for covering the gap

The Government will explore the possibilities of increasing its contribution to the purchase of vaccines and vaccination equipment by using funds from the Highly-Indebted Poor Countries Initiative, and by including support for the EPI in requests for IDA loans or from other donors. This option could enable the Government to increase its contribution to 70 to 80% of vaccine requirements.

The current options for the Government to cover the funding gap are based on two observations. Initially, the Government agreed to pay part of the cost of vaccines in the multi-annual plan. This principle is still valid and is being maintained. Next, according to the PRSP, the economy is expected to grow at around 8% a year by 2003. It is therefore suggested that the Ministry of Health ought to benefit from that growth, adding to it the equivalent of the annual population growth rate of 2.8%. That would lead to an additional 10% funded each year. The Government would thus continue with the launching of the multi-annual plan and would increase its contribution to vaccines to 50% in 2008, 60% in 2009, 70% in 2010, and 80% in 2011. The strategy to be used to mobilize these amounts is reflected in section V.

The second option that could be contemplated is to use the current IDA loan or to request a specific EPI loan from the World Bank or from other financial institutions such as the African Development Bank, the Arab Development Fund, etc. Also, giving the EPI priority in the context of the budgetary support given to the Government of Madagascar by institutions like the European Union and certain bilateral cooperation agencies can be harnessed to increase the Government contribution. However, there is a real risk of a funding shortfall for vaccines after GAVI/ Vaccine Fund support ends. The country will do everything necessary to examine ways and means of ensuring adequate supplies of vaccines for the children and women of Madagascar.

SECTION V

STRATEGIC PLAN AND FINANCIAL SUSTAINABILITY INDICATORS

The National Immunization Program will be facing higher and higher costs as the population grows and the costs of the inputs needed to implement the program rise. The increase is estimated at 300% from 2000 to 2003. Subsequent increases will depend on the scenario adopted for the program's financial plan. This section considers the strategies that will serve to make up the deficit.

V.1 OPPORTUNITIES, CONSTRAINTS, STRENGTHS AND WEAKNESSES OF THE EPI.

V.1.1 Program opportunities and strengths

The State of Madagascar is politically committed at the highest level, as shown by the involvement of the Head of State in a variety of vaccination activities. This is a major asset for releasing an additional contribution when needed by an instruction from the highest authority in the land. Also at the political level, the Expanded Program of Immunization is one of the Government's priorities as stipulated in the various general development policy documents such as the PRSP. Awareness is starting to grow throughout the political class of the fact that vaccination coverage (DTP3) is a monitoring indicator of social and economic progress. This is a major asset for the Ministry of Health for issuing a reminder on every occasion of the program's uncovered requirements. This is especially important because the main donors of funds for macro-economic purposes have used the same indicator as a component of monitoring mechanisms. This opportunity will be used to argue for additional resources for the EPI in the framework of the HIPC Initiative above and beyond other health priorities.

Effective operation of the interministerial Interagency Coordinating Committee and systematic involvement of the partners on it is a first proof, the regularity of which is an important investment if the EPI is to live up to expectations. This committee maintains the momentum of program implementation and monitoring. The Ministry of Health Immunization Service must make use of this opportunity at the regular meetings to show which needs are unmet and what the results of the program are. The use of a management chart of the indicators identified for the Financial Sustainability Plan will raise the vision of the Program to a macro-economic level that it did not possess formerly. And for greater effectiveness, this mechanism should be decentralized to at least the provincial level.

At the technical level, although some areas are a long way from vaccination centers, it is to be hoped that the opening of the centers scheduled in the Business Plan – PRSP (105 in 2003 and 135 in 2004) will bring remote populations closer and at the same time reduce the cost of the outreach strategy. Refresher training/retraining courses for staff are the first measure adopted to improve the management aspects of the program. They will be backed up by regular supervision of the various levels.

The adoption of the "Reach Every District, RED" approach is an opportunity to apply in practice measures to increase vaccination coverage and to improve the management of program inputs (vaccines, vaccination equipment, cold-chain management, management of funds, etc). The strength of this new opportunity will lie in the initiation of a system for analyzing and using

EPI data at all levels to measure performance while enhancing the capabilities of those in charge of management and micro-planning. This approach is supported by a major strength - the commitment of community leaders to vaccination. Since the results of the Program are measurable and verifiable by various means, those in charge of the EPI will use them to persuade and inform the various actors involved.

V.1.2 Program constraints and weaknesses

As a preventive program, the EPI is competing with curative programs, and the results recorded do not have the same spectacular effect as curative care. However, epidemics and deaths prevented should be highlighted when the results are presented, especially to political managers who are less well versed in vaccination matters. Achieving high-quality results is partly handicapped by the high level of illiteracy, which makes information and the benefits of the program inaccessible. There are also remote areas where there is no physical access to information about vaccination or to medical establishments.

At the practical level, there are sometimes difficulties in reconciling the procedures required by donors with the requirements of implementing activities. The reliability and availability of EPI information are insufficient, as shown by the last Data Quality Audit. Material management and the monitoring of inputs should also be improved so as to limit and reduce the current level of wastage.

V.2 STRATEGIES AND MEASURES FOR MOBILIZING SUFFICIENT RESOURCES

V.2.1 Government

The Government plans to increase the budget allocation for the EPI by using several strategies at the internal level and vis-à-vis its external partners. Internally, the Government will intensify its advocacy in favor of immunization and its funding by the public and private sectors. Measures will be taken to increase the program's effectiveness and efficiency by improving vaccine management and use at all levels.

Political Advocacy

The Ministry of Health will explore the possibility of organizing an annual Health round table with all the health partners, including political representatives (Ministries, National Assembly, Senate, Religious Institutions, private sector, etc.) at which the EPI Financial Sustainability Plan would be presented. The occasion will be used to produce a calendar for monitoring EPI funding and results for each entity, with a periodic review, the principle being that the EPI is the least costly program in comparison with other health activities and in relation to the benefits generated.

Since the Ministry of Health made a political commitment by sending its submission to GAVI in 2000 in which the Government's contribution to the multi-annual funding plan is clearly stipulated, the following measures are crucial to supporting this Financial Sustainability Plan:

- to make provision at least in 2004 and later to contribute to the purchase of new vaccines and running costs the amounts already approved by the Government and then to add a progressive percentage until at least 80% of requirements are covered in 2013 (see table 16)

Table 16: Government contribution to Program funding

Title of the strategy/Line	2002	2003	2004	2005	2006	2007	2008	2009
Vaccination independence (vaccine purchases)	250,000	350,000	450,000	550,000	NA	NA	NA	NA
Vaccination independence (fuel purchases)	200,000	200,000	200,000	200,000	160,000	170,000	180,000	190,000
% of vaccines requested from the Vaccine Fund	100%	90%	80%	70%	70%	60%	50%	40%
% of new vaccines paid for by the Government	0%	10%	20%	30%	30%	40%	50%	60%
Equivalent Government contribution in USD	0	260,277	507,413	832,440	857,935	942,585	3,306,214	4,018,859
Contribution proposed in the FSP*	0	100,000	120,000	144,000	172,800	207,360	248,832	298,598
TOTAL Government contribution	350,000	910,277	1,277,413	1,726,440	1,190,735	1,319,945	3,735,046	4,507,457

* Figures based on Ministry of Health documents submitted to GAVI (% of new vaccines paid for by the Government 2007-2009)

- the regular budget should assume progressively the cost of routine vaccines so as to interest the partners in funding new vaccines. Informing the various political instances of vaccine requirements could enable the adoption of a separate budget line for vaccines instead of combining them with other requirements. Without vaccines, there can be no vaccination. The Minister for Health could take every opportunity to report on this issue on a regular basis.
- translate this Financial Sustainability Plan into a multi-annual action plan reviewed each year to assess the level of funding achieved.

Prioritization of the EPI in Government projects.

Efforts should continue at the same time to prioritize EPI requirements, particularly for new vaccines in the PRSP, the HIPC, IDA projects and budgetary support. Such prioritization will raise the visibility of the Program vis-à-vis the partners who will find it easy to support it. In this context, there should be agreement to include investment-specific requirements (capital cost) such as buildings, cold chambers and vehicles in projects funded out of loans from international institution.

The meetings of the Interministerial Coordination Committee are the occasion to report on the results obtained, examine the implementation of action plans and their funding and report on the contributions made by the partners. A quarterly review of the financial situation of the Program will stimulate the process of releasing funds from partners and also within the Ministries of Health and Finance. Keeping the management chart of the indicators of the Sustainability Plan up to date, and above all progress made on DTP3, could help the Ministry of Finance (IHIPC Secretariat) to speed up the release of funds.

Improving program effectiveness

Specific technical measures will be implemented, including improvement of the opened vials policy and the reduction of vaccine wastage by appropriate training courses and regular supervision. Although this approach does not lead to a direct mobilization of funds, it is an essential tool for supporting the results presented in order to obtain funds. This approach serves above all to convince the partners already present of the importance of their contribution and of the need to increase it. It will also be presented to potential donors to convince them of the need

for their support. Success by the Immunization Service in using this approach will enable the Ministry to involve the partners better in covering investment and/or running costs, which are critical but whose funding is often subject to discussion (renewal of the solar cold chain, support for the outreach/mobile strategy, support for epidemiological surveillance and to medical information and management system, etc). Improving the promptness and reliability of the HIMS should also be given special attention so as to ensure the quality of the data that will be used as the basic ingredients for any strategy to mobilize resources.

Promotion of efficient strategies for remote populations

Improvement of vaccination coverage among all sectors of the population and in particular affordable coverage for remote populations will convince the partners that the organization and planning of the Program is effective. The “Reach Every District” approach will act as a lever for this indirect strategy for mobilizing funds. In fact, in implementing this strategy, use will be made of funds of which some are actually EPI funds and others are from other programs like IMCI, World Bank support for the operating budgets of districts as part of the implementation of the Child Survival project, action to combat malaria, etc. This approach will make it possible to free up funds that should be transferred directly for vaccination activities. Effective accounts of these actions and the effects generated (funds freed up) should be kept by the Immunization Service. They will direct the funds intended for that purpose to the unfunded budget items. If this approach succeeds, it will boost the partners’ confidence still further and thus facilitate the mobilization of additional funds.

In the context of GAVI support, the Government of Madagascar intends to introduce two specific requests. The first is to stage the contribution already approved over 8 years instead of the present 5 years. This will enable the Ministries of Health and Finance to implement the measures to mobilize additional funds right away, either by increasing the Government contribution from its own budget, from IHIPC or budget support, or by using the contributions from other partners like the World Bank, which has agreed not to object to the use of CRESAN funds in this way. Subsequently, the Ministry of Health will introduce a request for support from GAVI for the introduction of Hib vaccine. This request will of course be formalized once the epidemiological study has been completed and is conclusive on pneumonia and haemophilus influenza pediatric meningitis. The request will make it possible to receive support from GAVI/VF for a 5-year period before the Government takes over. This obviously has an immediate implication for the resolution of the financial gap in the projected years and the Government’s preparations for assuming future funding.

The Ministry of Health is setting itself a deadline of one year to make a start on all the strategic area proposed for mobilizing additional funds for the program. A precise calendar will be drawn up after adoption of this plan by all the partners of the ICC.

V.2.2 The partners

To date, Madagascar’s immunization program has been financed via the State budget and thanks to the partners, the most important of which are: WHO, UNICEF, GAVI, JICA, and USAID, and charities such as ROTARY International.

For the years with GAVI/Vaccine Fund support for vaccination, the partners’ will focus on: the purchase of vaccines and injection supplies for routine activities, the purchase of cold-chain spares and maintenance kits, the purchase of refrigerators and freezers, the purchase of means of

transport (mopeds, vehicles) and the provision of funds for activities (outreach and mobile strategies, social mobilization and IEC, training and refresher courses, monitoring/evaluation, disease surveillance, etc.). They will be able to continue to fund these sectors after the GAVI/Global Fund contribution, but with a preference for investment needs.

As to its international partners, Madagascar will give preference to subsidies and grants before resorting to loans and credits, if required, to fund the EPI. This option is bolstered by the choice of DTP3 as a monitoring indicator of the implementation of the programs backed by these partners (World Bank, European Union, GAVI/Global Fund).

Increasingly, partners such as the European Union are tending to provide budget aid to the Government, which is thereby able to fund the immunization program as a priority. Other partners, such as the World Bank, the African Development Bank and the African Development Fund, are likely to fund the program at the Government's request as part of their contributions to the Public Investment Program.

Bilateral partners, some of which already participate within the EPI framework, are also potential sources of funding. Some are more likely to contribute in that they already participate in the health sector. Advocacy to that effect should encourage them to view their contribution to the program more favorably.

The World Bank has also been contacted, and has stated its willingness to fund vaccination activities if it receives applications. The World Bank already plans to support the operating budget of the districts to the tune of 40,000 to 45,000 USD per year, through a component of the CRESAN project; vaccination activities could be included in that component.

The World Bank will also participate at the central level by funding solar panels for the BLU, the microscope and refrigerators. The person in charge had an interview with the JICA team preparing the funding project for the cold chain, to coordinate activities for the possible purchase of solar-powered refrigerators. World Bank funding could be implemented almost immediately.

The Government of Madagascar could explore this source of funds despite its current reluctance to do so, because:

- IDA loan conditions are such (deferred, concessional interest rates) that a dollar borrowed today will be reimbursed at 30 cents;
- World Bank credits have an increasing number of "donation" components;
- immunization is an investment in the future and can therefore be financed via loans.

V.3 SCENARIO FOR FUNDING THE GAP

Several theoretical scenarios could be contemplated, but the Ministry of Health intends to give greater preference to the following possibility, which employs the following measures in order of priority:

1. Arguing for the Government budget to cover the gap remaining for routine vaccines and other running costs,
2. Negotiating a specific EPI subsidy from HIPC funds,
3. Releasing a given sum from budget aid (European Union contribution),
4. Releasing a CRESAN amount to cover part of the gap,

5. Requesting an IDA loan for 2006 should GAVI/Vaccine Fund not fund the introduction of Hib,
6. Present the remaining gap to the partners who are members of the ICC and to other Health partners,
7. Adjust requirements in line with the contributions received.

These measures will be implemented each year in a complementary fashion so as to minimize the gap. An estimation of potential funding of the gap is shown in table 17 below. **This is an estimate and not a commitment in any way.** It will be used as an exploratory tool by the Ministry of Health to seek the necessary funding for this sustainability plan.

In the table below, the amount provided out of the CRESAN Project would be used to pay the Government contribution in the event of a **rescheduling of the GAVI contribution over 8 years instead of the present 5 years.**

Table 17: Mobilizable funds

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total gap (projections)	5,158,875	2,652,569	6,790,271	6,291,895	10,246,460	7,772,668	8,304,119	7,514,688	8,835,608	8,314,340
Gap for vaccines if GAVI supports HIB			1,184,101	528,753	4,362,201	1,812,172	2,030,839	0	0	0
Regular budget	0	150,000	250,000	250,000	250,000	250,000	250,000	300,000	300,000	300,000
HIPC subsidy	600,000	1,000,000	1,200,000	1,200,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
EU budget aid	250,000	300,000	400,000	400,000	500,000	500,000	500,000	600,000	1,000,000	1,000,000
CRESAN funds	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	0	0	0
IDA or other credit	0	0	0	0	0	0	0	2,500,000	2,500,000	3,000,000
Partners	2,000,000	500,000	500,000	500,000	2,000,000	500,000	700,000	700,000	700,000	700,000
Shortfall to cover	808,875	702,569	2,940,271	2,441,895	4,496,460	3,522,668	3,854,119	1,914,688	2,835,608	1,814,340

“Total gap” includes all aspects including supplementary vaccination activities. **“Gap for vaccines if GAVI supports the introduction of Hib”** is in reality the cost of the Hepatitis B vaccine and the associated injection equipment. In the event of rescheduling, this cost would be practically covered partly by GAVI/VF and the CRESAN Project contribution, for example. The World Bank Office is already mindful to take action on these lines. If GAVI were then to lend its support for Hib and accept rescheduling for Hepatitis B, and if the HIPC and CRESAN contribute the amounts proposed, the shortfall to cover would be due to supplementary vaccination activities until 2008. Beyond 2010 (the last year of support for Hib), in contrast, there is a real shortfall that has to be covered.

It is proposed that an IDA or other loan be taken out from 2010 to mitigate the gap, but not automatically, the principle adopted being to give preference to donations and subsidies before resorting to loans.

The amount proposed for the regular budget in this case would be in addition to what has already been announced as secure and probable Government funding. For the HIPC Initiative, the proposals are based on the fact that the Ministry of Health has already received an amount equivalent to 8 million USD in 2001 and that it can therefore devote to the EPI an appropriation within the limits described above.

For the European Union contribution, given its approach in the budget, it is up to the Government to allocate an appropriation to the Ministry of Health which, under these conditions, will allocate the equivalent of the amounts proposed. It can be seen that the partners will once again be asked to contribute to increase their appropriation, particularly in the context of supplementary vaccination activities.

Implementation monitoring

The overall success of the plan will depend on the implementation of the abovementioned strategies. It goes without saying that monitoring is of the utmost importance to ensure this is not just another document. To do this, the Ministry of Health, in collaboration with the ICC, has approved the document and its thrust. Measures will be taken to monitor the indicators that will henceforth be the reference tool for these actions. An annual update is planned to take stock of progress on implementation.

Table 18: MONITORING INDICATORS

Financial sustainability attribute	INDICATORS	Unit	Timeline	Explanatory note
Self-sufficiency	➤ National spending on EPI-specific investment costs after debt-servicing expenses	Percentage	In the medium term	Five-year report
	➤ National spending on EPI-specific operating costs as a proportion of GDP after debt-servicing costs	Percentage	In the medium term	Annual report
	➤ Per capita cost of the EPI	In FMG	In the short term	Annual report
	➤ Existence of a three-year strategic communication plan on the EPI	Yes	In the short term	In the framework of EPI advocacy, partners such as the European Union are tending to provide budget aid to the Government, which can then give priority to financing of the immunization program. Other partners, such as the World Bank, the African Development Bank and the African Development Fund, could fund the program at the request of the Government within the framework of their contributions to the Public Investment Program.
Mobilization and use of appropriate resources	➤ Existence of a memorandum binding EPI participants/financial partners	Yes	In the medium term	Every 2 years
	➤ Existence of a five-year development steering plan	Yes	In the medium term	Every 5 years
	➤ Five-year plan for renewal of the cold chain	Yes	In the short term	Every 5 years
	➤ Percentage of inhabitants with access to immunization services (less than 5 km from or within one hour's walking distance of the health unit)	Yes	In the short term	
Reliability of resources	➤ Funds available in terms of budget allocations: - State budget - GAVI funds - Japanese funds - WHO funds - UNICEF funds - USAID fund - etc.	Percentage	In the short term	Annual report
Reliability of resources	➤ Financial implementation rate: - State budget - Japanese funds - WHO funds - UNICEF funds - USAID funds - etc.	Percentage	In the short term	Six-month report
	➤ Financial implementation rate for allocations for the provinces	Percentage	In the short term	Six-month report

POSSIBLE SCENARIOS FOR SUSTAINABLE LONG-TERM FUNDING OF THE EPI

This section describes four possible scenarios for the financing of the immunization program. For each scenario, the costs of vaccines and supplies were calculated on the basis of:

1. the vaccination coverage targets for each antigen;
2. the wastage reduction targets for each antigen;
3. the drop-out rate reduction targets for multi-dose vaccines;
4. the introduction (or not) of the Hib vaccine in 2006;
5. whether combined or single-dose Hib vaccine was introduced;
6. the maintenance or otherwise of the combined DTP-HepB vaccine.

All four scenarios have similar costs for other implementation activities such as training courses, outreach and mobile strategies, social mobilization, disease monitoring and surveillance, capital costs and the costs of supplementary vaccination activities.

The financial partners' participation in funding was therefore readjusted in the light of the costs of those activities; the overall amounts are the same for all four scenarios.

The basic assumption is that the Immunization Service's plan will be fully implemented.

Scenario A:

- The vaccination coverage target is set and maintained at 80% from 2003 to 2013 for all antigens.
- DTP-HepB is maintained and Hib introduced in single-dose form in 2006.
- Wastage:
 - for TT and Hib vaccine is maintained at 20% in 2004 – 2010, rising to 15% in 2011 and staying steady until 2013;
 - for MEAS, OPV and DTP-HepB vaccine is maintained at 20% in 2004–2006, rising to 15% in 2007 and remaining steady until 2013.
- Drop-out rates:
 - for **TT** will fall from 10% in 2004–2005 to 5% in 2006–2008, holding steady at 2% from 2009 to 2013;
 - for **OPV** and **DTP-HepB** will fall from 10% in 2004–2005 to 8% in 2006, holding steady at 5% from 2007 to 2013;
 - for **Hib** will fall from 15% in 2006–2007 to 10% in 2008–2009, holding steady at 5% from 2010 to 2013.

In this scenario, the total cost of the EPI from 2004 to 2013 is 169,694,309 USD; the overall cost of annual requirements will immediately rise twofold (excluding the costs of supplementary vaccination activities) when the new vaccine is introduced, from 9,909,358 USD in 2004 to 17,646,850 USD in 2006.

The funding gap varies from 2,825,364 USD in 2005 to 12,820,368 USD in 2008.

Scenario B:

This scenario foresees a rapid increase in vaccination coverage from 88% to 98% for all antigens between 2004 and 2013. DTP-HepB is maintained, and Hib is not introduced. Wastage fluctuates between 15 and 5%.

- Vaccination coverage targets
 - for **BCG** rise from 80% in 2004 to 90% in 2005–2006, 94% in 2007–2008, 96% in 2009–2011 and 98% in 2013;

- for **TT rise from** 90% in 2004-2006 to 94% in 2007-2008, 96% in 2009-2010 and 98% in 2011-2013;
- for **OPV-DTP-HepB-MEAS** rise from 88% in 2004 to 94% in 2005-2007, 96% in 2008-2010 and 98% in 2011-2013.
- DTP-HepB is maintained and Hib is not introduced.
- Wastage:
 - for TT-MEAS-OPV-DTP-HepB vaccines falls from 15% in 2004-2007 to 10% in 2008-2010 and 5% in 2011-2013.
- Drop-out rates:
 - for **TT-OPV-DTP-HepB** fall from 10% in 2004-2005 to 5% in 2006-2008, holding steady at 2% from 2009 to 2013.

The total cost of the EPI from 2004 to 2013 is 113,777,032 USD. This scenario has no repercussions in terms of additional cost, with costs fluctuating between 8,837,104 and 17,699,453 USD (with supplementary activities). The financial gap varies from 310,146 USD in 2005 to 6,159,781 USD in 2008.

Scenario C:

In this scenario there is a moderate increase in vaccination coverage, from 78% to 92% between 2004 and 2013 for all antigens. Hib is introduced in 2006 as a combined vaccine with DTP (DTP-Hib to minimize costs) and single-dose HepB vaccine. Wastage fluctuates between 15% and 5%.

In this scenario the overall cost of requirements will rise, but less than in scenario A.

- Vaccination coverage targets:
 - for **BCG** will rise from 78% in 2004 to 80% in 2005, 84% in 2007, 88% in 2008-2009, 90% in 2010-2011 and 92% in 2012-2013;
 - for **TT** will rise from 80% in 2004 to 86% in 2005, 90% in 2006-2007, 92% in 2008-2009, 94% in 2010-2011 and 96% in 2012-2013;
 - for **OPV** will rise from 75% in 2004 to 80% in 2005-2006, 85% in 2007-2008, 88% in 2009, 90% in 2010-2012 and 92% in 2013;
 - for **MEAS** will rise from 78% in 2004 to 80% in 2005, 84% in 2006, 88% in 2007, 90% in 2008-2011 and 92% in 2012-2013;
 - for **DTP-HepB** will rise from 75% in 2004 to 80% in 2005;
 - for **DTP-Hib** will rise from 80% in 2006-2007 to 84% in 2008-2009, 86% in 2010, 88% in 2011-2012, and 90% in 2013;
 - for **HepB** will rise from 80% in 2006-2007 to 84% in 2008-2009, 86% in 2010, 88% in 2011-2012 and 90% in 2013.
- DTP-HepB vaccine will be administered only in 2004-2005. As of 2006, HepB will be administered in single-dose form.
- Wastage:
 - for **DTP-Hib** will fall from 5% in 2006-2008 to 2% in 2009-2013;
 - for **MEAS, OPV** and **TT** will hold steady at 15% in 2004-2007 before falling to 10% in 2008-2010 and to 5% in 2011-2013;
 - for **DTP-HepB**, will hold steady at 15% in 2004-2005;
 - for **HepB** will fall from 5% in 2006-2008 to 2% in 2009-2013.
- Drop-out rates:
 - for **TT** will fall from 10% in 2004-2005 to 5% in 2006-2008, holding steady at 2% from 2009 to 2013;

- for **OPV** will fall from 10% in 2004-2005 to 5% in 2006-2008, holding steady at 2% from 2009 to 2013;
- for **DTP-Hib** will fall from 5% in 2006-2008 to 2% in 2009-2013;
- for **DTP-HepB** will hold steady at 10% in 2004-2005.

Under scenario C, the total cost of the EPI from 2004 to 2013 is 146,669,753 USD, varying from 10,855,746 USD in 2005 to 17,157,577 USD in 2004. The funding gap fluctuates between 2,652,569 USD in 2005 and 10,248,460 USD in 2008.

Scenario D:

Vaccination coverage will be increased modestly, from 78% to 92% between 2004 and 2013 for all antigens. DTP-HepB vaccine will be maintained without introducing Hib vaccine. Wastage will be kept with the range between 15 and 5%.

This scenario has no particular impact in terms of additional costs.

- Vaccination coverage targets
 - for **BCG** will rise from 78% in 2004 to 80% in 2005, 84% in 2006-2007, 86% in 2008, 88% in 2009, 90% in 2010-2011 and 92% in 2012- 2013;
 - for **TT** will rise from 80% in 2004 to 86% in 2005, 90% in 2006-2007, 92% in 2008-2009, 94% in 2010-2011 and 96% in 2012-2013;
 - for **MEAS** will rise from 78% in 2004 to 80% in 2005, 84% in 2006, 88% in 2007, 90% in 2008-2011, and 92% in 2012-2013;
 - for **OPV** will rise from 75% in 2004 to 80% in 2005, 82% in 2006, 85% in 2007-2008, 88% in 2009, 90% in 2010-2012 and 92% in 2013;
 - for **DTP-HepB** will rise from 75% in 2004 to 78% in 2005, 80% in 2006-2007, 84% in 2008-2009, 86% in 2010, 88% in 2011-2012 and 90% in 2013.
- DTP-HepB vaccine is maintained and Hib is not introduced.
- Wastage for **TT-MEAS-OPV-DTP-HepB** vaccines will fall from 15% in 2004-2007 to 10% in 2008-2010 and 5% from 2011 to 2013.
- The drop-out rate for **TT-OPV-DTP-HepB** vaccines will fall from 10% in 2004-2005 to 5% in 2006-2008, holding steady at 2% from 2009 to 2013.

The costs of funding vary from 4,564,764 USD in 2004 to 6,660,305 USD in 2012, with the total cost for EPI from 2004 to 2013 amounting to 107,398,430 USD. The financial gap fluctuates between 1,539,268 USD in 2007 and 5,494,874 USD in 2008.

ADVANTAGES AND DISADVANTAGES OF EACH SCENARIO

Scenario	Key components	Advantages	Disadvantages
A	<ul style="list-style-type: none"> • VC steady at 80% • DTP-HepB maintained • Hib introduced in 2006 • Vaccine wastage 20-15% 	<ul style="list-style-type: none"> • Introduction of a new vaccine 	<ul style="list-style-type: none"> • High cost • Wastage
B	<ul style="list-style-type: none"> • Rapid increase in VC, from 88% to 98% • DTP-HepB maintained • No Hib • Wastage between 15-5% 	<ul style="list-style-type: none"> • Rapid increase in VC • Decrease in wastage • No additional cost 	<ul style="list-style-type: none"> • No new vaccine
C	<ul style="list-style-type: none"> • Modest increase in VC, from 78-92% • Hib introduced in combination with DTP • Single-dose HepB • Wastage between 15-5% 	<ul style="list-style-type: none"> • Introduction of a new vaccine • Low vaccine wastage • Lower cost 	<ul style="list-style-type: none"> • VC moderately increased
D	<ul style="list-style-type: none"> • Modest increase in VC, from 78 to 92% • DTP-HepB maintained • No Hib • Wastage between 15-5% 	<ul style="list-style-type: none"> • Low vaccine wastage • No extra cost 	<ul style="list-style-type: none"> • VC moderately increased

In conclusion

In view of the advantages and disadvantages spelled out above, the Government of Madagascar has opted for **Scenario C** and pledges to give due weight to all the implications in terms of the resources and decisions implicit in that choice, namely:

- to improve the efficiency of the EPI by providing enough qualified staff;
- to increase the budget allocation for the EPI gradually, at least in proportion to population and economic growth rates;
- to involve national partners to a greater extent in management of the program;
- to give priority to the EPI in the PRSP, the HIPC Initiative and other additional resources, taking better account of needs in the budget aid provided by the partners;
- to argue the case with other partners for mobilizing additional resources;
- to pay closer attention to the rational management of the resources set aside for immunization.

There are various means of bridging the shortfall:

1. The State can cover additional financial needs, drawing on additional State resources such as financing relief on public development debt claims.
2. World Bank funds could be used to fund the purchase of new vaccines and injection equipment.
3. The Government could apply for GAVI support for a subsequent program spread over the next five years (2007-2011), although this would mean that the first program would cover seven and not five years (end of support in 2008 instead of 2006). An application should be made to GAVI for that purpose.
The purchase of new vaccines and injection equipment would thus be secured until 2013.
4. Appeal to other private or traditional financial partners to bridge the gap.