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COMBATTING CHILDHOOD COMMUNICABLE DISEASES PROJECT

COUNTRY ASSESSMENT

CENTRAL AFRICAN REPUBLIC

Country Assessment Team:  
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Centers for Disease Control  
USAID - Yaounde, Cameroon  
FAC - Bangui, CAR  
With Active Participation of  
UNICEF  
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## 1.0 Introduction

The Central African Republic (CAR), through the U. S. Embassy Bangui, requested the United States Agency for International Development (USAID) and the Centers for Disease Control (CDC, Atlanta) to assist its Ministry of Public Health (MOH) in conducting a country assessment (feasibility study) as a preliminary step to developing a program for Combatting Childhood Communicable Diseases (CCCD) in the CAR.

CCCD is a cooperative effort among the African nations and member nations of CDA (Cooperation for Development in Africa) to reduce childhood morbidity and mortality by improving health services for the prevention and treatment of infectious diseases in children.

CDA, whose member nations are Belgium, Canada, the Federal Republic of Germany, France, Italy, the United Kingdom (UK), and the United States of America (US) initiated the CCCD activities in December, 1980, as a specific response to the World Health Organization's (WHO) request for increased technical cooperation in support of Primary Health Care (PHC) programs in sub-Saharan Africa. The US was designated as the lead donor in this effort.

## 2.0 CCCD

### 2.1 Goal

The goal of CCCD is to reduce childhood morbidity and mortality in sub-Saharan Africa.

### 2.2 Strategy

In order to achieve its goal, CCCD's strategy is to control:

- measles, diphtheria, tetanus, pertussis, polio and tuberculosis by timely vaccination of infants;
- neonatal tetanus by vaccinating pregnant women;
- diarrheal diseases by oral rehydration and by teaching better feeding and hygiene practices;
- malaria by presumptive treatment (oral drugs) of children with fever and presumptive treatment of pregnant women with fever and/or chemoprophylaxis.

### 2.3 Role of CCCD

CCCD provides a mechanism for increasing external support to African nations in two separate but interrelated ways: by supporting regional activities; and by supporting country-specific (bilateral) activities. Funds are provided by USAID for the regional support project and some country-specific activities. Other CDA members concentrate their resources on country-specific activities.

The following regional activities are available to all sub-Saharan African countries requesting to participate:

- Training
- Training Development/Adaptation
- Health Education/Promotion
- Operations Research
- CCCD Health Information System

Bilateral technical cooperation agreements, on the other hand, are negotiated on a government-to-government basis. This document is a country assessment of the CAR health sector activities and may be used as a reference paper to approach CDA member nations or other bilateral or multilateral cooperating organizations for technical cooperation in reducing childhood morbidity and mortality in CAR.

### 3.0 Country Assessment

#### 3.1 Method of Assessment

With cooperation from members of the Government of the Central African Republic, the French Fund for Aid and Cooperation (FAC), UNDP, UNICEF and the WHO Coordinator in Bangui, two CDC technicians met with officials of the Ministry of Public Health, and with representatives of WHO/AFRO, UNICEF, UNDP, FAC, USAID, the US Embassy and OCEAC to discuss present and future policies, plans and strategies to control childhood communicable diseases in CAR.

The Assessment Team visited the central, regional and peripheral levels of government in Bangui, Bimbo and Mbaiki in order to observe the delivery of health services and review health related procedures and documents at these levels. One member of the Assessment Team had previously visited the prefectural hospital and maternal-child health center at Sibut, and the health center at Damara.

#### 3.2 Scope

From May 31 to June 16 the Assessment Team:

Reviewed and analysed current CAR policies, plans and strategies for control of childhood communicable diseases;

Estimated current morbidity and mortality of priority diseases;

Observed ongoing activities in childhood disease control programs;

Assessed the effectiveness of current activities in controlling childhood communicable diseases;

Identified resources presently available in the CAR to start a CCCD program;

Determined additional resources needed to develop a national CCCD program;

Drafted a work plan to integrate CCCD activities into existing health services;

Proposed a four-year plan for phased bilateral participation.

#### 4.0 Background Information - Central African Republic

##### 4.1 Geography

Situated on a broad plateau in the geographic center of Africa between 4° and 9° north latitude, the Central African Republic is a landlocked country with an area of 626,777 km<sup>2</sup>. (See Annex 1.) It is bounded on the north by Chad, on the east by Sudan, on the south by Congo and by Zaire, and on the west by Cameroon. Most of the country lies between 400 and 1100 m. above sea level, with an average latitude of about 600 m.

The country is a watershed for the Lake Chad/Chari River basin to the north and the Congo River basin to the south. Although there are many rivers, they are not easily accessible. Only the Oubangui, which forms part of the southern border of the country, is commercially navigable year round, and then only south of Bangui.

Vegetation varies from tropical rainforest in the southwest to semi desert in the northeast. Most of the country's precipitation occurs in two seasons: April-May and August to November.

##### 4.2 Transportation Infrastructure

Being landlocked, CAR has limited access to international transportation routes. The three routes of commercial significance are:

- by air from Bangui to Europe (principally Paris), to Brazzaville and to Abidjan
- by road from Bangui and Berberati through Cameroon to Douala, 1400 km. from Bangui
- by river from Bangui to Brazzaville (July-December), thence by rail to Pointe Noire, 1815 km. from Bangui

Transportation adds considerably to the cost of imported goods and equipment.

Within the country, service is available by small aircraft from Bangui to the major provincial cities.

In 1982, there were an estimated 5000 km of "national" roads, 3880 km. of "regional" roads, and 12,000 km. of rural tracks (pistes rurales). Only 425 km. of roads are hard surfaced, principally those from Bangui to several cities in the southwest region. For the most part, 4-wheel drive vehicles are necessary for travel in the interior. Surface transportation to areas in the eastern region of the country is difficult, not only because of the road conditions, but also because of the limited availability of fuel.

#### 4.3 Recent History

CAR has experienced three changes of government since 1979. The present government, led by the Military Committee for National Recovery, took power on September 1, 1981.

#### 4.4 Economy

The economy is predominantly subsistence agriculture, with manioc, millet, and sorghum as the leading food crops. A number of light industries are located in the Bangui area, including cigars and cigarettes, textiles, beer, diamond cutting, and bicycle and moped assembly, but plant capacity is little utilized. There is no heavy industry. Leading exports are diamonds, cotton, coffee and timber.

A former French colony and an associate member of the EEC, CAR receives substantial economic and technical assistance from France and from the EEC's European Development Fund. In addition, the Federal Republic of Germany, Yugoslavia, People's Republic of the Congo, Romania, Japan and the US and other countries provide more modest levels of technical and project assistance. A number of UN agencies also support development projects.

The annual Gross Domestic Product (GDP) for 1979 was estimated at \$592 million, with a rate of growth estimated at 2%. Per capita income was \$257.

#### 4.5 Population

The most recent national census was conducted in 1975, at which time the total population was 2,054,610. The annual rate of growth is estimated at 4.3% for urban zones and 1.6% for rural zones, or approximately a 2.5% overall growth rate. The population at the end of 1982 can thus be estimated at approximately 2,453,000 of which 38.7% is classified as urban, and 61.3% rural.

CAR is divided into 16 prefectures. These are further divided into sous-prefectures, of which there are 50, plus the City of Bangui. The estimated population by geographic subunits is presented in Annex 2.

Almost two thirds of the people live in the western region, which includes Bangui. Most of the rest live in the central region. The eastern region has a density much less than 1 per km<sup>2</sup>. The country's overall density is 3 to 4 per km<sup>2</sup>.

There are 80 ethnic groups in the CAR, each with its own language. About two thirds are either Baya-Mandiya or Banda. Sangho, a language of a small riverine group along the Oubangui, is the lingua franca spoken by the majority of the population. While French is the official language, only a minority of the people have more than elementary knowledge of it. In 1980 literacy was estimated at about 18%.

#### 4.6 Demographic Aspects

Based on the general census of 1975 the age distribution of the population is as follows:

Table 1 - Age Distribution of CAR Population

<u>Age Group</u>	<u>Percentage of Total</u>	<u>Summary Percentages</u>
0-5 mo.	2.4%	
6-11 mo.	2.3%	less than 1 year 4.7%
1 yr.	4.5%	
2 yrs.	4.1%	
3 yrs.	3.8%	
4 yrs.	3.6%	less than 5 years 20.7%
5-9 yrs.	15.7%	
10-14 yrs.	12.5%	less than 15 years 48.9%
15-19 yrs.	10.6%	
20 yrs. plus	40.5%	

The age distribution is typical for a sub saharan African country, with 49% of the population under 15 years of age and almost 21% less than 5 years.

The following rates were estimated for 1977 by the Institut de Formation et de la Recherche Demographique (IFORD):

Crude birth rate:	43 per 1000 population
Crude mortality rate:	19 per 1000 population
Infant mortality rate:	190 per 1000 live births

The life expectancy at birth is estimated at 41 years.

## 5.0 Resources in the Health Sector

### 5.1 Ministry of Public Health

The Ministry of Public Health (MOH) which is responsible for health planning, preventive and curative services, health facilities, and sanitation, is headed by a Minister, assisted by his Technical Counselor, Cabinet and six major directorates (Directions). In the recently reorganized hierarchical structure, health activities are directed by the Secretary General, who supervises the six directorates and coordinates the five operational health regions in the field (Regions Sanitaires). The six directorates include 1) planning and studies and 2) administrative support services plus the technical services of 3) curative medicine, 4) preventive medicine and control of major endemic diseases (Direction de la Medicine Preventive et de Lutte contre les Grandes Endemies), 5) maternal-child health and family planning (MCH), and 6) environmental sanitation. (See organigram-Annex 3.) Until the reorganization in November 1982, one directorate, Medicine Rurale et des Grandes Endemies, supervised the other activities of curative medicine, MCH, and environmental sanitation, which were separate Services within that directorate. It also supervised the operational sectors in the field. Now MCH and the two other services have been elevated to directorates on a level with preventive medicine, and coordination of field activities in the health sectors is the responsibility of a more central authority, the Secretary General.

In the field, the country is divided geographically into the five operational health regions (see Annex 4), each headed by a Regional Director (Directeur Regional), who is a physician. The Regional Director is responsible for supporting, coordinating and supervising all the services (curative, preventive, MCH, and sanitation) as well as the health facilities (hospitals, health centers, dispensaries etc.) in his region. The Director receives guidance as well as certain supplies from the central level technical directorates, but is supervised hierarchically by the Secretary General.

The Minister, Secretary General, and heads of the six major directorates are Central African nationals and primarily physicians. The Minister is a physician. The five Regional Directors are expatriate physicians made available through the French Ministry of Cooperation and Development. The Minister is assisted by an expatriate Technical Counselor, as is the Director of Preventive Medicine and the Grandes Endemies.

#### 5.1.1 Personnel

At the present time, the MOH, like other sectors of the CAR government, is concerned about its expenditures in the area of personnel. Any new programs or activities undertaken by the Ministry would require maximum utilization of existing personnel, with retraining and possibly some reassignment from current duties.

The information available on number and category of health personnel in the public sector as of December 1982 are presented in Table 2.

Table 2 - Public Health Personnel Situation  
December 1982

CATEGORIES	NATIONALS			EXPATRIATES	TOTAL
	Functioning	In Training	Total		
Physicians	27	15	42	62*	104
Surgeon-Dentist	1	-	1	2	3
Pharmacists	10	-	10	1	11
Senior Technicians	69	7	76	10	86
Health Technicians	34	1	35	-	35
Paramedical Specialists	18	1	19	-	19
State Licensed Mid-Wives	148	7	155	9	164
Principle Mid-Wives	12	-	12	-	12
Managers of Health Estab.	-	-	-	7	7
State Registered Nurses	277	12	289	22	311
Sanitation Assistants	65	5	70	-	70
Senior Technical Agents	18	1	19	-	19
Technical Agents	39	-	39	-	39
Nursing Assistants	228	-	228	-	228
Nurses	389	-	389	-	389
Licensed Practical Nurses	83	-	83	-	83
Licensed Health Agents	10	-	10	-	10
Health Agents	101	-	101	-	101
Health Aides	70	-	70	-	70
Decisionnaires and others	396	2	398	-	398
<b>TOTAL</b>	<b>1995</b>	<b>51</b>	<b>2146</b>	<b>113</b>	<b>2159</b>

\* 62 expatriate physicians of which 3 are contractual

According to the National Action Plan of 1982-1985 (dated 1 Sept. 1982) the projected recruitment of health personnel over the next three years is modest, as shown in the following table.

Table 3 - Projected Recruitment of Personnel to  
Ministry of Public Health - 1983-85

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>Total</u>
Physicians	15	15	15	45
Senior health technicians	20	20	20	60
Nurses/midwives	80	80	80	240
Assistant sanitarians	10	10	10	30
Other health personnel	100	100	100	300

### 5.1.2 Facilities

The official number of health facilities in the country by category is shown in Table 4. More detailed information can be found in Annex 5.

Table 4 - Health Facilities, Public and Private, CAR,  
as of December 1981

	<u>Public</u>	<u>Private</u>
University Hospital, Bangui	1	
General Hospitals	5	
Prefectoral or Comparable Hospitals	10	4
Health Centers	51 (38 w. beds)	21 (all w. beds)
Health Sub Centers/Dispensaries	72 (no beds)	26 (no beds)
Health Posts	201 (no beds)	

However, as stressed by the National Action Plan 1982-85, the general condition of health facilities in the public sector is poor. During the period of the 1970's, health facilities deteriorated seriously. The majority of facilities, particularly the health centers and smaller units are not functional due to lack of equipment and utilities, lack of upkeep of buildings, lack of human and financial resources, and lack of medications.

As an indicator of current level health service delivery, on June 4, 1983, only 58 health facilities had active MCH services, including 9 prefectural hospitals, 43 health centers, 5 sub-centers and one health post. Another 32 facilities were being prepared to offer these services. In addition, 4 general hospitals and one health post offer vaccinations.

While there has been progress in expanding MCH services in the past year, the health facilities offering MCH services are not evenly distributed. Fifteen of the current 58 active facilities are in Bangui. An additional 5 are in the operational Health Region which includes Bangui. Thus 30 of 58 MCH centers (52%) are located in one Region containing 34% of the country's population.

In addition to fixed health facilities, a mobile health team operates in each operational Health Region and is supervised by the Regional Director. The teams are the traditional Grandes Endemies polyvalent teams, doing case finding and treatment of sleeping sickness, tuberculosis, leprosy, as well as providing vaccinations. They serve the populations in the rural areas who lack access to health facilities. Generally, visits to individual villages are at a frequency of every two years, making measles and BCG and tetanus vaccination possible if not ideal, but effective DTP and polio vaccination is virtually impossible.

### 5.1.3 Pharmaceuticals and Supplies

No pharmaceuticals are manufactured or packaged in CAR; all are imported through both the public and the private sectors.

In the public sector, medicines and supplies are channeled through the Central Supply Pharmacy (Pharmacie d'Approvisionnement) in Bangui, which is responsible for their receipt, management and distribution to the health facilities throughout the country. These supplies do not include EPI vaccines, which are ordered, received, stored, and distributed through the EPI cold chain system, under the direction of Preventive Medicine/Grandes Endemies.

The Regional Director in each operational Health Region is responsible for coordinating orders to the Central Pharmacy for medicines and supplies for the health facilities in his Region. The Central Pharmacy releases the ordered items, as available, to representatives of the individual facilities or to the Regional Director who in turn is responsible for their distribution. The Pharmacy does not have the means of transportation to deliver the ordered items. This system places a strain on the supply to health facilities far from Bangui.

Many medicines and supplies are furnished by external donor agencies, and the Central Pharmacy has only a limited role, and a limited budget, in determining needs or placing orders. Because of the irregular and somewhat unpredictable nature of donated pharmaceutical supplies, the Pharmacy had some difficulty in assuring a regular supply of certain items to the country's health facilities, and interruptions of supplies are frequent.

Medicines and supplies from UNICEF which are specifically designated for the MCH project, including packets of oral rehydration salts, chloroquine, and certain other drugs for MCH centers, are received, processed and released to MCH centers by the Central Pharmacy in coordination with the MCH project director. Thus, the project has supervisory control over materials destined for its centers, even though the Central Pharmacy actually handles the materials.

The following table shows the supplies of pharmaceuticals relevant to diarrheal diseases and malaria which were received by the Central Pharmacy in 1982:

Table 5 - Supplies of Selected Pharmaceuticals Received in 1982 by Central Pharmacy

Intravenous fluids (also used for surgery, etc.)	60,000 bottles (500 ml)
Oral Rehydration Salts, packets (UNICEF)	67,000 packets
Oral Rehydration Salts, supply for 1983	275,000 packets
Chloroquine, 100 mg. pills	7,000,000
Quinimax (injectable quinine)	
pediatric dose	250,000
adult dose	250,000

In the private sector, two wholesale agencies are authorized to import pharmaceuticals: SODIPHAC, and Pharmacie d'Etat. Private pharmacies obtain their supplies through these two suppliers. In addition, numerous pharmaceuticals are imported and distributed by itinerant vendors, particularly in the rural areas.

There is no government control over the nature or the quantity of pharmaceuticals imported or sold through the private sector. No information on nature or quantity was available to the assessment team.

## 5.2 Health Training Facilities

The Faculty of Health Sciences at Bangui trains physicians, nurses and other categories of health professionals. (See Annex 6 for details.) The first group of 10 Central African physicians graduated at the end of 1982. Previously, national physicians were trained abroad, and as noted in Section 5.1.1 above, the number available to the public sector was quite limited.

## 5.3 Research Institutions

The major health related research institution in CAR is the Pasteur Institute, which is largely funded and staffed by France. Areas of research interest include viral diseases, especially arboviruses and hemorrhagic fevers, and diarrheal diseases. The efforts in this latter area relate to studies of disease etiology. WHO supports several such studies on diarrhea in children.

Two other research laboratories, the National Institute of Public Health, and the Center for Sexually Transmitted Diseases are located in Bangui. The former, which was recently opened, is primarily responsible for diagnostic tests related to diseases of public health importance, rather than basic research. The latter, which is more research oriented, is exclusively involved in STD activities and not directly related to CCCD priority diseases.

## 6.0 National Plan

The Central African Republic's National Action Program 1982 - 1985 is extremely frank in its description of the current state of the country's health sector and draws a direct relationship between the current low level of public health services and the high levels of global and infant mortality. While the Plan does not outline specific strategies to be carried out over the four year period, it does enunciate the national health objective of assuring all citizens access to sufficient and appropriate levels of health services, with equitable distribution among both rural and urban populations. In order to accomplish this objective, the government has stated as a priority the application of primary health care in the following areas:

- Effective protection of family health and family planning
- Infectious disease control
- Provision of potable drinking water and basic sanitation
- Refurbishing and repair of health facilities in rural and urban zones
- Training of health personnel

Although reduction of childhood mortality and morbidity is not explicitly stated above, this objective emerged repeatedly in meetings with senior Ministry officials. As an example, the malaria strategy drawn up in early 1981, but not yet implemented for reasons of availability of means, adopts this approach toward setting of priorities. The beginning of the document presents a ranking of the 6 major causes of childhood mortality and morbidity, in which malaria occupies third place, as the primary justification for an anti-malaria program.

As yet no specific primary health care strategy has been developed. However, the Maternal and Child Health Program, which integrates a number of primary health care elements, is emerging as a major activity of the Ministry of Health.

The country's major on-going health projects, the amounts to be expended over the three year period 1983-1985, and the sources of funding of these projects are listed in Annex 7.

## 7.0 Budget

### 7.1 National Budget

National budget information for 1983 was not yet available for examination by the Assessment Team. The 1981 and 1982 National Budget data were available in summary form in the WHO Coordinator's 1982 First Semester Report. See Annex 8 for Summary Table.

The CAR national budget for 1982, 38,203,178,000 frs. CFA, (\$116 million), represents a 12% increase over the previous year's Budget. Despite this increase, the 1982 budget was considered to be an austerity budget, and a number of strict measures were officially adopted during 1982 to increase revenues while at the same time attempting to sharply reduce operating costs, especially in the area of personnel expenditures.

## 7.2 Public Health Budget

The Public Health budget for 1982, 2,282,120,000 frs. CFA, (\$6.9 million), increased 11% over the previous year. However, despite this increase, the proportion of the national budget allocated to health continued to decline for the second consecutive year. The 1982 health budget represented 6.0% of the national budget. The health budget for 1981 represented 6.7%, and for 1980, 7.9%. Per capita health expenditures did increase as is indicated in the following table:

Table 6 - CAR Budgets 1981-82

Yr.	Pop.	National Budget	Health Budget	% of Natl Budget	Per Capita <sup>I</sup> Expenditure
1981	2,393,493	34,085,000,000	2,040,240,000	6.7	\$2.58
1982	2,453,330	38,203,178,000	2,282,120,000	6.0	\$2.81

I - at \$1.00 equal to 330 frs. CFA

The Health Budget allocations listed above represent only operating costs, plus additional diverse expenditures, and do not include capital investment expenditures. Such costs are combined for both the Ministry of Health and for Social Affairs (an independent entity previously part of the MOH) under a separate budgetary rubrique. Examination of the data available in this budgetary category indicated an increase of 150% in 1982 over the 1981 Budget (45,000,000 frs. over 18,000,000 frs.) Forty-four percent of funds allocated in this category were earmarked for construction and equipment of the National Faculty of Health Sciences, the institution responsible for training national physicians and other medical professionals and para-professionals. The remaining funds were for community development.

## 7.3 External Assistance to the Health Sector

The CAR health sector depends to a great extent on large amounts of external financial, technical and material assistance provided by a wide variety of international, multi-lateral and non-governmental agencies, as well as by a number of countries furnishing bilateral support.

Assistance is provided across a broad spectrum, ranging from the construction of health facilities to the donation of ambulances to the furnishing of drugs and vaccines.

A list of major donors contributing to the country's health sector between 1981-83, and the amounts of assistance they furnished is provided in Annex 9. Of the seven countries furnishing bilateral assistance during this period, the Government of France, through its Fund for Assistance and Cooperation (FAC) continued in its traditional role of leading all other donors in input. In terms of technical assistance alone, there were 60 French Cooperants working in the health sector as of December 1982, 32 of whom were physicians.

With regard to health activities related to CCCD Program interests, substantial external contributions have been and continue to be made by WHO and UNICEF to the Expanded Program on Immunization (EPI), and by the UNDP and UNFPA to the Maternal and Child Health Project (MCH).

## 8.0 Health Information Systems

### 8.1 Passive Reporting

A system of routine disease and health activity reporting exists in CAR, based in part on fixed health facilities, and in part on the Grandes Endemies activities.

Health facilities in the public sector are required to report all cases of disease seen in over 70 different disease categories, both infectious and non-infectious. In addition they report numerous service and utilization data, including the numbers of pre and post natal consultations, hospitalizations, length of stay in hospital, diagnostic procedures, laboratory examinations, surgical and obstetrical interventions, vaccinations performed, etc.

Grandes Endemies teams also report cases of disease actively found, plus such service statistics as population surveyed, number and type of diagnostic procedures, number of cases under treatment, number cured, dead, lost to follow up, etc., plus the number of vaccinations performed.

Both reports are sent monthly to the Regional Director of the operational Health Region where the facility or the Grandes Endemies team is located. He is responsible for compiling the health data for his sector, and in turn declaring it to the national level, through the Secretary General to the Documentation and Health Statistics Service in the Directorate of Studies and Planning. Copies of Grandes Endemies reports are sent to the Director of Preventive Medicine and Grandes Endemies. Copies of reports of vaccination activities and other services by MCH centers are sent to the Director of MCH and Family Planning.

At the national level, the data are compiled and published annually by the Documentation and Health Statistics Service. In addition, the Director of Preventive Medicine and Grandes Endemies compiles and reports Grandes Endemies disease data and activities. The Director of the MCH project compiles data on vaccinations performed at MCH centers, as well as other MCH service statistics.

Despite numerous constraints, this passive reporting system has functioned with reasonable regularity. The most recent published annual report of overall statistical data is from 1980. However, certain unpublished figures on infectious diseases from 1981 and the first half of 1982 are also available. In addition, summary data on EPI vaccinations for 1982 are available from the MCH project.

The national health information system outlined above thus represents an effort at tracking both disease activity and health delivery and service functions. It appears that its major purposes are to permit accountability and to serve as a basis for long term planning.

At the intermediate level there is a more rapid, less formal system of direct notification from health facilities to the operational Health Region Director which would allow a public health response to a local disease problem.

## 8.2 Special Surveys and Studies of Morbidity and Mortality

The mobile activities of the Grandes Endemias prospection teams are in fact field surveys with follow-up treatment of Grandes Endemias target diseases including sleeping sickness, tuberculosis and leprosy. In recent years, there was also a special survey of goiter and cretinism prevalence coordinated by the Grandes Endemias.

No recent population based surveys have been performed to develop morbidity or mortality information of the CCCD target diseases to supplement the information available from routine disease reporting.

## 9.0 Disease Epidemiology, Including CCCD Target Diseases

Epidemiologic data available to the assessment team came primarily from the routine reporting system. Although disease reporting is reasonably regular, the data must be interpreted with caution because of the nature of passive data collection from treatment facilities and treatment teams. Only those cases of disease which are seen at, and diagnosed at, functioning health facilities, or found by mobile teams, are reported. In general, only those deaths occurring at health facilities are declared. Those illnesses which occur more frequently in rural areas, or which lead to death rapidly, would tend to be underrepresented, as would diseases requiring complex diagnostic procedures.

It is apparent that for deaths, at least, there is considerable information which is not available. For example, in 1980 there were 1290 reported deaths by all causes and at all ages. However, the population then of approximately 2.3 million with a crude death rate of 19 per 1000 per year would be expected to have had about 43,700 total deaths. Reported deaths thus represented less than 3% of estimated deaths.

### 9.1 Relative Role of Infectious Diseases

For reported deaths at any age in 1980, 661 of the total of 1290 (51%) were due to infectious diseases. Information regarding age distribution of deaths was not available.

For reported cases of disease in children under 5 years old, 80% were due to infectious causes (268,730 out of 337,422 total cases in 1980).

As the cause of hospitalization of children in 1980, infectious diseases were responsible for 86% (16,185 out of 18,872 total hospitalizations).

9.2 Relative Role of CCCD Target Diseases

Since data were not available on the age at death for reported deaths, the contribution of CCCD target diseases to all reported deaths due to infectious diseases was calculated, as shown in Table 7.

Table 7 - Deaths by Cause, All Reported Infectious Diseases at Any Age, CAR - 1980

<u>Disease</u>	<u>Number of Deaths</u>	<u>Percentage of All Deaths</u>
Measles	53	8.2
Neonatal tetanus	(not listed)	-
Diphtheria	0	0
Pertussis	2	0.3
Polio	(not listed)	-
Tuberculosis	(+)	-
(All EPI target diseases)	(55)	(8.5)
Malaria	118	18.3
Diarrheal disease	80	12.4
Respiratory disease	163	25.3
All other infections	<u>229</u>	<u>35.5</u>
Total	645	100.0

(+) 18 deaths excluded, probably at age greater than 5 years.

Thus, listed EPI target diseases account for 8.5% of all reported infectious disease deaths, malaria for 18.3%, and diarrheal disease 12.4%. A total of 39.2% of all infectious disease deaths are attributable to CCCD target diseases.

CCCD target diseases were also important causes of childhood morbidity as shown in Table 8:

Table 8 - Reported Morbidity by Cause,  
Children 0 - 4 yrs. old, CAR, 1980

<u>Disease</u>	<u>Number of Cases</u>	<u>Percentage of All Disease Cases</u>
Measles	4,293	1.3
Neonatal tetanus	(not listed)	-
Diphtheria	8	< 0.1
Pertussis	2,523	0.8
Polio	(not listed)	-
Tuberculosis	39	< 0.1
(All EPI target diseases)	(6,875)	(2.0)
Malaria	73,411	21.8
Diarrheal disease	57,638	17.1
Respiratory disease	60,853	18.0
All other infections	69,693	20.7
Non-infectious diseases	<u>68,693</u>	<u>20.4</u>
Total	337,423	100.0

Thus EPI diseases accounted for 2.0% of all reported cases of disease in children 0-4 yrs. old, malaria accounted for 21.8% and diarrheal disease 17.1%. A total of 40.9% of all reported morbidity in children 0-4 was attributed to CCCD target diseases.

When analyzed by cause of hospitalization of children 0-4 yrs. old, CCCD target diseases remain important, as shown in the next table.

Table 9 - Cause of Hospitalization, Children 0-4 Yrs. Old,  
CAR, 1980

<u>Disease</u>	<u>Number Hospitalized</u>	<u>Percentage of all Hospitalizations</u>
Measles	1,513	10.3
Neonatal tetanus	(not listed)	-
Diphtheria	1	< 0.1
Pertussis	96	0.7
Polio	(not listed)	-
Tuberculosis	8	< 0.1
(All EPI target diseases)	(1,618)	(11.0)
Malaria	1,960	13.4
Diarrheal disease	1,136	7.7
Respiratory disease	6,673	45.5
All other infections	586	4.0
Non infectious diseases	<u>2,687</u>	<u>18.3</u>
Total	14,660	99.9

Thus, 11.0% of reported hospitalizations of children 0-4 years old were due to EPI target diseases, 13.4% due to malaria, and 7.7% due to diarrhea. A total of 32.1% of all hospitalizations in this age group were due to CCCD target diseases.

The importance of neonatal tetanus and of poliomyelitis could not be evaluated with the data available, since neither were listed in the 1980 report. However, both diseases are reported in the partial data available for 1981 and 1982. Neonatal tetanus caused 20% as many reported deaths as measles in those years, and one half as many deaths as did reported diarrheal disease. Thus although its role cannot be quantified, neonatal tetanus appears to be important.

It should be noted that in general the impact of both neonatal tetanus and polio can only be determined by special surveys, since they are usually very underrepresented in routine reporting.

In summary, infectious diseases as a whole and the CCCD target diseases in particular appear to be of considerable importance as causes of morbidity and mortality in Central African children. They also put considerable pressure on health facilities and health service delivery.

To determine the role of the CCCD target diseases more precisely, special surveys would be needed. But it is safe to say they are worthy targets for a control program, and that an effective intervention could significantly reduce childhood morbidity and mortality.

## 10.0 Current Program Activities Related to CCCD Target Diseases

Consistent with the increasing orientation of the Ministry of Health toward family health and primary health care, as outlined in the National Plan for 1982-1985, two recent developments in both policy and practice should be noted. A project in maternal and child health (Sante Maternelle et Infantile) was undertaken in 1979, which has continued to expand with financial and technical support from WHO, UNICEF, UNDP and UNFPA as well as from bilateral donors. The project previously constituted the MCH Service in the Directorate of Rural Health and the Grandes Endemies. However, with the increased priority being attached to MCH, this service has now been elevated in the MOH reorganization to a separate Directorate (Direction de la Sante Maternelle et Infantile et de la Planification Familiale), on an equal hierarchical level with the restructured Directorate of Preventive Medicine and the Grandes Endemies.

The second development relevant to CCCD was the undertaking in 1980 of an Expanded Program on Immunization (EPI). Vaccination activities as described below are integrated into MCH services in the field. They are also performed by the Grandes Endemies mobile teams in rural areas. The EPI has increased both its activities and the vaccination coverage as the MCH services themselves have expanded.

### 10.1 Maternal and Child Health

The MCH project is the MOH's major effort in family health. MCH services at present include health education, pre and post natal consultation, child delivery, EPI vaccinations, well baby consultation (weighing etc.), and some consultation and treatment of sick children. Child spacing and family planning activities are being programmed, but for the most part are not yet available.

#### 10.1.1 MCH Centers

MCH services are presently offered at 63 MCH centers (centres de SMI). The number of active centers continues to grow, following a general plan, as health facilities (some of which were virtually abandoned in the 1970's) are rehabilitated and equipped, and as staff are trained. Thirty-two more centers are listed as "en formation" (See Annex 10).

MCH centers are based at existing health facilities (5 general hospitals, 9 prefectoral hospitals, 43 health centers, 5 health sub centers, and 1 health post). MCH is just one of several services offered at these facilities. At present, MCH activities are conducted primarily at the health facility, with only a few MCH centers doing outreach into the surrounding villages.

Geographic distribution of MCH centers throughout the country is not even, nor does it correspond to the distribution of the population, as shown in the next table.

Table 10 - Distribution of MCH Centers and Population  
by Operational Health Regions, CAR

Region	Population (1981)	Percent of Total	MCH Centers	Percent Of Total	Projected MCH Centers
Bangui Only	387,030	16.2%	16	25%	2
Region I+	804,088	33.6%	31	49%	11
Region II	480,839	20.1%	7	11%	0
Region III	462,643	19.3%	9	14%	5
Region IV	308,606	12.9%	5	8%	11
Region V	337,367	14.1%	11	17%	5

+Region I data includes Bangui, thus Bangui data appears twice in this table

MCH is a relatively new project. For reasons of logistics and the availability of already functioning health facilities in which to base MCH centers, the project initially concentrated its efforts in Bangui and the surrounding readily accessible areas. However, as the project expands, more parts of the country are being served.

The MCH Project Director estimates that 60% of the Central African population could be reached if MCH services were made available in all the existing health facilities, including health posts, throughout the country. This figure is for activities at fixed centers. Outreach could extend the population coverage, but size of this extension has not been estimated. No outreach strategy is yet planned. At present the development of MCH activities in other facilities, plus the consolidation and improvement of existing centers requires all the resources and management available.

#### 10.1.2 Personnel and Coordination

MCH personnel at the health center level are midwives, nurses and nurses' assistants. Their activities are supervised by the physician in charge of the health facility. They also receive coordination and support from the Director of the operational Health Region in which the center is located, as do all other health activities in the Region. MCH personnel also receive guidance and training from the MCH staff at the national level.

The Director of the MCH project since its inception, an expatriate physician, is a WHO consultant on extended duty in CAR. Her functions and day to day responsibilities are virtually those of a national MOH health professional. A national physician counterpart previously worked with her, but is currently abroad for training in public health until October of 1983. A new Director of Maternal and Child Health and Family Planning, whose Directorate includes the MCH project, has recently been appointed.

10.1.3 Population Served

The target population of MCH is the country's mothers and children under 5 years old, with particular emphasis on children under one year.

In 1982, 34,395 pregnant women were registered in the MCH system, and made a total of over 110,836 consultation visits, an average of 3.2 visits per woman. At the same time 35,395 children 0-11 months old were registered and had had a total of 180,922 consultation visits, an average of 5.1 visits per child.

This represents 33.4% and 31.6% respectively of the estimated population of these two groups for the entire country, as shown in Table 11.

Table 11 - Children and Pregnant Women Registered and Selected Data on Vaccinations Performed at MCH Centers, CAR, 1982

<u>Target Population</u>	<u>Estimated No. in Population*</u>	<u>No. Registered</u>	<u>Percentage Registered</u>	<u>Vaccine</u>	<u>No. of Doses</u>	<u>Percentage Registered Population Vaccinated</u>
Children 0-11 mos.	112,000	35,395	31.6%	BCG	27,980	79.1%
Pregnant Women	103,000	34,395	33.4%	1st Dose Tetanus Toxoid	28,351	82.4%

\* Estimation for children 0-11 mo. - 4.7% of total population  
 Estimation for pregnant women crude birth rate, 43/1000 x population.

Table 11 also shows the percentage of each of the registered populations which received at least one vaccination. For this estimate the most frequently given vaccine, BCG for children, and 1st dose of tetanus toxoid for pregnant women, was used. It is apparent that a sizeable proportion of the women and children in contact with the MCH system remain to be vaccinated, even with one dose of vaccine.

10.1.4 Support

Funding for this project is largely from sources outside CAR. Major support comes from UNICEF, WHO (including the Project Director), UNDP, UNFPA, and several bilateral donors. Since MCH is integrated at the intermediate and peripheral levels with other health services, it receives indirect support from other sources of assistance.

### 10.1.5 Observations

The CDC members of the Assessment Team were favorably impressed with the organization and program of the MCH system, including the EPI vaccination activities performed by this service (see below). MCH, including the EPI vaccinations, is one of the more active and successful MCH activities.

There is, however, some potential concern about the continued support of the MCH service. It is a project, funded largely from the outside and benefits greatly from an expatriate consultant provided by WHO. Thus far, because of the nature of its activities in primary and family health, the project has attracted considerable financial support from various sources. However, the current accords with the international donor agencies, plus the contract of the WHO consultant, run out at the end of 1984. While it is expected that international support will be extended beyond that date, it cannot presently be guaranteed. With the current budgetary constraints of the CAR Government, it is not at all clear that the MOH budget would be able to suddenly absorb the costs of the project.

## 10.2 Expanded Program on Immunization

### 10.2.1 Background, Organization, and Strategy

CAR's Expanded Program on Immunization (EPI), officially began operations in 1980 under the direction of the Service of Grandes Endemies. Vaccinations in the rural areas were performed by mobile Grandes Endemies prospection teams in each of the 5 Health Regions in the course of their other activities. Vaccinations in urban areas were given primarily in Maternal and Child Health (MCH) Centers. In the period since its inception, EPI activities have been progressively integrated into larger numbers of fixed MCH centers. This evolution represents a conscious effort on the part of MOH officials to make immunization services a vital part of primary health care. According to the EPI director, 71 health facilities are presently vaccinating (see Annex 11). This number is larger than that reported by the MCH Services, which counts as active MCH vaccination centers only those which have sent reports of vaccinations to MCH headquarters. A number of additional centers are in the process of integrating EPI into routine services. In addition, vaccinations are conducted at several private or mission hospitals and health centers throughout the country. The EPI has, on occasion, provided vaccines for these private sector activities and the Director of EPI expressed the Ministry's willingness and desire to pursue a closer collaboration between the two sectors in the future.

Under the current organizational structure of the Ministry, EPI vaccination activities are the responsibility of the Directorate of Preventive Medicine and the Grandes Endemies, in collaboration with the Director of the MCH Project. As described later, this overall responsibility applies particularly to technical supervision, ordering and supply of vaccine, cold chain management, etc.

Mobile teams continue to serve the more remote rural populations, but their role in overall EPI activities has diminished with the current active effort toward providing more MCH fixed centers. Outreach vaccination activities from MCH centers are being considered for the future, once the

majority of the country's fixed facilities are felt to be functioning effectively. MCH was formerly a service within the Preventive Medicine Directorate, but now is an independent Directorate. At the peripheral level coordination of both preventive medicine and MCH activities is the responsibility of the operational Health Region Director. He, in turn, answers to the Secretary General, as do the Directors of MCH and of Preventive Medicine. Thus EPI is integrated into other health services and is coordinated from both the central and the regional levels.

The first EPI Plan of Operations 1981-1983 was drawn up in 1980 by the Government of CAR in conjunction with UNICEF. The two have been active partners in EPI since its inception, and UNICEF has provided the bulk of external assistance to EPI in the form of vaccines and cold chain equipment. This document, which expires in December 1983, has served two functions. In addition, to being the National EPI Plan, it has served as the working agreement between UNICEF and CAR for EPI matters. The Plan defined the target age groups, delineated the general vaccination strategies to be followed, set 3 year coverage objectives to be achieved in terms of actual number of vaccinations to be given, and established the number of doses of vaccine needed over this period.

#### 10.2.2 Goals and Targets of EPI

The goal of EPI is to reduce morbidity and mortality due to measles, diphtheria, pertussis, tuberculosis, polio, and tetanus by immunizing children under one year. In addition, an effort is made to reduce neonatal tetanus mortality by immunizing pregnant females aged 15 to 45 years in all fixed-centers and all women in this age group encountered by Grandes Endemias mobile teams in the course of their prospection activities. CAR's EPI, unlike other country programs seen by the CDC members of the team, actually concentrates on reaching the WHO-EPI advocated target population of children under one year, the age group at greatest risk. Vaccinations given in MCH Centers are reported by age at vaccination as either under one year or one year of age or older. Reporting in this manner permits EPI and MCH personnel to periodically measure the number of vaccinations given against the estimated target population of the service area as an indicator of coverage. The following table represents the Vaccination Schedule in use in fixed Centers in CAR since January of 1981:

TABLE 12

NATIONAL VACCINATION SCHEDULE

EPI - CAR

VACCINE	AGE AT 1st VACCINATION	MINIMUM INTERVAL	NUMBER DOSES GIVEN	NORMAL AGE
BCG	at birth	-	1	Newborn
DPT	3 months	1 month	4	3 months 4 months 5 months booster - 18 mos.
Polio	3 months	1 month	4	3 months 4 months 5 months booster-18 mos.
Measles	9 months		1	between 9 and 12 months

NB: Current EPI plans call for adding yellow fever vaccination to the above schedule in the near future. First vaccination would begin at 12 months of age with a 10 year interval between 1st and 2nd dose.

The vaccination schedule utilized by the Grandes Endemies mobile teams, includes older children since these teams visit the population relatively infrequently.

10.2.3 Vaccination Activity

The following table shows the number of EPI vaccinations given through the MCH system during the period 1980 - 1982 by age group, and illustrates the continued increase in vaccination activities both in Bangui and in the rest of the country.

TABLE 13

EPI VACCINATIONS BY DOSE AND AGE, GIVEN BY MCH CENTERS,  
CAR 1980 - 1982

Vaccine, Age	BANGUI			Rest of country			Total vaccinations		
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
<u>3rd DPT,</u>									
<u>Polio</u>									
under 1 yr.	9,005	6,781	11,232	4,480	5,838	4,696	13,485	12,619	15,928
1 yr. plus	9,269	471	533	2,340	6,019	N/A	11,605	6,493	—
<hr/>									
<u>Measles</u>									
under 1 yr	8,578	6,994	11,607	4,234	10,076	6,562	12,752	17,070	18,169
1 yr. plus	840	1,220	1,569	6,689	14,724	N/A	7,557	15,944	—
<hr/>									
<u>BCG</u>									
under 1 yr.	12,334	13,392	16,694	5,950	15,255	11,286	18,284	28,647	27,980
1 yr. plus	392	563	602	3,573	6,639	N/A	2,965	7,202	—
<hr/>									
<u>Tetanus toxoid</u>									
1st dose	9,788	10,069	9,749	15,169	13,900	15,064	19,537	25,234	28,351
2nd dose	5,191	5,079	7,926	4,249	8,811	9,763	9,440	13,890	17,689

The above vaccination figures represent a minimum of the number of vaccinations actually being performed in CAR. The Grandes Endemies Mobile Teams continue to vaccinate on a biannual basis in each of the 5 health regions, however, their statistics are not reported by age of vaccinee. It is difficult to compare the results achieved to date with the vaccination goals established in the Plan of Operations 1981-1983 because the total number of vaccinations performed represent a mixture of two target age groups which differ considerably. Overall, there exists a need to integrate the reporting of all vaccinations given in CAR into one uniform reporting system.

The vaccination figures can be used to estimate the percentage of children and of pregnant women throughout the country who have received at least one vaccination from the MCH services. In 1982, there were an estimated 112,000 children under 1 year old, as calculated in Table 11. That year, 27,980 of them were vaccinated with BCG, or about 25%. For pregnant women the number, estimated differently would have been 103,000, of whom 28,351 or 28% received their first dose of tetanus toxoid. Thus, at least one quarter of the entire target populations could be reached for one or more vaccinations.

While the numbers of vaccinations achieved, and the size of the national population reached by the MCH fixed centers are impressive, the data indicate some areas for improvement of vaccination services. For example, there are considerably less children receiving their third DTP-Polio vaccinations than their first. The number decreased from 26,478 first vaccinations to 15,928 third vaccinations, a drop of 40%. Similarly for pregnant women, there was a decrease from 28,351 first doses of tetanus toxoid to 17,689 second doses, a drop of 38%. These figures suggest that further efforts are needed to insure that people complete their vaccination series, in order to obtain maximal protection against disease.

#### 10.2.4 Coverage Levels Attained

A vaccination coverage assessment was performed in Bangui in December of 1982. The coverage levels found in the children aged 12 to 24 months who were sampled are, in the opinion of the team, impressive when compared to those attained in other African capitals. Moreover, the coverage found by survey corresponds fairly closely to the coverage previously estimated by comparing the number of doses given by MCH Centers in Bangui to the size of the target population.

TABLE 14

#### VACCINATION COVERAGE ASSESSMENT

##### BANGUI, DECEMBER 1982

	<u>Number</u>	<u>%</u>
Total children sampled	212	100
Children with vaccination cards		
vaccinated with BCG	165	77,8
verified by card	139	65,5
verified by scar	180	84,9
Vaccinated - 3rd dose DPT	121	57
Vaccinated - 3rd dose Polio	120	56,6
Vaccinated against Measles	146	68,8
Completely vaccinated	118	55,6

#### 10.2.5 Cold Chain and Distribution System

A cold chain has been established which reaches from the central level in Bangui, to 9 intermediate level warehouses which in turn supply vaccines to health facilities at the peripheral level. The efficacy of the cold chain is variable with the majority of problems occurring at the intermediate and peripheral levels.

The EPI cold store, located at the Direction of Preventive Medicine and Grandes Endemies in Bangui, contains 3 large chest type refrigerators and 3 large chest type freezers. Temperatures are monitored daily and a well-kept inventory of stock is maintained. Nevertheless, even in Bangui, electrical outages occur frequently and portions of the vaccine stocks are sometimes moved to other locations having a guaranteed electrical supply. A back-up generator has recently been purchased for EPI and will be installed shortly.

UNICEF has agreed to provide two cold rooms for EPI and these have been ordered. The bulk of the vaccines and cold chain equipment used in CAR have been supplied by UNICEF. The present accord between UNICEF and CAR will expire in December of 1983 and a new agreement will be negotiated in several months. Vaccines are ordered, received, stocked, and distributed outside of the normal national pharmacy channels.

The Cold Chain at the intermediate and peripheral levels is extremely variable and is hampered by problems of unreliable electricity, shortages of kerosene and refrigerators which function poorly due to improper maintenance. The need for a properly trained cold chain equipment repairman, based in Bangui, is apparent and dire.

A recent survey made of approximately two-thirds of the country's cold chain indicated that of the 75 refrigerators currently in EPI, at least 14 (19%), were not in working order. Of the 18 freezers in country, 2 (11%), were out of order. These breakdowns range in cause from minor to major problems.

Over the last two years, a solar powered refrigerator has been field tested at the agricultural college in rural M'baiki, CAR. The unit continues to function effectively with minimal maintenance. Based on this experience, the MCH project has recently ordered two solar powered refrigeration units to be placed in two MCH Centers, one in Birao, the other in Obo, both of which are remote rural areas inaccessible by road for part of the year. Vaccine is normally distributed to these two areas by air. Delivery of kerosene to these areas is more problematic. Even when the roads are passable, the trip from Bangui to Birao takes three days.

A distribution system for vaccines and other supplies has been established and attempts have been made to furnish these supplies at regular fixed intervals. However, the system is often plagued by shortages of gasoline, vehicles, weather and the poor condition of the country's roads, of which only 425 of a total 20,880 kilometers are paved.

#### 10.2.6 Training of Personnel and Supervision

The Director of Preventive Medicine and the Grandes Endemies, who also serves as Director of the EPI, participated in the WHO-EPI Senior Level Management and Planning Course held in Tunisia in September 1982.

He, in turn, was responsible for arranging and directing the first national level EPI course which was given in Bangui in November-December 1982. This two-week course was attended by 41 health personnel from all of the country's 16 prefectures. Attendees participated in the coverage assessment of Bangui and performed an epidemiologic study of measles in children 0 to 5 years.

The Superior Technician who manages the Central Level Cold Store in Bangui received two weeks of EPI training at the OCEAC Training Center in Yaounde, Cameroon in November 1982.

There exists a recognized need for additional training of health personnel at the health region level. This need was stressed repeatedly in the Team's contacts with Senior Ministry officials.

Supervisory visits by central level personnel are normally performed in conjunction with the distribution of vaccines and supplies to the intermediate level. Visits by intermediate level personnel to the peripheral level are made in a like fashion. Supervisory visits, like distribution efforts, are oftentimes hampered by lack of fuel, lack of vehicles or poor weather. There is an acknowledged need for more supervisory visits on all levels.

A detailed supervisory check list has been devised and is used by central level personnel during working visits to the field.

#### 10.2.7 National EPI Plan

A second national EPI Plan, this covering immunization activities to be carried out in CAR between 1983 and 1989 was drafted by EPI officials working in collaboration with a WHO-AFRO consultant in December 1982. The following coverage objectives for the 7-year period were established. Total national coverage is anticipated by 1989.

TABLE 15  
COVERAGE GOALS, CAR 1983-1989

<u>Year</u>	<u>Increment of Coverage</u>	<u>Cumulative</u>
At time of Plan	-	25%
1983	plus 10%	35%
1984	plus 15%	50%
1985	plus 15%	65%
1986	plus 10%	75%
1987	plus 10%	85%
1988	plus 10%	95%
1989	plus 5%	100%

In addition to establishing coverage goals, outlining the progressive integration of EPI activities into other national health facilities and the yearly growth in the target population, the Plan outlines in great detail the specific costs necessary for all EPI activities over the 7-year period. Tables summarizing costs by major category and costs of vaccines needed appears as Annexes 12 and 13.

### 10.3 Diarrheal Disease Program

Considerable interest in diarrheal disease control was expressed to the Assessment Team by both the Minister of Health and other senior health officials. However, no formal programs or strategies currently exist for diarrheal disease control in CAR. These diseases are managed by health personnel in both curative and MCH centers, on a case by case basis. UNICEF has recently provided limited quantities of oral rehydration salts (ORS) to the MCH project and these have been well received, and used in some centers. However, there has been no general training of MCH or other health personnel in the use of oral rehydration.

The Director of Preventive Medicine and the Grandes Endemies who also serves as director of the EPI, is scheduled to participate in the WHO Senior Level Diarrheal Disease Control (CDD) Course in Kinshasa in June 1983. He expects to begin developing a CDD strategy for CAR following the course.

A Diarrheal Disease Committee has been formed made up of members from the Pasteur Institute and the Faculty of Medicine. There is no member from either the MOH Directorate of Preventive Medicine and Grandes Endemies or the Directorate of Maternal Child Health. The primary activity to date is the undertaking by the Pasteur Institute of several etiologic studies of childhood diarrhea which will be supported by WHO. Other areas of future interest of the Committee will include a study of the use of traditional herbal treatment of diarrhea and the use of oral rehydration.

### 10.4 Malaria Control Program

In 1981, a malaria control strategy was proposed which included presumptive treatment of cases, selective chemoprophylaxis including school children, plus anti-vector methods. However, this has not been adopted, and the Director of Preventive Medicine and the Grandes Endemies states that considerable modification would be needed in view of recent concepts. Otherwise, no formal programs or control strategies currently exist for malaria in CAR. Some chloroquine is available through the MOH curative and MCH services. The drug is also widely available commercially, including in village markets. The use of the drug (and/or injected Quinimax) is on ad hoc basis. Several MCH personnel interviewed stated that they prescribed chloroquine prophylaxis for pregnant women, but there is no general policy on the matter.

### 11.0 Needs and Feasibility of CCCD Activities in CAR

Since the involvement of the MCH project would be basic to any proposals for control of the CCCD target diseases in CAR, the prospects for the MCH project itself over the 4 year period of a possible CCCD project must first be considered.

### 11.1 Prospects for Maternal and Child Health Project

As previously described the MCH project has made a vigorous beginning and is expanding on schedule, with funding assured for functioning and modest expansion through 1985. In 1982 MCH centers contacted over one third of all the pregnant women and children under 1 year old in the country. At least one quarter of the nation's pregnant women, and its children under one year received at least one vaccination at an MCH center.

MCH would appear to have good potential for continuing to develop and extend. Its activities correspond to MOH health priorities and also fit the priorities of WHO, UNICEF, UNDP and UNFPA, which have various support funds available. The fact that family planning is to be an explicit part of MCH services opens further possibilities for support from international and bilateral donors.

Sufficient health personnel are available for the MCH services. However, they need to be trained for the specific MCH activities. Limited training money is available for education in routine MCH functions. More specialized training in EPI and particularly diarrheal diseases and malaria control activities will require other sources of support.

For the development of new MCH centers in existing health facilities, considerable funds are necessary for repair of buildings, plus furnishing and equipping centers even with basic items. The sources for these funds have not yet been identified.

At present the direction and management of the MCH service are reasonably good. The director of the Project is an experienced expatriate physician made available by WHO. However, to assure the continued smooth operation of the MCH activities after the WHO consultant leaves, there is need now for adequate training and experience of a national counterpart, especially in the day to day management of the project, supervision in the field, training personnel, solving operational problems, planning, evaluating, preparing reports, and other basic program elements.

Given the importance placed on MCH by the Government and the support available from the UN agencies, as well as the encouraging acceptance by the public of MCH services, there is good reason to expect continued progress of the MCH, as long as the question of training and direct operational experience of a national project director can be addressed.

CCCD support could stimulate diarrheal disease and malaria control activities in the sizeable population already reached by MCH. CCCD support would also help EPI vaccination activities reach a larger proportion of the populations served by MCH. The integration of these various activities should permit the MCH to offer a wider range of services to the public and hopefully increase the credibility and the perceived value of all the MCH services. Thus CCCD support should strengthen MCH generally.

## 11.2 Expanded Program on Immunization

Despite limited means, the EPI has made a good start, and has many reasons to continue to improve. There is dynamic direction. There is a recognition of the need to systematically strengthen management systems, cold chain maintenance and supervision. Within the means available these problems are being addressed in a rational way. The preventive nature of the EPI activities corresponds with the expressed policy of the MOH for basic family health services. Reasonable external support has been available for vaccines, supplies, vaccination cards, limited amounts of cold chain equipment, training. The EPI benefits greatly from integration into MCH center activities, which permit it to expand with the MCH system. EPI and MCH are mutually reinforcing. Reasonable record systems exist for vaccination activities done by MCH centers.

There are several important needs which CCCD support could address to permit better functioning of the current EPI program and facilitate an extension to new areas.

- cold chain equipment, and maintenance, will be necessary for opening new vaccination centers, both in developed MCH centers and ones being developed
- refrigeration less dependent on kerosene (which is bulky and difficult to supply at the peripheral level) would greatly facilitate vaccination activities in remote, but populated areas; solar powered refrigerators may be extremely valuable in such situations
- greater mobility is necessary to improve the distribution of vaccines, and to increase the supervision of cold chain and vaccination activities
- continued training, including on-the-job training, will be necessary for EPI related personnel (all of whom have other functions) at the intermediate and peripheral levels
- if an outreach strategy is adopted for vaccination (and other MCH services) in areas around fixed centers, means of mobility - such as molyettes will be necessary
- periodic technical consultation by an experienced technical officer would be very valuable for training of national counterparts, operational problem solving, strengthening of management and reporting procedures, etc.
- periodic consultation by a field epidemiologist could help 1) develop a sentinel surveillance system to evaluate impact of vaccination activities, 2) conduct field surveys of target disease impact 3) undertake studies of public participation, how to improve the rate of completion of vaccination series, etc.

The EPI personnel are receptive to the proposal for technical consultation as well as material support for training and program activities. Their plans for extension are logistically and operationally reasonable, as long as the issues of equipment and mobility to facilitate supervision can be addressed. CCCD support could realistically strengthen management and operations while at the same time permit an extension of activities to a wider segment of the population.

### 11.3 Diarrheal Disease

Given the recognized importance of diarrheal disease, and the expressed desire of the MOH to strengthen anti diarrhea activities, CCCD could have considerable impact on diarrheal disease control. The MCH infrastructure in place and in the process of expansion is an obvious way of reaching over one third of the Central African population with oral rehydration salts and education concerning control of diarrheal diseases. The limited number of ORS packets already available have been enthusiastically received.

The elements needed to effectively combat diarrheal disease and reduce mortality in the population accessible to the MCH are:

- development of a strategy and policy for oral rehydration and relevant health education
- training of MCH center personnel and supervisory personnel
- provision of an adequate supply of ORS packets
- strengthening the system for distribution of ORS to MCH centers (possibly in conjunction with distribution of vaccines)
- development of methods of monitoring ORT activities, public participation and impact on diarrheal disease mortality

CCCD could help in all these areas through technical and operational consultation, technical and financial support for training of personnel, supply of ORS, increased mobility for distribution of materials and supervision. If outreach capability is added to MCH fixed centers, diarrheal disease control is an obvious service for outreach.

Once experience is gained with diarrheal disease control through the MCH system, strategies for broader application of oral rehydration and health education could be developed.

### 11.4 Malaria control

At present no national plan for malaria control is anticipated. However, within the confines of the MCH system, malaria control efforts could have a significant impact. With over one-third of all pregnant women currently reachable by MCH, chloroquine prophylaxis could easily be introduced into this sizeable population. Over one-third of the country's young children are also reachable by the MCH. Malaria treatment, with assured supplies of

chloroquine, and personnel trained in this treatment modality, could add a valuable service to those already available within MCH.

The technical and material requirements for effectively implementing malaria control within MCH are analogous to those for diarrheal disease control, as are the contributions CCCD support could make to such an effort.

#### 11.5 Appropriateness of CCCD

MCH is already established and functioning. So is the EPI, which to a large extent is integrated into MCH services. CCCD technical and financial support could strengthen and extend both MCH and EPI as well as promote diarrheal disease and malaria control through the MCH system. The same personnel would be involved in the delivery of all these basic services. At the intermediate level, coordination and supervision of all these services would be done by the same few people. Training of personnel would benefit all the services, and increasing public participation in one service should indirectly increase participation in the others. The integrated nature of these various services makes them mutually reinforcing. CCCD support would appear to be extremely appropriate.

## 12.0 Proposal for CCCD in CAK, and Budget

In this section, we outline a proposal as to how CAR might take advantage of activities and commodities available through the CCCD Project to strengthen and extend its efforts in the control of childhood communicable diseases and the promotion of family health.

It should be emphasized that CCCD involvement is intended to help develop national capability to plan, manage and ultimately support program activities in basic health care. Therefore, the four-year CCCD Project proposes increasing over time the financial participation by the government in support of these activities. The Ministry of Health will have to consider how it will identify resources to finance an increasing proportion of the operating costs of the program.

### 12.1 Overview

The previous sections of this assessment document describe the Central African Republic's health infrastructure and the relative importance of the CCCD target diseases (EPI diseases, malaria and diarrheal disease) in CAR. That these conditions are accorded importance by the MOH is evidenced by an EPI Program since 1980, the progressive emergence of a strengthened Maternal/Child Health System and the government's interest in developing a cohesive and realistic strategy for diarrheal disease control. Moreover, the Ministry's desire to integrate the elements proposed by CCCD into existing MOH activities was emphasized during the course of the Team's meetings. In brief, CCCD goals are consistent with those of the Ministry of Health.

Because the Ministry is just beginning to implement an integrated health care delivery system, the Assessment Team feels that CCCD would be able to offer useful and complementary support through both its regional and bilateral components.

The Assessment Team proposes a package of technical and financial assistance to existing Central African health care services, complimentary to currently available resources and support, in order to strengthen and expand the ability of these services to reduce childhood morbidity and mortality. The proposal is consistent with the government's priorities and strategies and is aimed at reinforcing the abilities of the Expanded Program on Immunization and the Maternal and Child Health Service to further reduce morbidity and mortality due to the six EPI target diseases, and to reduce the excessive mortality caused by diarrheal disease and malaria in children.

Since the three disease control activities which the CCCD Project supports would be integrated into the MCH system, it is expected that the availability of these additional activities would increase the general attractiveness and usefulness of MCH services to the public, and consequently increase public participation in all MCH services.

## 12.2 Basic Assumption

The basic strategy of the Ministry for MCH and EPI over the period for proposed CCCD support is the activation and strengthening of MCH and EPI services at fixed health facilities, with no current proposals for outreach activities from the fixed health facilities. This policy may be reconsidered after another year or two of extension and consolidation.

The projected increases in active MCH centers in 1984 and 1985, for which funds are now assured, approximate a 20% annual increment of newly functioning centers (developed in existing health facilities) over the number which exist in 1983. For centers with EPI activities, almost the same annual increase of 20% over the number in 1983 is projected, if resources can be found for cold chain equipment and for the increased logistical needs for delivery of vaccine and for supervision.

A 20% increase in the number of MOH centers over the existing number does not, however, imply a 20% increase in population currently served, since the new areas have lower population densities than those currently served. However, it is expected that the improved functioning in existing centers in addition to the new populations served by new centers, as well as natural population growth, will result in increased public participation at existing centers. Thus the assessment assumed a steady 20% annual increase in population served by the various MCH and EPI activities compared with the 1982 baseline period.

Since in 1982 approximately 35% of the estimated number of pregnant women and of children 0-11 months old in the entire country participated in at least one contact with the MCH system, a 20% increase each year over 1982 corresponds to an additional 7% of the respective segments of the total population to be included in MCH and EPI activities, each year during the projected period of CCCD support.

## 12.3 Proposed Activities

The proposed CCCD assistance would have two effects, to strengthen the management and functioning efficiency of existing EPI and MCH program activities, and to facilitate the extension of these services to new areas of the country.

CCCD assistance from both regional and bilateral budgets would strengthen existing activities by providing:

- technical consultation on a regular basis by a regionally based technical officer based in a bilateral CCCD project in another country within Central Africa (20% of his time devoted to activities in CAR) and a regionally based medical epidemiologist (periodic consultation visits)
- technical and financial assistance for training health workers on management and conduct of disease control activities
- training and tool kits for repair and maintenance of cold chain equipment

- vehicles for improved distribution of supplies and for supervision in the field
- supplies of oral rehydration salts for diarrheal disease control
- supplies of chloroquine tablets for malaria control
- miscellaneous supplies and equipment
- mobylettes for outreach activities, if such a strategy is adopted

#### 12.4 CCCD Coordinator

In order to facilitate the frequent technical communication between the Ministry of Public Health officials and the bilaterally based CCCD technical officer and the regionally based epidemiologist on the one hand, and between the MOH and the provider of CCCD bilateral assistance on the other, the Assessment Team recommends that if an accord is reached on a CCCD project, the Minister designate a MOH official as CCCD coordinator. Ideally this coordinator would be someone with program responsibility in at least one area of CCCD supported activities. The coordinator would serve as a regular point of contact between the various MOH officials involved in CCCD related activities and the CCCD technical personnel providing periodic consultation to CAR.

#### 12.5 Proposed Bilateral Budget

In order to accomplish the activities described in Section 12.3 above, the following bilateral budget is proposed in Table 16. Total CCCD Program costs in CAR for the project period 1984 through 1987 are estimated at US \$1,329,589, excluding the salaries, per diem and fuel costs. The breakdown by funding source for the total budget is shown in Table 17. If a bilateral agreement is reached between the Government of CAR and a CCCD bilateral donor, the Government of CAR will assume all national salaries, per diem and fuel costs associated with project activities. The bilateral donor contribution over the four year period is estimated to be \$523,519. It is anticipated that UNICEF will continue to furnish the necessary vaccines, vaccination equipment and some oral rehydration salts and chloroquine. Technical assistance will be paid from regional USAID CCCD funds. In-country operating costs as outlined below will be paid from bilateral funds.

The project budget is structured in such a way to permit CAR to progressively assume increasing proportions of operating costs over the last two years of the four year period, thus encouraging a greater self-reliance while at the same time assuring a phase-down of external financial assistance. Operating costs during the first two years, exclusive of those national personnel and fuel costs mentioned above, and of the estimated UNICEF contributions, will be fully supported by the bilateral donor. In the third year, CAR will assume 33% of operating costs; and in the fourth year 67% of operating costs, again exclusive of UNICEF contributions.

In view of this gradual assumption of project costs, for the latter two years, the Government of CAR has been urged by the Assessment Team to carefully evaluate its resources, both internal and external, to identify as early as possible the additional resources required during years three and four.

TABLE 16  
PROPOSED CCCD BUDGET\*  
CAR 1984-1987

<u>Item</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>Total</u>
ORS Packets	\$12,700	\$27,720	\$45,240	\$64,260	\$149,920
Chloroquine	24,570	38,778	57,400	75,937	196,685
Refrigerators					
Solar	5,000(1)	5,000(1)			10,000
Kerosene/Battery/ DC Combo Type	13,750(25)	11,000(20)	9,000(15)	9,750(15)	43,550
Ice Chests	1,700(20)	980(10)	565(5)	650(5)	3,895
Vaccine Carriers	1,200(50)	780(30)	420(15)	450(15)	2,850
Refrigerator Repair Tool Kits	2,400(3)	2,760(3)	-	-	5,160
Vehicles and Parts					
4 wheel drive vehicles	72,000(4)	60,000(3)	-	-	132,000
Motorbikes and Parts	-	-	13,220(10)	15,250(10)	28,470
Equipment	4,000	4,000	-	-	8,000
Supplies	2,000	2,300	2,645	2,910	9,855
Shipping (in-country)	2,000	2,286	2,571	2,857	9,714
Training	12,100	13,915	8,000	9,200	43,215
Contingency(10%)	15,342	16,951	13,906	18,126	64,325
<hr/>					
Bilateral Donor** Contribution	168,762	186,470	102,488	65,799	523,519
CAR Contribution**	-0-	-0-	50,479	133,591	184,070

\* Bilateral Donor and CAR Contributions Only. Total CCCD budget is shown in Table 17.

\*\* Personnel Excluded

TABLE 17  
TOTAL CCCD BUDGET  
CAR 1984-87: BY FUNDING SOURCE

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>Total</u>
Bilateral Donor Contribution	168,762	186,470	102,488	65,799	523,519
CAR Contribution	- 0 -	- 0 -	50,479	133,591	184,070
UNICEF/EPI <sup>+</sup>	102,000	102,000	105,000	83,000	392,000
UNICEF/ORS	50,000	55,000	60,000	65,000	230,000
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	320,762	343,470	317,967	347,390	1,329,589

<sup>+</sup> Estimated Assistance to EPI includes vaccines, cold chain and sterilization equipment, transport, etc. Source: Joint CAR-WHO EPI Plan 1983-1989.

12.5.1 EPI Needs

Vaccines and other vaccination related supplies and equipment have been intentionally excluded from the budget presented in Table 16 based on tentative assurances given to the Team by the UNICEF Resident Representative that his agency will, in all likelihood, be able to continue furnishing vaccines and related supplies in quantities that are sufficient and correspond to needs as projected in the EPI Plan 1983-1989 drafted in December 1982. Anticipated cost of the UNICEF contribution to EPI over the 4 year CCCD period is shown in Table 17. Summaries of costs by major EPI category and specific costs of vaccines appear as Annexes 12 and 13. The present UNICEF EPI agreement with CAR expires in December 1983, and a new agreement will be negotiated in several months.

12.5.2 ORS Packets and Chloroquine

Two of the largest budget items in terms of cost, ORS packets and chloroquine tablets, represent only a portion of the estimated national need.

12.5.2.1 ORS packets

In determining the actual amounts of ORS to be furnished from bilateral sources under CCCD, the Team made the assumption that the current annual quantity of ORS packets furnished by UNICEF for MCH use, 500,000 packets would remain constant during the four years. Thus CCCD proposed to furnish the balance of the estimated annual needs as indicated in the following table:

TABLE 18

Estimated ORS Packets Needed

CAR: 1984-1987

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Total Number of Packets Needed	627,000	752,000	877,000	1,002,000
Minus UNICEF Contribution	500,000	500,000	500,000	500,000
Balance to be provided by CCCD Bilateral Donor	127,000	252,000	377,000	502,000

### 12.5.2.2 Chloroquine

Chloroquine needs over the four year period were calculated in a different manner. It was impossible to determine the proportion of current annual quantities of chloroquine that are actually provided by the National Pharmacy exclusively for MCH use. Thus Chloroquine tablet needs were estimated in the following manner:

Table 19  
Estimated Chloroquine Needs  
CAR: 1984-1987

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Estimated Annual Number Tablets Required	2,340,000	2,810,000	3,280,000	3,750,000
% of estimated target group to participate in malaria treatment	50	60	70	75
Number tablets required	1,170,000	1,686,000	2,296,000	2,812,500

Detailed information regarding estimation of target populations, cost calculations, and additional delineation of components included in line items of the above estimated budget (Table 16) are on file in the Ministry of Health, Directorate of Preventive Medicine, the American Embassy, Bangui, and in the International Health Program Office at CDC, Atlanta.

### 12.6 Recurrent Costs

In order to offset recurrent costs for the purchase of malaria drugs and ORS, both of which are considerable expenditures in the above line item budget, the Government might wish to consider the establishment of a nominal fee-for-service system in the near future.

### 12.7 Proposed CCCD Regional Support

The CAR Ministry of Health understands that the CCCD Program includes both regional and bilateral assistance elements. Whether or not bilateral assistance is made available to CAR, the government of CAR will be able to participate in the following CCCD regional activities:

<u>Category</u>	<u>Activity</u>	<u>Responsibility</u>
A. Training	Sponsor CAR participants for inter-regional a) CCCD Management Course b) Mid-level Management/ Training of Trainers Courses	Regional Liaison Officer Brazzaville, Congo

- c) Cold-chain maintenance and repair course
- B. Training Development/ Adaptation
- Assist in development of country-specific integrated materials for EPI, CDD, and malaria training
- CDC-designated training Consultant
- Assist in development of training materials for inclusion into medical, nursing and paramedical school curricula.
- Medical Epidemiologist, Kinshasa, Zaire
- Evaluate the effect of training materials and courses
- Both of the above
- C. Health Education/ Promotion
- Develop techniques for increasing the impact of village health workers and community-development workers engaged in health education activities
- CDC-designated training consultant
- Develop materials and methods to assist health services at the household or village level vis-a-vis CCCD target diseases
- D. Health Information Systems
- Develop survey techniques for establishing disease and utilization baseline data and follow-up evaluative data by which to measure impact
- Medical Epidemiologist Kinshasa
- Work with the Direction of Studies and Planning to improve the current HIS.

E. Operations  
Research

Support, as appropriate,  
and as authorized by review  
committee

Central African  
Researchers with  
guidance from Medical  
Epidemiologist based  
in Zaire

Possible topics:

- . Drug sensitivity to  
chloroquine of P. falciparum  
in program areas prior to  
start of presumptive treatment  
and annually thereafter.
- . Likelihood that fever cases  
receiving presumptive  
treatment actually represent  
malaria
- . Community acceptance of  
and participation in  
ORS therapy
- . Impact on mortality  
of children under 5 years  
of ORS and chloroquine  
therapy
- . Community acceptance of ORS

CCCD support of operational research activities requires that activities be directed at solving program problems. Funding and material support must be approved by CCCD, based on recommendations of a research review committee after study of research protocols submitted by prospective Central African investigators.

F. Technical Consultation

In addition to the activities outlined above, the regional component of CCCD will provide funds to support the periodic visits to CAR of a Technical Officer based in another CCCD country. This Technical Officer will provide managerial, operational, and logistical guidance, and will collaborate closely with those CAR Ministry of Health officials responsible for the implementation of CCCD activities. The Technical Officer will devote 20% of his total annual work time to CAR consultation.

A Medical Epidemiologist based in Kinshasa, Zaire, will also be available to provide periodic guidance to CAR in those activities relating to health information systems, applied research and program evaluation.

Other consultants in training, applied research (including epidemiologic studies), health education and evaluation activities will be made available to CAR, as necessary, supported from regional funds.

13.0 ANNEXES

1. Administrative Map of the Central African Republic
2. Evolution of the CAR's Resident Population, 1975-81
3. Organigram of the Ministry of Public Health
4. CAR Health Regions
5. Health Facilities in CAR
6. Medical and Paramedical Training in CAR. Number of Graduates since 1970
7. Major Ongoing Health Projects 1983-1985
8. CAR National Budget Summary 1981-1982
9. External Assistance to CAR Health Sector
10. Maternal and Child Health Centers
11. Health Facilities Offering Immunization Services
12. EPI Needs - CAR 1983-1989
13. Estimated EPI Vaccine Costs
14. Persons Contacted by the Assessment Team
15. Documents Reviewed by the Assessment Team

RÉPUBLIQUE CENTRAFRICAINE  
ORGANISATION ADMINISTRATIVE

0 50 100 150 200 250 Km.



Capitale et limite d'Etat	BANGUI	⊙	———
Chef lieu et limite de Préfecture	SIBUT	●	———
Chef-lieu de Préfecture Economique	NOLA	●	———
Chef-lieu et limite de Sous-Préfecture	Rafai	●	———
Posta de Contrôle Administratif (P.C.A.)	Gamba	●	———

Administrative Map of the Central African Republic

LP

## EVOLUTION DE LA POPULATION RESIDENTE DE LA REPUBLIQUE

CENTRAFRICAINE

PERIODE : 1975-1981

PREFECTURE & SOUS-PREFECTURES	POPULATION AU 31 - 12 - 1975		POPULATION AU 31 - 12 - 1981		
	ZONE URBAINE	ZONE RURALE	ZONE URBAINE	ZONE RURALE	TOTAL
1 - VAKAGA	4.884	17.050	6.286	18.738	25.024
- BIRAO	3.245	16.631	4.176	18.277	22.453
- OUADDA-DJALLE	1.639	419	2.109	460	2.569
2 - BAKINGUI-BANGORANI	6.732	18.067	8.664	19.856	28.520
- NDELE	5.920	13.936	7.619	15.316	22.935
- BAKINGUI	812	4.131	1.045	4.540	5.585
3 - GRIBINGUI-ECONOM.	14.783	59.306	19.029	65.177	84.202
- KAGA-BANDORO	12.200	48.184	15.701	52.954	68.655
- MERES	2.583	11.122	3.324	12.223	15.547
4 - OUHAM	50.249	164.558	64.670	180.849	245.519
- BATANGAO	12.852	38.776	16.541	42.615	59.156
- MARKOUNDA	1.151	22.558	1.455	24.901	26.357
- BOSSANGOA	27.347	75.114	35.196	82.550	117.746
- BOUCA	8.919	28.010	11.479	30.783	42.262
5 - OUHAM-FENDE	25.874	167.265	33.300	183.824	217.124
- BOZOUN	13.410	23.744	17.250	260.895	43.345
- BOCARANGA	5.629	80.636	7.245	88.674	95.919
- PAOUA	6.835	62.935	8.797	69.166	77.963
6 - NANA-MALIEBRE	40.586	127.803	52.234	140.455	192.689
- BOUAR	31.688	60.072	40.782	66.019	106.801
- BABOUA	3.993	50.362	5.139	55.348	68.487
- PAORO	4.905	17.369	6.312	19.089	25.401
7 - HAUTE-SANGHA	51.100	143.859	65.766	158.101	223.867
- CARNOT	18.616	64.970	23.959	71.402	95.361
- EBREPRATI	29.653	51.104	38.163	56.163	94.326
- GAMBOUTA	2.831	27.785	3.643	30.536	34.179
8 - SANGHA-ECOLOGIQUE	7.807	49.340	10.048	54.225	64.273
- NOIA	6.817	42.705	8.773	46.933	55.706
- BARBIO	990	6.635	1.274	7.292	8.566
9 - LOBAZE	27.205	97.567	35.013	107.226	142.239
- BODA	8.376	32.602	10.780	38.830	49.610
- M'BAIKI	16.931	57.965	21.855	63.704	85.559
- M'ENGOUNEA	1.848	7.000	2.378	7.693	10.071

10 --	OMBELEA-K'POKO	18.032	86.687	23.207	95.269	113.476
	- BOSSEMEELE	10.242	52.242	13.181	35.434	48.615
	- BOALI	1.410	12.930	1.815	14.210	16.025
	- BIMBO	3.864	28.764	4.973	31.612	36.585
	- DAMARA	2.516	12.751	3.238	14.013	17.251
11 --	KEMO-GRIBINGUI	21.640	40.300	27.851	44.290	72.141
	- DEKOA	7.811	19.125	10.053	21.018	31.071
	- SLEUT	13.829	21.175	17.798	23.271	41.069
12 --	OULAKA	57.014	119.220	73.377	131.023	204.400
	- BAKAIA	2.350	5.024	3.024	5.521	8.541
	- GRIMARI	7.362	21.238	9.475	23.341	32.816
	- KOUANGO	2.559	30.313	3.293	33.314	36.607
	- BANFARI	33.882	42.752	43.606	46.984	90.590
	- IFFY	10.861	19.893	13.978	21.862	35.840
13 --	BASSE-KOTTO	22.699	126.164	29.214	138.654	167.868
	- ALINDAO	12.496	37.390	16.082	41.092	57.174
	- HOBAYE	4.179	43.738	5.378	48.068	53.416
	- KEMBE	5.616	26.917	5.941	29.582	35.523
	- MINGALA	1.408	18.119	1.812	19.913	21.725
14 --	MBOU	38.744	78.560	39.568	86.337	125.905
	- BAKOUMA	2.003	8.715	2.578	9.578	12.156
	- CUANGO	3.801	35.914	39.469	39.469	44.361
	- BANGASSOU	23.658	24.972	27.444	27.444	57.892
	- R. E. I.	1.282	8.959	9.846	9.846	11.436
15 --	HAUT-MBOU	8.875	26.544	11.422	29.172	43.594
	- DJEMA	496	2.827	638	3.107	3.745
	- ZEMIC	3.132	14.203	4.095	15.609	19.704
	- MBOKI	1.273	430	1.638	473	2.111
	- OBO	3.924	9.084	5.050	9.983	15.033
16 --	HAUTE-KOTTO	19.574	23.139	25.192	25.430	50.622
	- OUADDA	2.948	3.311	3.794	3.659	7.433
	- ERIA	15.252	16.199	19.629	17.803	37.432
	- YALINGA	1.374	3.629	1.768	3.988	5.756
	BANGUI	300.723	-	387.030	-	387.030
ENSEMBLE R.C.A.		708.321	1.346.289	911.867	1.491.626	2.393.493
		2.054.610				

NOTES : 1) Les effectifs de population de 1981 sont obtenus par projection des effectifs de 1975 avec les taux d'accroissement annuel suivants : 1,60% pour les zones rurales

4,3% pour les zones urbaines

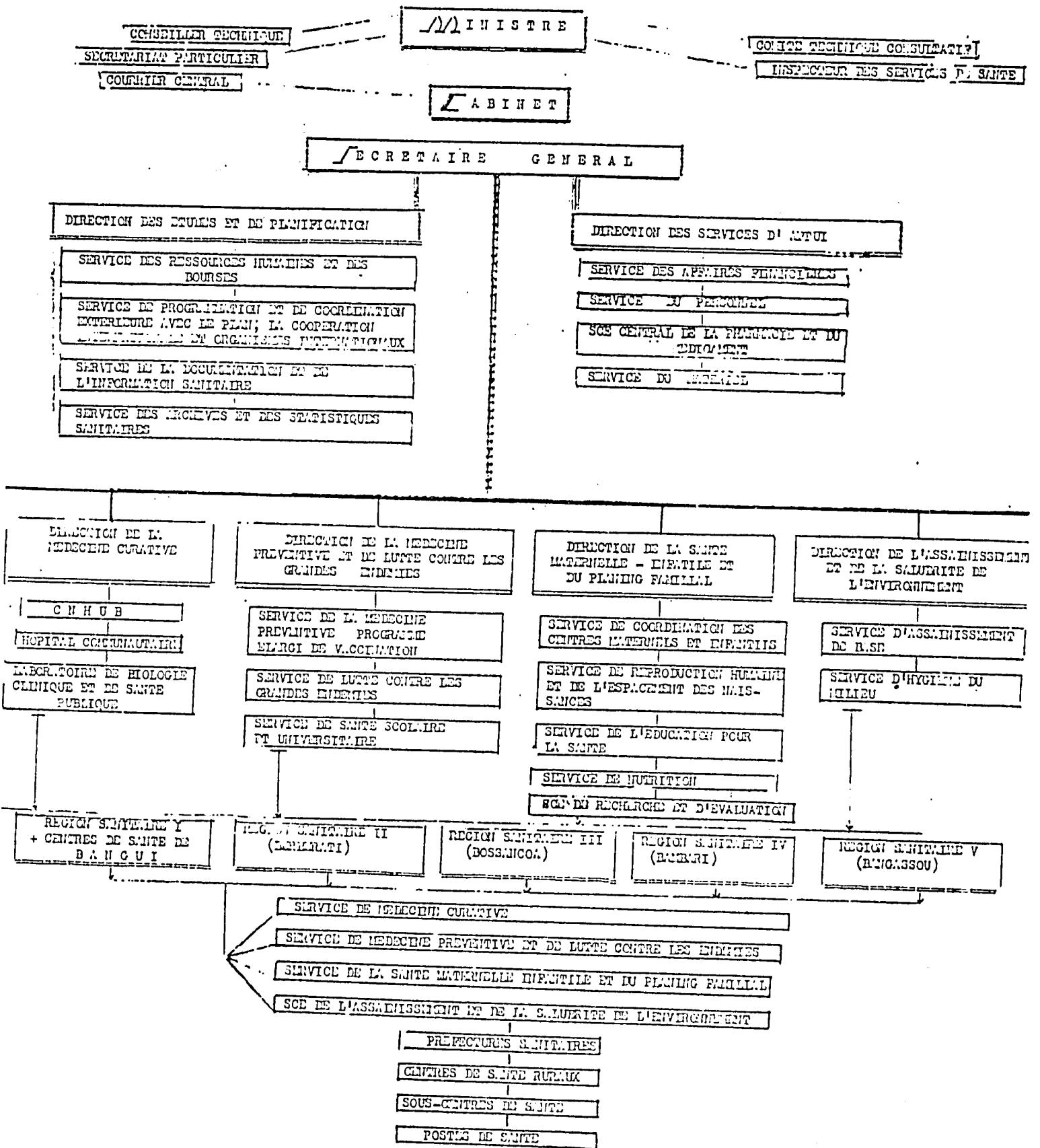
- 2) a/ L'on projette les 2 composantes de l'effectif total de la population, on obtient :  
 - Zone rurale :  $P_r = 1.480.814$   
 - Zone Urbaine :  $P_u = 911.867$   
 - Population :  $= 2.392.690$

b/ La légère différence (2.393.493 - 2.392.690) provient des erreurs d'arrondissement.

- 3) Si l'on applique le taux de 2,5% (accroissement annuel) sur la population totale de 1975, on obtient pour 1981 l'effectif de 2.382.712.

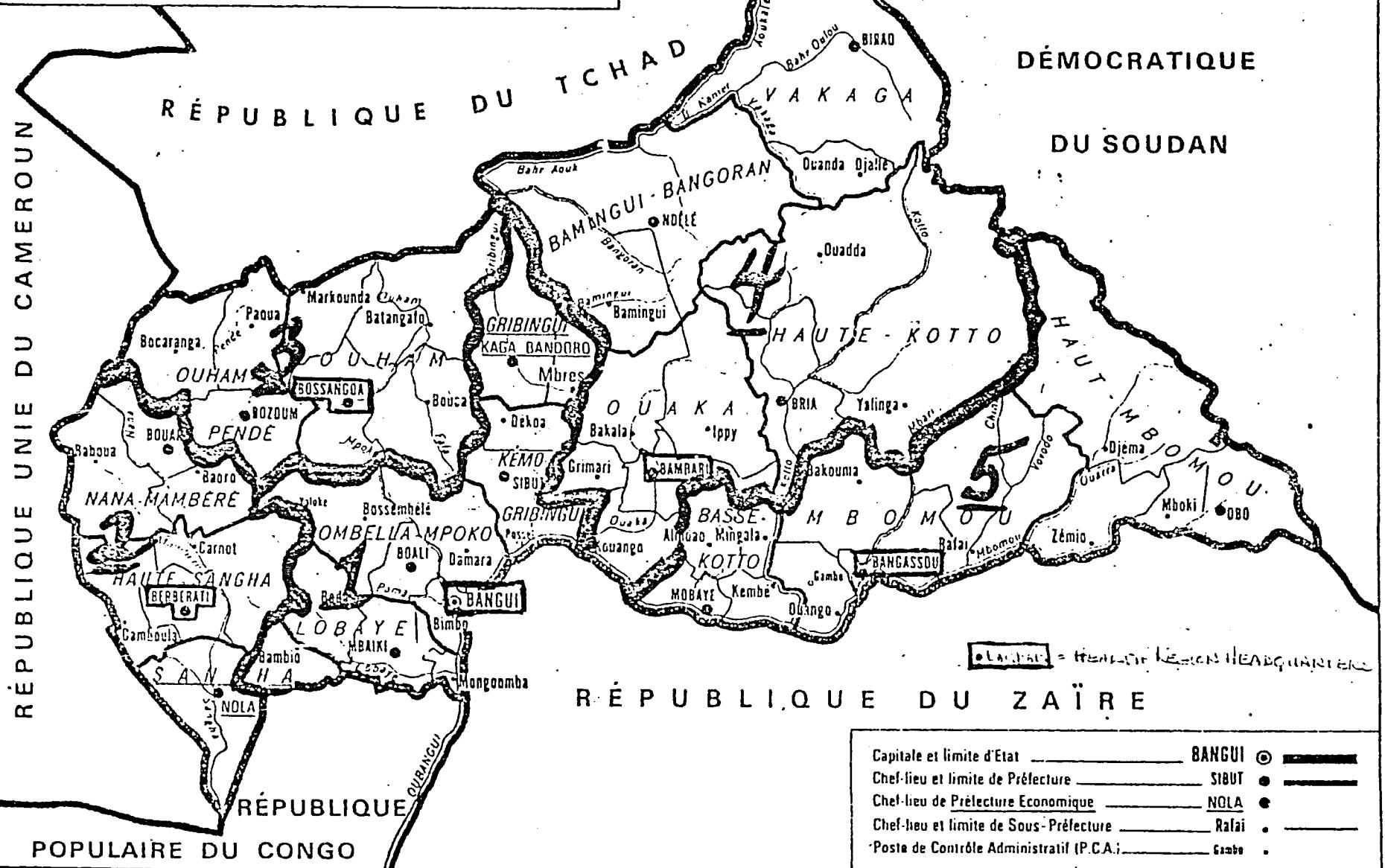
- 4) De tout ce qui précède on peut retenir comme chiffres de population résidente au 31 Décembre 1981 : 2.400.000 habitants.

ORGANIGRAMME DE LA SANTE PUBLIQUE



RÉPUBLIQUE CENTRAFRICAINE  
ORGANISATION ADMINISTRATIVE

Km 50 25 0 50 100 150 200 250 Km.



CAR Health Regions

51

## Health Facilities in CAR

Formations Sanitaires en RCA et leur capacité en  
lits au 31/12/81

FORMATIONS SANITAIRES	Avec lits	Sans lits	Nombre de lits		Nbre de Berceaux
			Medecine Chirurgie Pédiatrie	Mater- nités	
<u>Formations Publiques</u>					
- CNHU de Bangui	1	-	536	47	37
- Hôpitaux Généraux	5	-	543	117	(25)
- Hôpitaux Préfectoraux	10	-	412	133	...
- Centres de Santé	38	13	708	356	103(1)
- Sous-Centres de Santé	-	72	-	-	-
- Postes de Santé	-	201	-	-	-
- Léproseries ou Hypno.	6	-	169	-	-
- Secteurs des Grandes Endémies	1	5	-	-	-
Sous Total.....	60	291	2.368	653	(165)
<u>Formations Privées</u>					
- Hôpitaux	4	-	478	57	...
- Centres de Santé ou Cliniques	21	-	147	32	...
- Sous Centres de Santé et Dispensaires	-	26	-	-	-
Sous Total.....	25	26	625-	89	
<u>TOTAL GENERAL</u>	85	317	2.993	742	(165)

( ) données partielles. Les 25 berceaux sont pour l'Hôp. Général de Bouar uniquement  
 ... renseignements non disponibles

(1) Les 103 berceaux sont disponibles dans les Centres de Santé Urbains de Bangui.

Medical and Paramedical Training in CAR:  
Number of Graduates Since 1970

Formation Médicale et Paramédicale en République Centrafricaine

Nombre de Diplômés depuis 1970

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	T O T A L
Docteur en Médecine													10	10
Techniciens Sup. de Santé										25	11	5	12	53
Infirmiers (ères) D.E.	10	7	15	18	24	27	28	46	44	40	43	40	15	357
Sages-Femmes D.E.	-	-	8	8	9	10	10	26	13	26	22	15	16	163
Assistants (es) Sociaux (ales) d'Etat	-	-	-	6	8	15	11	13	20	18	23	15	15	144
Assistants d'Assainiss. D.E.	-	-	6	5	9	7	7	7	7	11	6	7	8	80
Infirmiers Assistants	-	32	35	24	53	35	70	26	-	21	28	4	20	348
Agents de Développement Communautaire	-	-	-	-	16	17	14	17	13	17	22	15	20	151
Aides Accoucheuses	-	-	-	9	13	19	25	18	20	15	20	-	19	158
Aides de Santé	-	-	-	8	10	22	18	15	17	15	25	-	17	147
Aides d'Hygiène	-	-	-	11	12	13	17	14	13	18	15	-	15	128

## Major Ongoing Health Projects - 1983-1985

LES PRINCIPAUX PROJETS

Millions de F. CFA

Projets	1983	1984	1985	Source
Aide aux soins de Santé Primaires dans les zones rurales et urbaines	300	300	300	Recherche auprès FAC
Aménagement des points d'eau potable en zone rurale	300	300		Recherche auprès Coopération Italienne, Française et US/AID
Aide au Service National d'Hygiène	50	58		Recherche
Appui Assistance Alimentaire	47	47	47	PNUD/PAM Fonds Suedois
Lutte contre le paludisme				Recherche
Couverture ophtalmologique primaire				Recherche
Aide à la santé rurale et aux grandes Endémies	75	75	75	Recherche auprès FAC
Enquête sur mortalité infantile	100	100		Recherche auprès UNICEF CRDI
Service de Santé Maternelle et Infantile	100	120		FNUAP/UNICEF OMS/PNUD/USAID
Complexe Pédiatrique	400	280		FED
Rénovation des hôpitaux généraux et préfectoraux	200	400	400	Recherche pour 5 hôpitaux
Réfection-reconstruction Sous-Centres de Santé de province	50	100	200	Recherche
Construction-Equipement FACSS (1ère tranche)	360	340		BAD/FAD
Création du service des urgences	110			Recherche auprès FAC
Equipement services Urgences		90		"
Réfection des 30 maternités de province	100	50		UNICEF

Budget National 1982 (en milliers de francs)

Nomenclature des dépenses	Crédits 1982	Crédits 1981	Différence		% Augment.
			en +	en -	
Charges de Fonctionnement	32.825.138	29.948.000	2.877.138		+ 10
Charges d'Équipement - Développement Économique et social	5.378.040	4.137.000	1.241.040		+ 30
<u>L. GENERAL des Dépenses du Budget</u>	38.203.178	34.085.000	4.118.178		+ 12

3-3-2- Budget du Ministère de la Santé

Nomenclature des Dépenses	Crédits 1982	Crédits 1981	Différence		% Augment.
			en +	en -	
<u>Charges de Fonctionnement</u>	2.282.120	2.040.240	233.880		+ 11
- Personnel permanent	1.834.900	1.668.600	165.300		+ 10
- Dépenses courantes et diverses	447.220	379.640	67.580		+ 18

3-3-3- Budget Affaires Sociales

Nomenclature des Dépenses	Crédits 1982	Crédits 1981	Différence		% Augment.
			en +	en -	
<u>Charges de Fonctionnement</u>	396.739	270.840	127.899		+ 29
- Personnel Permanent	370.400	248.800	121.600		+ 49
- Dépenses courantes et diverses	28.339	22.040	6.299		+ 29

3-3-4- Charges d'Équipement et de développement économique et social

Nomenclature des Dépenses	Crédits 1982	Crédits 1981	Différence		% Augment.
			en +	en -	
<u>Équipements sociaux et Communautaires</u>	45.000	18.000	27.000		+ 150
- Développement Communautaire	25.000	10.000	15.000		+ 150
- Construction et Équipement FACSS	20.000		20.000		

CAR HEALTH SECTOR  
EXTERNAL ASSISTANCE

I INTERNATIONAL ORGANIZATIONS

	<u>Period</u>	<u>Frs. CFA</u>	<u>\$ US</u>	<u>Other</u>
WHO	1982-83		1,056,360	
FNUAP	1982-83		403,000	
UNDP	1982-83		250,000	
UNICEF	1981-83		5,077,000	

II MULTI-LATERAL ORGANIZATIONS

BAD	1982-83	1,500,000,000		
FED	1981-83	1,365,000,000		

III BILATERAL ENTITIES

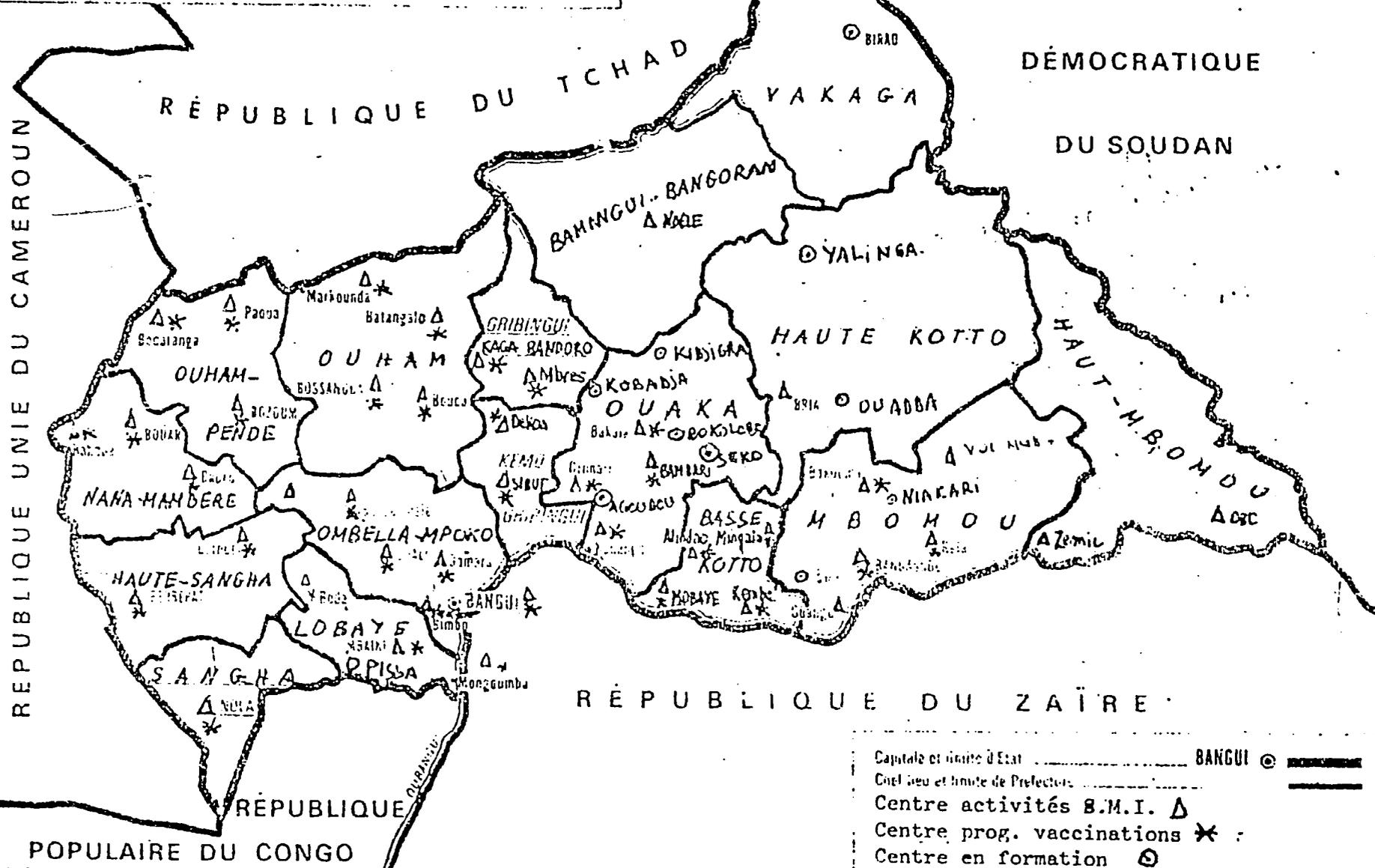
FRANCE	1982-83	492,450,000		
JAPAN	1982	500,000		
SWITZERLAND	1981-82	30,000,000		
GREAT BRITAIN	1982			7,000 pounds
CANADA	1981-83	13,482,792		
INDIA	1982		50,000	
SWEDEN	1982		500,000	

IV NON-GOVERNMENTAL ORGANIZATIONS

CEBEMO-HOLLAND	1982	135,685,000		
EMMAUS SUISSE	1982	52,000,000		
CARITAS-GERMANY	1982	10,000,000		
CCDD	1983	50,000,000		
MISEREOR	1982	2,500,000		

RÉPUBLIQUE CENTRAFRICAINE  
ORGANISATION ADMINISTRATIVE

0 50 100 150 200 250 km



Capitale et limite d'Etat ..... BANGUI ○ **—**  
 Chef lieu et limite de Prefecture ..... **—**  
 Centre activités S.M.I. Δ  
 Centre prog. vaccinations \*  
 Centre en formation ○

Maternal and Child Health Centers

MINISTERE DE LA SANTE PUBLIQUE

\*\*\*\*\*

SECRETARIAT GENERAL

\*\*\*\*\*

DIRECTION DE LA SANTE MATERNELLE  
INFANTILE & PLANIFICATION FAMILIALE

\*\*\*\*\*

SERVICE DE RECHERCHE D'EVALUATION &  
DE STATISTIQUE

\*\*\*\*\*

REPUBLIQUE CENTRAFRICAINE  
UNITE DIGNITE TRAVAIL

\*\*\*

PROJET S.M.I./P.F.

LISTE DE FORMATIONS SANITAIRES PARTICIPANTES  
AUX ACTIVITES DE LA SANTE MATERNELLE INFANTILE  
& AU PROGRAMME ELARGI DE VACCINATION

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Δ = Activité S.M.I.  
\* = Programme Elargi de Vaccination  
⊙ = En Formation

REGION SANITAIRE	HOPITAUX REGIONAUX	HOPITAUX PREFECTORAUX	CENTRE DE SANTE	SOUS CENTRE DE SANTE	POSTE DE SANTE
REGION SANITAIRE I	:	:	Δ* CASTORS	:	:
:	:	:	Δ* LAKOUANGA	:	:
:	:	:	Δ* MALIMAKA	:	:
:	:	:	Δ* GOBONGO	:	:
:	:	:	Δ* O.C.S.S.	:	:
VILLE DE BANGUI	:	:	Δ* MAMADOU-MBAIKI	:	:
:	:	:	Δ* BOY RABE	:	:
:	:	:	Δ* NGARAGBA	:	:
:	:	:	Δ* OUANGO	:	:
:	:	:	Δ* PETEVO	:	:
:	:	:	Δ* YAPELE	:	:
:	:	:	Δ* BIRDO	:	:
:	:	:	Δ* BEGOUA	:	:
:	:	:	Δ* GENDARMERIE	:	:
:	:	:	Δ* KASSAI	:	:
:	:	:	⊙ MATERNITE EF	:	:
:	:	:	⊙ FOYER DE CHAR.	:	:
OMBELLA-MPOKO	:	:	Δ* BOSSEMBELE	Δ* LITON	:
:	:	:	Δ* DAMARA	Δ - YALOKE	⊙ DJO
:	:	:	Δ* BOALI CHUTE	Δ - BOALI POSTE	:
:	:	:	:	Δ - BOALI CROIS.	:
:	:	:	:	⊙ BOGANKOLO	:

REGION SANITAIRE	HOPITAUX REGIONAUX	HOPITAUX PREFECTORAUX	CENTRE DE SANTE	SOUS CENTRE DE SANTE	POSTE DE SANTE
LOBAYE		△ * MBAIKI	△ * BODA △ * MONGOUMBA	⊙ BOBANGUI ⊙ PISSA ⊙ BONGANANGONE ⊙ BATALIMO ⊙ BOGAN GA	△ LOKO SAFA
KEMO GRIBINGUI		△ * SIBUT	△ * DEKOA	⊙ DJOUKOU ⊙ MALA	
GRIBINGUI ECONOMIQUE		△ * KAGA-BANDORO	△ * MBRES	OUANDANGO	
REGION SANITAIRE II HAUTE SANGHA	* BURBERATI		△ * CARNOT GAMBOULA	SOSSO GADEI	ZAOROSSONGO
SANGHA ECONOMIQUE		△ * NOLA	BAMBIO	MBOUSSA BILOLO	
NANA MAMBERE		△ * BOUAR	△ * BOUAR HERMAN △ * BABOA △ * BAORO	* DOAKA ABBA BAYANGA-DIDI	
REGION SANITAIRE III			△ * BOUCA △ * BATANGAFO △ * KABO △ * MARKOUNDA	⊙ NANA BAKASSA ⊙ MADALI ⊙ MAITIKOULOU	⊙ KOUKI
OUHAM	* BOSSANGOA				
OUHAM PENDE		△ * BOZOOM	△ * BOCARANGA △ * PAOUA △ * NGAOUNDAYE	⊙ KOUTI	
REGION IV			△ * KOUANGO △ * GRIMARI △ * BAKALA ⊙ IPPY ⊙ AGOUDOUNANGA	⊙ SEKO ⊙ BOKOLOGBO ⊙ KOBADJA ⊙ KIDJIGRA	
OUAKA	* BAMBARI				
BAMINGUI BANGORAN VAKAGA		NDELE ⊙ BIRAO	⊙ BAMINGUI	⊙ MINDOU	
HAUTE KOTTO		△ BRIA	⊙ OUADDA ⊙ YALINGA		
REGION V			△ OUANGO △ * BAKOUMA △ * RAFAI ⊙ GAMBO	⊙ NIAKARI △ VOUNGBA	
MBOMOU	* BANGASSOU				

REGION SANITAIRE	HOPITAUX REGIONAUX	HOPITAUX PREFECTORAUX	CENTRES DE SANTE	SOUS CENTRES	POSTES DE SANTE
HAUT M'BOMOU		L O B O	Δ ZEMIO ⊙ DJEMAH		
BASSE KOTTO		* MOBAYE	* ALINDAO * KEMBE * MINGALA	⊙ KONGBO ⊙ DIMBI BONDJO * ELIME	

MINISTÈRE DE LA SANTÉ PUBLIQUE

DIRECTION GÉNÉRALE DE LA SANTÉ PUBLIQUE

DIRECTION DE LA SANTÉ RURALE ET DES GRANDES ENDEMIES

S M P / P E V

Health Facilities  
Offering Immunization  
Services

REPUBLIQUE CENTRAFRICAINE  
UNITE - DIGNITE - TRAVAIL

LISTE DES FORMATIONS SANITAIRES POUVANT PARTICIPER AUX ACTIVITES DE VACCINATION

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PREFECTURES	FORMATIONS DEJA INTEGREES	TYPE	FORMATIONS A INTEGRER				OBSERVATIONS
			1983	TYPE	1984	TYPE	
<u>VILLE DE BANGUI</u>	CASTORS	C.S.U.	GENDARMERIE	C.S.U.			LILIBALDE
	IAKOUANGA	"	KASSAI	"			"
	MALIMAKA	"	GARDE	"			"
	GOBONGO	"	MATERNITE	CNHUB			CNHUB
	OCSS	"	CMG	"			"
	MALADOU-MBAIKI	"	FOYER DE CHARITE	DISP.			PRIVE
	BAY-RAHE	"					
	NGARAGBA	"					
	OUANGO	"					
	PETEVO	"					
	YAPELE	"					
<u>OMBELEA-MPOKO</u>	BOSSEMELE	C.S.	YALOKÉ	S.C.S.			
	DAMARA	"					
	BOALI-ROSTE	"					
	LITON	"					
<u>IORAYE</u>	BODA	"			BOGANGOLO	S.C.S.	
	MONGOULIDA	"					
	LIBAIKI	H.P.	LOKO-SAPA	P.S.			
			PISSA	S.C.S.			
			BOGANANGONE	"	BOBANGUI	"	
			BATALING	"	BOKANGA	"	

PREFECTURES	FORMATIONS DEJA INTEGREES	TYPE	FORMATIONS A INTEGRER		OBSERVATIONS
			1983	1984	
<u>KEMO-GRIENGUI</u>	DEFOA	C.S.	MAIA	S.C.S.	
	SIBUT	H.P.	DJOUKOU	"	OUANDAGO S.C.S.
<u>GAMBINGUI-ECONOMIQUE</u>	KANJA-BANDORO	"			
	MERES	C.S.			
<u>HAUTE-SANGHA</u>	BERBERATI	H.G.			GADZI "
	CARIOT	H.P.			ZAOROUSSONGOU "
	GALDOULA	C.S.			SOSSO
<u>SANGHA-ECONOMIQUE</u>	NOJA	H.P.			MBOUSSA "
					BILLOLO "
<u>NANA-MAMBERE</u>	DOUAR	H.G.			ABBA "
	DOUAR-HERIAN	C.S.			BAYANGA-DIDI "
	DABOUA	"			
	BAORO	"	DOAKA		
<u>OUHAM</u>	BOSSANGO	H.G.	NANA-BAKASSA	"	MARALI "
	KABO	C.S.	KOUKI	"	
	BATANGAFO	"	MAITIKOULOU	P.S.	
	MARKOUNDA	"			
<u>OUHAM-PENDE</u>	BOUCA				
	BOZOULI	H.P.	KOUI	S.C.S.	
	BOCARANGA	C.S.			
	PAOUA	"			
	NGAOUNDAYE	"			



EPI Needs - CAR 1983-1989

BESOINS DE P E V EN CENTRALISERIE ( 1983 - 1989

ARTICLE	Coût U\$ Dollars								FINANCEMENT
	TOTAL	1983	1984	1985	1986	1987	1988	1989	
1. Vaccins	671.000	50.000	68.000	85.600	98.000	111.000	127.000	132.000	
2. Chaîne du Froid	331.430	49.740	53.000	36.800	65.300	55.940	25.500	45.350	
3. Enregistrement et Rapport	93.300	9.900	8.900	13.100	12.000	16.700	17.700	18.000	
4. Formation et recyclage	74.000	24.000	9.000	5.000	15.000	21.000	—	—	
5. Stérilisation	6.020	1.900	790	600	810	920	1.000	—	
6. Administration	48.390	4.675	6.670	6.940	6.180	6.905	8.220	8.700	
7. Transport	652	103.000	102.000	102.000	105.000	83.000	98.000	54.000	

Estimated Vaccine Costs in Thousands of Dollars U.S.

ESTIMATION DU COUT DE VACCINS COMPTES EN MILLIERS DE DOLLARS US

ARTICLE	TOTAL	1983		1984		1985		1986		1987		1988		1989	
		Coût	Q	Coût	Q	Coût	Q								
1. V A C C I N S (doses x 1000)															
I. BCG + solvant 10 doses, RU x 2	163.000	102	12000	138	17000	176	21000	200	24000	226	27000	254	30000	264	32000
2. DTCoq, 10 doses Swiss x I.4	186.000	153	14000	207	19000	264	24000	300	27000	339	31000	381	35000	376	36000
3. POLIO, 10 doses Buocal, .	160.000	71	12000	97	16000	123	20000	140	24000	158	27000	178	30000	185	31000
4. Rougeole, 10 doses avec solvant x I.4.	162.000	17	12000	22	16000	28	20000	32	23000	37	26000	46	32000	47	33000
T O T A L	671.000	/	50000	/	68000	/	85000	/	98000	/	111000	/	127000	/	132000
- Prix UNICEF en															
- 30% transport aérien															
- 10% augmentation par année															
- Q = Quantité en doses x 1000															

Persons Contacted by the Assessment Team

US Embassy, Bangui  
 Mr. Arthur Woodruff, Ambassador  
 Mr. Douglas A. Hartwick, Deputy Chief of Mission

USAID

Mr. Ray Martin, Health, Population, Nutrition Officer - Yaounde, Cameroon

Ministry of Health

Medecin Commandant Gabriel Ngaindiro, Minister of Health  
 Dr. Simon Feikouman, Secretary General  
 Dr. Banga-Bingui, Inspector General  
 Dr. Jean Limbassa, Director, Preventive Medicine and Grandes Endemies  
 Dr. Dieudonne Kpossa-Mamadou, Director, Maternal-Child Health and Family Planning  
 Dr. Filomena Falaha de Zalaguet, Principal Technical Adviser, MCH  
 Mr. Francois Awangbi, Assistant Social, MCH  
 Dr. Pascal Kado, Castors Health Center, Bangui  
 Dr. R. Champion, Chief Medical Officer, Health Region I, Bangui  
 Dr. Fidele Mongonou, Chief Medical Officer, Prefectoral Hospital, M'Baiki  
 Adjudant-Chief Valere Orsinet, Preventive Medicine  
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 Mr. Wayaro, Cold Chain Officer, EPI

Ex-Patriate Technical Advisors Attached to MOH

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 Dr. G. Baquillon, French Government Advisor to Director, Preventive Medicine

FAC

Mr. Michel Cuignet, Director of French Cooperation

UNICEF

Mr. Mario Ferrari, Resident Representative, Bangui

UNDP

Mr. Williard F. Harper, Resident Representative  
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Institut Pasteur

Dr. Alain Georges, Director  
Mme. Marie-Claude Georges, Researcher, Diarrheal Diseases

U.S. Peace Corps

Mr. Rick Bradshaw, Asst. Peace Corps Director  
Mrs. Candy Steiner, P.C. Volunteer, Health/Community Development  
Ms. Brooke Fenn, P.C. Volunteer, Health Education  
Mr. Todd Smith, P.C. Volunteer, Health Sector Development  
Ms. Betty Pope, P.C. Medical Officer

Other

Dr. Jean Delmont, Chief, Training, Faculty of Health Sciences, Bangui  
Mr. Tony Watson, Representative, World Bank, Bangui  
Mr. L. Schiano-Campo, Chief of FED Mission to CAR  
Dr. Brigitte Delabarre, Pediatrician in Private Practice, Bangui

Documents Reviewed by the Assessment Team

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- Liste des Postes de Sante Publique en Republique Centrafricaine, M. Nebout (29 Dec. 1980)
- Liste des Sous-Centres de Sante Publique en Republique Centrafricaine, M. Nebout (13 Mars 1981)
- Tableau de Conditionnement des Vaccins et Circuit d'Approvisionnement des Magasins Intermediaires en Vaccins et Materiels de la Chaine du Froid a Partir du Magasin Central - Programme Elargie de Vaccination (undated)
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