PROFESSIONALIZATION OF THE HEALTH PRODUCT SUPPLY CHAIN IN WEST AFRICA

PRELIMINARY REPORT
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Survey conducted by the Bioforce Institute
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In partnership with
The Reproductive Health Supplies Coalition

SUMMARY

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ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
AGMED	AGence du MEDicament de Madagascar [Drugs Agency of Madagascar]
AMP	Agence de Médecine Préventive [French Preventive Medicine Agency]
ASACO	Association de SAnté COmmunautaire [Community Health Association]
CAME	Centrale nationale d'Approvisionnement en Médicaments Essentiels [National Supply Center for Essential Drugs]
CAMEG	Centrale nationale d'Approvisionnement en Médicaments Essentiels et Génériques [National Supply Center for Essential Generic Drugs]
CEPRAOM	Cellule d'Échanges et de Partenariats Rhône-Alpes, Afrique de l'Ouest, Madagascar [Unit for Discussions and Partnerships between the Rhône-Alpes Region, West Africa, and Madagascar]
CHD	Centre Hospitalier de District [District Hospital]
CHD	Centre Hospitalier Départemental [Provincial Hospital – *(Benin only)*]
CHU	Centre Hospitalier Universitaire [University Hospital]
CHW	Community Health Worker
CM	Centre Medical [Medical Center]
CMA	Centre Médical avec Antenne chirurgicale [Medical Center with Surgical Services]
CMLS	Comité Ministériel de Lutte contre le SIDA [Ministerial Committee for the Fight against AIDS]
CNHU	Centre National Hospitalier et Universitaire [National University Hospital]
CS	Centre de Santé [Health Center]
CSA	Centre de Santé d'Arrondissement [Borough Health Center]
CSB	Centre de Santé de Base du district [District Basic Health Center]
CSC	Centre de Santé de Commune [Communal Health Center]
CScom	Centre de Santé communautaire [Community Health Center]
CSLP	Cadre Stratégique de Lutte contre la Pauvreté [Strategic Framework for the Fight against Poverty]
CSPS	Centre de Santé et de Promotion Sociale [Health and Social Promotion Center]
CSref	Centre de Santé de référence [Reference Health Center]
DGIEM	Direction Générale des Infrastructures, de l'Equipement et de la Maintenance [Directorate-General for Infrastructure, Equipment and Maintenance]
DGILMT	Direction de la Gestion des Intrants de santé, des Laboratoires et de la Médecine Traditionnelle [Directorate for the Management of Health Inputs, Laboratories and Traditional Medicine]
DGPML	Direction Générale de la Pharmacopée, du Médicament et des Laboratoires [Directorate-General for Pharmacopoeia, Drugs and Laboratories]
DNPEV/SSP	Direction Nationale du Programme Elargi de Vaccination et des Soins de Santé Primaires [National Directorate for the Expanded Program on Immunization and Primary Health Care]
DNPS	Direction Nationale de la Protection Sanitaire [National Directorate for Health Protection]
DPM	Direction de la Pharmacie et du Médicament [Directorate for Pharmacy and Drugs]
DPMED	Direction des Pharmacies, du Médicament et des Explorations Diagnostiques [Directorate for Pharmacies, Drugs and Diagnostic Investigations]
DRC	Dépôt-Répartiteur de Cercles [Circles Distribution Depot]
DRS	Direction Régionale de la Santé [Regional Health Directorate]
DRSP	Direction Régionale de la Santé Publique [Regional Public Health Directorate]

ED	Essential Drug
ECD	Equipe Cadre de District [District Executive Team]
EMAD	Equipe de MAnagement de District [District Management Team]
ENSP	Ecole Nationale de Santé Publique [National School of Public Health]
EPI/PHC/ED	Expanded Program on Immunization / Primary Health Care / Essential Drugs
EPS	Etablissement Public de Santé [Public Health Establishment]
ESSC	Equipe Sanitaire et Sociale du Cercle [Circles Health and Social Team]
EU	European Union
GAVI	Global Alliance for Vaccines and Immunization
GF	Global Fund to Fight AIDS, Tuberculosis and Malaria
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit [German Technical Cooperation Agency]
HDI	Human Development Index
HIV/AIDS	Human Immunodeficiency Virus / Acquired ImmunoDeficiency Syndrome
HZ	Hôpital de Zone [Area Hospital]
IMF	International Monetary Fund
INPS	Institut National de Prévoyance Sociale [National Social Security Institute]
IRSS	Institut de Recherche en Sciences de la Santé [Health Science Research Institute]
JICA	Japan International Cooperation Agency
LDC	Least Developed Country
LMIS	Logistics Management and Information System
LNSP	Laboratoire National de Santé Publique [National Public Health Laboratory]
NGO	Non Governmental Organization
OARHS	Observatoire Africain des Ressources Humaines pour la Santé [African Health Human Resources Observatory]
PA	Pharmacy Assistant
PCG	Pharmacie Centrale de Guinée [Central Pharmacy of Guinea]
PDD	Plan de Développement des Districts [District Development Plan]
PNA	Pharmacie Nationale d'Approvisionnement [National Supply Pharmacy]
PNDS	Plan National de Développement Sanitaire [National Health Development Plan]
PNLP	Plan National de Lutte contre le Paludisme [National Plan for the Fight against Malaria]
PNMT	Politique Nationale de Médecine Traditionnelle [National Traditional Medicine Policy]
PNSDRHS	Plan National Stratégique de Développement des Ressources Humaines du Secteur Santé [National Strategic Plan for Health Sector Human Resources Development]
PNT	Plan National de lutte contre la Tuberculose [National Plan for the Fight against Tuberculosis]
POCL-Health	Plan Opérationnel des Collectivités Locales [Local Collectivity Operational Plan]
PPA	Plan National d'Approvisionnement [National Supply Plan]
PPM	Pharmacie Populaire du Mali [The Malian People's Pharmacy]
PPN	Politique Pharmaceutique Nationale [National Pharmaceutical Policy]
PRA	Pharmacie Régionale d'Approvisionnement [Regional Supply Pharmacy]
PRSP	Poverty Reduction Strategy Paper
PS	Poste de Santé [Health Post]
PTA	Plan de Travail Annuel [Annual Work Plan]
RHSC	Reproductive Health Supplies Coalition
SCM	Supply Chain Management
TFP	Technical and Financial Partner

UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USP	Unité de Soins Périphériques [Peripheral Care Unit]
UVS	Unité Villageoise de Santé [Village Health Unit]
WAHO	West African Health Organization
WFP	World Food Program
WHO	World Health Organization

INTRODUCTION

1. CONTEXT OF THE SURVEY

The West African sub-region's health situation and the weakness of national health systems have been sources of concern for decades. According to the West African Health Organization (WAHO), health challenges such as malaria, malnutrition, HIV/AIDS, maternal and child mortality, and access to drugs and vaccines remain paramount in the region.

The performance of the health product supply chain appears to be key to strengthen public health systems. An efficient supply chain means that the right products are available in good quantity and in good condition, at the right time and at the right price. As summarized by Dr. Orin Levine (associated teacher, Johns Hopkins Bloomberg School of Public Health), *"an ideal logistics chain is a chain which guarantees that the limits of science are not restricted by the limits of the system"* [1].

To operate with the greatest efficiency, public health supply systems need trained, competent staff, with experience of the standard operational procedures required for each logistics function, but also able to make decisions or take part in the decision-making process and the elaboration of policies which have an impact on supply chains. The lack of a workforce which has the appropriate skills is often the cause of dysfunctions in supply chain management (SCM), and has an impact on the entire health system, and therefore on the country's health situation.

The essential role of the supply chain was recognized by the World Health Organization (WHO) in 2006. Today, it is supported and promoted by, among others, the *People that Deliver* Global Initiative[2] which began as a workstream of the Reproductive Health Supplies Coalition (RHSC)[3].

In order to identify the relevant actions that must be taken to improve health systems' supply chains, Bioforce proposed to conduct a survey. As a result of this initiative, the present survey aims to generate a complete picture of the performance of the workforce in charge of SCM in the West African sub-region, and to consider areas for improvement.

2. OBJECTIVES

1. General Objective

The general objective of this survey is to map the capacity of the human resources involved in the public health supply chain in the West African sub-region and in Madagascar.

2. Specific Objectives

The survey's specific objectives are the following:

+ Describe the context of the public health supply system of each country studied.
+ Describe the organization of the public health supply system of each country studied.
+ Describe supply chain human resources in each country studied.
+ Set up priorities to improve supply chain efficiency in each country studied.

[1] WHO, Immunization Services, *Optimize Project*, http://www.who.int/immunization_delivery/optimize/en/index.html

[2] PEOPLE THAT DELIVER, *Meeting Tomorrow's Health Challenges through Workforce Excellence in Supply Chain Management,* www.peoplethatdeliver.org.

[3] RHSC, *Professional Development of Supply Chain Managers*, http://www.rhsupplies.org/working-groups/systems-strengthening/professional-development-of-supply-chain-managers.html.

+ Identify the issues that are common to all countries studied and make general recommendations to improve SCM.

3. METHODOLOGY

1. Methodology of the Survey

This cross-sectional study combines two data collection methods: documentary research and a written remote questionnaire.

The questionnaire[4] draws from a guide realized in the context of a country survey by the Bioforce Institute, to assess health logistics human resources. It also draws from the assessment tool developed by USAID | DELIVER to assess human resources in charge of public health SCM. It was sent via email from Burkina Faso to resource-people in each country studied: pharmacy directorate staff or health staff positioned at the intermediary or central level of the system. These resource-people were selected for their knowledge of the health system and of the health product supply chain, thanks to the support of the West African Economic and Monetary Union and the West African Health Organization.

Yet an important bias, which is inherent to the survey, must be noted: the information collected is sometimes incomplete and very diverse. Documentary research, mainly on the internet, allowed us to partially fill information gaps in order to meet the survey's specific objectives.

For Burkina Faso and Senegal, the present report is mainly based on data collected during field country surveys conducted by Bioforce[5] in 2011.

2. Survey Locations

The survey covers six countries of the West African sub-region: Benin, Burkina Faso, the Republic of Guinea, Mali, Senegal, and Togo. As a French-speaking country partner of Bioforce within the Unit for Discussions and Partnerships between the Rhône-Alpes Region, West Africa, and Madagascar (CEPRAOM), Madagascar also accepted to fill up the data collection form.

3. Report Structure

First of all, the data collected during the survey and documentary research will be presented country by country. For each country, general information will be provided (economic and health context), followed by an analysis of the organization of the health system (public and private sectors, human resources, and financing). This will provide solid ground for the analysis of the organization of the supply chain: public and private sectors, infrastructure and equipment, and areas for improvement[6].
In the second part of the survey, all this information will be analyzed in order to reveal similarities between the health product supply systems of the different countries studied.

In conclusion, the recommendations collected from survey respondents, to improve supply chain efficiency in health systems in West Africa and Madagascar, will be presented.

[4] See Annex 1 for a copy of the questionnaire.
[5] INSTITUT BIOFORCE, *Survey on Human Resource Capacity in Public Health Supply Chain Management in Burkina Faso*, 2011; INSTITUT BIOFORCE, *Survey on Human Resource Capacity In Public Health Supply Chain Management in Senegal*, 2011.
[6] For better understanding of the different structures presented, diagrams and organizational charts of the Health Ministry's public supply system of each country are available in Annex 2.

1. GENERAL COUNTRY PROFILE

Located in West Africa, Benin is surrounded by 4 countries (the Republic of Niger, Burkina Faso, Togo, and Nigeria). It is also bordered to the North by the Niger River and to the South by the Atlantic Ocean.

"Since 1999, Benin has been involved in the implementation of a national poverty reduction strategy for sustainable human development. Following the draft of a Poverty Reduction Strategy Paper (PRSP, 2000), a three-year strategy (2003-2005) […]"[7]. The latter was renewed and updated for the 2007-2009 period.

Despite all this, the incidence of monetary poverty remains high and is estimated to have increased from 28.5% to 36.8% between 2002 and 2006[8]. The rural population is particularly affected by this poverty.

Since 2006, the Beninese economy has entered a new phase of growth. From 3.8% in 2006, the growth rate increased to 5.0% in 2008[9].

COUNTRY PROFILE: Benin[10]	
Population	9,598,787
Area (km²)	112,622
Median age	17.4
Urban population (% of the total population)	42
Human Development Index	0.427 (167th)
Literacy rate (% of the total population)	34.7
GDP per inhabitant (US$)	1,500
Population under the poverty line (% of the total population)	37.4
Life expectancy at birth	60.26
Child mortality rate (/1000 people)	60.03
Adult mortality rate (/1000 people)	319
First causes of under-5 mortality	Malaria (23%), pneumonia (19%), diarrhea (13%)

[7] REPUBLIC OF BENIN, *Stratégie de croissance pour la réduction de la pauvreté* [Growth Strategy for Poverty Reduction], March 2007, available in French at: http://www.finances.bj/IMG/pdf/SCRP_DOCUMENT_REMANIE.pdf.
[8] http://www.bj.undp.org/fr/pauvrete.html (French).
[9] MINISTRY OF HEALTH OF BENIN, *Plan National de Développement Sanitaire 2009-2018* [National Health Development Plan 2009-2018], version validated in September 2009.
[10] CIA, *World Fact Book*; WHO, *Benin Health Statistic Profile 2010*.

2. ORGANIZATION OF THE HEALTH SYSTEM

1. The Public Sector and the National Health Policy

The general assemblies (*Etats généraux*) which were held in November 2007 on the health sector made important recommendations on the country's health development. A new vision was defined, which recommends that "Benin has an efficient health system by 2025, based on public and private initiatives, either individual or collective, for permanent supply and the availability of quality healthcare, fair and accessible to all categories of populations, and based on solidarity and risk sharing in order to address all needs in health of the Beninese people"[11]. This new vision has been integrated into the National Health Development Plan (PNDS) 2009-2013[12].

The health system has a three-level pyramid structure, in accordance with the recommendations of the Bamako Initiative:

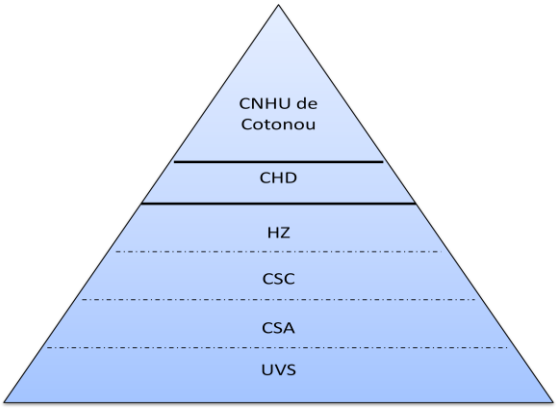


Figure 1. Structure of the Health System in Benin

Central level: the Ministry of Health (MoH) with its central directorates, and the Cotonou University Hospital (CNHU).

Intermediary level: 12 provincial health directorates; Provincial Hospitals (CHDs).

Peripheral level: 34 health areas including the Area Hospital (HZ), Communal Health Centers (CSCs), Borough Health Centers (CSAs), and Village Health Units (UVSs).

Boroughs are generally well-covered by health centers (89% in 2008) but infrastructure is barely functional[13] and the utilization rate of health services is low (34% according to the Statistical Yearbook 2006).

2. The Private Sector

There is little valid information on the number of private health structures based in Benin[14]. However, the already great importance of this sector is continuously increasing. According to data from the private health facilities census realized in 1998[15], 650 health facilities were identified throughout the national territory and take different shapes: liberal, humanitarian, and associative. The main types of structures are the following:

- Liberal structures (clinics, polyclinics, medical, non-specialized or specialized practices, dental practices, etc.) are mainly located in urban areas, particularly in Cotonou and Porto-Novo. Many public officers work in these private structures, in parallel to (or at the expense of) their activities in the public sector: "although health professionals working in the public sector are, by law, not allowed to work in the private sector, this seems to be relatively common practice"[16].

[11] WHO, *Stratégie de Coopération de l'OMS avec les pays, Bénin 2009-2013* [Benin Country Cooperation Strategy 2009-2013].
[12] MINISTRY OF HEALTH OF BENIN, *Op. Cit*.
[13] Ibid.
[14] OARHS, *Profil en ressources humaines pour la santé au Bénin* [Health Human Resources Profile in Benin], Mars 2009.
[15] MINISTRY OF HEALTH OF BENIN, Joint organ of the public-private partnership, *Politique et stratégies de développement du partenariat entre les secteurs public et privé dans le domaine de la santé (2006-2008)* [Policies and Strategies to Develop the Partnership between the Public and Private Sectors in the Health Sector (2006-2008)], June 2006.
[16] OARHS, *Op. Cit*.

- Religious health centers are also concentrated in urban and semi-urban areas. Having a humanitarian goal, they provide quality healthcare to the poorest populations. These centers represented "78% of the 415,855 days of hospitalization provided by health facilities at the peripheral level in 2005"[17].
- Associative structures, particularly non-governmental organizations (NGOs), contribute to the expansion of health coverage.

Resort to traditional medicine is also significant, but there is no accurate statistical data on the subject. "Existing data is fragmented and was collected in the context of a project initiated in 1970 to promote natural substances"[18]. As health workers generally distrust traditional healers, collaboration between the two is very limited. Moreover, the making, conditioning, and storage of traditional health products are very often inappropriate. However, the relatively low cost of traditional practitioners' services is one of the main reasons why the population resorts to this type of medicine.

3. Human Resources for Health

The importance given to human resource management led the MoH to create a Directorate for Human Resources in 2000, and to develop a National Strategic Plan for Health Sector Human Resources Development (PNSDRHS) for 2007-2016.

Health pre-service and in-service training is provided by public schools and institutions affiliated to the Ministry in charge of professional training and the Ministry of Higher Education. However, we note a mismatch between training and the skills needed in the sector, as well as a lack of a specialized workforce. Indeed, consultation between Ministries in charge of training and the MoH is insufficient. Moreover, the MoH has not yet defined the professional profiles it needs.

Besides, the geographical distribution of personnel is not balanced and staff is concentrated in urban areas at the expense of rural centers.

Finally, despite many monetary incentives, health workers' motivation to join or stay in the public sector remains low. The most often cited factors of this lack of motivation, especially as stated in the OARHS report[19], are:

- low salaries, not adapted to the cost of living;
- the lack of mutual understanding between workers and the population;
- the non-application of positive sanctions based on transparent and objective criteria;
- the lack of an in-service training policy;
- complacency in decision making related to conflict management;
- supervisors' lack of an open mind: they do not listen and are not open to dialogue;
- bad working conditions ;
- the level of development of the working environment (primary and secondary schools' installations, electrification, internet, radio, television, markets, access roads, etc.).

One of the main consequences of this seems to be absenteeism of workers who rather go and work in private health structures. For public officers, this is illegal; and it also has a negative impact on the public health sector's consistency.

[17] MINISTRY OF HEALTH OF BENIN, *Annuaire statistique 2005* [Statistical Yearbook 2005].
[18] Id., *Plan National de Développement Sanitaire 2009-2018* [National Health Development Plan 2009-2018], version validated in September 2009.
[19] OARHS, *Op. Cit*.

4. Health Sector Financing

According to the national health accounts for 2003, the global health bill for this year was around US$192,000,000. It was financed at:

- 52.1% by households through cost recovery in health facilities, i.e. payments for care and the purchase of drugs. The 2003 survey noted that drug purchases represented 76% of households' health spending. In Benin's PNDS[20], this type of funding is considered to be less favorable and limiting households' access to healthcare and services, because the population's level of income is low.
- 30.8% by the government. In 2011, government budget was estimated at US$2,144,848,889, and the Health Ministry's budget at US$148,299,784, including US$32,400,776 dedicated to human resources and US$288,889 to drugs.
- 16.5% by external aid. The total amount of health funding coming from the international community reached nearly US$19.2 million in 2006. The health sector's main technical and financial partners (TFPs) are the WHO, UNICEF, UNFPA, the UNDP, the Work Bank, USAID, the Belgium Cooperation and the Global Fund to Fight AIDS, Tuberculosis and Malaria.
- 0.6% by collectivities, health and mutual health insurers, and private and public enterprises.

3. ORGANIZATION OF THE HEALTH PRODUCT SUPPLY CHAIN

1. Public Sector Supply

Benin has a National Pharmaceutical Policy which was elaborated in 1991, but no National Supply Plan.

The Directorate for Pharmacies, Drugs and Diagnostic Investigations (DPMED) collects data from the different health structures.

The National Supply Center for Essential Drugs (CAME), placed under the supervision of the DPMED, is a not-for-profit association responsible for supplying health facilities with essential drugs throughout the national territory. Initially limited to public and non-profit private structures, the CAME now also supplies for-profit private structures. In total, the CAME manages 60% of the drug volume and supplies 1,500 health facilities.

One quarter of orders is placed with local manufacturers who participate to tenders just like external competitors, and therefore do not benefit from regional preferences[21]. The CAME has two regional depots based in Parakou and Natitingou for the Northern provinces, and distribution depots in fourteen health areas. These depots, in turn, supply health facilities[22].

The National Directorate for the Expanded Program on Immunization and Primary Health Care (DNPEV/SSP) and the National Directorate for Health Protection (DNPS) have also their own supply systems for vaccines.

[20] MINISTRY OF HEALTH OF BENIN, *Op. Cit*.
[21] RESEAU MEDICAMENTS ET DEVELOPPEMENT, *Politique pharmaceutique du Bénin* [THE DRUGS AND DEVELOPMENT NETWORK, *Benin's Pharmaceutical Policy*], http://www.remed.org/html/politique_pharmaceutique_benin.html.
[22] WHO, *Mesure de la transparence pour améliorer la bonne gouvernance dans le secteur pharmaceutique, Rapport final d'évaluation au Bénin* [Measuring Transparency in the Improvement of Good Governance in the Pharmaceutical Sector, Final Evaluation Report in Benin], August 2009.

2. Private Sector Supply

The private pharmaceutical sector deals with 40% of the drug volume[23]. It is composed of six distribution wholesalers, 214 pharmacy dispensaries, and numerous points of distribution to the general public.

However, it should be noted that private dispensaries are unevenly distributed throughout the territory. According to the WHO, "more than ninety pharmacy dispensaries out of a hundred and seventy two (52%) are concentrated in the Atlantic and Coast provinces"[24].

The illegal drug sales network is particularly developed, sometimes within health facilities themselves. According to the PNDS[25], "illegal drug sales are reaching alarming proportions, passing through informal distribution channels such as markets, shops, streets, and door-to-door".

3. Supply Chain Human Resources

Pharmacists are very few in the public sector (20 in 2008 according to the OARHS[26]). They are to be found at the central and intermediary levels, managing CAME warehouses as well as national and provincial hospital pharmacies with nurses and other staff trained in pharmaceutical product management.

At the peripheral level, pharmaceutical product warehouses are managed by health area managers and non health professional staff. The system does not employ logisticians. In-office staff is neither trained nor qualified and does not always understand the importance or necessity of filling up stock sheets or checking expiry dates and conditions of storage. Consequences are:

- frequent stock-outs;
- adulteration or loss of health products;
- robbery.

Only one pre-service training course exists in Benin: at the School of Pharmacy of the Health Science Faculty, within the University of Abomey-Calavi, in Cotonou. It is a five-year training course rewarded with a State Pharmacist Diploma.

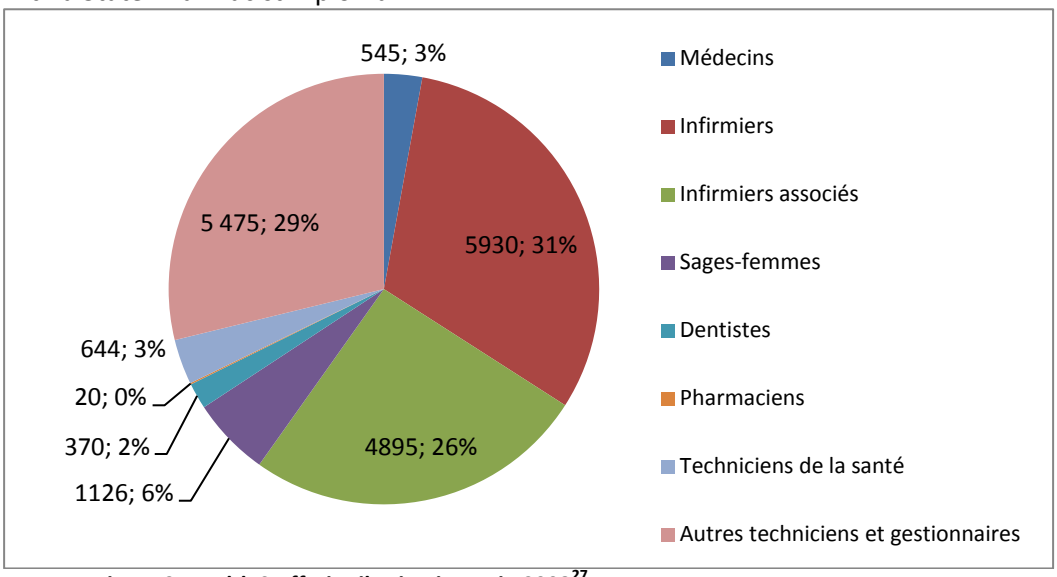


Figure 2. Health Staff Distribution in Benin 2008[27]

[23] MINISTRY OF HEALTH OF BENIN, *Op. Cit*.
[24] WHO, *Op. Cit.*
[25] MINISTRY OF HEALTH OF BENIN, *Op. Cit*.
[26] OARHS, *Op. Cit*.
[27] OARHS, *Op. Cit*.

In 2011, the *Agence de Médecine Préventive* (French Agency for Preventive Medicine) and the WHO launched a project to establish a regional reference center in Benin, dedicated to the training and certification of health logisticians, in collaboration with public and private partners[28].

4. Equipment and Infrastructure

Public health infrastructure is unevenly distributed throughout the territory because there is no national development plan on this matter. Moreover, 40% of this infrastructure is in a state of disrepair and most of it does not comply with standards due to poor monitoring during the execution of works[29].

According to Benin's PNDS, the main factors contributing to this issue are:

- the multiplication of equipment brands with no training or refresher training of the staff in charge of maintenance;
- the lack of specialists in charge of maintenance;
- the absence of a mechanism for equipment maintenance and monitoring (hence the irregularity of equipment pool inventories, for instance);
- the absence of a manual of procedures for medical device maintenance;
- slow procurement for spare parts;
- the lack of funding[30].

Regarding transport means, "according to the assessment of 34 health areas in 2005, 30 areas have ambulances but only 7 of these vehicles (21%) are in good working condition, and only 13 health areas (38%) have a functioning radio system"[31]. This situation is caused, among other things, by the absence of an appropriate policy for medical technical equipment procurement and management.

5. Improving Supply Chain Management

According to the data collected in this survey, the supply system's main problems are the lack of funding for SCM activities and the lack of a competent workforce in charge of this management. Pharmacists, who are the only health product management professionals employed, are scarce in the system.

According to survey respondents, the priority should be to:

+ support the School of Pharmacy of the Health Science Faculty in order to develop pharmacist curricula, in both quantitative and qualitative terms;
+ recruit and train health product SCM professionals;
+ elaborate an appropriate equipment maintenance policy;
+ develop in-service training for maintenance officers;
+ dedicate more financial means to SCM;
+ establish an efficient logistics management and information system (LMIS).

[28] LOGIVAC PROJET, http://www.logivac.org/.
[29] MINISTRY OF HEALTH OF BENIN, *Op. Cit.*
[30] Ibid.
[31] OARHS, *Op. Cit*.

HEALTH PRODUCT SUPPLY CHAIN MANAGEMENT IN BURKINA FASO[32]

1. GENERAL COUNTRY PROFILE

"Located in the heart of West Africa, Burkina Faso is a landlocked country bounded to the North and to the West by Mali, to the East by Niger, and to the South by Benin, Togo, Ghana, and Côte d'Ivoire"[33].

"With an estimated gross national income of US$1,215 per inhabitant and per year, Burkina Faso is part of the least developed countries […][34]".

"Official development aid (15.2% of GDP and 32% accounted in government budget) plays an important role in Burkina Faso's economic and social development process"[35]. However, it also leads to a multiplication of actors, procedures, modalities for intervention, and coordination frameworks.

COUNTRY PROFILE: Burkina Faso[36]	
Population	17,275,115
Area (km²)	274,200
Median age	16.9
Urban population (% of the total population)	26
Human Development Index	0.331 (181th)
Literacy rate (% of the total population)	21.8
GDP per inhabitant (US$)	1,500
Population under the poverty line (% of the total population)	46.4
Life expectancy at birth	54.07
Child mortality rate (/1000 people)	79.84
Adult mortality rate (/1000 people)	472 (men); 410 (women)
First causes of under-5 mortality	Malaria (24%), pneumonia (18%), diarrhea (12%)

[32] BIOFORCE INSTITUTE, *Survey on Human Resource Capacity Building in Public Health Supply Chain Management in Burkina Faso*, 2011.
[33] MINISTRY OF HEALTH OF BURKINA FASO, *Plan National de Développement Sanitaire 2011-2020* [National Health Development Plan 2011-2020].
[34] Ibid.
[35] MINISTRY OF ECONOMY AND FINANCE OF BURKINA FASO, *Plan d'actions national de l'efficacité de l'aide au développement (PANEA) 2010-2012* [National Action Plan for Development Aid Efficiency (PANEA) 2010-2012], www.dgcoop.gov.bf.
[36] CIA, *World Fact Book*; WHO, *Burkina Faso Health Statistic Profile 2010*.

2. ORGANIZATION OF THE HEALTH SYSTEM

1. The Public Sector and the National Health Policy

In 2000, Burkina Faso established a Strategic Framework for the Fight against Poverty (CSLP) which gave clear priority to the education and health sectors for budget resource allocation. The share of government budget allocated to the Ministry of Health shifted from 12.32% in 2006 to 15% in 2008[37]. The government also developed a PNDS for 2001-2010, and then for 2011-2020[38].

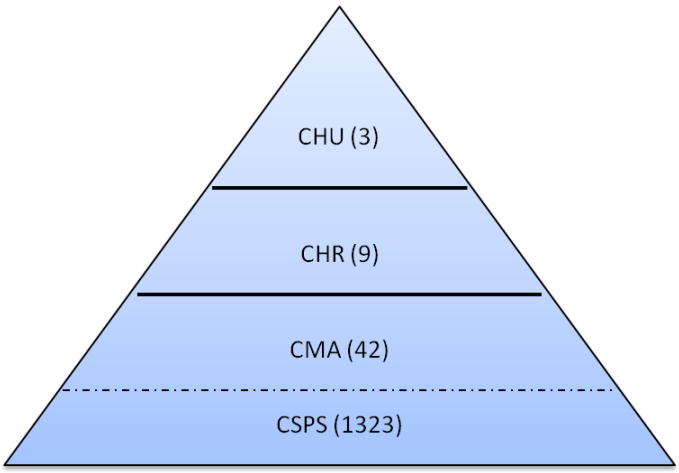
In accordance with the recommendations of the Bamako Initiative, the public health system is organized into a three-level pyramid: central, intermediary, and peripheral.

The central level is composed of the Health Minister's office, its central services, different programs and projects, affiliated services, and public administrative establishments (2 national hospitals, the National Blood Transfusion Center, etc.).

The intermediary level is composed of the 13 Regional Health Directorates (DRSs), in charge of coordination and support to districts.

The peripheral level is currently composed of 63 health districts which constitute the operational level of the MoH and are administrated by district executive teams (ECDs) headed by district chief medical officers.

At the operational level, public health structures are also organized into three levels[39]:



CHUs: University Hospitals
CHRs: Regional Hospitals
CMAs: Medical Centers with Surgical Services
CSPSs: Health and Social Promotion Centers

Figure 3. Structure of the Health System in Burkina Faso

According to the WHO however, we note that "hospitals and health districts located in urban areas or around a CHR are poorly functional". In addition to this, district teams and regional directorates lack management capacity, the Support Unit for Health System Decentralization lacks operational capacity […], there is no coordination of the healthcare system at the communal level, and the mechanism to address disasters' health components is inappropriate"[40].

[37] MINISTRY OF HEALTH OF BURKINA FASO, *Cadre des dépenses à moyen terme 2009-2011* [Framework for Mid-Term Expenditures 2009-2011], final version.
[38] Id., *Plan National de Développement Sanitaire 2011-2020* [National Health Development Plan 2011-2020].
[39] WHO, *Stratégie de coopération de l'OMS avec les pays, Burkina Faso 2010-2015* [Burkina Faso Country Cooperation Strategy 2009-2013].
[40] WHO, African Health Observatory, *Burkina Faso, Analytical Summary*, available in French only at: http://www.aho.afro.who.int/profiles/index.php/Burkina_Faso:_Analytical_summary_-_Leadership_and_governance/fr.

2. The Private Sector

The private sector includes 358 structures, mostly for-profit (81.56%) and religious establishments. These structures are mainly located in Ouagadougou and Bobo-Dioulasso[41]. The private sector also allows the development of health training, especially with the Faculty of Medicine of the Saint Thomas d'Aquin University and the Sainte Edwige private school (paramedical training) in Ouagadougou.

However, the private sector develops without blueprints, and it is not sufficiently integrated into the health system. There are still deficiencies in the application of the legislation and in the compliance with service provision standards.

Traditional medicine and pharmacopeia, recognized since 1994 by the Public Health Code, also play major roles in the supply of health products and care[42]: around 30,000 actors practice autonomously[43].

3. Human Resources for Health

The number of MoH staff in the public sector was estimated at 19,899 workers in May 2010[44]. Private health establishments employ nearly 1,800 people, including 8% of doctors (143), 37% of nurses (699), and 12% of midwives and birth attendants (216), the rest of it being composed of low-skilled workers.

Although several government initiatives resulted in the increased availability of human resources, the PNDS[45] reminds us that there are still fundamental issues to be addressed in terms of health human resources:

- staff deficit remains significant for some categories such as public sector midwives, especially outside urban centers. Moreover, the standards used in CSPSs (number of staff/CSPS) do not appear to be relevant when taking into account disparities in the size of the populations covered by CSPSs;
- absence of an overall human resource development plan with an implementation plan;
- low staff motivation;
- poor coordination leading, to a lesser extent, to brain drain;
- under-equipment of training institutions in laboratories and practical work rooms, saturation of fields for placements, and lack of quality in-service training;
- low level of education of community health workers (CHWs) due to the lack of training of and support to these CHWs.

4. Health Sector Financing

Several actors participate to the financing of the health sector:

- The share of government budget dedicated to the health sector shifted from 7.07% in 2000, to 12.13% in 2007, to 15.21% in 2008, to 15.46% in 2009[46].
- Households also contribute to total health expenditures (they are the first contributors to the budget for health product procurement).

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[41] MINISTRY OF HEALTH OF BURKINA FASO, *Op. CIt.*
[42] WHO, *Stratégie de coopération de l'OMS avec les pays, Burkina Faso 2010-2015* [Burkina Faso Country Cooperation Strategy 2010-2015].
[43] MINISTRY OF HEALTH OF BURKINA FASO, *Op. Cit.*
[44] Id., *Statistical Yearbook 2010*.
[45] Id., *Plan National de Développement Sanitaire 2011-2020* [National Health Development Plan 2011-2020].
[46] Ibid.

- External resources (donations, technical and financial partners' subsidies, decentralized cooperation, and loans in the context of health projects and programs or direct interventions on the ground) constitute the third source of public health financing after the government and households. In 2007, official development aid for the health sector reached US$32.60 million[47]. The main areas concerned by external aid are: health infrastructure, personnel training, immunization within the framework of the fight against disease, AIDS, malaria, and tuberculosis, reproductive health, overall support to health districts, and support to the development of mutual health insurances.
- Territorial collectivities participate in the financing of the health sector via the construction of infrastructure and the payment of workers' salaries.

3. ORGANIZATION OF THE HEALTH PRODUCT SUPPLY CHAIN

1. Public Sector Supply

Only one public structure, the Health Science Research Institute (IRSS – Ouagadougou), and some private structures produce medicines in Burkina Faso[48]. Therefore, almost all health products are imported. There are two main types of channels in the supply chain:

- the channel for drugs distributed for free ("free" channel);
- the channel for drugs intented for sale ("for sale" channel).

As a result, two parallel monitoring systems coexist at the intermediary and peripheral levels. Products from the "free" channel are generally allocated ("push" system), as opposed to products from the "for sale" channel, which are rather ordered ("pull" system).

Additionally, the free drug channel is itself particularly complex, as highlighted by a survey conducted in 2010 by the Directorate-General for Pharmacy, Drugs, and Laboratories (DGPML), in collaboration with the WHO[49]. Indeed this system is composed of several sub-systems which are vertical and different from each technical and financial partner (TFPs) and type of products. For example, the National Plan for the Fight against Tuberculosis (PNT), the Ministerial Committee for the Fight against AIDS (CMLS), and the National Plan for the Fight against Malaria (PNLP) have their own supply system.

Supply managers, in general pharmacists working in central directorates' programs, are responsible for selecting products. The products supplied through these programs are delivered:

- either to the National Supply Center for Essential Generic Drugs (CAMEG) which has warehouses adapted for storage as well as appropriate distribution logistics;
- or to central directorates which have neither suitable warehouses, nor transport logistics for distribution, and little or no space for the storage of products which are sometimes left in corridors in these directorates' offices before being distributed to health structures. Moreover, the MoH sometimes receives donations which do not comply with WHO standards (alignment with needs expressed by the beneficiaries, coverage of all approach and management costs by the donor, etc.). These products are generally stored at the level of the central directorate.

Distribution is then ensured by 800 essential drug depots in public structures. In principle, each public facility has a drug depot for sales to the general public. But according to the PNDS, "the

[47] WHO, *Op. Cit.*
[48] MINISTRY OF HEALTH OF BURKINA FASO, *Op. Cit.*
[49] MINISTRY OF HEALTH OF BURKINA FASO / DGPML, WHO. *Cartographie des systèmes d'approvisionnement et de distribution des médicaments et autres produits de santé au Burkina Faso* [Mapping of Supply and Distribution Systems for Drugs and Other Health Products in Burkina Faso], December 2010.

hospital pharmacy is not established, and drugs remain financially inaccessible to the majority of the population, which could in part explain the persistence of illegal drug sales" [50].

Although 50% of supplies transit through the CAMEG, we can distinguish at least 13 different supply channels in the public health supply chain. Each channel has its own LMIS and there is no harmonization of information systems between the different TFPs. Therefore several TFPs involved in the different health programs require supply chain personnel to provide them with reports on the other channels and different products concerned.

The complexity of this system results in:

- A very high risk of misinformation communicated to TFPs by users/providers at the end of the supply chain, be it at the level of pharmacy dispensaries or at the level of district hospitals.
- Great difficulties in managing needs priorities due to diverging conditions of supply from one TFP to another and, more particularly, widely varying deadlines and different reporting frequencies, which significantly increases the risk of stock-out or overstock at the end of the supply chain.
- Some TFPs remain locked into a specific supply system and are therefore not very open to potential changes. This situation is, in part, responsible for the multiplicity of health product supply channels throughout the country.

More particularly, the following deficiencies should be noted:

- Insufficient space for storage in the periphery.
- Budget issues, with interruptions during the year, which has an impact on results (travels, equipment maintenance, staff training).
- No monitoring dashboard for the different products in stock in DRSs, and warehouses not always complying with standards.
- Poor logistics management (especially maintenance).
- Multitude of technical reports but no management reports.
- Decaying, badly maintained infrastructure at the level of CMAs and CSPSs.
- Cold chain equipment not available for products other than vaccines.
- Needs are ill-defined since the information system is weak.
- Quality checks are the responsibility of the National Public Health Laboratory (LNSP) and they are generally done at the request of the DGPML. The laboratory is not certified by the WHO, and the quality and length of its analyses are major concerns: the production of results is particularly slow, or inexistent, and therefore, imported products are often distributed before the results of the analyses arrive.

2. Private Sector Supply

Private sector supply is ensured by nine private wholesalers (Cophadis, Laborex, Pharmaplus, Faso Galien, Multi M, DPBF, ISDA, COPHARMED, Pharma International). Distribution is ensured by 144 private pharmacy dispensaries and 500 private drug depots[51].

However according to the DGPML, "here we do not encourage the establishment of parallel supply systems by private actors"[52].

Traceability and, more generally, the monitoring of products are better ensured in the "for sale" channel than in the "free" channel. It should also be noted that there exist illegal channels for drug sales.

[50] MINISTRY OF HEALTH OF BURKINA FASO, *Op. Cit.*
[51] Ibid.
[52] BIOFORCE INSTITUTE, *Op. Cit*.

3. Supply Chain Human Resources

In Burkina Faso, health product supply chain professionals are pharmacists and public sector pharmacy assistants. This responsibility is entrusted to them at both legal and regulatory levels. The official acts they sign must be endorsed by their structures' primary leaders. Finally, the implementation of acts having financial consequences requires the approval of the institution's financial officer.

The following table gives an estimate of the number of staff involved in SCM, per occupational category.

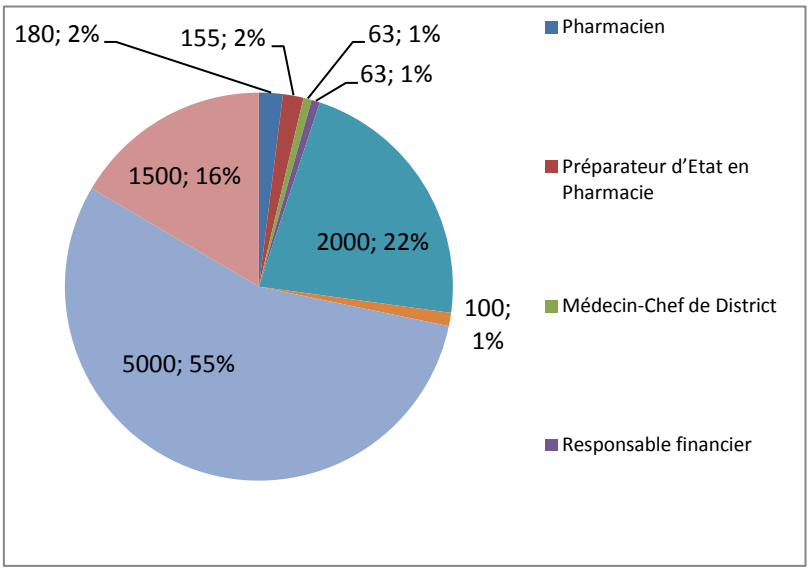

Figure 4. Number of SCM positions in Burkina Faso[53]

There is no qualification or certification system required for the personnel in charge of SCM. In general, all supply directorates would rather train medical staff in SCM than employ pure logisticians. The medical workforce is therefore mobilized on logistics issues, even though it is not trained in these tasks. This considerably reduces its availability for healthcare. The resulting lack of performance contributes to the loss of motivation, particularly at the peripheral level.

Pharmacists are currently trained at the Health Science Training and Research Unit (UFR SDS) of the University of Ouagadougou. Public sector pharmacy assistants are trained at the National School of Public Health (ENSP). It should be noted that the ENSP provides basic knowledge of human and material resource management to all the paramedical staff it trains, through a health service management course.

Non professional workers are recruited at a junior secondary education level and receive short theoretical training in health product supply, as well as field training.

The above elements and the analysis of the deficiencies of the health logistics system highlight the importance of a more effective professionalization of logistics functions.

4. Equipment and Infrastructure

According to the PNDS, efforts have been made to reinforce the DGIEM's capacity (Directorate-General for Infrastructure, Equipment and Maintenance). However, there is still no policy for infrastructure, equipment and maintenance. Structures and equipment suffer from a lack of funding, under-qualified maintenance staff and equipment.

[53] Ibid.

In regional and local structures, storage conditions do not allow the efficient management of health products and equipment. Storage rooms are often cramped, poorly ventilated, and not equipped with basis logistics tools (forklift truck, pallet truck, etc.). Therefore, a lot of equipment is not functional, especially in districts. Health structures themselves are not sufficiently maintained, too cramped, or inappropriate.

For TFPs (Global Fund, Work Bank, UNITAID, etc.), equipment and infrastructure maintenance must be financed under government budget. However, government subsidies to health structures are limited and therefore, they only finance expenditures which are considered priority (e.g. salaries) and only involve a few supply chain support activities.

5. Improving Supply Chain Management

According to the results of the survey, several steps would allow the improvement of SCM in Burkina Faso:

+ The creation of the logistician position at the central and regional levels, to improve product, material, and equipment management.
+ The development of short training courses (basic interviews, tools, daily use of tools and equipment), i.e. 2-3 days training courses starting in CMAs or CSPSs, up to the central level.
+ Training maintenance staff is a priority. Staff distribution is important but maintenance agents must also understand their educational role towards the daily users of the different types of equipment.
+ The integration of a certain number of hours of training in the health product supply chain into pre-service training courses intended for pharmacists, doctors and paramedical staff. The various steps of the supply chain are often little-known.
+ In-service training should include the following: elaboration of supply plans, quantification, pre-quantification of the product/provider couple, and hospital pharmacy management.

1. GENERAL COUNTRY PROFILE

The Republic of Guinea has 6 neighboring countries (Guinea-Bissau to the North-West, Senegal to the North, Mali to the North-East, Côte d'Ivoire to the East, Liberia and Sierra Leone to the South). The country is also bordered by 300 km of coast[54].

The country's economy is mainly based on the mining and agricultural sectors. However, despite the economic potential of its natural wealth, Guinea remains badly hit by poverty.

Official development aid has considerably decreased since 2002[55]. Moreover, "declining terms of trade resulted in a significant decrease in mining revenue (first source of hard currency), rendering the state unable to properly finance its priority objectives, especially in social sectors"[56].

COUNTRY PROFILE: Guinea[57]	
Population	10,884,958
Area (km²)	245,857
Median age	18.6
Urban population (% of the total population)	35
Human Development Index	0.344 (178th)
Literacy rate (% of the total population)	29.5
GDP per inhabitant (US$)	1,100
Population under the poverty line (% of the total population)	47
Life expectancy at birth	58.61
Child mortality rate (/1000 people)	59.04
Adult mortality rate (/1000 people)	364 (men); 319 (women)
First causes of under-5 mortality	Malaria (24%), pneumonia (17%), diarrhea (14%)

[54] MINISTRY OF HEALTH OF THE REPUBLIC OF GUINEA, *Plan National de Développement Sanitaire 2005-2014* [National Health Development Plan 2005-2014], August 2004 version.
[55] UNDP, *La Réduction de la Pauvreté en Guinée* [Poverty Reduction in Guinea], available in French only at: http://www.gn.undp.org/html/pauv.html
[56] APPUI AU RENFORCEMENT DE L'INDEPENDANCE VACCINALE EN AFRIQUE (ARIVA), Guinée, *Quelques information sur le pays* [SUPPORT TO THE REINFORCEMENT OF IMMUNIZATION INDEPENDENCE IN AFRICA, Guinea, Some Information on the Country], http://www.ariva.bf/html/guinee1.htm.
[57] WHO, *Fiche d'information des statistiques sanitaires Guinée 2010* [Health Statistics Information Sheet, Guinea 2010]; WHO, *Country Health Fact Sheet 2006*.

2. ORGANIZATION OF THE HEALTH SYSTEM

1. The Public Sector and the National Health Policy

In 1988, Guinea launched a national primary healthcare strategy (Expanded Program on Immunization / Primary Health Care / Essential Drugs: EPI/PHC/ED) based on the Bamako Initiative. The first PNDS, in accordance with the objectives of the Poverty Reduction Strategy Paper (PRSP), was published in 1997, and the last one covers the period between 2005 and 2014[58].

In accordance with the recommendations of the Bamako Initiative, the public health system is organized into a three-level pyramid: central, intermediary, and peripheral.

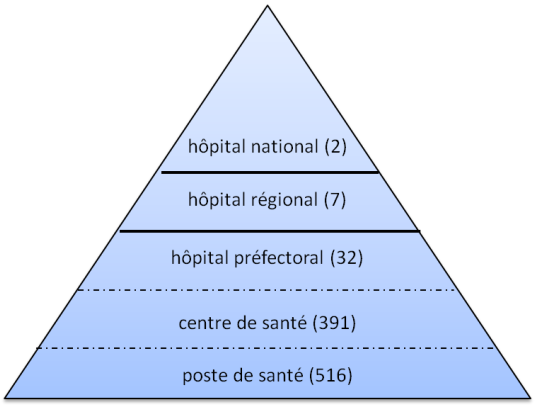

Figure 5. Structure of the Health System in Guinea

The central level is composed of the Health Minister's office, its central services, different programs and projects, affiliated services, public administrative establishments (2 national hospitals, the National Blood Transfusion Center, etc.), and the Central Pharmacy of Guinea.

The intermediary level is composed of the 7 Regional Health Directorates (DRSs), regional health inspectorates, and regional hospitals.

The peripheral level corresponds to health districts. It is composed of 33 prefectural health directorates and several levels of health structures: prefectural hospitals, Health Centers (CSs), Health Posts (PSs) with one health worker and community workers, and community-based services.

According to data from the basic integrated survey for poverty assessment conducted in 2002-2003, the access rate for health services (less than 30 minutes) is 38.9%, and the utilization rate for health services is 18.6%[59].

2. The Private Sector

The for-profit private sector, which collaborates very little with the public sector, mainly develops in urban areas (55% of structures[60]) and includes 19 clinics, 2 enterprise hospitals, 219 medical practices, 11 dental practices, and 16 midwifery practices.

The illegal private sector is greatly developing, facilitated by a weak control and inspection system. The quality of services and products, and the prices charged, are completely outside government control.

At the community level, traditional practitioners, whose area of intervention is very wide, constitute an important source of care. They are estimated to be between 8,000 and 10,000 throughout the territory[61]. Since 1994, the Guinean government committed to greater collaboration between the Traditional Medicine Division and traditional practitioners' associations, as well as to enhancing the status of traditional medicine.

[58] MINISTRY OF HEALTH OF THE REPUBLIC OF GUINEA, *Op. Cit.*
[59] WHO, *Stratégie de l'OMS avec les Pays, Guinée 2008-2013* [Guinea Country Cooperation Strategy 2008-2013].
[60] WHO, *Profil des systèmes de santé des Pays, République de Guinée* [Health System Profile, Republic of Guinea], 2005.
[61] Ibid.

3. Human Resources for Health

The health workforce is essentially composed of public officers, with 50% of contract staff. A survey on the health workforce's situation was conducted in 2011 by the MoH in the context of the elaboration of the human resource development plan. According to the results of this analysis, the MoH employs in total 6,679 people, distributed between medical staff (82.2%) and support staff (17.8%)[62].

The PNDS 2005-2014[63] highlights many issues related to health human resources:

- Loss of motivation due to numerous factors: no job descriptions and therefore no differentiation of tasks, no career profiles, fees considered to be too low, and bad working conditions.
- Unbalanced distribution: unfair distribution of staff between Conakry and the rest of the country, and between urban and rural areas (72.5% of staff works in urban areas where only 30% of the population lives).

Still according to the PNDS, some unbalances are also linked to a lack of coordination and communication between the educational system and the MoH:

- Quantitative unbalance: some occupational categories are over-represented (technical health workers and doctors for instance) while others are under-represented (midwives, pharmacy assistants, and social workers for example). Moreover, a survey on the health workforce's situation conducted in 2001 by the MoH demonstrates that, between 2001 and 2008, more than 25% of paramedical staff (already under-represented in general) was going to retire.
- Qualitative unbalance: the number of young graduates is considered to be too low, and the skills of some workers are not adapted to their job's requirements.

4. Health Sector Financing

The health sector is particularly dependent on external aid.

- The government finances 11.3%[64] of the country's total health expenditure. It mainly finances the health system's structural costs, mostly public officers' salaries, as well as some investment operations in health centers and hospitals, the purchase of part of vaccines, central and decentralized structures' other operating costs, and pre-service and in-service training.
- Local collectivities (municipalities, prefectures, regions) only finance part of contract staff.
- External aid is a major source of financing. The main donors are: GAVI, UNFPA, UNICEF, UNDP, GTZ, WFP, and USAID. According to the WHO[65], this aid mainly finances investments (infrastructure, heavy equipment, and training).
- Households, through cost recovery, finance part of "the construction of the health infrastructure, operating costs, the repurchase of pharmaceutical products, staff motivation, maintenance costs, and tool management"[66].

3. ORGANIZATION OF THE HEALTH PRODUCT SUPPLY CHAIN

1. Public Sector Supply

In the public sector, pharmaceutical product supply has been defined by the national pharmaceutical policy since 1994. Yet this policy has still not been translated into a validated implementation plan, and it is not monitored/evaluated on a regular basis[67].

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[62] Ibid.
[63] MINISTRY OF HEALTH OF THE REPUBLIC OF GUINEA, *Op. Cit.*
[64] WHO, *Global Health Observatory Data Repository*, http://apps.who.int/ghodata/.
[65] WHO, *Stratégie de l'OMS avec les Pays, Guinée 2008-2013* [Guinea Country Cooperation Strategy 2008-2013].
[66] Ibid.

According to the WHO, the only industrial unit which has a manufacturing license is the SODONGPHARMAGUI, headed by Chinese economic actors[68]. The majority of health products is imported.

The Central Pharmacy of Guinea (PCG), which is an industrial and commercial public establishment, has been the public pharmaceutical product procurement center since 1994. It has a central warehouse and five regional intermediate warehouses. Its mission is to supply the following with drugs and products:

- public health facilities: (national, regional, and prefectural) hospitals, laboratories, and health research institutes;
- NGOs involved in public services and cooperation projects.

The Essential Drug (ED) unit of the EPI/PHC/ED program, created on a provisional basis in 1988 within the framework of the launching of the Bamako Initiative, also has its own distribution network composed of a central warehouse and four regional warehouses. It mainly provides essential products financed by donors (WHO, UNICEF, the EU) and subsidized, therefore at a lower price than the PCG. At the regional level, depots are integrated into regional health inspectorates. A decree (June 26, 2002) demands the integration of the ED unit into the PCG but, in practice, it has never been implemented.

Therefore at the regional level, PCG depots can coexist with those of the ED unit but very few coordination mechanisms are implemented between the two structures. This double channel generates a critical waste of resources and means in the health context of Guinea.

The PNDS highlights the fact that "the public supply, distribution, and drug management system is still fragile"[69]. An analysis of the pharmaceutical sector was conducted in 2006 in order to update the National Pharmaceutical Policy (update still ongoing). This survey revealed the incapacity of current supply channels to properly meet pharmaceutical needs.

Indeed, despite technical support financed by the European Union and the improvement of the PCG's capacity, operations are hindered by financial constraints, lack of support from the MoH, and limited access to hard currency, which restrains international purchases[70]. Also to be noted, the poor management of available resources, administrative slowness in the supply process, and poor control of needs due to the lack of planning for the supply of health structures and a barely functional logistics information system.

Transportation from the central pharmacy to regional depots is also problematic because of insufficient cash flow to finance transportation costs[71]. Consequently, stock-outs are frequent and often long-lasting[72] in regional depots, and therefore also in public health structures.
In the face of such inefficiency of the system, various programs have developed vertical supply practices and parallel distribution practices, therefore multiplying channels even more (for ARVs, anti-tuberculosis drugs, anti-leprosy drugs, etc.).

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[67] GLOBAL FUND, WHO, *Profil du secteur pharmaceutique de pays, Guinée* [Pharmaceutical Sector Profile in Guinea].
[68] Ibid.
[69] MINISTRY OF HEALTH OF THE REPUBLIC OF GUINEA, *Op. Cit.*
[70] GLOBAL FUND, WHO, *Op. Cit.*
[71] Ibid.
[72] MINISTRY OF HEALTH OF THE REPUBLIC OF GUINEA, *Op. Cit.*

2. Private Sector Supply

Private sector supply is ensured by 4 certified distribution wholesalers. Prices, general high, greatly vary. Essential drugs only represent 5% of the private sector's turnover[73].

The sector has 236 pharmacy dispensaries, including 73% located in Conakry, and 40 drug sales depots[74].

Additionally, low general availability, or even shortage, of drugs in public health facilities favors the development of illegal supply channels. "The illegal sector's development is out of control", notes the PNDS.

3. Supply Chain Human Resources

There is only one school of pharmacy in Guinea, at the National University (155 graduates in 2010). The basic training program for pharmacists includes aspects related to drug supply management[75].

The total number of pharmacists authorized to practice in the country is 650 (or 0.57 for 10,000 inhabitants), including 223 in the public sector. There are also 22 pharmacy technicians and assistants[76].

In-service training in logistics chain management is organized in favor of staff, with support from technical and financial partners such as GTZ, UNFPA, and the French Cooperation.

On the human resources side, the main weaknesses mentioned are:

- Insufficient skills in supply system management;
- The absence of personnel dedicated to this management (non existence of the health logistician position);
- The lack of tools allowing good staff management (manual of procedures in management, job description sheets, etc.). These tools only exist in the PCG.

4. Equipment and Infrastructure

The PNDS highlights the fact that infrastructure and equipment are not adapted to needs and do not always comply with the required technical and functional standards. Equipment and infrastructure maintenance is guided by no performing system (no or inefficient maintenance plans, standards, or procedures related to wealth management). Consequently, the lifespan of equipment is significantly reduced, just like the quality of the management of patients. Because of the low quality of the technical platform (especially in hospitals), some diseases, including frequent ones, cannot be treated, which results in numerous medical evacuations.

Health Centers' (CSs) procurement from regional depots is generally done twice a year, by motorbike[77]. Yet some CSs have no bike while other have several bikes[78].

Moreover, only two regions (Kankan and N'Zerekore) have refrigerators and freezers for vaccine supply, and around 5% of CSs have no cold chain[79].

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[73] WHO, *Profil des systèmes de santé des Pays, République de Guinée* [Health System Profile, Republic of Guinea], 2005.
[74] Ibid.
[75] GLOBAL FUND, WHO, *Profil du secteur pharmaceutique de pays, Guinée* [Pharmaceutical Sector Profile in Guinea].
[76] *Op. Cit.*
[77] USAID, *Study of the Contraceptive Supply Logistics in the PRISM Project Zone in Guinea*, March 2006, http://pdf.usaid.gov/pdf_docs/Pnadg520.pdf.
[78] WHO, *Op. Cit*.

5. Improving Supply Chain Management

In Guinea, the public health supply chain appears to be inefficient. At the overall level, the main issues seem to be:

- Lack of financial resources;
- Lack of investment from the government;
- Multiplication of supply channels.

Today, deeply reviewing the National Supply Pharmacy (PNA) and creating an implementation plan for it appear to be particularly critical. Several aspects require special attention:

+ Integrating parallel supply channels into the PCG supply channel;
+ Creating an operational LMIS and training staff;
+ The quantitative development of pre-service training for pharmacists;
+ The integration of more in-depth SCM courses into pharmacy degrees;
+ Creating the health logistician position at the central level, and developing pre-service training in Health Logistics;
+ In-service training for personnel in charge of the supply chain at the central level;
+ Developing a maintenance system, and more particularly equipment and infrastructure maintenance plans.

At the intermediary and peripheral levels, the main solutions proposed for a performing supply system are:

+ In-service training of personnel in charge of management and supply: quantification, elaboration of supply plans, stock management;
+ In-service training of maintenance officers;
+ Creation of an operational LMIS and in-service training of personnel in the collection and communication of information;
+ Systematic creation of job profiles;
+ Strengthening the transport system (« last mile vision»): improvement of material, human, and financial capacity.

[79] Ibid.

1. GENERAL COUNTRY PROFILE

Madagascar is an island located in the Indian Ocean, East of Mozambique. Due to its geographical situation, the country is prone to cyclones and repeated floods.

Agriculture (including fishing and forestry) is a pillar of the Malagasy economy, contributing to one quarter of GNP and employing 80% of the population. Export of garments has significantly developed these last few years thanks to tax exemption in favor of the United States but, when these agreements ended in 2010, textile production dropped significantly. Deforestation and erosion, aggravated by the mass use of wood for heating, are also major concerns.

The 2001-2002 political crisis led to an important recession, increasing the poverty rate up to 80.7%[80].

COUNTRY PROFILE: Madagascar[81]	
Population	22,585,517
Area (km²)	587,041
Median age	18.2
Urban population (% of the total population)	30
Human Development Index	0.48 (151st)
Literacy rate (% of the total population)	68.9
GDP per inhabitant (US$)	900
Population under the poverty line (% of the total population)	50
Life expectancy at birth	64
Child mortality rate (/1000 people)	50.09
Adult mortality rate (/1000 people)	338 (men); 270 (women)
First causes of under-5 mortality	Neonatal causes (25.6%), pneumonia (20.7%), malaria (20.1%), diarrhea (16.9%)

[80] WHO, *Stratégie de coopération de l'OMS avec les pays, Madagascar, 2008-2013* [Madagascar Country Cooperation Strategy 2008-2013].
[81] CIA, *World Fact Book*; WHO, *Country Health System Fact Sheet Madagascar*, 2006.

2. ORGANIZATION OF THE HEALTH SYSTEM

1. The Public Sector and the National Health Policy

Madagascar's national health policy has been in force since 2005 and is implemented through 8 health programs. In 2004, the country also adopted a national pharmaceutical policy which was revised in 2011. Finally, it should be noted that the health sector is governed by a public health code.

The health system is organized into 4 levels:

- **The central level** which is composed of the Secretariat-General, the General Project Coordination Unit, and the Head of the Minister's office, which are the executive bodies around the Minister. Technical directorates and directorates in charge of department management, i.e. nine directorates in total, are also part of the central level.
- **The intermediary level** composed of Regional Public Health Directorates (DRSPs).
- **The peripheral level** composed of 111 health districts.
- **The community level** implementing cross-cutting activities related to health (COsan, COges, the Health/Management Committee established by the government in each village).

The health district is at the heart of the system and is structured as follows:

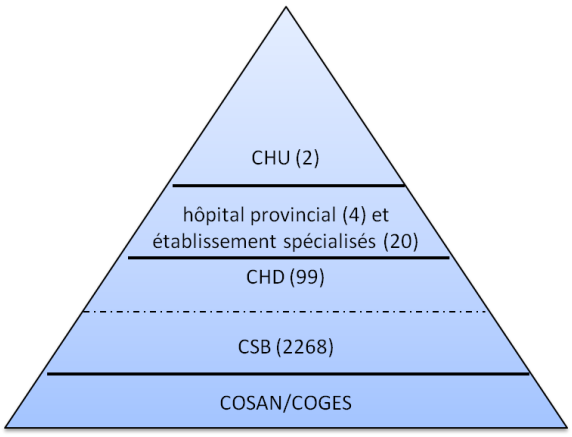

Figure 6. Structure of the Health System in Madagascar

- a district health unit headed by the District Management Team (EMAD) in charge of planning and implementing health programs;
- a District Hospital (CHD) or a reference first resort center;
- District Basic Health Centers (level 1 or 2 CSBs) for the first contact;
- all private health facilities located in the CSB's area of jurisdiction.

According to the WHO, "the main concern at the peripheral level is the operation and development of activities and services within districts, as well as the inventory of the resources needed for these operations"[82]. The utilization rate of public basic health services is below 50%[83].

The WHO points several issues in care management:

- low quality of health services;
- lack of implementation of the District Development Plan (PDD) and the Annual Work Plan (PTA);
- little geographical access to services: "throughout the territory, 58% of the population can access a health facility within less than 5 kilometers", which led the Ministry of Health and Family Planning to create mobile health teams for the most remote areas[84];
- little financial access to services for poor households;
- insufficient drug supply;
- insufficient financial resources allocated to health.

[82] WHO, *Profil du système de santé de Madagascar* [Madagascar's Health System Profile], December 2004.
[83] Id., *Stratégie de coopération de l'OMS avec les pays, Madagascar, 2008-2013* [Madagascar Country Cooperation Strategy 2008-2013].
[84] Id., *Profil du système de santé de Madagascar* [Madagascar's Health System Profile], December 2004.

2. The Private Sector

Nearly 15% of the country's health structures are part of the private sector[85]. This sector, which is generally more functional than the public sector, is composed of for-profit establishments, religious establishments, and NGOs.

Around 110 national and international NGOs work in the health sector in Madagascar[86], and some of them own health facilities (734 CSBs and 34 CHDs[87]).

3. Human Resources for Health

In 2001, the health workforce represented 13,595 people, including 2,281 doctors. The number of paramedical staff (nurses and midwives) has decreased since 2000[88], and 50% of health workers are aged over 50. A pre-service training plan is necessary to renew staff. There are several private professional schools and training institutions, such as the National Institute for Public and Community Healthcare and the Paramedical Training Institute[89], but the relationship between training and the sector's needs still needs to be strengthened.

According to the WHO, although EMADs are at the heart of the health system, they still lack skills and resources. To be noted, among other things:

- the qualitative and quantitative lack of monitoring and supervision of activities;
- the lack of training and direction in the elaboration of the PDD and the PTA;
- the non compliance with management principles (planning not followed, unclear organizational chart, no distribution of tasks, lack of team work);
- inefficient leadership.

This results in low staff motivation at the peripheral level.

Moreover, medical staff distribution is uneven: "21% of the population, in urban areas mainly, is covered by 41% of medical staff"[90].

4. Health Sector Financing

In 2008, the total annual health bill was estimated at US$422,390,000[91]. Unlike what was observed in most of the other countries included in this survey, public health expenditure represents the major part of this amount. The private health bill amounts to 30.80% in total.

The total pharmaceutical bill reached US$67,330,000, equivalent to 15.9% of the total health bill.

The government introduced community participation in health sector financing. However, according to the WHO, "a certain number of households are forced to go bankrupt in order to pay for care, particularly in hospitals, or have to forego medical treatment altogether because fees are too high"[92].

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[85] Id., *Stratégie de coopération de l'OMS avec les pays, Madagascar, 2008-2013* [Madagascar Country Cooperation Strategy 2008-2013].
[86] Id., *Inventaire des ONG/santé à Madagascar* [Inventory of Health NGOs in Madagascar], April 2003.
[87] Id., *Stratégie de coopération de l'OMS avec les pays, Madagascar, 2008-2013* [Madagascar Country Cooperation Strategy 2008-2013].
[88] Id., *Profil du système de santé de Madagascar* [Madagascar's Health System Profile], December 2004.
[89] Ibid.
[90] Ibid.
[91] WHO, GLOBAL FUND, *Profil du secteur pharmaceutique de pays, Madagascar* [Madagascar's Pharmaceutical Sector Profile], 2011.
[92] Ibid.

Out of a total health bill of US$6 per person and per year, US$2.2 come from external aid[93]. The main technical and financial partners are: WHO; UNFPA; UNICEF; the Japanese cooperation (JICA); the American Cooperation (USAID); GAVI funds; the Global Fund to Fight AIDS, Tuberculosis, and Malaria; and the African Development Bank (AfDB).

3. ORGANIZATION OF THE HEALTH PRODUCT SUPPLY CHAIN

1. Public Sector Supply

At the central level, the Directorate for the Management of Health Inputs, Laboratories and Traditional Medicine (DGILMT) and the Drugs Agency of Madagascar (AGMED) supervise, regulate, and control the supply system. Generic drugs represent 61% (in value) of the drug market[94].

The SALAMA purchasing center is responsible for supplying health facilities with essential drugs throughout the entire national territory. It has regional warehouses which themselves supply hospital pharmacies and health districts' wholesale pharmacies (which in turn supply community-managed pharmacies).

However, part of public sector supply is ensured by the DGILMT and national health programs which supply Regional Public Health Directorates and, in turn, health districts.

A number of issues have been noted with regard to SCM[95]:

- some essential drugs are out of stock;
- the list of drugs available at SALAMA is insufficient;
- security in warehouses is insufficient;
- misuses have been discovered belatedly due to the lack of frequent monitoring;
- the logistics information system is poorly developed (the information reaching EMADs is incomplete in quantity and poor in quality and, in some cases, EMADs do not have the capacity to interpret, analyze and use the data collected);
- difficulties in the transport and delivery of drugs are significant at the peripheral level;
- absenteeism of personnel in charge of SCM;
- lack of personnel and lack of skills in drug management and LMIS management.

2. Private Sector Supply

Alongside the public sector, the private pharmaceutical sector is composed of some small drug manufacturing industrial units, as well as 205 pharmacies (in 2011) and sales depots[96].

Traditional medicine is also relatively developed and in 2000, the country adopted regulations for herbal medicine, with support from the WHO. Small enterprises extract essential oils and collect medicinal plants.

The illegal drug market is also developing, especially as a response to the public sector's deficiencies.

[93] Ibid.
[94] Ibid.
[95] WHO, *Profil du système de santé de Madagascar* [Madagascar's Health System Profile], December 2004.
[96] WHO, GLOBAL FUND, *Profil du secteur pharmaceutique de pays, Madagascar* [Madagascar's Pharmaceutical Sector Profile], 2011.

3. Supply Chain Human Resources

Pharmacists are relatively few in the public sector. We only find them at the central level in administration, in the SALAMA purchasing center, and in national hospital pharmacies. At the central level, they ensure drug warehouse management with doctors, nurses, and accountants.

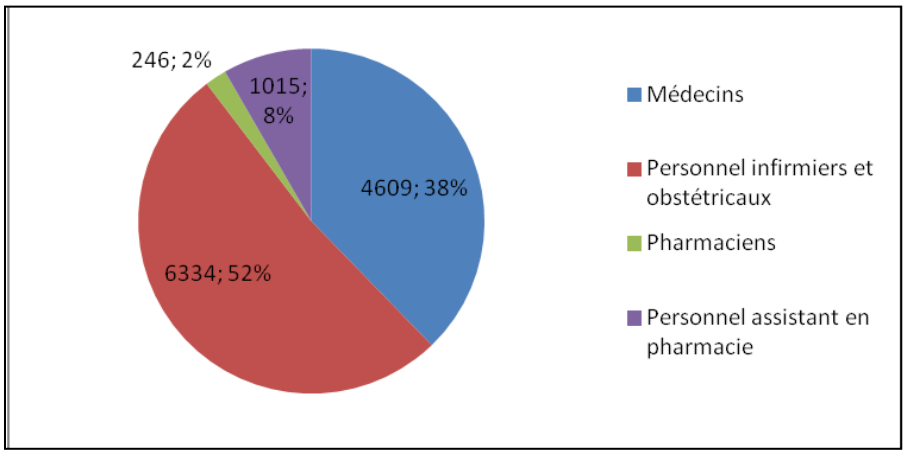


Figure 7. Public Health Occupational Categories in Madagascar

At the intermediary and peripheral levels, warehouses and hospital pharmacies, as well as basic health centers' pharmacies, are only managed by doctors, nurses, and non professional workers. The health system has no health logisticians.

4. Equipment and Infrastructure

The health infrastructure does not comply with standards. It is decaying, cramped, and in need of maintenance. In remote areas, it raises security issues and it is inaccessible 6 to 8 months a year, during the rainy season[97].

Materials and equipment are insufficient, decaying, and in need of maintenance. They are not properly registered and recorded, and they are poorly managed, which leads to unexplained disappearing and poor performance.

Health workers are trained in neither maintenance nor accounting. Sometimes, tools (book, newspaper, accounting book, delivery book) are not available.

5. Improving Supply Chain Management

In the face of the difficulties observed, priorities in the supply system are the following:

+ creation of the health logistician position;
+ quantitative development of health logistics and pharmacy human resources (recruitment, pre-service training);
+ support to the qualitative development of pre-service and in-service training for positions related to the supply chain;
+ development of an equipment and maintenance plan;
+ creation of a computerized and functional database at the level of the DGILMT, down to the peripheral level;
+ revival of the fight against the illegal drug market;
+ more financial investment in the supply chain.

[97] WHO, *Profil du système de santé de Madagascar* [Madagascar's Health System Profile], December 2004.

1. GENERAL COUNTRY PROFILE

Mali is a continental country, located at the heart of West Africa. It shares 7,420 km of border with seven neighboring countries: Algeria to the North, Niger and Burkina Faso to the East, Côte d'Ivoire to the South, Guinea Conakry and Senegal to the West, and Mauritania to the North-West[98].

Poverty significantly affects the country and its incidence is more important in rural than in urban areas. The country's economy is heavily dependent on the mining industry (gold) and agricultural exports. Therefore, government budget greatly varies depending on the harvest and commodity prices. The economic activity is concentrated around the valley irrigated by the Niger River as 65% of the land is desert or semi-desert. The country also remains heavily dependent on external aid.

COUNTRY PROFILE: Mali[99]	
Population	14,533,511
Area (km²)	1,240,192
Median age	16.3
Urban population (% of the total population)	36
Human Development Index	0.359 (175th)
Literacy rate (% of the total population)	46.4
GDP per inhabitant (US$)	1,300
Population under the poverty line (% of the total population)	36.1
Life expectancy at birth	53.06
Child mortality rate (/1000 people)	121
Adult mortality rate (/1000 people)	490 (men); 414 (women)
First causes of under-5 mortality	Neonatal causes (25.9%), pneumonia (23.9%), diarrhea (18.3%), malaria (16.9)

[98] MINISTRY OF HEALTH OF THE REPUBLIC OF MALI, *Cartographie et évaluation approfondie du système d'approvisionnement et de distribution des médicaments et autres produits de santé au Mali* [Mapping and In-depth Analysis of the Supply and Distribution System for Drugs and Other Health Products in Mali], 2008.
[99] CIA, *World Fact Book*; WHO, *Country Health System Fact Sheet, Madagascar*, 2006.

2. ORGANIZATION OF THE HEALTH SYSTEM

1. The Public Sector and the National Health Policy

The public sector provides the essential part of emergency and hospital care through health structures organized into a three-level pyramid[100]: the central level, the regional level, and the sub-regional level.

The central level has 3 CHUs (the Point G Hospital, the Gabriel Touré Hospital and the Kati Hospital), one foundation hospital (the Luxemburg Mother/Child Hospital), and specialized establishments (the National Center of Odonto-Stomatology, the Ophtalmology Institute, the National Blood Transfusion Center, the National Public Health Research Institute, etc.). The health administration is composed of the Health Minister's office, central services, and affiliated services. This third level is in charge of supporting regions with political, administrative, and technical issues.

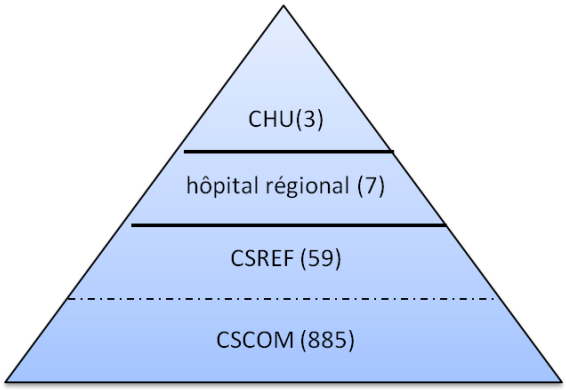


Figure 8. Structure of the Health System in Mali

The regional level includes 7 public hospitals which receive patients referred by the peripheral level and emergency services. At the regional level, the health administration is represented by the DRS. It is a decentralized service of the central administration in charge of providing administrative and technical support to Circles Health and Social Teams (ESSCs).

The sub-regional level is composed of 59 reference health centers (CSrefs, located in health districts' chief towns), including 6 centers in the Bamako district, and 885 community health centers (CScoms) which are first contact structures for the population. In comparison with CScoms, CSrefs have a larger technical platform and more qualified staff in order to ensure the management of referred patients and play the role of a health district hospital. CScoms, in accordance with the Health Policy Act (Act N°02-049 of July 22, 2002) are considered as private not-for-profit health establishments, created and managed by Community Health Associations (ASACOs). The district health administration is affiliated to the health system and represented by the ESSC. This team is in charge of the technical supervision of CScoms on behalf of ASACOs within the framework of the mutual assistance agreement.

There also exists a **para-public sector** which "includes the security and armed forces' infirmaries and maternity services, the inter-enterprise medical centers of the National Social Security Institute (INPS), and the distribution network of the Malian People's Pharmacy"[101].

The utilization rate of health services (CScoms and CSrefs) remains low, lingering around 20% (average between 2001 and 2004), and "the irregularity of supervision as well as the absence of qualified staff in CScoms can affect the quality of the services provided in a relatively negative way"[102]. Financial accessibility to health services also remains a major concern for many households.

[100] MINISTRY OF HEALTH OF THE REPUBLIC OF MALI, *Op. Cit.*
[101] WHO, *Profil du système de santé du Mali* [Mali's Health System Profile], 2005.
[102] Ibid.

2. The Private Sector

For-profit private structures include, according to the WHO[103], private clinics, medical and healthcare practices, pharmacy dispensaries and private drug depots, import and wholesale establishments for pharmaceutical products, pharmaceutical product manufacturing establishments, and analysis laboratories. The for-profit private sector is coordinated by Orders of health professionals (the Order of doctors, midwives, and pharmacists) in collaboration with the government. The for-profit private sector is generally concentrated in big cities and, because of the high prices charged, remains reserved for a privileged section of the population.

The non-profit private sector has been created and is managed by associations, foundations or religious congregations. Mutual healthcare establishments and NGOs' health facilities are also accounted under this category.

The traditional medicine sector is not negligible. Mali has elaborated a National Traditional Medicine Policy (PNMT, 2004) and the country has a traditional medicine department within the National Public Health Research Institute.

3. Human Resources for Health

Human resource management is spread out between three entities within the MoH:

- the Directorate for finance and staff files management material;
- the Planning and Statistics Cell, for the management of long-term training grants;
- the National Institute for Paramedical Training in Health Sciences, for the management of public health schools.

According to the WHO, "in terms of MoH staff, in 2011, Mali had 1,536 doctors, 4,195 nurses, 676 midwives, 1,970 administrative staff, and 2,028 other support staff. In 2009, there were 816 pharmacists. Although the number of doctors and pharmacists can be considered sufficient to address the health system's current needs, Mali lacks nurses and midwives to build operational health teams, it lacks specialists to ensure hospital operations, as well as advanced health technicians (health executives, laboratory technicians, radiographers), managers, engineers, and hospital technicians"[104].

Moreover, geographical staff distribution is uneven, at the expense of rural areas: "in 2004, only 40% of doctors and 49% of nurses worked inside the country"[105]. "There is no redeployment or training plan […] and the motivation policy does not provide enough incentives to retain staff in difficult areas"[106]. It should also be noted that specialists increasingly migrate abroad, especially to France, Côte d'Ivoire, and Senegal.

Regarding training, the following public schools can be mentioned[107]:

- the Faculty of Medicine, Pharmacy, and Odontostomatology, which trains 100 doctors and around 40 pharmacists per year on average. Within this faculty, there also exist specialization courses in public health, surgery, pediatrics, etc.
- the Specialization Center for Advanced Technicians, which trains approximately 90 health workers per year, all specializations included.
- four Secondary Schools of Health and four First Cycle Nursing Schools, training approximately 100 workers per year (nurses, midwives, and health technicians).

[103] Ibid.
[104] Ibid.
[105] Ibid.
[106] Ibid.
[107] Ibid.

There are also 17 private health training schools, half of which are located in Bamako. In-service training is limited and suffers from the lack of coordination of the MoH.

4. Health Sector Financing

According to the WHO, "the total amount of funds available to health services in Mali is not controlled with precision. Accordingly, at the central and regional levels, the composition and evolution of expenditures, between salaries, drugs, maintenance, and investments, are unknown"[108]. Yet according to estimates, 63% of total resources comes from government budget, and 35% comes from technical and financial partners (especially Canada, Netherlands, France, USAID, UNICEF, UNFPA, WHO, GF).

A cost recovery system puts part of the health expenditure burden on households, especially at the peripheral level, and limits financial access to health care and services for the poorest.

3. ORGANIZATION OF THE HEALTH PRODUCT SUPPLY CHAIN

1. Public Sector Supply

Mali's pharmaceutical policy, adopted in 1998, has been integrated into the national health policy, and a national supply and distribution pattern has existed since 1996. The National Health Laboratory is in charge of product control. The Malian Pharmaceutical Product Manufactory produces around thirty molecules, although most health products are imported.

The Directorate for Pharmacy and Drugs (DPM), created in 2000, is in charge of implementing the pharmaceutical policy. The DPM estimates needs in drugs and the Malian People's Pharmacy (PPM) acts as a purchasing center for public health products, and more particularly for all products registered as essential drugs.

However, there is a parallel supply channel for vaccines intended for the Expanded Program on Immunization, for condoms, and for contraceptive drugs. TFPs (Global Fund, WHO, UNITAID, UNICEF, GAVI, USAID, etc.) also have their own supply systems.

The PPM has 8 regional depots (PPM regional warehouses) and 8 sales depots in Bamako (7 warehouses and 1 pharmacy dispensary)[109]. Warehouses supply Circles Distribution Depots (DRCs), located in 58 health districts and which in turn supply CSref and CScom depots.

For national and regional hospitals, supply is directly managed by the central level of the PPM. The PPM also supplies some not-for-profit private structures.

There are many problems in the public sector. The main difficulties diagnosed in the mapping of supply systems are the following[110]:

- The national ED list is not available at all levels.
- The system is poorly computerized and there is almost no use of specific quantification software.
- At all levels, there are almost no logistics information reports with a clearly defined transmission circuit.
- Quantification is done at the individual level, with no supply plans at the level of the purchasing center (except for ARVs).
- CHUs' tender calls are not sufficiently documented.

[108] Ibid.
[109] MINISTRY OF HEALTH OF THE REPUBLIC OF MALI, *Op. Cit.*
[110] Ibid.

- In CHUs, we note important price variations (from 5 to 90 CFA francs) between the different trace products of the survey.
- We note the precarious nature of logistical means for the transportation products ordered from DRCs by regional PPMs.
- In CHUs and DRCs, too often, storage areas do not comply with standards and conditions of storage are inappropriate.
- At all levels, stock-outs are many and products have often expired.
- Funds are not always available for orders at the level of the purchasing center.
- We note the lack of written procedures in the different structures.
- The profile of DRC staff does not facilitate the implementation of good supply and distribution practices for drugs and other health products.

2. Private Sector Supply

The supply of this sector is ensured by the PPM and certified wholesalers. Mali has 23 private wholesalers and 321 private pharmacy dispensaries[111].

3. Supply Chain Human Resources

The health product supply system is essentially managed by pharmacists and non professional staff (warehouse employees, depot managers). However, the latter only represent 10% of medical staff in Mali.

There are very few pharmacy assistants and biomedical equipment maintenance officers. The logistician position does not exist.

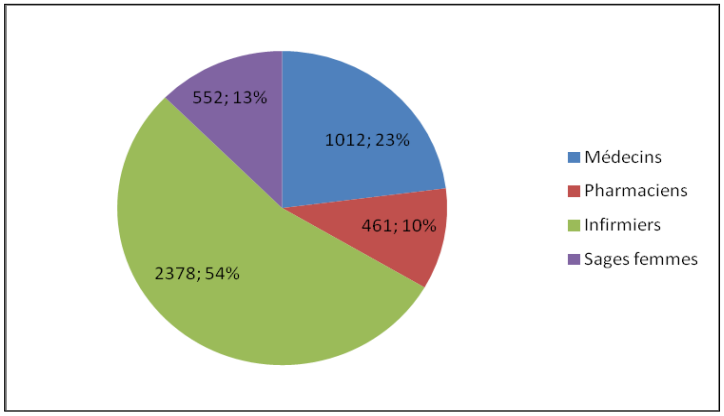


Figure 9. Public Health Occupational Categories in Mali[112]

4. Equipment and Infrastructure

The Unit for the Implementation of Health Infrastructure Rehabilitation Programs defines standards for infrastructure, equipment, and maintenance. Equipment standards have been elaborated for the different levels of the health pyramid, especially for CScoms and CSrefs. But "in general, health facilities suffer from under-equipment, dilapidation, and a lack of resources to operate"[113].

The number of technicians in charge of maintenance is insufficient (2 nurses and 10 technicians in total according to the WHO). Moreover, they are all based in national hospitals in Bamako and only go to the regional and peripheral levels on request, for support missions.

[111] Ibid.
[112] WHO, *Op. Cit.*
[113] Ibid.

5. Improving Supply Chain Management

In the pharmaceutical sector, Mali's priorities appear to be:

- to strengthen the capacity of the Pharmaceutical Regulation Authority, and more particularly its capacity to register multi-source drugs, monitor clinical trials, implement pharmacovigilance, and control the advertisement and promotion of drugs;
- to monitor the quality of drugs after they are placed on the market;
- the rational use of drugs, with the introduction of good prescription practices into training courses;
- price regulation and control;
- the availability of logistical means which are in good working condition to ensure the transportation of health products to peripheral depots;
- the continued availability of funds for product orders at all levels of the system.

HEALTH PRODUCT SUPPLY CHAIN MANAGEMENT IN SENEGAL[114]

1. GENERAL COUNTRY PROFILE

Senegal is located in the far West of the African continent, between the Republic of Mali (East), the Atlantic Ocean (West), the Islamic Republic of Mauritania (North), the Republic of Guinea-Bissau and the Republic of Guinea Conakry (South). Additionally, Gambia forms an enclave in the South-West part of the country[115].

The main export industries are phosphate mines, fertilizers, and commercial fishing. The country also develops exploration projects for the extraction of iron ore and oil. Yet Senegal is still largely dependent on external aid.

"Since 2000, the country has been part of the Least Developed Countries (LDCs). […] Following the devaluation of the CFA franc in January 1994, economic growth has recovered and the real GDP shifted from 2.9% in 1994 to more than 5% per year on average between 1995 and 2001. However, this economic performance did not contribute to significantly improve the population's living conditions or to substantially reduce poverty"[116].

COUNTRY PROFILE: Senegal[117]	
Population	12,969,60
Area (km²)	196,722
Median age	18
Urban population (% of the total population)	42
Human Development Index	0.459 (155th)
Literacy rate (% of the total population)	39.3
GDP per inhabitant (US$)	1,900
Population under the poverty line (% of the total population)	54
Life expectancy at birth	60.18
Child mortality rate (/1000 people)	55.16
Adult mortality rate (/1000 people)	358 (men); 288 (women)
First causes of under-5 mortality	Malaria (27.6%), neonatal causes (22.8%), pneumonia (20.7%), diarrhea (17.1%)

[114] BIOFORCE INSTITUTE, *Survey on Human Resource Capacity Building in Public Health Supply Chain Management in Senegal*, 2011.
[115] MINISTRY OF HEALTH AND PREVENTION OF THE REPUBLIC OF SENEGAL, *Cartographie et évaluation approfondie des systèmes d'approvisionnement et de distribution des médicaments essentiels et autres produits de santé au Sénégal* [Mapping and In-depth Analysis of Supply and Distribution Systems for Drugs and Other Health Products in Senegal], August 2009.
[116] UNDP, *Contribution du Bureau du PNUD/Sénégal à la mise en œuvre du Programme d'Actions en faveur des Pays les Moins Avancés (PMA)* [Contribution of the UNDP/Senegal Bureau to the Implementation of the Action Program in Favor of the Least Developed Countries (LDCs)].
[117] CIA, *World Fact Book*; WHO, *Country Health System Fact Sheet,* 2006.

2. ORGANIZATION OF THE HEALTH SYSTEM

1. The Public Sector and the National Health Policy

The health sector's planning system is composed of a ten-year strategic plan (the PNDS), a rolling triennial plan (the CDSMT), and an annual work plan (PTA) which takes into account Local Collectivity Operational Plans (POCL-Health).

This system has a pyramid structure:

The central level is composed of the Minister's office, the Secretariat-General, and 8 Directorates and affiliated services. Senegal has 22 national hospitals. Three hospitals are currently under construction and therefore not operational. CHUs are the reference for Regional Hospitals (CHRs).

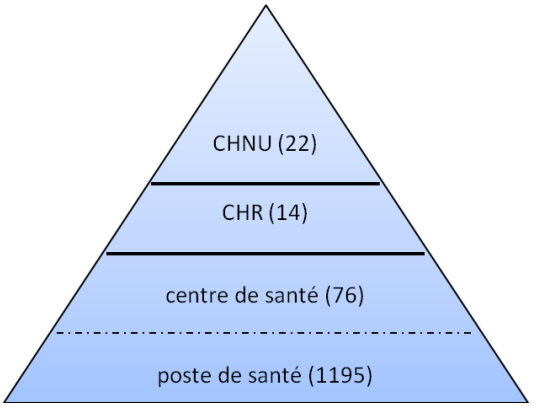


Figure 10. Structure of the Health System in Senegal

The intermediary level corresponds to the 14 medical regions. The medical region, headed by a public health doctor and covering an area of intervention corresponding to the administrative region, ensures the coordination, supervision, inspection, and control of the region's public and private health structures. At the regional level, CHRs are the reference for Health Centers. Hospitals are autonomous in their management because they are Public Health Establishments (EPS).

The peripheral level corresponds to the 69 health districts (DSs), each of them headed by a chief medical officer and representing the most peripheral operational unit of the health pyramid. The DS covers a geographical area that can cover an entire province or part of a province.

Each health district has at least one health center and a network of health posts. Health posts are based in municipalities, rural communities, or villages, and managed by nurses. They provide curative, preventive, social, and educational medical care.

There are 76 health centers, including 23 reference health centers. Health centers are the reference for health posts. There are 1,195 health posts at the district level, including 1,035 which are functional. Health posts supervise health outposts (managed by community health workers) and rural maternity services at the community level.

It is also important to note that other Ministries also play a major role in the implementation of the health policy. The army for example runs facilities throughout the country, including the garrison's military centers, as does the Ministry of National Education with its medical education centers.

2. The Private Sector

The private sector, largely concentrated in Dakar (more than 80% of private sector doctors practice in the capital and its region), plays an important role in the health system. The not-for-profit private sector must be distinguished from the for-profit private sector (religious sector and enterprise medicine). It is composed of:

- 1 private religious hospital;
- 32 clinics;
- 70 maternity centers;
- 131 medical practices;
- 76 private dispensaries;
- 843 pharmacy dispensaries;

- 12 private medical laboratories;
- 10 private imagery services;
- NGOs and associations providing care.

3. Human Resources for Health

According to data from the Directorate for Human Resources, the health department employs 13,110 people across all socio-occupational categories. Approximately 46% of health staff is employed by the state, 22% by communities, 20% by public health establishments, 10% by local collectivities, and 2% by other actors.

Medical staff constitutes only 7% of the public health sector workforce (Ministry of Health and Medical Prevention, 2007). This staff shortage results in a heavier workload for health staff.

Moreover, there is no efficient HR policy in hospitals: a significant part of hospital budgets is assigned to staffing costs (in Saint-Louis, it is around 80% of the budget). However, in most cases, health workers have not received the appropriate training, and profiles do not correspond to real needs. No performance-based assessment is in place.

Senegal also faces a problem of geographical distribution of all types of health service providers. Indeed, the health workforce is concentrated in some regions of the country, and more particularly in the Dakar region (70% of specialist doctors and 39% of general practitioners).

In 2005, the MoH initiated a process to create regional health training centers for para-medical professions with the aim of recruiting health professionals living in the region where they were trained, and increasing the availability of health professionals on the market. In 2007, these schools opened new courses to train public sector nurses and midwives.

4. Health Sector Financing

Several entities contribute to the financing of health:

- The Ministry of Finance which allocates a budget to the Ministry of Public Health to run public health services. In 2009, the Ministry of Health and Prevention had a 97,022,102,580 billion CFA francs budget for districts.
- Municipalities and rural communities which use their own funds to support their health services.
- Households which finance an important part of care. Indeed, most service providers propose paying services: public hospitals (which, however, make an exception for the very poor), private hospitals, private clinics, pharmacies, and traditional medicine practitioners.
- Foreign donors, both governmental and non-governmental, which provide funds and technical assistance to a number of selected establishments in the health sector. The main partners are: GF, World Bank, USAID, UNITAID, and UNFPA.

The health sector financing system currently used is considered unsatisfactory. The healthcare provided by this system is often of lower quality and unevenly distributed. Changing this financing system could greatly contribute to improving the quality and fairness of the care provided.

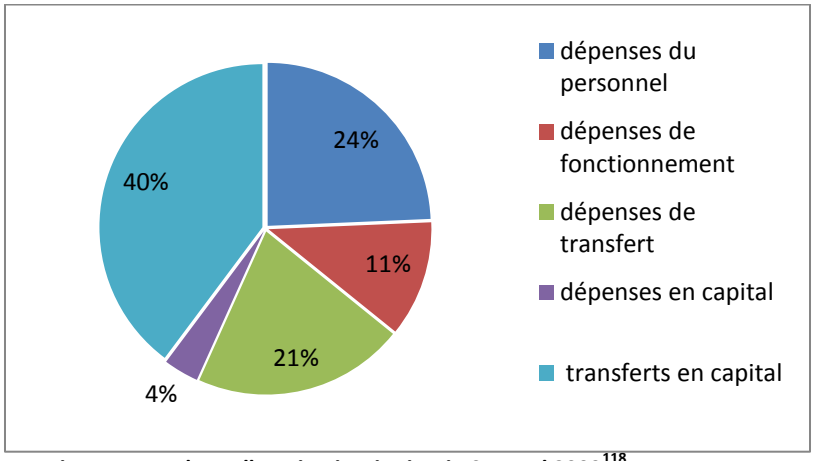


Figure 11. Budget Allocation in Districts in Senegal 2009[118]

3. ORGANIZATION OF THE HEALTH PRODUCT SUPPLY CHAIN

1. Public Sector Supply

Since 1990, the Ministry in charge of health has revised the national list of drugs and other health products every two years, via the National Committee for the Elaboration and Revision of Drug and Essential Product Lists. Public sector supplies are based on this list.

In accordance with the Bamako Initiative, drugs are sold in public health facilities to allow, among other things, stock renewal. An important part of drugs is financed by the cost recovery system.

The Directorate for Pharmacy and Laboratories is in charge of elaborating and monitoring the implementation of the policy and programs related to pharmacy and medical analysis. It is responsible for compliance with the legislation and regulations related to pharmacy. It is also in charge of regulating the practice of pharmaceutical professions, promoting and controlling public and private medical analysis laboratories, and regulating and promoting traditional pharmacopeia. Pharmacovigilance control and the management of marketing authorizations are also important functions of the Directorate for Pharmacy and Laboratories.

There are several drug supply channels for the different programs and donors, and for the private sector. Channels are complex.

The National Supply Pharmacy (PNA) is the public sector's wholesale distributor. As a public health establishment (EPS), it is autonomous in its management. It coordinates all activities related to drugs and reagents in health facilities. Apart from vaccines (procured via the EPI) and other so-called "specific" products (4,000 references to date), all health products transit through the National Supply Pharmacy which is responsible for orders. Nearly 99% of its purchases are related to essential drugs.

The PNA is based in Dakar and has 11 Regional Supply Pharmacies (PRAs) which fulfill the same role in districts. District depots supply health facilities. Populations have access to drugs from public health facilities' depots through the cost recovery system.

However, despite its excellent territorial network (the PNA is present in 11 of the country's 14 regions), the PNA does not manage to satisfy national demand, and it is only able to supply the equivalent of 15% of the drug market. The PNA is indeed plunged into a both structural and economic crisis.

[118] MINISTRY OF HEALTH AND PREVENTION OF THE REPUBLIC OF SENEGAL, *Statistical Yearbook 2009*.

- The PNA's information system, established at the central and regional levels, is not really used due to the lack of trained personnel and monitoring of results, which leads to frequent stock-outs. Moreover, some PRAs do not take into account orders not yet delivered to hospitals, health centers and pharmacy dispensaries. Orders that have not been closed are not taken into account in the centralization process. Therefore, the PNA has inaccurate figures on needs, automatically resulting in products running out very rapidly.

- Constraints imposed by the new articles of the public market procurement regulation are hampering the PNA's health commodity supply system (applications regularly rejected by the Public Procurement Regulatory Authority). This situation has resulted in a complete system dysfunction across the entire national territory where public health facilities like hospitals and health posts are only receiving around 20% of their orders. In 2001, the PNA's last drug tender bid dated back to 2007.

However, since the reform and establishment of Public Health Establishments (EPSs), management improved in both hospitals and the PNA. An establishment which has the EPS status has a board of directors and is relatively autonomous. It is therefore less constrained by public sector administrative red tape in its management.

The infrastructure of the health system is more or less absorbed by debts which hamper good functioning. In hospitals, expenses are often minimized and income exaggerated. Hospitals also suffer from the drug management system. The majority of generic drugs required for patients is not available, meaning that PRAs (and therefore hospitals) experience frequent stock-outs. Yet hospitals cannot procure from the private sector. Doctors are therefore obliged to write prescriptions for patients who will then go to private pharmacy dispensaries to purchase their medicines. This loss of earnings has an important impact on the hospital's revenue.

The most remote regions, which suffer from PRAs' difficulties in supplying them, are affected by the parallel market which may exist with neighboring countries. As community health workers are essentially paid by pharmacy revenue, they are forced to procure on the black market, exposing themselves to all the risks that that implies in terms of drug quality. Some pharmacy dispensaries that are close to a border, such as that with Mauritania, Gambia, Guinea, and Mali, also sell generic drugs to these countries. These traders cross the Senegalese border to buy certain products that are subsidized by the government (generic drugs) to then sell them in their own countries. This illegal trade is a dead loss of income for the Senegalese government.

The Directorate for Pharmacy and Laboratories suffers from an important deficit in human resources (2 inspectors currently in office) and in material and financial means to carry out its inspection missions properly.

2. Private Sector Supply

The private sector controls more than 85% of the drug market in terms of value, worth nearly 75 billion CFA francs. The sector remains by far the best organized for the supply of drugs: the system is managed professionally, with materials which are in good condition, and with efficient transport and order means.

Private sector distribution is assured by 5 wholesalers who supply the 843 private pharmacies dispensaries which then supply private depots. Around 4,000 proprietary medicinal products are listed.

In the private sector, the pricing structure is presented as follows: the wholesale price before tax (also called the ex-works price) is the basic price accepted in the marketing authorization decree. The coefficient for profit margins varies from 1.32 (for so-called "social" drugs) to 2.12 (for drugs packaged for hospital use). As part of efforts to improve the population's access to high quality drugs,

the PNA supplies the private sector with essential generic drugs (EGDs). These drugs are therefore sold in both sectors at the same price.

3. Supply Chain Human Resources

The quality of human resources is a major problem within the PNA: apart from pharmacists fulfilling administrative functions, the remaining workforce does not have the appropriate skills to meet PNA missions' requirements. The logistics role, which should be at the heart of the system, is not clearly identified. It is spread between the role of the inventory accountant and the store keeper who, to add to the problem, have no specific training. In PRAs, warehouse managers are not trained and basic cleanliness and storage regulations are not respected. It is also worth mentioning that staff that have held their positions for several years are discouraged. These problems are well known but no solutions are introduced, which lowers staff motivation. The staff evaluation system is, for the moment, based on the same system used to evaluate civil servants. It is a points system only and does not assess or capitalize on results and objectives.

Within the PNA, the central management is conscious of the different functional problems at all levels. In 2011, a staff training plan was established for the PNA and PRAs, and the review of human resources tools was initiated (job descriptions, evaluation, action plan, training plan, objectives).

We also noted deficiencies at the health district level:

- The absence of personnel trained in pharmacy management. Pharmacists are very few and pharmacy assistants are even fewer at this level, but there are many CHWs with no professional skills in the management of drug depots.
- The almost entire non-existence of maintenance personnel: across the two districts which include 70 health posts and two health centers, there are no more than two or three trained technicians. All other maintenance activities are left to trainees or private maintenance service providers. Consequently, most of the refrigerators and cool boxes that are supposed to guarantee the vaccine cold chain are not in working order and are left stacked up at health posts.

However, a professionalization process does exist, via pre-service training. The latter is provided by:

- The National School of Health and Social Development, which is affiliated to the Health Ministry's Directorate for Human Resources and offers pre-service and in-service training (especially for pharmacy assistants). State Diplomas are reserved for students completing a pre-service training course; education certificates are awarded to professionals wishing to attend additional in-service training courses.
- The Diourbel National Hospital Technicians and Maintenance Officers Training Center, product of a partnership between the government of Senegal and the government of the Federal Republic of Germany. It has been the WHO's partner center for training and research in hospital maintenance since 1994. It is also affiliated to the MoH's Directorate for Human Resources.

4. Equipment and Infrastructure

The architecture and organization of medicinal coverage are relatively satisfying for the area of the country. However, equipment is often missing in health structures. Around 85% of health posts providing maternity services are not equipped with all of the following at the same time: an examination table, a delivery table, a sphygmomanometer, a baby weighing scale, and a motorbike (Ministry of Health and Medical Prevention, 2005).

The lack of technical equipment in many health centers creates a disparity between the training a person has received and the work they are required to perform. This lack of technical infrastructure can also create relatively challenging working conditions.

In the hospitals of Saint-Louis, Ndioum, Tambacounda, and Kaolack, resources allocated to cleaning and maintenance rarely exceed 1% of the overall budget of each hospital while the recognized norm is at least 10% of the total value of the equipment present in the facility. This is one explanation for the extremely high number of equipment breakdowns observed in these hospitals, particularly for highly technical medical equipment. The number and profiles of personnel assigned to maintenance vary from one hospital to another. Very few facilities allow the maintenance manager to fulfill his/her role to full capacity. Technicians trained at Diourbel have the skills to be involved in technical decisions over equipment to be purchased for the facility, the installation of this equipment when it is delivered, the training of personnel that will use the equipment and of course, its maintenance. Maintenance officers are also able to deal with manufacturers directly and to decide whether maintenance contracts should be outsourced or not. However, most often, the maintenance manager is not involved at all at this level. He is only called when something has broken down.

5. Improving the Supply Chain

Several elements could contribute to improve the supply system:

+ Higher quality in-service training for human resources: up-to-date mapping with a training action plan and career management for individuals working in the public health system;
+ Improved human resource management: evaluation system with job descriptions, an annual action plan, objectives, and result assessment;
+ Increased involvement of pharmacists, doctors, and nurses: training and awareness raising of the role of the supply chain during pre-service and in-service training;
+ Specific training in stock management and technical equipment management for in-office staff;
+ Recognition of the role of hospital maintenance technicians (whose functions share similarities with the health logistician's functions) to allow technicians to play a more important role.

1. GENERAL COUNTRY PROFILE

Since the beginning of the 90's, Togo has been facing a socio-political crisis which has significantly hindered development and led to the impoverishment of the population. Official development aid decreased by 62% between 1990 and 2005, and the HDI shifted from 0.51 at the beginning of the 90's to 0.435 today.

The economy is essentially based on both commercial and subsistence agriculture, which absorbs 65% of the workforce. Cocoa, coffee and cotton represent around 40% of exports, and Togo is also one of the largest phosphate producers. However, the balance of trade largely remains in deficit. Structural reforms have been undertaken with the World Bank and the IMF for a decade, but foreign direct investments has slowed down these last few years.

COUNTRY PROFILE: Togo[119]	
Population	6,961,049
Area (km²)	56,785
Median age	19.3
Urban population (% of the total population)	43
Human Development Index	0.435 (162th)
Literacy rate (% of the total population)	60.9
GDP per inhabitant (US$)	900
Population under the poverty line (% of the total population)	61.7
Life expectancy at birth	63.17
Child mortality rate (/1000 people)	49.87
Adult mortality rate (/1000 people)	401 (men); 327 (women)
First causes of under-5 mortality	Neonatal causes (29%), malaria (25.3%), pneumonia (17.1%), diarrhea (13.8%)

[119] CIA, *World Fact Book*; WHO, *Country Health System Fact Sheet, Togo*, 2006.

2. ORGANIZATION OF THE HEALTH SYSTEM

1. The Public Sector and the National Health Policy

Togo has a national health policy which was elaborated in 1998 (and reinforced after the country joined the IHP+ Global Compact), as well as an implementation plan for this policy (the National Health Development Plan 2012-2015, under preparation). The country also has a national pharmaceutical policy which was elaborated in 1997 and which should be renewed in 2012.

According to the WHO[120], the public sector is composed of three different levels defined as follows:

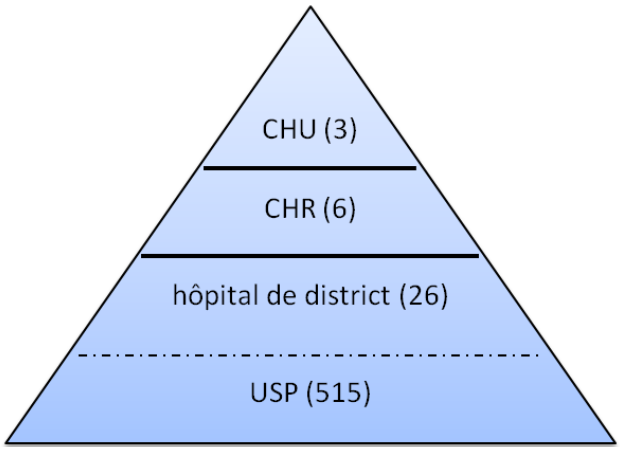


Figure 12. Structure of the Health System in Togo

The central level, with the Minister's office, the Directorate-General and its central directorates, divisions and services. It is in charge of elaborating policies and standards, mobilizing resources, monitoring management, and assessing performance. 3 CHUs constitute the highest reference level of the national system.

The intermediary level, organized in six health regions responsible for district coordination and support. Each region has a CHR.

The peripheral level, organized in 35 health districts and corresponding to the prefectures. It is in charge of the planning, implementation, and monitoring of the health sector policy. This level is also in charge of community participation in the health system. Peripheral Care Units (USPs) are the first level of the peripheral level, and 26 district hospitals represent the second level.

Also according to the WHO[121], "the estimated rate of coverage of populations (percentage of the population living within 5 km of health services) is 60%. However, the effective use of public health services has significantly decreased these last few years due to the ongoing deterioration of infrastructure and equipment, staff's loss of motivation, and the relatively high cost of services. […] The attendance rate for USPs' curative care consultation services shifted from 65% to 25.7% between 1991 and 2003"[122].

2. The Private Sector

The private sector is growing significantly, notably due to the public sector's deficiencies. However, collaboration between the two sectors is very limited.

The private sector, composed of associations' health facilities, NGOs, and religious organizations, has "283 care institutions including 7 religious hospitals, 155 clinics and privates practices, and 121 nursing care units"[123].

Furthermore, medicine and traditional pharmacopeia play an important role in healthcare provision in the country. There exist a policy and regulations for traditional medicine, and traditional healers are organized into associations. However, collaboration with the public sector remains low.

[120] WHO, *Stratégie de coopération de l'OMS avec les pays, République du Togo 2004-2007* [Togo Country Cooperation Strategy 2004-2007].
[121] MINISTRY OF HEALTH OF TOGO, WHO, *Profile of the Health System in Togo*, 2004.
[122] Ibid.
[123] Ibid.

Additionally, the WHO notes that "there is also a parallel private sector, which is informal and not regulated, and which has significantly developed after the crisis that hit the public sector during the last decade"[124].

3. Human Resources for Health

There is a serious lack of human resources. "In 2007, there were 7,765 agents for a population estimated at 5,446,000 inhabitants. The main ratios (population/health staff), as compared to standards recommended by the WHO, are as follows:

- 1 doctor for 11,171 inhabitants vs. 1 for 10,000
- 1 public service nurse for 6,135 inhabitants vs. 1 for 4,000
- 1 midwife for 13,171 inhabitants vs. 1 for 4,000"[125]

According to the WHO[126], "this human resource crisis is a matter of quantity, but also of quality and distribution. Nearly 80% of staff remains concentrated in urban centers, mainly in Lome and in the Maritime region. The lack of health human resources experienced by Togo is essentially linked to the low recruitment rate, not to the non-replacement of retirees, death, or brain drain. It is based on a certain number of factors and deficiencies, particularly:

- Deficiencies linked to the planning and management of staff
- Inappropriate budgetary means, and recruitment ceilings which impede the production or recruitment of health staff on a larger scale as well as the implementation of appropriate measures to motivate and retain staff".

Pre-service training is ensured by the Joint Faculty of Health and Pharmacy, the Advanced School of Biological and Food Techniques (especially for paramedical staff), the School of Medical Assistants, the National Midwifery School, and the National School of Medical Auxiliaries.

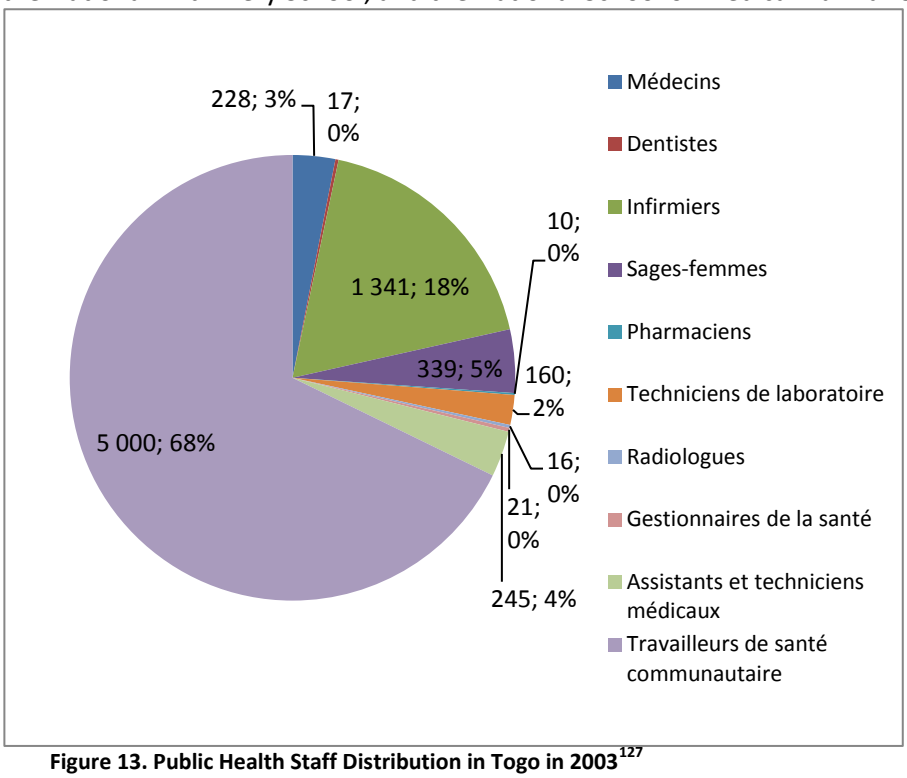


Figure 13. Public Health Staff Distribution in Togo in 2003[127]

[124] Ibid.
[125] WHO, *Stratégie de coopération avec les Pays, Togo 2009-2013* [Togo Country Cooperation Strategy 2009-2013].
[126] Ibid.
[127] MINISTRY OF HEALTH OF TOGO, WHO, *Op. Cit*.

4. Health Sector Financing

The health system is essentially financed by the following: the government, collectivities, households, and development partners.

- In 2011, government budget was estimated at US$1,217,391,000, and the Health Ministry's budget at US$64,516,129.

- "Households participate to the financing of health sector through cost recovery in health facilities (Bamako Initiative since 1991), i.e. payment for care and drugs. According to the data available for 2001, resources generated by cost recovery at the level of public sector health facilities reached US$1.7 million, equivalent to one third of the Health Ministry's budget at the time"[128].

- "Some local collectivities (town halls or prefectures) participate to the financing of health services through the payment of salaries for some categories of staff (prefecture health agents)"[129].

- At the bilateral level, the main donors are France, Germany, the United States of America, China and Japan. Multilateral agencies present in the health sector are the WHO, UNICEF, UNFPA, the UNDP, the World Bank, the European Union, and the Global Fund to Fight AIDS, Tuberculosis and Malaria.

3. ORGANIZATION OF THE HEALTH PRODUCT SUPPLY CHAIN

1. Public Sector Supply

There is legislation on drugs but there is no implementation plan. In the public sector, there are several channels for the supply and management of health products.

The National Supply Center for Essential Generic Drugs (CAMEG), established in September 1996, coordinates the supply of health facilities with essential drugs on the entire national territory. It supplies the country with 10-15% of drugs, versus 2-3% directly supplied by the Ministry of Health.

The CAMEG supplies three regional depots (functioning relatively well, according to the WHO[130]), which themselves supply sales depots in hospitals and health centers. Since 2001, the CAMEG can sell EGDs to the private sector.

TFPs' health programs generally have their own supply systems: each program supplies health districts with health products.

2. Private Sector Supply

The private pharmaceutical sector represents around 80% of the country's supplies. It is composed of two private drug manufacturing and conditioning factories, four distribution wholesalers, 160 pharmacy dispensaries[131], and many dispensing points to the general public: religious health facilities, for-profit private health facilities, associations, and NGOs.

Illegal drug sale is one of the main problems to be solved in order to improve the population's access to quality and affordable drugs.

[128] Ibid.
[129] Ibid.
[130] WHO, *Op. Cit.*
[131] MINISTRY OF HEALTH OF TOGO, WHO, *Op. Cit.*

3. Supply Chain Human Resources

The public pharmaceutical supply sector has only 165 pharmacists who remain at the central and intermediary levels. They are located at the level of the Directorate for Pharmacies, the CAMEG, university hospitals (CHUs), and 4 regional hospitals (CHRs). Program supplies are most often managed by doctors.

At the peripheral level, pharmaceutical supply is managed by nurses and area managers, especially in district hospitals and health centers.

The pharmacy assistant, logistician, and health logistician positions do not exist in the country.

Staff is recruited by the central level, but also by the local level by collectivities. It is assessed and scored every year, but no standard tool is available for this evaluation. Despite the existence of a national human resource policy, the public sector does not seem to be attractive.

4. Equipment and Infrastructure

According to the WHO, "equipment and materials are insufficient in most health services and facilities at the different levels of the system. Existing technical medical equipment is both lacking and often obsolete. The minimum equipment package is not respected and does not comply with the minimum standards required. […] Equipment for cold chain logistics, particularly oil containers, refrigerators, and freezers, is generally insufficient for good immunization coverage as sought by the national policy. Preventive and curative maintenance is unorganized and poorly implemented, which worsens equipment malfunctions and the frequency of failures"[132].

"Besides, the situation of the car and motorcycle fleet shows that most vehicles are old and experience frequent breakdowns. This situation is not really favorable to monitoring and supervision activities. At the moment, there are not enough motorcycles compared to the number of staff whose activities require travelling. Most district hospitals have no more ambulances to refer emergency cases. Some ambulances available in hospitals are not adapted to the conditions of the roads"[133].

5. Improving Supply Chain Management

Priority actions to be implemented to improve SCM at the overall level appear to be the following:

+ elaborating a national policy for the financing of health services as well as a framework for health expenditures in the mid-term;
+ developing pre-service training quantitatively, and more particularly strengthening the capacity of the Public Health Training Center of Lome;
+ developing a human resource policy including: support to pre-service and in-service training for health staff and personnel in charge of supply, particularly at peripheral level; the development of a career plan for staff;
+ strengthening monitoring bodies: for quality, illegal channels, and the implementation of regulatory standards;
+ strengthening the Health Information System and its utilization on a national scale.

At all levels of the health system, and more particularly in the periphery, special attention should be given to:

+ strengthening management structures, particularly through in-service training and the promotion of self-assessment and use of information for operational action and strategic management;

[132] Ibid.
[133] Ibid.

- improving staff performance via pre-service and in-service training;
- integrating information sub-systems;
- reinforcing LMISs.

The seven countries studied in this survey show several similarities in terms of their health system organization.

All of the countries studied have a national health policy and an implementation plan for this policy (the National Health Development Plan, which is a condition of eligibility for international financial contributions).

The countries studied have similar health systems in terms of organization. Indeed, the pattern was inspired by the Bamako Initiative for the promotion of primary health care, with the district as the operational entity, and community participation to the management of health structures. This pattern seems to have facilitated larger health coverage of territories, and more important population participation to the public health system, especially in the periphery.

Moreover, in all countries, health products are almost all imported. Even in the absence of a national supply policy, a supply center for essential drugs is in place and decentralized to the intermediary level of the health system. The center supplies regional warehouses, which themselves supply health structures, in order to extend the coverage of needs in health products.

All of the countries studied have also vertical programs (malaria, AIDS, etc.) which often use their own supply systems.

The public health systems studied experience the same types of problems. Decentralization and effectiveness of the health system are impeded by financial, human, and material challenges.

+ **In terms of human resources**, most of the countries studied experience an overall deficit in health staff in the public sector, even when there is a specific policy for health human resources. It seems that health positions in public structures are not very attractive.

Everywhere, staff motivation is judged poor, particularly due to low salaries, the absence of in-service training and career plans, and bad working conditions. These factors are even more important in rural areas and lead to an uneven distribution of the health workforce in favor of urban centers. They also contribute to the migration of specialists who seeking better working and living conditions elsewhere.

All countries have training centers dedicated to health professions, but there is often a gap between the training provided and the skills needed in health structures. This mismatch is due to a lack of consultation between the Ministry of Health and training centers or the Ministry in charge of education and training. In-service training is non-existent or embryonic, and often depends on TFPs' programs.

The human resources involved in public health supply chain management are many, but none of the countries studied have health logisticians.

At the central and intermediary levels (supply center, national and regional hospital pharmacy), pharmacists and pharmacy assistants are generally responsible for the supply, storage, and distribution of health products. Nursing and administrative (and more particularly accounting) staff sometimes assist them in their tasks. Yet, the number of pharmacists is often insufficient, even at the central level, and pharmacists lack the qualifications and skills required for logistics management.

At the peripheral level, pharmacists are scarce. Doctors and nurses, as well as non health professional staff (warehouse staff, depot managers, material accountants) are in charge of product logistics management. There are not enough positions for maintenance technicians.

		Benin	Burkina Faso	Guinea	Madagascar	Mali	Senegal	Togo
Type of staff Supply Chain Management at the central level	doctor				x			X
	pharmacist	x	x	x	x	x	x	X
	PA			x		x	x	
	nurse	x			x			
	material accountant				x			
	others	x	x			x		
Type of staff Supply Chain Management at the intermediary level	doctor				x			X
	pharmacist	x	x	x		x		X
	PA		x	x				X
	nurse	x		x	x			
	material accountant						x	X
	others	x	x		x	x	x	
Type of staff Supply Chain Management at the peripheral level	doctor		x	x	x			
	pharmacist							
	PA		x					
	nurse		x	x	x			X
	material accountant					x		X
	health area manager	x						X
	others	x	x	x	x	x	x	

Using medical staff for SCM limits its availability for medical care. Besides, medical staff is neither trained (neither through pre-service training nor through in-service training), nor sufficiently competent to ensure the effective and efficient management of the logistics chain.

Non medical staff dedicated to the supply chain (warehouse staff, depot managers, material accountants, maintenance technicians) lack pre-service and in-service training.

+ **Equipment and infrastructure in public health facilities** suffer from a lack of maintenance in particular. Indeed, although infrastructures are generally in good quantity, many do not comply with standards and are not operational. Often, infrastructure deterioration does not allow satisfying storage conditions.

In many cases, medical technical equipment is insufficient in number and poorly maintained, and therefore often out of order. The weakness of the technical platform directly impacts the quality of diagnostics and care to patients, but also staff motivation because of the bad working conditions.

Transport equipment (trucks, motorcycles) are in insufficient number, and they are generally unreliable. This is a major problem for the supply of structures at the intermediary and peripheral levels, but also for the transportation of patients in case of emergency, and for monitoring visits to peripheral health structures by officers.

We note the absence of maintenance plans and the lack of funding dedicated to equipment and infrastructure maintenance in most cases. Moreover, as mentioned above, human resources dedicated to maintenance are insufficient and suffer from a lack of pre-service and in-service training. Finally, the entire medical workforce is not sufficiently aware of the maintenance issue.

+ **Logistics management and information systems perform poorly in all of the countries studied**, which leads to bad needs assessment and therefore, over-stock or stock-outs. On the one hand, personnel in charge of data collection are poorly trained in this task. On the other hand, data entry is always done manually at the community level, and sometimes even at the intermediary and central levels. Moreover, the multitude of supply channels in a same country complicates reporting for health facilities, and leads to mistakes in data collection and compilation. Therefore, it seems that information systems inform retrospectively but do not yet constitute a tool which can help decision making.

+ **Health sector financing** does not provide clear solutions to these problems. All of the health systems studied are based on four main sources of funding: households (via cost recovery in health facilities), the government (MoH budget), collectivities, and external aid (the main TFPs in the countries studied are: the Global Fund, UNICEF, USAID, UNFPA, the WHO, and the UNDP). The share of government budget in health expenditures varies across countries[134]:

	Benin	Burkina Faso	Guinea Conakry	Madagascar	Mali	Senegal	Togo	*France*
Total expenditure dedicated to health as a % of GNP	4.1	6.7	4.9	3.8	5	5.7	7.7	*11.9*
Share of government expenditure dedicated to health as a % of total health expenditure	49.5	51.0	11.3	60.3	46.6	55.5	44.2	*77.8*

(Data for France are included for comparison)

Cost recovery, which was established in all countries in order to address the problem of diminishing budgetary resources, tends to limit financial accessibility to the public health system for the poorest households.

The supply chain also lacks funding. Although drug expenditures represent a significant part of national health spending, they are relatively low in the Health Ministries' budgets because they are generally borne by TFPs. However, the latter tend to consider that responsibility for the public sector logistics chain lies with the government. Yet national budget is already under significant constraints and rather favors the payment of public officers' salaries. Therefore, health structures lack funds to ensure the supply and good management of health products. Infrastructure and equipment also suffer from the lack of financial resources allocated to maintenance.

The peripheral level is crucial in the pyramid organization of the health system because it is the first point of contact with the population. Yet it appears that the health system's decentralization remains theoretical because there is particularly limited room for manoeuvre in terms of human resources and budgets in peripheral structures.

These major challenges appear to be structural and have a long-lasting and deep impact on the health product supply chain, and therefore on health systems' general performance. Therefore we

[134] WHO, African Health Observatory, *Burkina Faso, Analytical Summary*, available in French only at: http://www.aho.afro.who.int/profiles/index.php/Burkina_Faso:_Analytical_summary_-_Leadership_and_governance/fr.

note a relatively low utilization rate of public health services in all of the countries studied (between 18.20% and 49%).

	Benin	Burkina Faso	Guinea Conakry	Madagascar	Mali	Senegal	Togo
Utilization rate of public health services	34%	49%	18.60%	46.5 % (CSBs)	20%	44%	25.7% (USPs)

Public sector dysfunctions facilitate the development of the private sector in terms of care and drug supply. This sector is generally judged more reliable and more efficient than the public sector. As it is also more expensive and concentrated in urban areas, it is often reversed for the wealthiest classes. Traditional medicine, which is culturally grounded in health practices, remains a major source of care.

The illegal sector also benefits from the public sector's weaknesses, especially in terms of supply. "Street-pharmacies", which are the last level of drug trafficking, enable the poorest households to buy health products at a lower price. Yet this raises the major question of product quality and safety.

In the face of such ineffectiveness of public supply, many TFPs also tend to develop their own supply systems. This multiplication of supply channels results in a level of complexity which hampers the efficiency of the supply system as a whole. Moreover, in the context of the cost recovery strategy, drug sale is a major source of revenue for public health structures and, as the population often turns to private or illegal channels, this represents a significant loss of income for public structures.

CONCLUSION

The general objective of this survey was to map the capacity of the human resources involved in the public health supply chain in the West African sub-region. In view of the challenges mentioned above, several avenues for improvement can be considered and implemented through collaboration between Ministries of Health, Ministries in charge of professional training and higher education, TFPs, and civil society.

Overall structure of the health system and supply chain:

+ Progressive integration of the supply chains of the different programs and TFPs into the public system. Although this solution raises issues in terms of effectiveness at first, and corruption, in the long run this integration would allow the reinforcement of public supply chain capacity, both in terms of human capacity (through a systemic approach to human resources and the development of skills) and financial capacity. This would result in a less fragmented and more effective system.
+ Reinforced coordination at the central level, and formalized exchange of practices in the periphery between public and private sector actors (including traditional practitioners) towards an integrated health system based on complementarity between the public and the private sectors.
+ Stricter control of illegal channels, through the training and recruitment of control officers.

The development of national policies:

+ In-service training of supply chain human resources at the central level to support the development of national supply policies and their implementation plans; in-service training of agents at the intermediary and peripheral levels to facilitate the implementation of these plans.
+ In-service training of human resources within the directorates in charge of infrastructure, equipment and maintenance, to support the systematic development of maintenance and monitoring plans for equipment; in-service training of maintenance agents at the intermediary and peripheral levels to facilitate the implementation of these procedures.

The professionalization of health logistics:

+ Integration of logistics issues into pre-service training for all health agents.
+ Identification of positions for logistics staff or staff in charge of logistics functions, as well as revision of these positions in relation to needs.
+ Professionalization of the personnel in charge of the supply chain through the development of human resource management tools (job descriptions, evaluations, etc.) and SCM tools (stock inventories, etc.), and training in the use of these tools.
+ Creation of the health logistician position according to the reference framework validated by the WHO/AFRO, which would allow:
    - the refocus of medical professions on healthcare activities, with appropriate tools and products able to address needs;
    - the professionalization of SCM and the improvement of performance, as well as the reduction of costs;
    - the local contractualization of private sector resources, which is one of the fundamental competences of the health logistician.

To this end:

- The awareness of the importance of the health logistician position must be reinforced at the global level. Just like the Bamako Initiative was able to reform health systems, a new initiative could support public SCM reform.

- TFPs must support the training of health logisticians: creation of pre-service training courses within existing training institutes, development of in-service training.

+ Establishment of operational LMISs at all levels, and more particularly training of personnel in the use of these tools, in order to benefit from reliable tools for needs assessment, stock management, and support to decision making.

It should be recalled that "health can be a trailblazer in increasing efficiency and equity. Decision-makers in health can do a great deal to reduce leakage, for example, notably in procurement"[135]. These structural changes necessitate significant financial investment in the long term, which would be recovered many times over by the reduction of leakage and the improvement of performance. As highlighted by the WHO, "few African countries reach the target, agreed to by their heads of state in the 2001 Abuja Declaration, to spend 15% of their government budget on health"[136]. In parallel, "if countries were to immediately keep their current international pledges, external funding for health in low-income countries would more than double overnight"[137]. A joint effort from governments and TFPs is necessary to find innovative sources of financing and to invest sustainably in order to support the effectiveness and efficiency of the supply chain and the health system in general, and therefore contribute to the improvement of populations' health.

[135] WHO, *The World Health Report, Health Systems Financing*, 2010
[136] Op. Cit.
[137] Op. Cit

REGIONAL SURVEY
ON
PHARMACEUTICAL AND HEALTH PRODUCT MANAGEMENT AND HUMAN RESOURCES DEDICATED TO THIS MANAGEMENT

A	**COUNTRY**	

B	**CONTENT**	I: Main stakeholders in the drug supply system in the country
		II: Standards, regulations, legislation, and policies related to pharmaceutical and health products
		III: Supply policy
		IV: Stock management
		V: Information management and reporting systems
		VI: Human resources
		VII: Conclusion

C	**DATE**	

I. Main Stakeholders in the Pharmaceutical System

- **1. Government:**

Organizational chart of the Ministry of Health

Structures affiliated to the Minister's office	Structures affiliated to the Secretariat-General	3rd level structures	4th level structures

- ***Administrative division. How many regions:***
  - ……..

Not Assessed ☐

- ***Types of health structures:***
  - ……..

Not Assessed ☐

- ***Structure in charge of supply by level:***

Not Assessed ☐

- Central level: ……
- Intermediary level: ……..
- Operational level: ……
- Health centers: ……....
- Community level: ……

- ***Government budget (US$):***
  - ……..

Not Assessed ☐

- ***Health Ministry's budget (US$):***
  - ……..

Not Assessed ☐

- ***Health Ministry's budget dedicated to human resources (US$):***
  - ……..

Not Assessed ☐

- ***Health Ministry's budget dedicated to drugs (US$):***
  - ……..

Not Assessed ☐

- ***Percentage of drugs managed by the government:***
  - ……..

Not Assessed ☐

List of the main donors. international organizations, and programs working with the Ministry of Health:

- :
- :
- :
- :

- **For-profit private sector:**
  - ***Number of distribution wholesalers:***
    - ……..

    Not Assessed ☐
  - ***Number of private pharmacies:***
    - ……..

    Not Assessed ☐
  - ***Number of private medical clinics:***
    - ……..
    - ……..

    Not Assessed ☐
  - ***Number of private hospitals:***
    - ……..

    Not Assessed ☐
  - ***Percentage of drugs managed by the private sector:***
    - ……..

    Not Assessed ☐

II. Standards, Regulations, Legislation, and Policies Related to Pharmaceutical and Health Products

- **National health policy:**

Is there a national health policy?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there an implementation plan for the national health policy?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

- **National drug policy:**

Is there a national drug policy?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there an implementation plan for the national drug policy?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

- **Legislation on drugs:**

Does legislation exist for pharmaceutical products?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

III. Supply Policy

Is there a national supply policy?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Does the national supply policy only authorize drugs that are on the essential drug list?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Does the national supply policy give special attention to "good pharmaceutical supply practices"?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

- **Product selection for supply:**

Development of technical specifications for drugs and/or health products to be supplied within the framework of a program

Not Assessed ☐ If assessed, answer the following questions

Who is in charge of this function?

- **An institution:** ☐
- **A service within each institution:** ☐

Who contributes to the development of technical specifications? (Select your answer within the following list):

☐ A designated expert / specialist of the institution in charge
☐ A multidisciplinary committee with experts coming from the institution in charge
☐ A multidisciplinary committee with experts coming from diverse institutions
☐ Any employee designated on an *ad hoc* basis
☐ Any employee representing diverse institutions on an *ad hoc* basis

In the following list, tick the elements included in the technical specifications:

☐ Product specifications
☐ Conditioning specifications
☐ Labeling instructions and information about the product
☐ File identification
☐ Unique identifiers
☐ Requirements of the manual
☐ Batch tractability
☐ Quality control test
☐ Quality control standards for storage

Pre-qualification and assessment of the supplier and product:

Name of the institution in charge of this function: ……..

Are technical and financial evaluations separated?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Are functions related to financial and technical evaluations separated from supply and order?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Who participate to the pre-qualification of the supplier and product? (Select your answer from the following list) Not Assessed ☐

- ☐ A designated expert / specialist of the institution in charge
- ☐ A multidisciplinary committee with experts coming from the institution in charge
- ☐ A multidisciplinary committee with experts coming from diverse institutions
- ☐ Any employee designated on an *ad hoc* basis
- ☐ Any employee representing diverse institutions on an *ad hoc* basis

IV. Stock management

Delivery, storage, and inventory management at the central level

How many warehouses are managed? Not Assessed ☐

- **……..**

Who is responsible for stock management?

Organization	Comments……..
OTHERS	

Who manages storage warehouses at the central level? Not Assessed ☐

- ☐ Other (specify): ……

Who manages storage warehouses at the intermediary (regional) level? Not Assessed ☐

- ☐ Other (specify): ……

Who manages storage warehouses at the peripheral (district) level? Not Assessed ☐

- ☐ A pharmacist
- ☐ A governmental institution
- ☐ Other (specify): ……

Type of staff managing drug warehouses:

- ***At the central level*** Not Assessed ☐
  - ☐ Central warehouse:
    - ☐ Doctor
    - ☐ Pharmacist
    - ☐ Pharmacy assistant
    - ☐ Nurse
    - ☐ Material accountant
    - ☐ Other
  - ☐ National hospital:
    - ☐ Doctor
    - ☐ Pharmacist
    - ☐ Pharmacy assistant
    - ☐ Nurse
    - ☐ Material accountant
    - ☐ Other

- ***At the intermediary level*** Not Assessed ☐

☐ Regional warehouse:
- ☐ Doctor
- ☐ Pharmacist
- ☐ Pharmacy assistant
- ☐ Nurse
- ☐ Material accountant
- ☐ Other

☐ Regional hospital:
- ☐ Doctor
- ☐ Pharmacist
- ☐ Pharmacy assistant
- ☐ Nurse
- ☐ Material accountant
- ☐ Other

- ***At the peripheral level*** Not Assessed ☐

☐ Health center:
- ☐ Doctor
- ☐ Pharmacist
- ☐ Pharmacy assistant
- ☐ Nurse
- ☐ Material accountant
- ☐ Other

☐ Health post:
- ☐ Doctor
- ☐ Pharmacist
- ☐ Pharmacy assistant
- ☐ Nurse
- ☐ Material accountant
- ☐ Other

V. Information Management and Reporting Systems

Pharmaceutical information and reporting

Name of the institution in charge of this function: **……..**

Select within the following list the type of information on pharmaceutical management collected at each level of the pharmaceutical system:

How is information entered?

- ***Central level*** ☐ Not Assessed

  - ☐ Computerized
  - ☐ Manual
  - ☐ Both

Note / comments: ……

- ***Peripheral warehouses*** ☐ Not Assessed

  - ☐ Computerized
  - ☐ Manual
  - ☐ Both

Note / comments: ……

- ***Intermediary warehouses*** ☐ Not Assessed

  - ☐ Computerized
  - ☐ Manual
  - ☐ Both

Note / comments: ……

- ***Health centers*** ☐ Not Assessed

  ☐ Computerized
  ☐ Manual
  ☐ Both

Note / comments: ……

- ***Community level*** ☐ Not Assessed

  ☐ Computerized
  ☐ Manual
  ☐ Both

Note / comments: ……

How is information transferred?

- ***From the central level to the other levels*** ☐ Not Assessed

  ☐ Computerized
  ☐ Manual
  ☐ Both

Note / comments: ……

- ***From intermediary warehouses to another level*** ☐ Not Assessed

  ☐ Computerized
  ☐ Manual
  ☐ Both

Note / comments: ……

- ***From peripheral warehouses to another level*** ☐ Not Assessed

  ☐ Computerized
  ☐ Manual
  ☐ Both

Note / comments: ……

- ***From health centers to the next level*** ☐ Not Assessed

  ☐ Computerized
  ☐ Manual
  ☐ Both

Note / comments: ……

- ***From the community level to the next level*** ☐ Not Assessed

  ☐ Computerized
  ☐ Manual
  ☐ Both

Note / comments: ……

VI. Human Resources

Human resources policy in the health system:

Is there a structure in charge of human resources within the Ministry of Health?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there a human resource policy in the health system?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there a clear organizational chart of each health structure and its staff at the central level?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there a clear organizational chart of each health structure and its staff at the intermediary level?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there a job description for each position within the Ministry of Health?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there a job profile for Logisticians or Health Logisticians within the Ministry of Health? If so, indicate at which level (central / intermediary / peripheral).

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Are medical HR all recruited at the central level?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there a recruitment test defined for each of the different levels of position?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Are medical HR trained in health product management before taking office at the central level?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there a national strategic plan for in-service training for the entire medical and paramedical workforce?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Do all the HR managed by the Ministry of Health come from the public sector?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Number of public officers in the Ministry of Health: Not Assessed ☐

……

Number of contract staff in the Ministry of Health: Not Assessed ☐

……

% of the Health Ministry's budget dedicated to HR management? Not Assessed ☐

……

- **Active staff:**

Number of doctors in the public sector: Not Assessed ☐

……

Number of pharmacists in the public sector: Not Assessed ☐

……

Number of pharmacy assistants in the public sector: Not Assessed ☐

……

Number of nurses in the public sector: Not Assessed ☐

……

Number of midwives in the public sector: Not Assessed ☐

……

- **Evaluation system:**

Is there a staff evaluation system?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there a specific tool for this evaluation?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is the evaluation directed towards the individual's advancement in the public sector?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is the evaluation result-based, in relation to objectives defined in an action plan?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Is there an individual, annual action plan?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Are there specific objectives defined each year?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Were problems revealed by the evaluation form addressed during the past year?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Are problems met capitalized at all levels?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

Are problems met during the past year taken into account during the elaboration of the action or strategic plan?

Yes ☐ No ☐ Not Assessed ☐

Note: ……

VII. Conclusion

On the entire health product supply chain:

What are the main problems in the supply of health products?

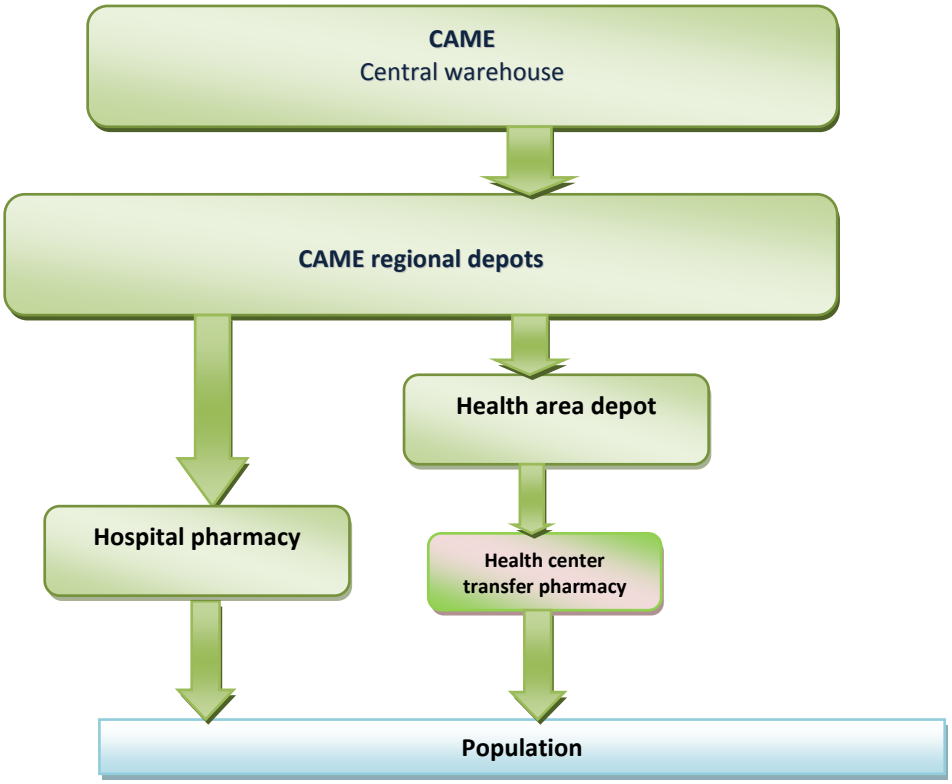
Comments:

What should be improved first in health product SCM?

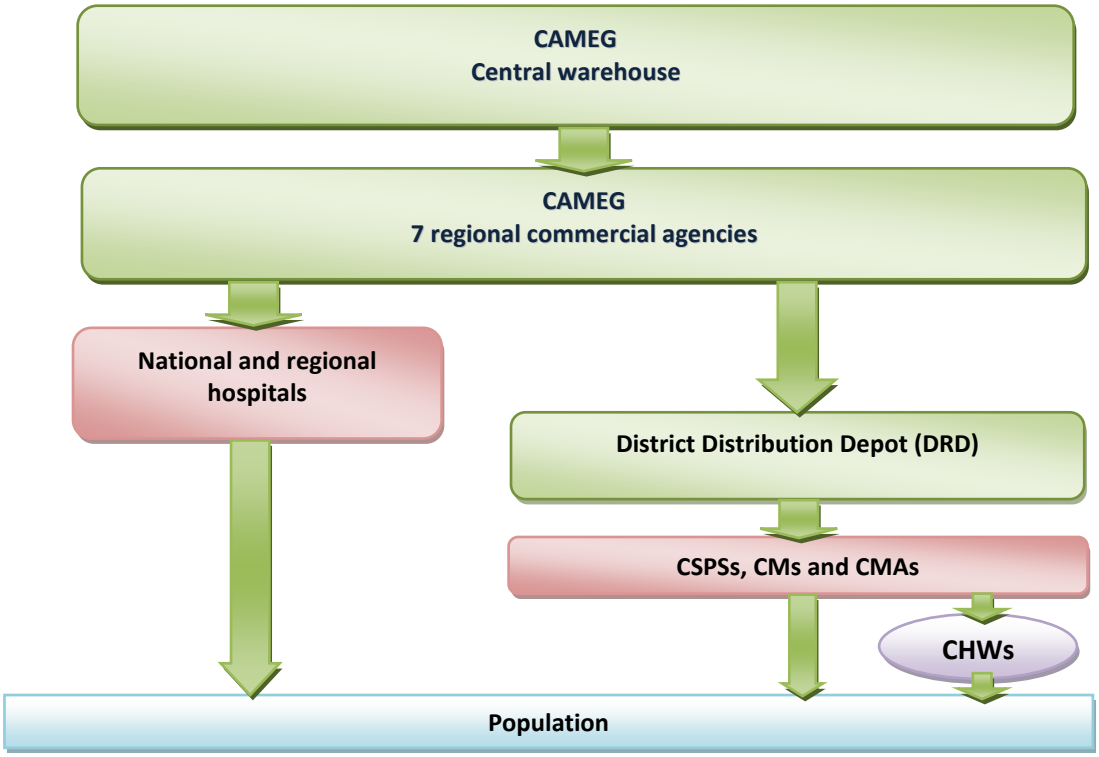
Priorities……	**Comments……**

ANNEX 2. DIAGRAMS OF PUBLIC SUPPLY SYSTEMS COUNTRY BY COUNTRY

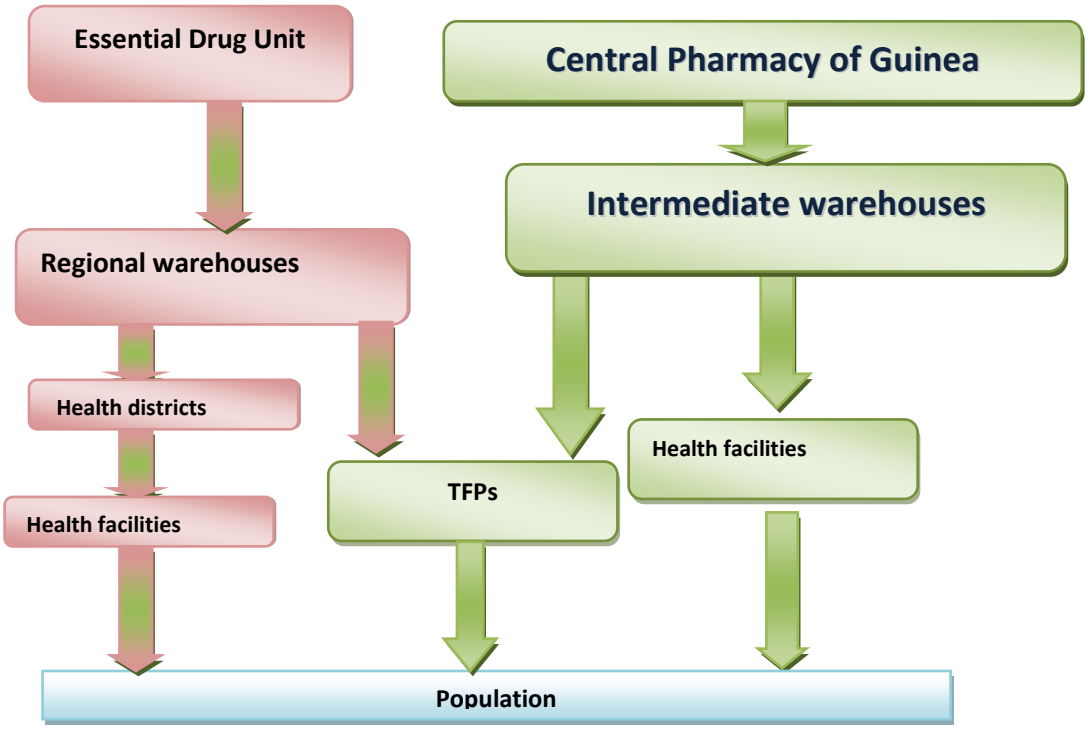
1. THE PUBLIC SUPPLY CIRCUIT FOR HEALTH PRODUCTS IN BENIN



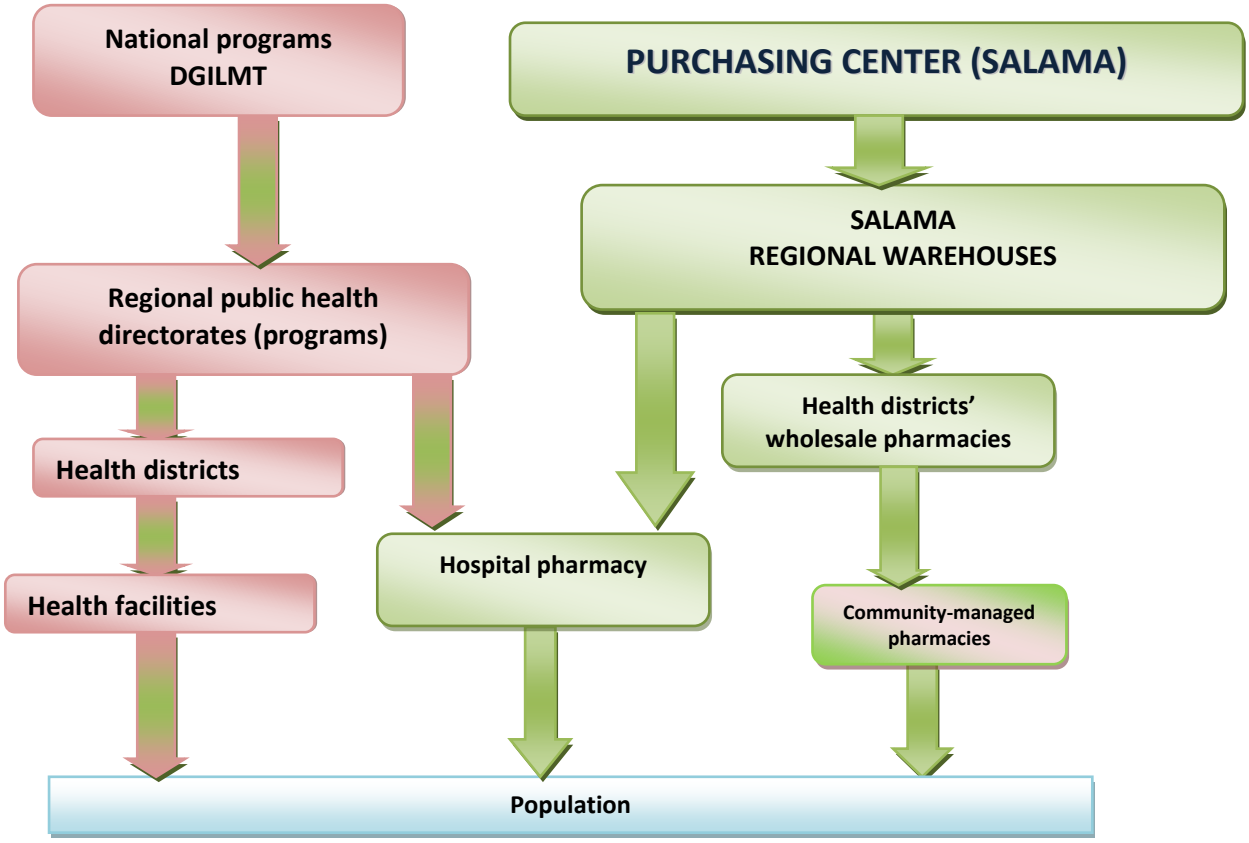
2. THE PUBLIC SUPPLY CIRCUIT FOR HEALTH PRODUCTS IN BURKINA FASO



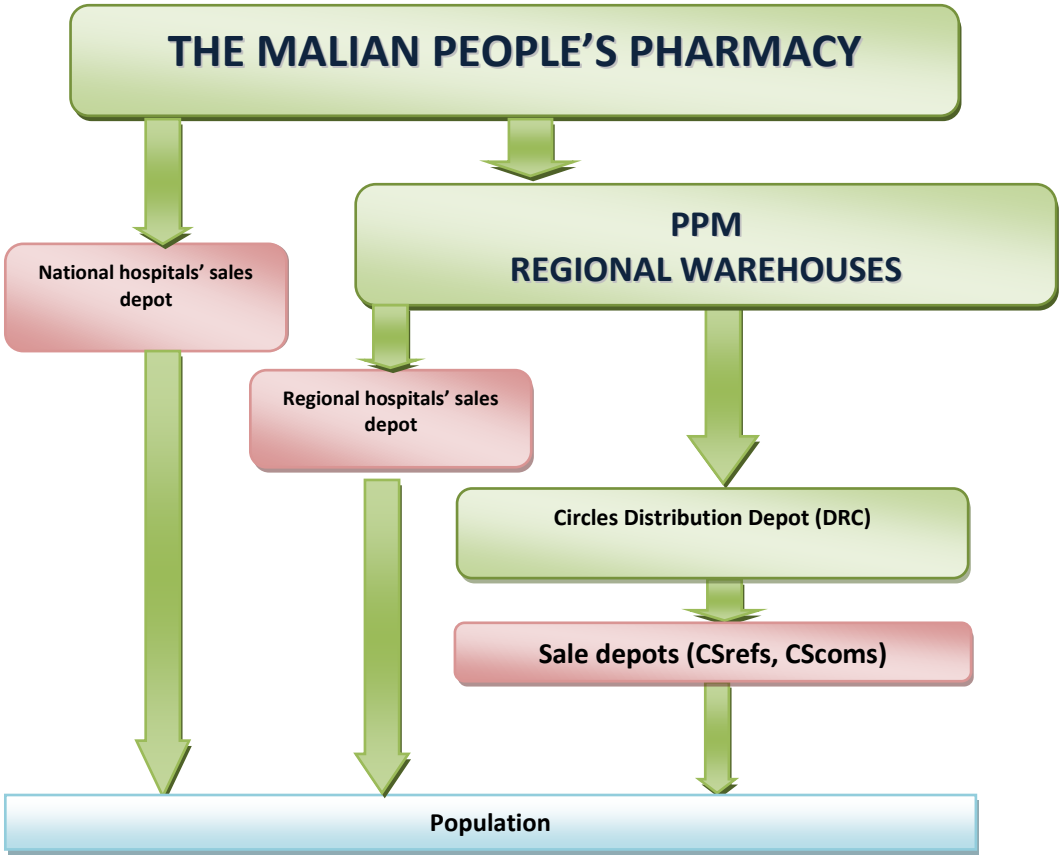
3. THE PUBLIC SUPPLY CIRCUIT FOR HEALTH PRODUCTS IN GUINEA



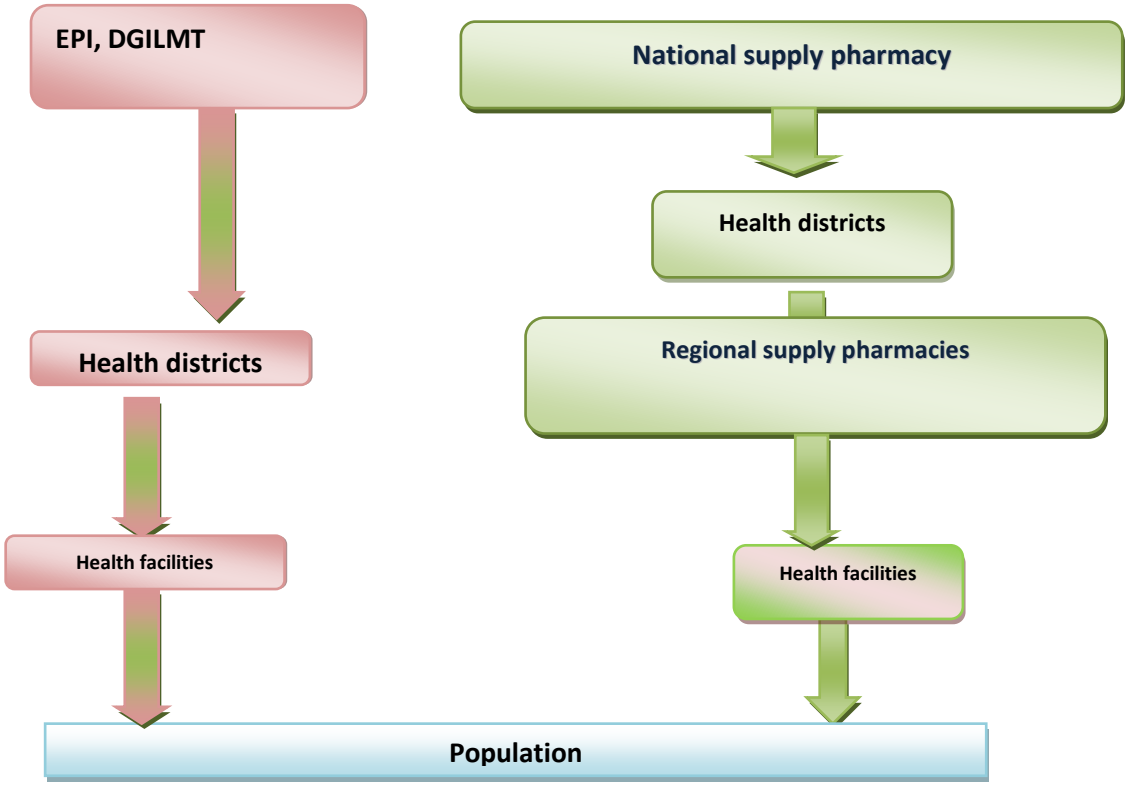
4. THE PUBLIC SUPPLY CIRCUIT FOR HEALTH PRODUCTS IN MADAGASCAR



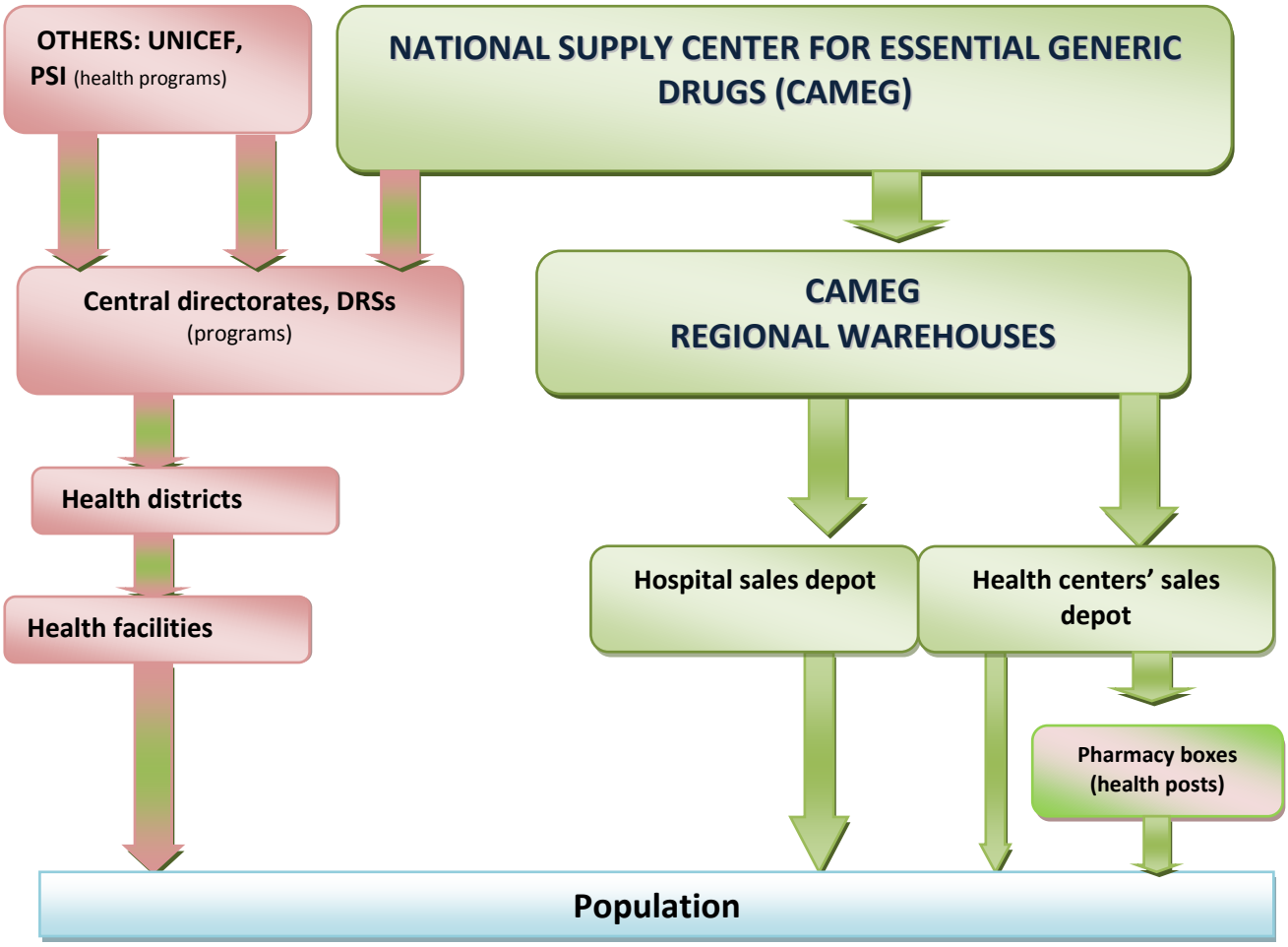
5. THE PUBLIC SUPPLY CIRCUIT FOR HEALTH PRODUCTS IN MALI



6. THE PUBLIC SUPPLY CIRCUIT FOR HEALTH PRODUCTS IN SENEGAL

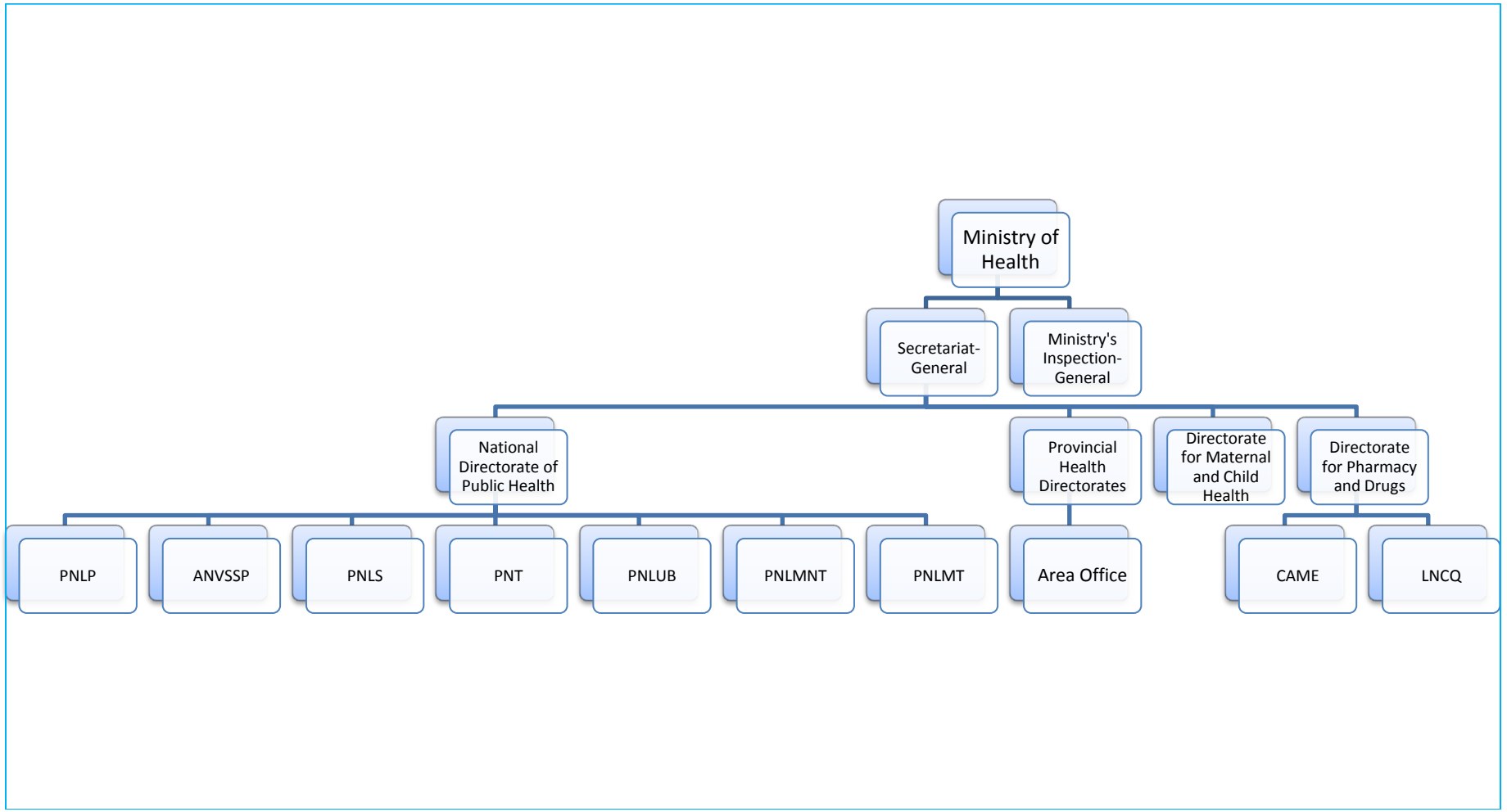


7. THE PUBLIC SUPPLY CIRCUIT FOR HEALTH PRODUCTS IN TOGO

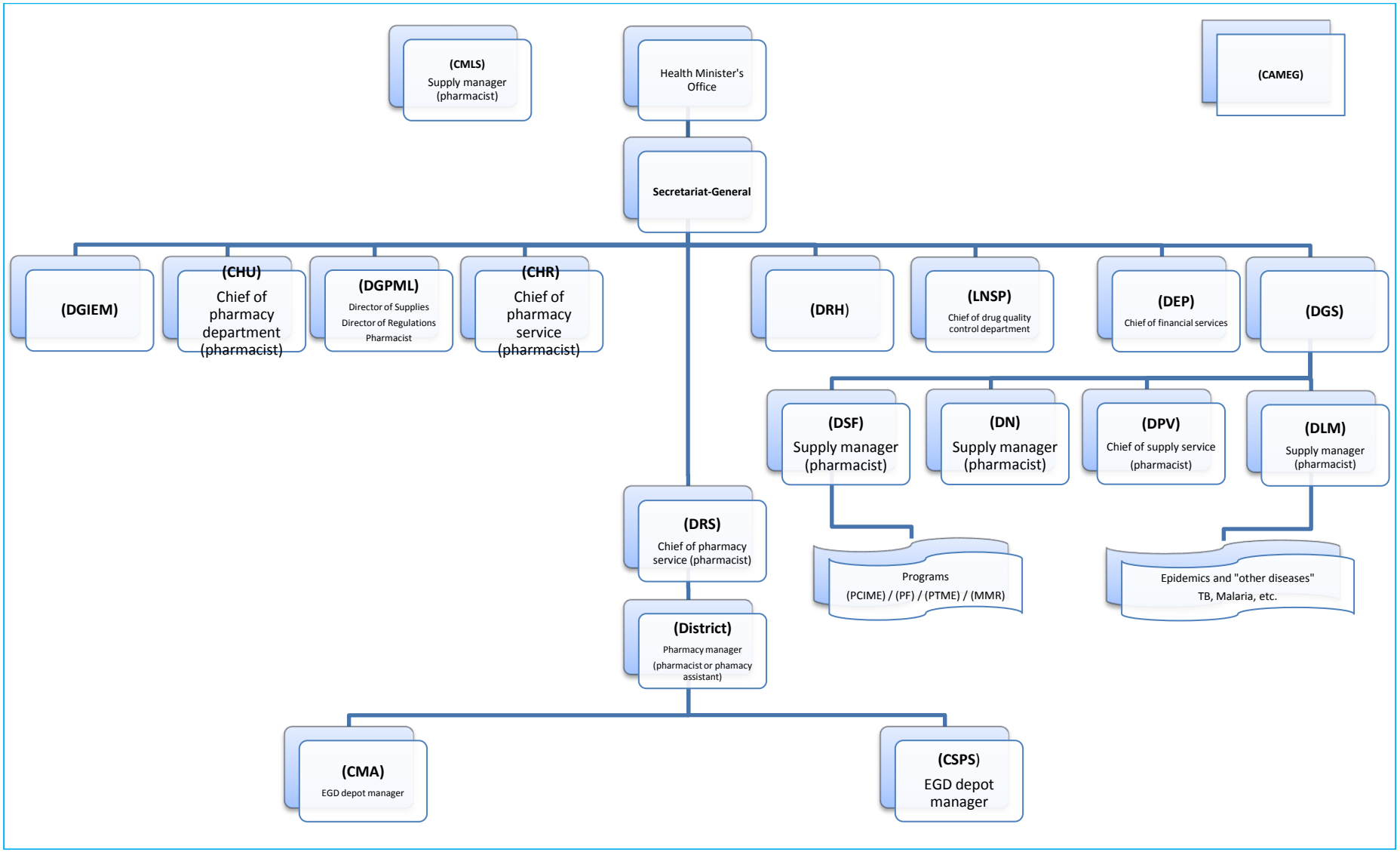


ANNEX 3. ORGANIZATIONAL CHARTS OF MINISTRIES OF HEALTH COUNTRY BY COUNTRY

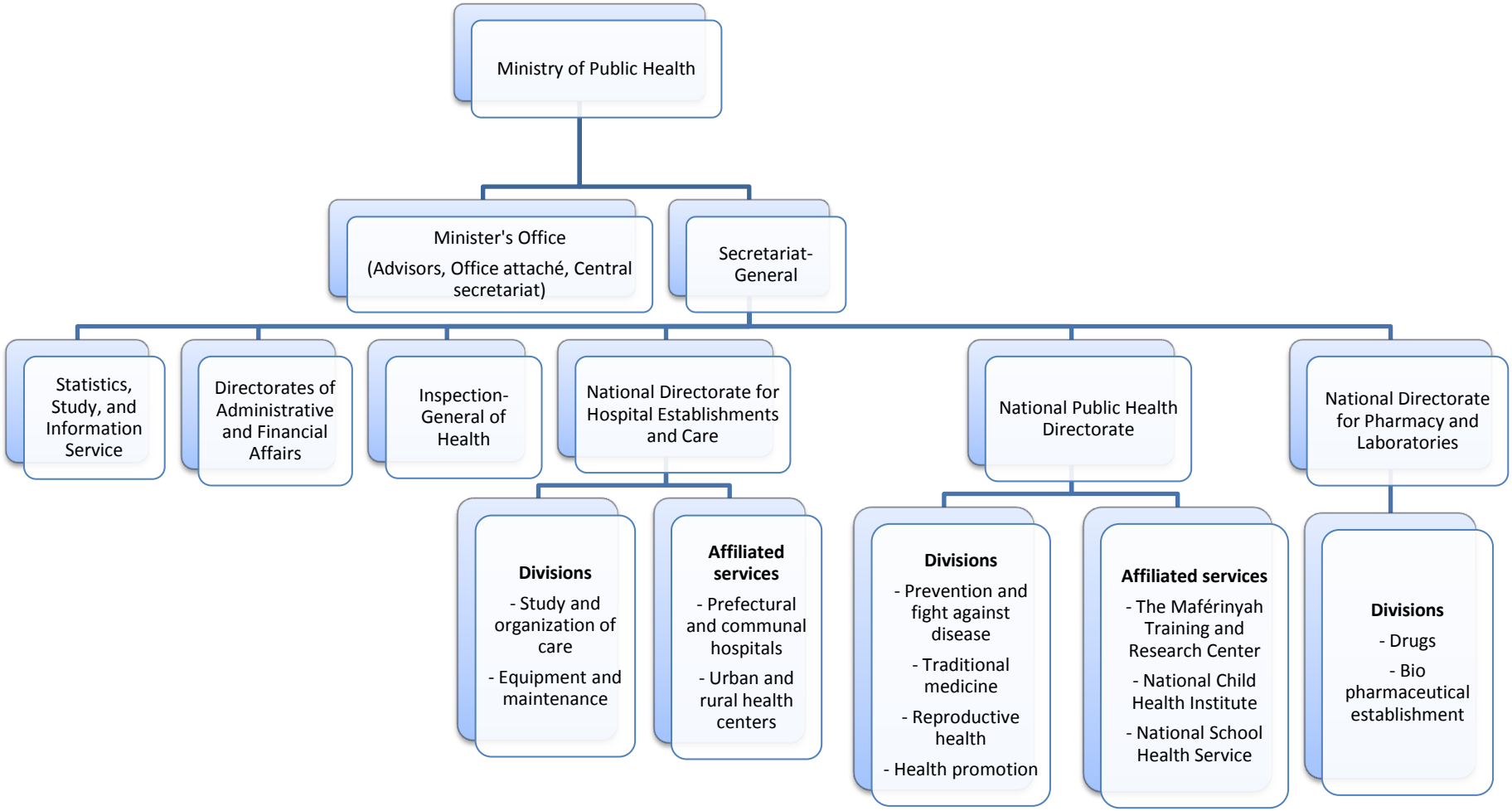
1. ORGANIZATIONAL CHART OF THE MINISTRY OF HEALTH OF BENIN



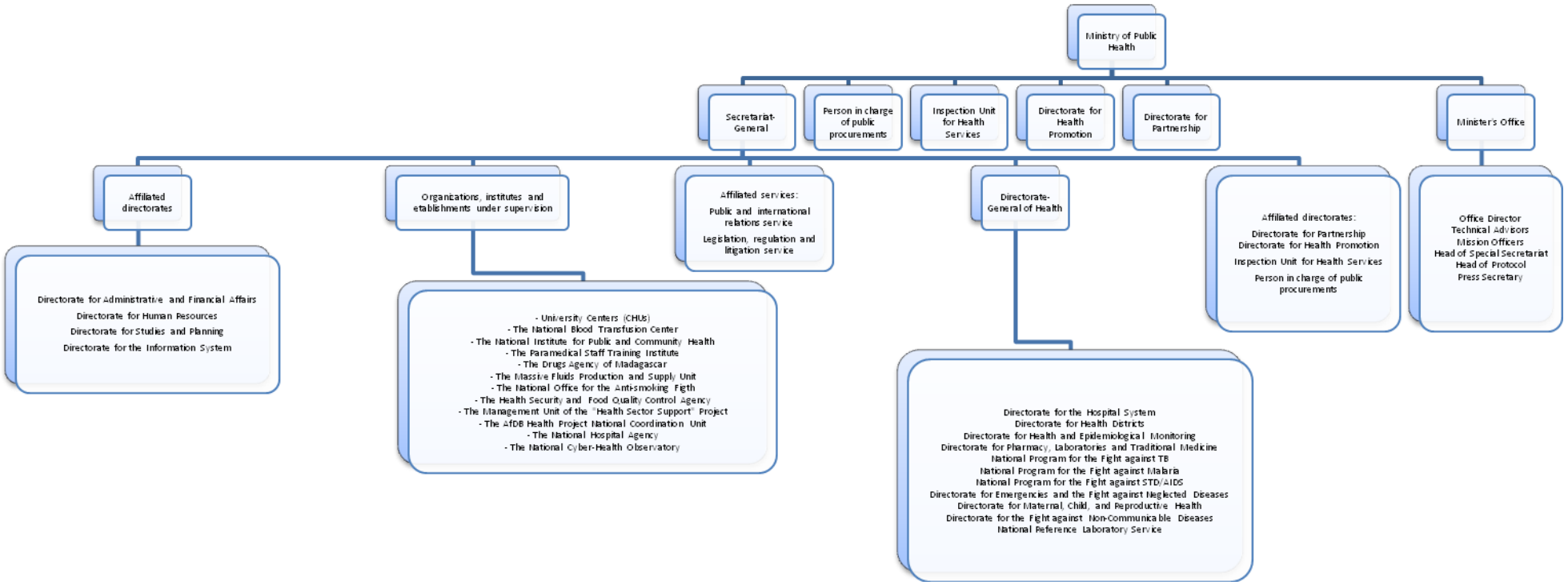
2. ORGANIZATIONAL CHART OF THE MINISTRY OF HEALTH OF BURKINA FASO



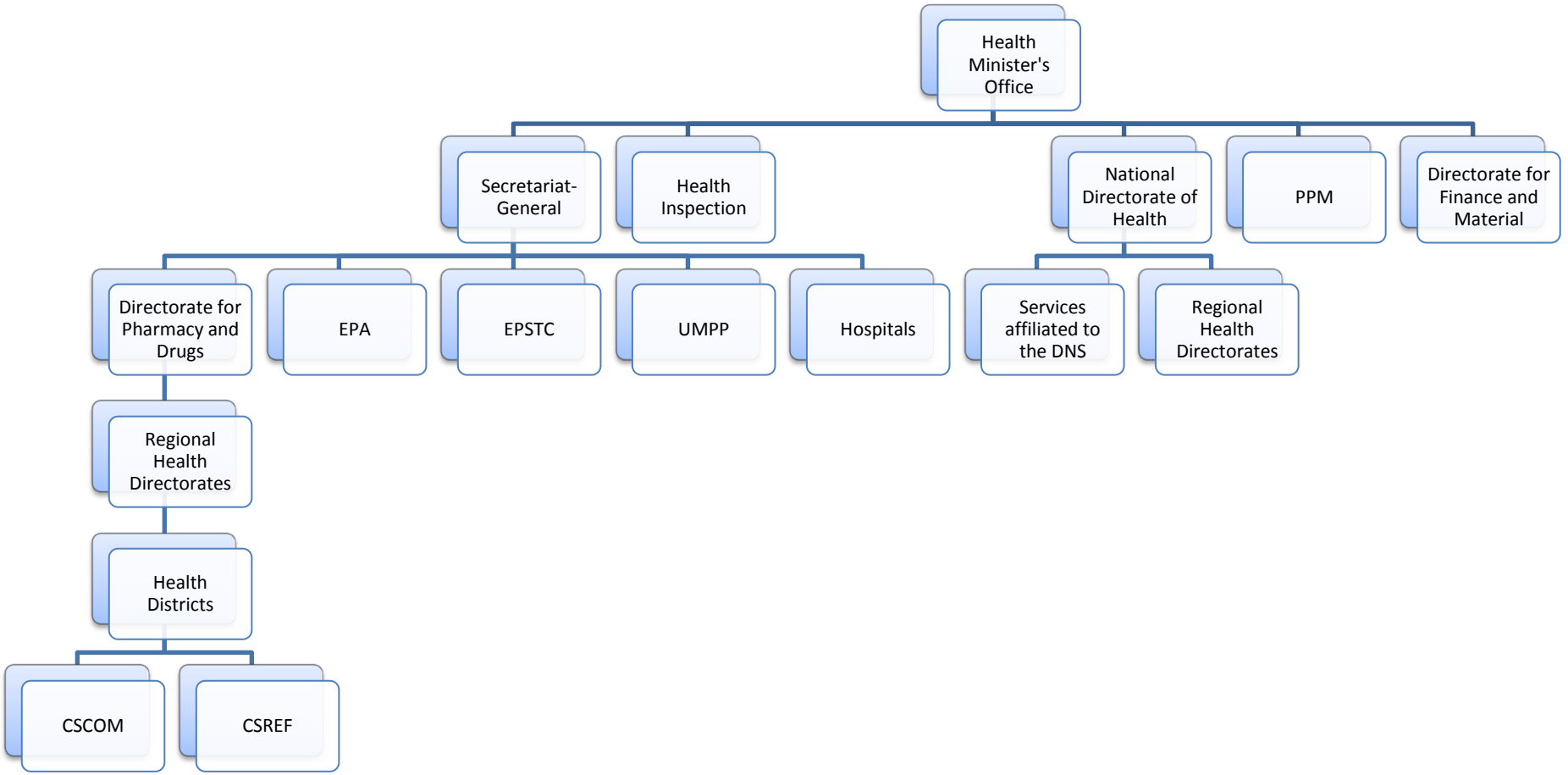
3. ORGANIZATIONAL CHART OF THE MINISTRY OF HEALTH OF THE REPUBLIC OF GUINEA



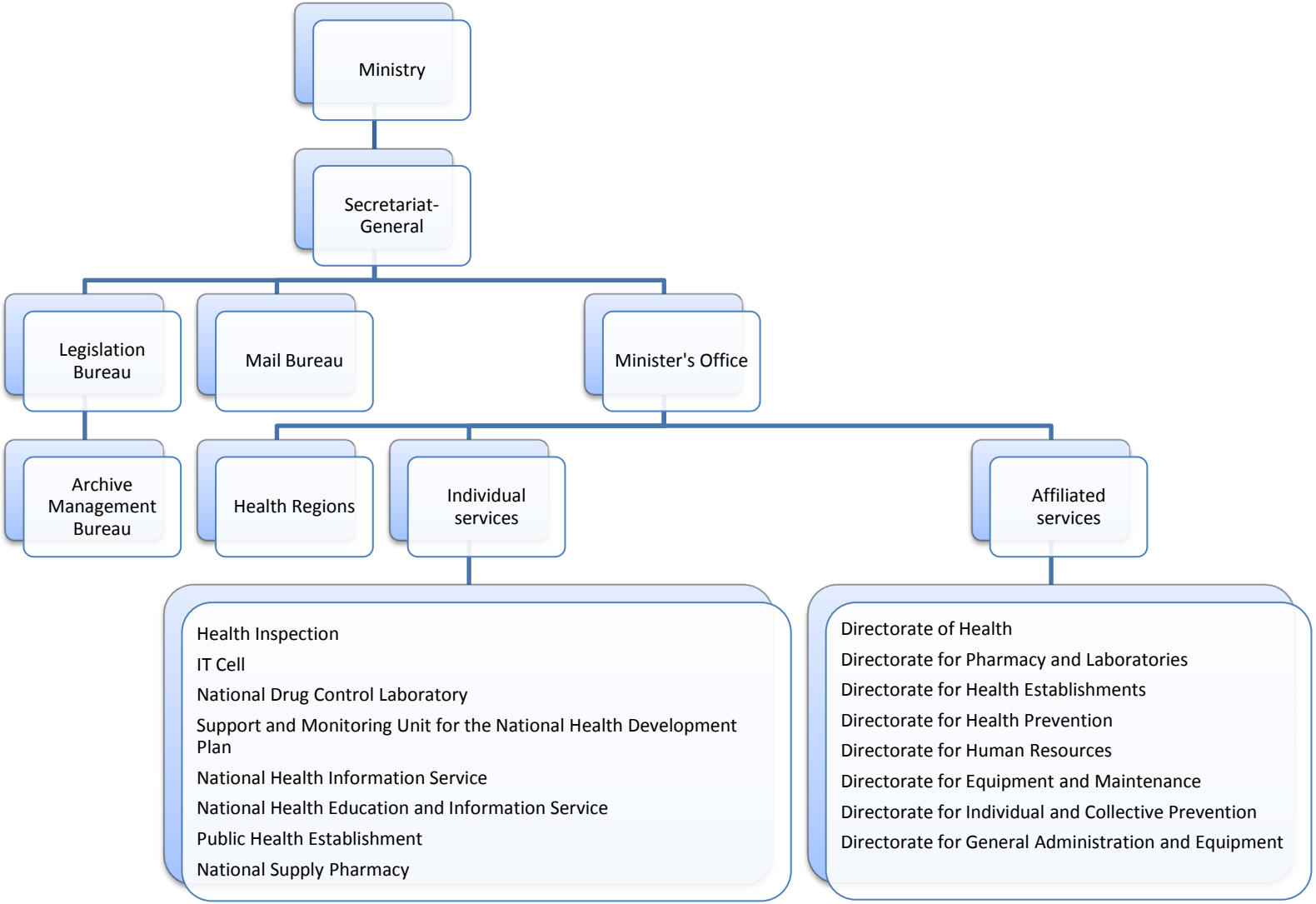
4. ORGANIZATIONAL CHART OF THE MINISTRY OF HEALTH OF MADAGASCAR



5. ORGANIZATIONAL CHART OF THE MINISTRY OF HEALTH OF MALI



6. ORGANIZATIONAL CHART OF THE MINISTRY OF HEALTH OF SENEGAL



7. ORGANIZATIONAL CHART OF THE MINISTRY OF HEALTH OF TOGO